



REQUEST TO CHANGE A CONDITION

*New Acland Coal Mine Stage 3
Project*

March 2022

Request for Project Change to Change Stated Conditions

New Acland Coal Stage 3 project

30 March 2022

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Executive summary

New Acland Coal Pty Ltd (**NAC**) is the proponent of the New Acland Coal Mine Stage 3 project (the **Project**). The Project involves the proposed extension of the operating life of the New Acland Coal Mine (the **Mine**). This includes the progressive development of three new resource areas within Mining Lease (**ML**) 50232 as three new pits, construction of a rail spur and balloon loop from Jondaryan, within ML 700002 and ML 50232, and associated infrastructure. The Environmental Authority (**EA**) EPML00335713 for the Project was initially granted on 12 March 2019 following the First Remitted Land Court Hearing before President Kingham (**First Remitted Land Court Hearing**). However, the EA was set aside following the decision of the High Court of Australia on 3 February 2021 (**High Court Hearing**), which also determined that NAC's ML and EA amendment applications should be re-considered by the Land Court. The Second Remitted Land Court Hearing commenced in February 2021 with the actual hearing occurring between 26 October 2021 and 25 November 2021.

On 17 December 2021, the decision from the Second Remitted Land Court Hearing (**Land Court Decision**) recommended that mining lease applications for ML 700002 and ML 50232 (**MLAs**) and the associated EA amendment be granted subject to a condition that the recommendation does not take effect unless and until:

- (a) NAC applies to the Coordinator-General to amend the environmental authority (EPML00335713) to account for the conditions as amended by the Second Remitted Land Court Hearing and/or the reasons contained within the Land Court Decision;
- (b) the Coordinator-General amends the stated conditions; and
- (c) DES incorporates the stated conditions (as amended by the Coordinator-General) in the draft environmental authority.

NAC, in light of the Land Court Decision, requests that the Coordinator-General assess proposed changes to the stated conditions of the EA in the Coordinator-General's Report, and as amended by subsequent change reports, to account for the conditions amended by the Second Remitted Land Court Hearing and/or the Land Court Decision.

In particular, NAC seeks the following changes to the stated conditions:

- (a) amend stated condition A2 and Figure 1 to provide certainty as to the spatial extent of mining following the Land Court Decision. This change will also impose a buffer from extraction and out of pit dump activities to minimise potential impacts on residents of the nearby rural town of Acland. Further, stated condition A2 specifies the limitations on supporting infrastructure outside the footprint in Figure 1 on the new mining leases, by restricting such infrastructure to minor infrastructure or infrastructure under the EA conditions or approved management plans or otherwise permitted by the administering authority. Infrastructure is not permitted in the Lagoon Creek Conservation Zone, other than in accordance with imposed condition 15. All mining activities will continue to be subject to the limitation in stated condition H42, which prevents disturbance of matters of state environmental significance other than as specified in Table H4;
- (b) amend stated condition A12 to require NAC to hold additional records of environmental complaints and require NAC to provide information the subject of stated condition A12 to the administering authority within 28 days of the action taken to resolve a complaint, and provided consent of the complainant is obtained;
- (c) amend stated conditions B1, B2, B3 and B4 in respect of air quality management and emissions to address the air quality findings of the Second Remitted Land Court Hearing and including updating the monitoring parameters to current air quality management standards and clarification of the location for monitoring. The

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changes also address the Land Court findings on the timing of reviews of the Air Emissions Management Plan;

new stated conditions B5 and B6 are proposed to accommodate the recommendation of the Land Court which specifically contemplated a review of the air quality monitoring program and monitoring requirements by a suitably qualified and experienced person in conjunction with the review of the AEMP provided under stated condition B3. Proposed stated condition B6 provides certainty as to when the review recommendations will be implemented;

- (d) amend stated conditions for management of surface water impacts to address the recommendations of the surface water quality expert in the Second Remitted Land Court Hearing to contemporise the conditions and align with current Condamine River Basin Water Quality objectives;
- (e) amend stated conditions D1, D2 and D4 in respect of noise management and emissions including to confirm where noise monitoring is to be undertaken, when abatement measures are triggered and to ensure the parameters for monitoring and reporting are consistent with contemporary acoustic practice and are measured in accordance with the Noise Measurement Manual; and
- (f) a small number of administrative and consequential amendments.

The changes proposed by this Request for Project Change will not result in any additional environmental harm or adverse impacts and have the overall effect of increasing the environmental controls and measures that NAC is required to operate the Project once it proceeds.

The economic benefits of the Project have been demonstrated. In the Coordinator-General's Report, it was concluded that the Project would deliver significant economic benefits to the local, regional and State economies. It also acknowledged the employment benefits that would be generated by the Project, in the form of direct and indirect jobs, local regional and Indigenous employment opportunities. The Land Court Decision also accepted the economic benefits identified in the expert evidence, namely that:

- (a) the real economic output of the Project is predicted to be \$2.73 billion for the local region, \$3.148 billion for Queensland as a whole and \$3.448 billion for Australia as a whole;
- (b) the real income for the local region from the Project is predicted to be \$1.0587 billion;
- (c) conservatively the Project will result in a net increase in jobs in the local region of about 156; and
- (d) the local region will experience an increase in real wages due to an increase in demand for labour.

Additional information on the importance of the Project is set out at section 1.4 of this document.

Extensive public consultation has been undertaken in regard to the Project and the Project has been the subject of intense public scrutiny, including through the EIS process and multiple court hearings. NAC has also provided an updated summary of its Community Engagement Measures for the Project as Annexure A and Project Consultation Summary (2012 - 2021) as Annexure C to this document. In NAC's view, given comprehensive Community Engagement Measures completed to-date for the Project and that the changes proposed are directed to imposing additional environmental controls, public notification of the proposed changes should not be necessary.

1. Introduction

1.1 The proponent

NAC is the proponent for the Project and is a wholly owned subsidiary of New Hope Corporation Limited (**NHCL**), which is an Australian publicly listed company with a long history of coal mine development and operation in Queensland, New South Wales and overseas dating back to the early 1950s. NAC and the other subsidiaries of NHCL trade and operate as the New Hope Group (**NHG**).

1.2 Project overview

NAC has operated the Mine since 2002. The Mine is currently operated under ML 50170 and ML 50216 and EA EPML00335713, all of which are held by NAC. Currently, the Mine has approval to produce 5.2 million tonnes per annum (**Mtpa**) of product coal as an open cut coal mine. The Project proposes the expansion of the Mine to produce up to 7.5 Mtpa of thermal coal.

The Project proposes the extension of the Mine's operating life, with the inclusion and progressive development of three new resource areas within ML 50232 as three new pits, construction of a rail spur and balloon loop from Jondaryan, within ML 700002 and ML 50232, and associated infrastructure. The mining activities for the new resource areas in the Project will not involve a substantial change to the mining method from that used for the existing operations. Novel or unproven resource extraction processes, technology or activity is not proposed as part of the application and the proposed EA amendment does not involve petroleum and gas activities.

The Project will allow NAC to produce coal at the Mine to meet current and future market demands for its thermal coal products. The Project's coal products are a highly valued energy resource that possesses lower sulphur content, provides higher energy output and produces less greenhouse emissions than many alternative thermal coal sources. An independent coal quality report confirms that the Project's thermal coal when utilised for heat production comparatively produces very low CO₂ emissions and is considered one of the best coals in the World from a CO₂ emissions perspective.¹ The Project will boost economic activity within the Darling Downs region through direct and indirect employment, investment and business opportunities for the life of the Project and beyond.

On 18 May 2007, the Coordinator-General declared the Project to be a 'coordinated project' (at that time a "significant project") under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (Qld) (**SDPWO Act**). A brief chronology of the Project is provided in Annexure D.

NAC's mining lease applications and environmental authority amendment application for the Project were referred to the Land Court on 14 October 2015 for an objections hearing (**Original Objections Hearing**) and since that time has been subject to protracted litigation, including two subsequent Land Court hearings. On 17 December 2021, the Land Court Decision from the Second Remitted Land Court Hearing recommended that the mining lease applications (MLA 50232 and MLA 700002) and associated environmental authority amendment application be approved subject to a condition that the recommendation does not take effect unless and until:

- (a) NAC applies to the Coordinator-General to amend the environmental authority (EPML00335713) to account for the conditions as amended by the Second Remitted Land Court Hearing and/or the reasons contained within the Land Court Decision;
- (b) the Coordinator-General amends the stated conditions; and
- (c) DES incorporates the stated conditions (as amended by the Coordinator-General) in the draft environmental authority.

¹ A&B Mylec 2018.

1.3 Project location

The Project is located approximately 160 kilometres (km) west of Brisbane, 35 km north-west of Toowoomba, and 14 km north-northwest of the town of Oakey. The Project is located entirely within the Toowoomba Regional Council area. The proposed access to the Project site for light vehicles is via the Oakey-Cooyar Road, which connects with the Warrego Highway through Oakey. Access to the Project site for heavy vehicles is via the proposed diverted Jondaryan-Muldu Road, which connects with the Warrego Highway, west of Toowoomba near the town of Jondaryan. From the two connection points, the Warrego Highway heads east to Toowoomba and Brisbane, respectively, or west to Dalby and beyond.

1.4 Importance of the Project

Employment

At its peak production New Acland Mine employed approximately 350 full-time equivalent employees and contractors. As a consequence of ongoing delays and approval uncertainty as the existing mine neared completion, New Hope was forced to drastically downsize the New Acland workforce. The impact to employees and the community was significant with NAC making redundant more than 350 jobs to leave just 22 employees to carry out care and maintenance and rehabilitation pending final approvals decisions.

When the Project proceeds, the activity level will ramp up considerably such that the anticipated jobs are approximately:

- (a) 300 contractor jobs during the peak construction phase; and
- (b) 400 full-time equivalent employees, including contractors, at the Mine for the peak operational phase of the Project.

The following associated jobs are also expected:

- (a) an additional 15 jobs at NHG Corporate Office and Queensland Bulk Handling;
- (b) 135 Aurizon jobs², under normal operating conditions;
- (c) Indigenous employment associated with Aboriginal cultural heritage protection.

Economy

The Coordinator-General's Report concluded that the Project would:

"deliver significant economic benefits to both the local, regional and state economies. Employment benefits would be generated by the project over the 12-year project life—providing direct and indirect jobs, local, regional and Indigenous employment opportunities".³

Further, evidence in the Second Land Court Remitted Hearing was that the Project would provide significant positive economic impacts for the local region, the State and the nation. Dr Jerome Fahrer an independent economist updated his previous analysis and gave evidence in the Second Land Court Remitted Hearing⁴ and his evidence was accepted by the Court.⁵ His evidence as to the economic benefits of the Project was:

² *New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No. 4)* [2017] QLC 2 at [420].

³ Coordinator-General's Report, chapter 9, page 156.

⁴ Paragraphs [76] and [77] Land Court Decision.

⁵ *New Acland Coal Pty Limited v Oakey Coal Action Alliance Inc. & Ors (No2)* [2021] QLC 44.

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- (a) the real economic output of the Project is predicted to be \$2.73 billion for the local region, \$3.148 billion for Queensland as a whole and \$3.448 billion for Australia as a whole;
- (b) the real income for the local region from the Project is predicted to be \$1.0587 billion;
- (c) conservatively the Project will result in a net increase in approximately 300 jobs, 156 of which will be in the local region; and
- (d) the local region will experience an increase in real wages due to an increase in demand for labour.

The project continues to represent a profitable project in terms of coal demand and position as a low-cost producer with a long-standing customer base. Demand for coal extracted from the Project is foreseen to remain strong for the life of the Project.

1.5 Approvals History

A chronology of the Project's primary approvals and associated legal history are provided in Annexure D. In summary, NAC has applied for the following primary approvals:

- (a) MLA 50232 and MLA 700002, under Queensland's MR Act;
- (b) an amendment to the environmental authority for the New Acland Mine to include the Project (EA Amendment Application), under Queensland's EP Act;
- (c) an AWL, under Queensland's MR Act and Water Act.

NAC also holds a controlled action approval under the Commonwealth EPBC Act in relation to the Project and a RIDA under the *Regional Planning Interests Act 2014* for the first five years of mining.

A number of secondary approvals have been obtained, with further secondary approvals also being progressed.

1.6 Litigation history

The litigation over the mine's applications for mining leases (MLA 50232 and MLA700002) and environmental authority amendment has continued for the last 6 years and has involved multiple objectors and multiple Court proceedings. The MLAs, and EA Amendment Application were first referred to the Land Court on 14 October 2015 for the Original Objections Hearing. The Original Objections Hearing spanned 96 days, making it the longest case in the Land Court of Queensland's history and was decided on 31 May 2017.

Member Smith's decision in the Original Objections Hearing dated 31 May 2017 was the subject of a judicial review by NAC. The Supreme Court on 2 May 2018 set aside the recommendations of the Original Objections Hearing and remitted the matter back to the Land Court for a new hearing, on a limited basis.

The remitted Land Court hearing was heard before President Kingham on 2-4 October 2018. The First Remitted Land Court Hearing recommended that the mining lease applications and environmental authority amendment application be approved subject to the Coordinator-General deciding to change the stated conditions of the Coordinator-General's Evaluation Report to change the noise limits. On 12 February 2019, the Coordinator-General approved the change to the stated conditions.

On 12 March 2019, the delegate of the chief executive of the Queensland Government DES approved the EA Amendment Application for the Project, to take effect upon the grant of the mining leases.

The Supreme Court decision was the subject of an appeal to the Queensland Court of Appeal by the Oakey Coal Action Alliance (**OCAA**), with the Appeal heard between 27 February and 1 March 2019. The

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Court of Appeal declared on 1 November 2019 that the decision of the Original Objections Hearing was affected by apprehended bias, but allowed the decision from the First Remitted Land Court Hearing and the environmental authority issued on 12 March 2019 to stand.

OCAA applied and obtained special leave to appeal the Court of Appeal decision to the High Court of Australia on 5 June 2020. On 3 February 2021 the High Court of Australia determined that NAC's ML and EA amendment applications should be re-considered by the Land Court. The High Court of Australia also set aside the decision to approve the environmental authority on 12 March 2019.

Member Stilgoe of the Land Court conducted the Second Remitted Land Court Hearing in October and November 2021 and delivered the Land Court Decision on 17 December 2021.⁶ The conditional recommendation of the Land Court Decision, which is required to be satisfied by 31 May 2022, is set out in section 1.2 above.

⁶ *New Acland Coal Pty Ltd v Oakey Coal Action Alliance Inc. & Ors (No 2)* [2021] QLC 44

2. Relevant statutory framework

2.1 Environmental Protection Act 1994

The Land Court Decision was made under section 190 of the EP Act. It relevantly provides that where a mining lease is included in a coordinated project, any recommended conditions for the EA by the Land Court must include the Coordinator-General's conditions and cannot be inconsistent with a Coordinator-General's condition. Also, under section 205 of the EP Act, the administering authority if it approves the application for an environmental authority, must impose any conditions that are stated conditions of the Coordinator-General. Any other condition imposed on the environmental authority must not be inconsistent with the Coordinator-General's conditions.

This Request for Project Change proposes to amend stated conditions which were subject to amendment during the course of the Second Remitted Land Court Hearing as well as conditions which were recommended in the Land Court Decision.

Following the Coordinator-General's assessment of the Request for Project Change, the next step in the approval process is a decision on the EA amendment application, which is to be made by the Chief Executive of the DES in accordance with sections 193 and 194 of the EP Act.

The considerations for the EA amendment application will, amongst other matters, be informed by the Coordinator-General's Report on the Request for Project Change. Further, under section 205(2) of the EP Act, the administering authority must impose any stated conditions of the Coordinator-General's Report.

Following the decision of the EA amendment application, the Minister for Resources is then required to decide whether to grant the MLAs under section 271A of the MR Act. There is no statutory timeframe on when the decision by the Minister for Resources will be made.

Under section 1250A of the Water Act and section 839 of the MR Act, NAC was required to apply for an AWL to take or interfere with associated water. The application process is set out in section 1250D of the Water Act. The AWL application was made on 3 October 2017 and publicly notified on 20 March 2019 to 7 May 2019. NAC's application for an AWL to take or interfere with associated water is currently awaiting approval by the delegate under the Water Act.

2.2 State Development and Public Works Organisation Act 1971 (SDPWO Act)

The EIS for the Project was submitted to the Coordinator-General in January 2014 and released for public and advisory agency consultation from January to March 2014. An AEIS was requested by the Coordinator-General during April 2014 and, following submission in August 2014, both the AEIS and EIS were released for additional public and advisory agency consultation during September 2014. The Coordinator-General's Report was issued on 19 December 2014 in accordance with section 34D of the SDPWO Act. The Coordinator-General's Report concluded that the Project should be approved, subject to conditions and recommendations.

Appendix 2, section 1 of the Coordinator-General's Report includes the Coordinator-General's stated conditions for the draft environmental authority for the Project, pursuant to section 47C of the SDPWO Act.

This Request for Project Change to the Coordinator-General's Report, pursuant to section 35C of the SDPWO Act, is to evaluate the environmental effects of the proposed changes to the Coordinator-General's stated conditions to give effect to the Second Remitted Land Court Hearing and the reasons contained within the Land Court Decision.

This Request for Project Change addresses each of the requirements set out in section 35E of the SDPWO Act, being:

35E Requirements for application

The application must be written and -

- (a) describe the proposed change and its effects on the project; and*
- (b) state reasons for the proposed change; and*
- (c) include enough information about the proposed change and its effects on the project to allow the Coordinator-General to make the evaluation.*

3. Proposed changes to stated conditions

3.1 Overview of the proposed changes to stated conditions

The changes sought by this Request for Project Change are required following the Second Remitted Land Court Hearing and the recommendation of the Land Court Decision.

A comparison of the current stated conditions of the Coordinator-General's Report and the proposed changes to the stated conditions, are set out in **Annexures E, F and G** of this Request.

In summary, the proposed changes sought by this Request for Project Change include changes to:

- (a) amend stated condition A2 and Figure 1 to provide certainty as to the spatial extent of mining following the Land Court Decision. This change will also impose a buffer from extraction and out of pit dump activities to minimise potential impacts on residents of the nearby rural town of Acland. Condition A2(c) also sets the limitations on other supporting infrastructure which is necessary for the mining activity and was contemplated in the EIS and AEIS;
- (b) amend stated condition A12 to require NAC to hold additional records of environmental complaints and require NAC to provide information the subject of stated condition A12 to the administering authority within 28 days of the action taken to resolve a complaint, provided consent of the complainant is obtained;
- (c) amend stated conditions B1, B2, B3 and B4 in respect of air quality management and emissions to address the air quality findings of the Second Remitted Land Court Hearing and including updating the monitoring parameters to current air quality management standards and clarification of the locations for monitoring. The changes also address the Land Court findings on when the Air Emissions Management Plan ought to be reviewed;
- (d) new stated conditions B5 and B6 are proposed to accommodate the recommendation of the Land Court which specifically contemplated a review of the air quality monitoring program and monitoring requirements by a suitably qualified and experienced person in conjunction with the review of the AEMP provided under stated condition B3. Proposed stated condition B6 provides certainty as to when the review recommendations will be implemented;
- (e) amend stated conditions for management of surface water impacts to address the recommendations of the surface water quality expert as referenced in the Second Remitted Land Court Hearing to contemporise the surface water conditions and update the EC trigger limit to align with current Condamine River Basin Water Quality Objectives;
- (f) amend stated conditions D1, D2 and D4 in respect of noise management and emissions including to confirm where noise monitoring is to be undertaken, when abatement measures are triggered and to ensure the parameters for monitoring and reporting are consistent with contemporary acoustic practice and are measured in accordance with the Noise Measurement Manual; and
- (g) a small number of administrative and consequential amendments.

3.2 Reasons for the proposed changes

The proposed changes to stated conditions which are the subject of this Request for Project Change are a result of the Second Remitted Land Court Hearing and the reasons contained within the Land Court Decision. The Second Remitted Land Court Hearing considered expert evidence on the matters subject to this Request for Project Change and draft EA conditions as amended by the respective parties.

Annexures E, F and G set out each proposed amendment to stated conditions and reasons for the proposed change to stated conditions in accordance with section 34H of the SDPWO Act. The following provides a summary of the reasons for the primary changes proposed to the stated conditions.

Spatial extent of mining disturbance

Stated condition A2 of the Coordinator-General's Report states a condition for the proposed environmental authority which provides:

"In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview - Mine Area)."

Figure 1 depicts three pit areas, described as Manning Vale West Pit, Manning Vale East Pit and Willeroo Pit. Figure 1 is marked "Indicative Only".

The Second Remitted Land Court Hearing determined that a condition limiting the location and extent of the disturbed area is necessary for the EA⁷ and that the shape of the disturbance area is defined by Figure 1.⁸ The Land Court confirmed however that there is "scope for some limited flexibility"⁹ and noted that the current Figure 1 did not incorporate ancillary infrastructure usually associated with mining such as pipelines, water management infrastructure, telecommunications, access tracks, flood protection levee and monitoring equipment. The Land Court also accepted that there was no benefit in limiting the areas for disturbance involved in the loadout facilities, haul roads and surface infrastructure as this would not give certainty that adverse impacts would be avoided.¹⁰ The Land Court also indicated that mining beyond the western edge of Manning Vale east should be fixed to protect Acland.¹¹

The proposed change to condition A2 and Figure 1 - Project Overview are to address these findings by providing a buffer for extraction and out of pit dumping activities around Acland, removal of the "indicative" notation on Figure 1 - Project Overview, depiction of the new mining areas for the Project and inclusion of the proposed footprint for primary infrastructure (rail spur, balloon loop, train load-out facility, primary haul road and mine infrastructure area) on Figure 1 - Project Overview. The shape and location of this footprint is consistent with the current Figure 1, but now also includes the 33kV electricity infrastructure and haul road crossing of Lagoon Creek which were assessed by the Coordinator-General through the EIS process.

Condition A2(c) limits other necessary infrastructure for the mine which is outside the new mining areas to that which is minor infrastructure or infrastructure which is the subject of the environmental authority conditions or required under approved management plans or otherwise permitted by the administering authority. Condition A2 also confirms that infrastructure for the Project may also be constructed on the existing mining leases ML50216 and ML50170 in areas that have already been disturbed and which are not yet rehabilitated.

Condition A2 does not authorise any new activities. The ancillary infrastructure was described in the EIS and AEIS. The Coordinator-General stated conditions for ancillary infrastructure includes water management infrastructure required to protect surface water, levees to protect mining areas from flooding and environmental monitoring infrastructure including for groundwater monitoring, noise and air quality monitoring. Annexure I identifies where this infrastructure and its impacts were considered.

Environmental complaints documentation

⁷ Paragraph [127] of the Land Court Decision.

⁸ Paragraph [128] of the Land Court Decision.

⁹ Paragraph [129] of the Land Court Decision.

¹⁰ Paragraph [131] of the Land Court Decision.

¹¹ Paragraph [129] of the Land Court Decision.

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Stated condition A12 currently requires records of all environmental complaints received about mining activities to be held by NAC and the specific records which NAC is required to keep is set out in stated condition A12.

Stated condition A12 is proposed to be amended to reflect the changes proposed in the Statutory Party EA submitted to the Land Court which was accepted by NAC.

If the proposed changes to stated condition A12 are made, NAC will be required to:

- (a) hold records of any referrals to the independent counselling service in addition to existing records to be held for all environmental complaints; and
- (b) confirm that consent of the complainant is required before records held by NAC pursuant to stated condition A12 are provided to the administering authority; and
- (c) provide information which is the subject of stated condition A12 to the administering authority (and the complainant) within 28 days of the action taken to resolve the complaint.

Air quality monitoring and management

Amendments are sought to be made to existing air quality monitoring and management conditions to implement the recommendations of the Land Court Decision. The proposed changes include changes to align the monitoring of air quality and dust with current standards and measurement techniques.

A summary of the amendments to the Coordinator-General's stated conditions with respect to air quality monitoring and management are set out below.

Proposed amended stated conditions Ba and B1

NAC proposes to amend stated condition B1 to separate this condition into two separate conditions (proposed stated condition Ba imposes the obligation to comply with air emission limits and B1 sets out the monitoring parameters and standards). The proposed changes reflect the changes proposed by the Statutory Party and agreed by NAC during the Second Remitted Land Court Hearing and recommended by the Land Court Decision¹².

Amended stated condition Ba requires the holder of the environmental authority to ensure that air emissions generated by the mining activities do not cause the criteria in Table A - Air Quality Monitoring requirements to be exceeded at a sensitive place or commercial place. Proposed stated condition Ba includes a note that confirms where air emissions for a sensitive place or commercial place must be measured.

The amendments to stated condition B1 will ensure the monitoring parameters for monitoring required at the locations and frequency in Table A reflect the current standards for air emission monitoring as follows:

- (a) in relation to the monitoring of PM10, removal of the allowance of 5 exceedances per year as contained in stated condition B1(b). This change is for consistency with the *National Environment Protection (Ambient Air Quality) Measure*;
- (b) monitoring to include an additional PM10 limit of 25 micrograms per cubic metre over a 1 year averaging time in accordance with the *Environmental Protection (Air) Policy 2019* and a daily average limit for particulate matter of 80 micrograms per cubic metre;
- (c) to include a requirement for monitoring of PM2.5 consistent with the criteria under the *Environmental Protection (Air) Policy 2019* and enabling another method of monitoring for PM2.5 to be agreed in writing by the administering authority; and

¹² Paragraphs [163]-[170] Land Court Decision.

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- (d) inclusion of a note to acknowledge that the air emission limits may be updated to reflect changes in the *Environmental Protection (Air) Policy 2019*.

Proposed amended stated conditions B3 and B4

NAC proposes an amendment to stated condition B3 to separate this condition into two separate conditions (proposed stated conditions B3 and B4). Proposed condition B3a) reflects the position agreed by NAC and the Statutory Party during the objections hearing, that the AEMP is to be prepared by a suitably qualified and experienced person in relation to air emissions and implemented for all stages of mining. The AEMP is to be submitted to the administering authority for review and comment within 3 months of grant of ML50232 and ML70002, and at intervals not exceeding two years thereafter. Proposed condition B3b) also requires a further review of the AEMP prior to NAC producing more than 5.1 million tonnes (Mt) of product coal per calendar year which review was specifically endorsed at paragraph [172] of the Land Court Decision. The trigger prior to the mine producing more than 5.1 Mt of product coal per calendar year is to ensure that the AEMP can be adapted to avoid or mitigate air emission impacts from more intensive mine operations.

Proposed changes contained in proposed condition B4 are to add additional requirements for the AEMP following expert air quality evidence in the Land Court hearing. The additional matters are consistent with the purpose of existing stated condition B3 which is to ensure that there is a program for continuous improvements for the management of dust resulting from mining operations. The additional matters to be included in the AEMP that were not previously within the scope of existing stated condition B3, include:

- (a) Monitoring locations acting as and continuing to act as suitable representative sites for sensitive places (if there is no monitor at a particular sensitive place);
- (b) PM10 trend monitoring at 2 locations to be specified in the AEMP;
- (c) a trigger action response plan that requires NAC to investigate, mitigate and manage **TSP** caused by mining activities at any sensitive place or commercial place when monitoring indicates exceedance of 80 micrograms per cubic metre over a 24-hour averaging time;
- (d) a forecasting system that provides daily predictions of upcoming meteorological conditions;
- (e) a protocol and register for the recording of requests and installation of first flush diverter systems;
- (f) a protocol for the transport of basalt material; and
- (g) annual review of the AEMP including its adequacy and effectiveness in avoiding and minimising air emissions and dust at a sensitive place or commercial place.

Table A - Air quality monitoring requirements is proposed to be amended to reflect the Land Court's conclusions on a number of amendments put forward by the respective parties, which are set out at paragraphs [188] to [208] of the Land Court Decision. Amendments to Table A include:

- (a) continuous PM2.5 monitoring at sensitive receptor 1 in Acland against the PM2.5 limits of 25 micrograms per cubic meter over a 24 hour averaging time and 8 micrograms per cubic metre over a 1 year averaging time in accordance with amended stated condition B1;
- (b) an additional PM10 limit of 25 micrograms per cubic meter over 1 year in accordance with new proposed condition B1;
- (c) an air quality limit for insoluble solids which is the same as the nuisance limit for insoluble solids;
- (d) at monitoring location 1,2 (Acland) measurement of temperature, precipitation, relative humidity and solar and net radiation;

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- (e) compliance monitoring at additional sensitive receptors to the north of the mine (at sensitive receptors 7,8), to the north-west of the mine (at sensitive receptors 38,39) and to the north east of the mine (at sensitive receptor 15); and
- (f) removal of identification of separate dust gauges at Table 2 and from Figure 2 as insoluble solids are to be measured at each compliance monitoring location in accordance with amended Table A.

Figure 2 illustrates the locations of air quality monitoring. The air quality experts in the Land Court hearing agreed that a monitoring station to the south of the ML50232 was not necessary¹³. As a result, monitoring location 4 is proposed to be deleted from Figure 2.

Proposed new stated conditions B5 and B6

NAC proposes to amend the existing air quality management stated conditions to include two new stated conditions in response to the reasons of the Land Court which specifically contemplated a review of the air quality monitoring program and monitoring requirements by a suitably qualified and experienced person.

Review of the AEMP is required under stated condition B3. In addition to this review, new stated condition B5 provides for a review of the Table A - Air quality monitoring requirements as part of the review of the AEMP within two years and three months of the grant of ML50232 and ML700002 and every two years thereafter. A review is also required prior to NAC increasing its extraction rate over 5.1 Mtpa. At paragraphs [176] and [177] the Land Court specifically mentioned that such regular reviews were sensible concessions by NAC.

The review must be undertaken by a suitably qualified and experienced person and a report must be provided to the administering authority following the review. The review to be conducted under new stated condition B5 must include:

- (a) The effectiveness of the monitoring network;
- (b) The frequency and cause of any exceedances of air quality objectives measured by the monitoring program over a period of at least **two (2) years**;
- (c) Dust complaints;
- (d) Future progression of the mining activities;
- (e) Locations of sensitive receptors relative to the mining activities;
- (f) Mining operating modes; and
- (g) The suitability of the locations, types and parameters of the monitoring network.

New stated conditions provides for the implementation of the review of the AEMP and the Table A - Air quality monitoring requirements to be conducted under stated condition B3 and proposed new stated condition B5 is provided to implement the Land Court findings. Specifically, the air quality monitoring program in Table A and any additional monitors recommended in a revised AEMP, where recommended by such AEMP review, are to be implemented as soon as practicable after approval by the administering authority and prior to production of more than 5.1Mt of product coal per calendar year.

Noise emission monitoring and management

In relation to proposed amendments to Table D1a, refer to **Annexure G** of this Request for Project Change.

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Stated condition D1 is proposed to be amended to include a note that the measurement of noise for a noise sensitive place is either at that place or at the monitoring location to which the noise sensitive place is correlated. The purpose of this change is to clarify where noise measurements could be taken. This change was proposed by the Statutory Party in the Second Remitted Land Court Hearing.

The proposed change to stated condition D1 in paragraph (a) was referenced by the Land Court at paragraph [226] and no particular issue was taken with that amendment.

The amendments to stated condition D2 are proposed to ensure that the obligation to implement noise abatement measures to avoid exceeding the relevant limits is triggered when either of NAC's performance or compliance monitoring indicates the potential for exceedance of the relevant noise limits. This is consistent with the Land Court Recommendation at paragraph [234].

The amendments to stated condition D4 seeks to retain the existing purpose of the condition but to refine the monitoring parameters for the compliance noise monitoring program to align with the acoustic expert evidence provided in the Second Remitted Land Court Hearing. The proposed amendment confirms that compliance noise monitoring will be undertaken in accordance with the Noise Measurement Manual and include monitoring of the following:

- (a) LA01, adj, 15 min - day, evening & night; LA10, adj, 15 min - day, evening & night; LAeq, adj, 15 min- day, evening & night; and LA90, adj, 15 min - day, evening & night;
- (b) the effects due to any extraneous factors such as traffic noise and natural sources (e.g. insects, birds and wind);
- (c) low frequency noise inside a residence or place concerned where permitted by the owner or occupier, which is consistent with the Land Court finding at paragraph [244] of the reasons;
- (d) maximum (LAm_{ax}) noise levels - night (for a minimum of 30 minutes), consistent with the Land Court finding at paragraph [245]; and
- (e) 1/3 octave band spectrums.

It is proposed to amend stated condition D5 to require the results of its blast monitoring program to be in monthly compliance monitoring which are to be provided to the administering authority. Noise related definitions are also proposed to be updated for consistency with conditions D4 and condition D1.

Monitoring data

It is proposed to amend stated conditions A4 and A5 to explicitly require the retention of monitoring data. The retention of records required to be kept pursuant to the environmental authority was specifically considered at paragraphs [148] - [149] of the reasons of the Land Court Decision.

Surface water

NAC proposes to amend stated conditions for management of surface water impacts following evidence of Dr Gregory Roads, a civil engineer specialising in surface water management in the Second Remitted Land Court Hearing. The proposed amendments are required to incorporate the changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate standards for surface water management and monitoring in order to protect the environmental values of the receiving waters. The Land Court Decision at paragraph [68] stated that "Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters...". The changes include an amendment to an Electrical Conductivity (EC) trigger limit to align with the current Condamine River Basin Water Quality Objectives.

Maximum authorised impacts on Matters of State Environmental Significance (MSES)

The reasons for the proposed changes to stated conditions H42 and Table H4 are referred to in **Annexure G** of this of this Request for Project Change.

Other administrative, clerical and consequential changes to the stated conditions are set out in the **Annexures E, F and G**.

3.3 Effects of the proposed changes

Annexures F and G set out in tabulated format each proposed amendment to stated conditions and the effects of the proposed changes on the Project, in accordance with section 34H of the SDPWO Act.

The proposed changes to the stated conditions will not adversely affect the Project as assessed and approved by the Coordinator-General, prevent NAC from meeting its Project commitments, but rather are directed at imposing further, more stringent and contemporary environmental controls.

Spatial extent of mining disturbance

NAC's proposed change to stated condition A2 and inclusion of amended Figure 1 further mitigates potential for impacts on residents of Acland by including an exclusion zone for extraction and out of pit dumping activities described as the Acland buffer zone as shown on amended Figure 1 - Project Overview and provides greater certainty as to the disturbance footprint of the new mining areas and primary infrastructure proposed in the Project.

The disturbance of land for infrastructure outside the new mining area and infrastructure footprint in Figure 1 is to be limited by proposed stated condition A2(c), such that infrastructure is restricted to minor necessary infrastructure (such as culverts, bores, underground services, access tracks, light vehicle roads, minor electricity and telecommunications infrastructure or environmental monitoring equipment) which is low impact, infrastructure which is the subject of conditions or approved management plans under the EA or Coordinator-General imposed conditions (such as monitoring equipment or water management infrastructure) or necessary infrastructure otherwise permitted by the administering authority.

The types of supporting infrastructure were identified and assessed through the EIS and the AEIS. The Coordinator-General's Report considered supporting infrastructure and stated conditions for key elements. The environmental effects of such infrastructure were assessed as part of the Project's EIS and AEIS and the Coordinator-General's Report, as summarised in **Appendix I**. The specific inclusion of such infrastructure in condition A2(c) and the removal of the "indicative only" notation on Figure 1 provides an appropriate limit on the extent of supporting infrastructure. Condition A2 does not authorise any new activities or infrastructure.

Disturbance of land for infrastructure pursuant to stated condition A2(c) also acknowledges that the Project intends to reduce new disturbance by utilising existing disturbed land within the existing mining leases. Infrastructure within areas of ML50216 and ML50170 in areas that have already been disturbed and which are not yet rehabilitated is therefore expressly included in condition A2(c).

Environmental complaints documentation

The amendment to stated condition A12 provides an additional requirement which will have the effect of increasing accountability for the Project to provide information to the administering authority regarding complaints or referrals to the required independent counselling service. The amendments to stated condition A12 also require NAC to provide environmental complaint documentation to the administering authority, with the consent of the complainant, within a set timeframe of within 28 days of the action taken to resolve the complaint.

Air quality monitoring and management

The proposed changes to stated conditions B1, B2, B3 and B4 operate to increase air emissions control and management that the Project will operate under.

Proposed amended stated conditions Ba and B1

The amendments to proposed stated conditions Ba and B1 are consistent with the intended purpose of stated condition B1 so that the mine monitors for and manages its activities so that it does not exceed the

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Environmental Protection (Air) Policy 2019 air quality criteria. The additional monitoring parameters required in proposed stated condition B1 are also reflected in proposed amended Table A.

Proposed stated condition Ba provides additional certainty on the requirement for the Project to manage air emissions by setting limits that must not be exceeded, whereas the current stated condition B1 currently requires all reasonable and feasible avoidance and mitigation measures. Proposed stated condition Ba also provides clarity as to where air emissions for a sensitive place or commercial place must be measured.

Proposed amended stated conditions Ba and B1 do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts, but rather impose a more stringent regime for complying with and monitoring for air quality parameters that meet current regulatory standards.

Table A

The proposed amended Table A aligns to the Land Court recommendations as to the monitoring locations and parameters to be monitored and included within the EA. The proposed condition includes the limits in accordance with the *Environmental Protection (Air) Policy 2019*, and proposed stated condition B1.

The effect of the proposed change on the Project is to require a more extensive air emission monitoring regime at sensitive receptors surrounding New Acland Mine. The proposed change will ensure the stated condition reflects the compliance monitoring regime for air emissions recommended by the Land Court.

The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

It is also proposed to update Figure 2 to reflect the updated compliance monitoring locations in Table A.

Proposed amended stated conditions B3 and B4

The effect of the proposed amended stated conditions B3 and B4 is to introduce additional requirements of the AEMP.

The proposed changes have the effect of providing more certainty for the implementation, review and content of the AEMP that the Project will operate under, consistent with the Land Court recommendations.

The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

Proposed new stated conditions B5 and B6

The effect of the new stated conditions will ensure that the Project will operate under an air quality monitoring program which is reviewed on a regular basis to ensure it is effective in monitoring air quality parameters. Review of the AEMP and Table A are required to be undertaken within two years and three months of the grant of ML50232 and ML700002 and every two years thereafter. The new stated conditions ensure that the outcomes of the review of the AEMP and Table A to be undertaken under stated condition B3 and new stated condition B5 are to be implemented as soon as practicable after receipt of approval from the administering authority following review of the AEMP and prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.

The proposed new stated condition does not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts, but will enable the monitoring network to be adapted over time to inform site mitigation measures. These conditions were recommended in the Land Court Decision.

Noise emission monitoring and management

Stated condition D1

The effect of the proposed changes to stated condition D1 is to clarify where noise monitoring for compliance measurements is to be undertaken at a noise sensitive and commercial place. There is no effect on the Project as a result of the change. It is a clarification and will not introduce any new impacts or increase the severity of impacts. Table D1a is addressed in **Annexure G**.

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Stated condition D2

The effect of the proposed changes to stated condition D2 is to require NAC to utilise real time performance monitoring as well as compliance monitoring as a trigger to implement noise abatement measures to avoid exceeding the relevant noise limits if considered necessary. This will provide added protection to the community to require NAC to take action where its real time performance monitoring indicates risk of noise exceedance.

Stated condition D4

The proposed changes will ensure that compliance noise monitoring parameters are consistent with contemporary acoustic practice and are measured in accordance with the Noise Measurement Manual developed by DES. The effect of such changes are to ensure that NAC will monitor in accordance with current acoustic quality standards. This change does not result in the introduction of new impacts or increase the severity of impacts. The amendments to stated condition D4 do not introduce any changes to the project itself.

The remaining proposed changes to stated conditions in relation to noise, including stated condition D5 and noise related definitions to be updated for consistency with conditions D4 and condition D1, do not result in the introduction of new impacts or increase the severity of impacts, or introduce any changes to the project itself.

Monitoring data

The proposed changes to stated condition A4 and A5 in respect of the retention of monitoring data does not alter the intent of these stated condition, but rather provides clarity that monitoring data needs to be retained. The changes do not affect the Project.

Surface water

The proposed changes in respect of surface water will ensure that water management and monitoring conditions are consistent with contemporary standards. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts, but rather will enable protection of the environmental values of receiving waters.

Maximum authorised impacts on Matters of State Environmental Significance (MSES)

The effect of proposed changes to stated conditions H42 and Table H4 are referred to in **Annexure G** of this Request for Project Change.

4. Project commitments

Throughout the EIS process for the Project, NAC made 843 commitments. These commitments were initially documented in Appendix L of the EIS and later updated to incorporate submissions on the EIS in Appendix D of the AEIS.

As part of this Request for Project Change, an assessment was undertaken to determine whether any of the commitments would be affected by the proposed changes to stated conditions. The assessment against the relevant commitments is presented in **Annexure H**. The analysis demonstrates that the requested changes to stated conditions does not affect NAC's ability to deliver on its commitments and in most cases there is either no effect on the project commitments or the proposed changes to stated conditions which are part of this Request for Project Change expand on the requirements currently set out under the project commitments.

5. Community consultation

In NAC's view, public notification of the proposed changes to the stated conditions should not be required as:

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1. substantial public consultation has already occurred about the Project, its proposed impacts and mitigation measures proposed to be implemented by NAC. The EIS for the Project was publicly notified for 6 weeks between 20 January 2014 and 3 March 2014 and the AEIS was released for public consultation for 29 days in September 2014. The EA Amendment Application was separately publicly notified between 13 May 2015 to 2 July 2015 (approximately 7 weeks);
2. there has been extensive public scrutiny of the EA Amendment Application and mining lease applications through the Original Objections Hearing and First and Second Remitted Land Court hearings, as well as the subsequent recommendations of the Land Court following each of these hearings. Throughout these court processes, there has been significant media about the Project and a high level of community awareness of the Project. Each of these hearings have been open to the public and numerous objectors to the EA Amendment Application have participated in the Court process;
3. the changes sought to stated conditions are in response to amendments considered during the Second Remitted Land Court hearing and the reasons contained within the Land Court Decision. The changes canvass those matters specifically considered during the Second Remitted Land Court Hearing, which was heard between 25 October 2021 and 26 November 2021. As well as the Statutory Party, the only remaining active objector, OCAA, was a party to the Second Remitted Land Court Hearing;
4. the proposed changes align the stated conditions with current regulatory standards including for noise, air and surface water monitoring and propose additional controls to mitigate the potential environmental impacts associated with the Project or are otherwise administrative or clerical in nature;
5. NAC has provided its Social Impact Management Report to the Coordinator-General every six months since mid-2015, which has summarised ongoing consultation with the community about the Project. These reports are published on the NHG website; and
6. The Project continues to undergo significant public consultation. A full description of the public consultation and community engagement undertaken for the Project is included in Annexure A and summarises the ongoing community consultation that NAC has undertaken including:
 - (a) NAC has held regular community information sessions since February 2014;
 - (b) since mid-2013, NAC has released a regular New Acland Community Newsletter;
 - (c) since 30 October 2012, NAC has held regular meetings with a Community Reference Group. The last meeting was in November 2021; and
 - (d) until March 2021, NAC operated a shopfront Community Information Centre in Oakey. The community liaison staff have been part of the Darling Downs community, working closely with local stakeholders for many years. These community liaison staff provide information about the Mine, employment, contractor and local supplier opportunities, and details about the New Hope Group's community sponsorship and donation program.

NAC maintains good relationships with many neighbouring landholders including, prior to entering care and maintenance, having engaged the services of over 20 landholders from the local areas to enable them to supplement their incomes. The objections to the MLAs and EA Amendment Application come from a relatively small group of people with whom NAC are prepared to engage with throughout the life of the Project to resolve any concerns they continue to have.

While community activities have been limited with COVID restrictions and the site entering care and maintenance, NAC have a history of engagement through avenues including:

- (a) The annual landholder social function and previously facilitated public tours of the Mine (COVID restrictions have impacted these events however a landholder function was held in October 2021);

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- (b) The New Acland Community Reference Group (**CRG**) is integral to the ongoing engagement between the mine operations and local community. The CRG operates as an advisory body and outcomes inform NHG's planning and community based decision making. The CRG provides local insight on key community topics, particularly in relation to potential opportunities and impacts presented by the Mine operation. It is also an avenue for sharing information with the broader community;
- (c) The New Acland Community Investment Fund is part of NHG's ongoing commitment to community investment and development. It aims to assist not for profit community groups and organisation with grants to support their initiatives and projects, which develop long term positive outcomes for the communities around the mine. The Fund is focused on areas relevant to the local community and contributes to a variety of local initiatives related to NHG's community investment priorities, namely:
 - i) education, training, capacity building and youth support;
 - ii) community safety, health and welfare;
 - iii) sport and recreation;
 - iv) arts, entertainment and culture;
 - v) environment and sustainability; and
 - vi) history and cultural heritage.

In addition, a statistical summary of NAC's consultation from 1 January 2014 to 31 December 2021 is provided in **Annexure C**.

6. Clarification to Land Court Judgment

For completeness, NAC wishes to clarify with the Coordinator-General that its understanding of paragraph 250 of the reasons of the Land Court Decision, which refers to draft condition F6 of the Statutory Party EA which requires NAC to undertake real time performance monitoring of noise against the noise limits. The Land Court considered whether the performance monitoring could be used to investigate compliance with noise limits. This condition F6 is not a stated condition. NAC understands that paragraph [250] of the Land Court Decision should read as follows:

"~~DES's~~ NAC's draft includes a note that the data can be used to investigate compliance and NAC DES agrees with that draft. OCAA's editorial note is superfluous. ~~DES's~~ NAC's draft condition is sufficient."

7. Conclusion

NAC requests that the Coordinator-General assesses the proposed changes presented by this Request for Project Change. NAC is of the view that the proposed changes would not result in any additional impacts to the existing impacts already identified and managed for the Project and have the overall effect of increasing the environmental controls and measures that NAC is required to operate under when the Project proceeds. The proposed changes are also sought to respond to and implement the recommendation of the Land Court Decision of 17 December 2021. The proposed changes will enable the EA amendment for the Project to include stated conditions which are consistent with the Land Court Decision recommendations.

There is significant evidence supporting the importance of the Project and the significant positive economic impact it will have on the local region, State and the nation. These benefits are supported or highlighted by the Coordinator-General's Report, the Land Court Decision and independent expert economic advice.

Extensive public consultation has been undertaken regarding the Project, including through the project assessment process and public scrutiny of the Project has continued through numerous Court hearings, with the most recent hearing concluding on 26 November 2021. In NAC's view, given the nature of the changes and the fact that substantial consultation has already occurred and continues to occur, public notification of the proposed changes should not be necessary.

Glossary

Term	Meaning
AEIS	Additional Information to the Environmental Impact Statement
AEMP	Air Emissions Management Plan
AWL	Associated Water Licence
CRG	The New Acland Community Reference Group
DES	Department of Environment and Science
DNRM	Chief Executive of Department of Natural Resources and Mines (now the Department of Resources)
EA	Environmental Authority
EA Amendment Application	Application to amend the EA dated 28 August 2015
EIS	Environmental Impact Statement
EP Act	Environmental Protection Act 1994 (Qld)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
First Remitted Land Court Hearing	The hearing resulting in the decision made on 7 November 2018: <i>New Acland Coal Pty Ltd v Ashman & Ors (No 7)</i> [2018] QLC 41
FTE	Full-time equivalent
High Court Hearing	<i>Oakey Coal Action Alliance Inc v New Acland Coal Pty Ltd</i> [2021] HCA 2
Land Court Decision	<i>New Acland Coal Pty Ltd v Oakey Coal Action Alliance Inc. & Ors (No 2)</i> [2021] QLC 44
JRLF	Jondaryan Rail Loadout Facility
km	kilometre
ML	Mining Lease
MLA	Mining Lease Application
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance

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MR Act	Mineral Resources Act 1989 (Qld)
Mtpa	Million tonnes per annum
NAC	New Acland Coal Pty Ltd
NAC Draft EA	The Draft EA proposed by NAC in the Second Remitted Land Court Hearing
NHCL	New Hope Corporation Limited
NHG	New Hope Group
OCAA	Oakey Coal Action Alliance Inc.
Original Objections Hearing	The hearing resulting in the decision made on 31 May 2017: <i>New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No. 4)</i> [2017] QLC 24
Project	New Acland Coal Mine Stage 3 Project
RIDA	Regional Interests Development Approval
Second Remitted Land Court Hearing	The hearing resulting in the decision made on 17 December 2021: <i>New Acland Coal Pty Ltd v Oakey Coal Action Alliance Inc. & Ors (No 2)</i> [2021] QLC 44
SDPWO Act	State Development and Public Works Organisation Act 1971 (Qld)
Statutory Party	Department of Environment and Science
Statutory Party Draft EA	The draft EA proposed by the Statutory Party in the Second Remitted Land Court Hearing
The Coordinator-General's Report	Coordinator-General's Evaluation Report on the Environmental Impact Statement for the Project dated December 2014
The Mine	New Acland Coal Mine since 2002
The Project	New Acland Coal Mine Stage 3 Project
ToR	Terms of Reference
TSP	Total suspended particulate
Water Act	<i>Water Act 2000</i>

Annexure A - NAC Community Engagement Measures

1. EIS released for public comment 20 January 2014 - 3 March 2014 (6 weeks) and 1397 responses were received during this time. The EIS included:
 - (a) Appendix K.1 - Stakeholder Engagement Plan;
 - (b) Appendix J.18 - Local Stakeholder Management Plan;
 - (c) Appendix J.14- Social Impact Management Plan Engagement, EIS; and
 - (d) Appendix A.11 - Landholder Engagement Protocol.
2. The AEIS was submitted and released for consultation in September 2014 for 29 days. Landholder engagement strategies proposed in the AEIS include:
 - (a) regular community information sessions;
 - (b) distributing newsletters to provide updates on project developments and current operations;
 - (c) maintain a locally based Community Liaison Officer;
 - (d) development of Landholder Agreements with all affected landholders;
 - (e) 24hr phone number;
 - (f) notification of blast events; and
 - (g) direct involvement of technical study teams in the stakeholder engagement activities and conversations.
3. NAC has held community information sessions since February 2014 to answer questions from local residents and other stakeholders about the Project.
4. An analysis of the Post-EIS engagement requirements was undertaken by Elliot Whiteing Social Planning Solutions. This body of work provided NAC with:
 - (a) an 'Integrated Engagement Plan', which captured all engagement actions and commitments from the EIS and AEIS period in a forward plan for implementation; and
 - (b) a 'Social Commitments Delivery Plan', which captured all Social Impact Management Plan actions, social commitments from the EIS/AEIS commitments register, and all related actions from the Social Impact Assessment completed during the EIS and AEIS period.
5. Public notification of MLAs 50232 and 700002 and the EA Amendment Application occurred from 13 May 2015 - 2 July 2015 (approximately 7 weeks).
6. Since mid-2013, NAC has released a regular New Acland Community Newsletter (an example of which is included below), distributed to approximately 3,000 local residents, in hard copy form until early 2020 and soft copy (digitally) since, that includes updates and promotion of:
 - (a) NAC03 Project activities and planning updates (locally awarded contracts, publication of research, planning and compliance reports);
 - (b) updates on the abovementioned Court processes;

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- (c) key facts about project impact management processes (e.g. water resources, bore baseline assessment process, Acland Management Plan);
 - (d) Community investment project and partnership outcomes;
 - (e) New Hope Group team updates;
 - (f) Acland Mine Tour Dates;
 - (g) enquiries, concerns and complaints information; and
 - (h) Community Information Centre opening hours.
7. Since 30 October 2012, NAC has held regular meetings with a Community Reference Group consisting of a cross-section of the community. The meetings cover:
- (a) New Hope Group Company updates;
 - (b) review of Community Investment Fund applications and recommendations;
 - (c) involvement in Community Needs and Resources Assessment and subsequent local projects;
 - (d) community updates including information sharing from local events, interests and concerns;
 - (e) updates on the abovementioned Court processes;
 - (f) updates on modelling undertaken by NAC; and
 - (g) general business updates (Community Reference Group structure, membership, meeting times).
8. NAC has provided a pre-construction Social Impact Management Report to the Coordinator-General every six months since mid-2015. The most recent of these reports submitted to the Coordinator-General is for the period 1 June 2021 to 30 November 2021. These reports are available on New Hope Group's website (<https://newhopegroup.com.au/general-reporting/>) and cover the following issues:
- (a) outcomes of community and stakeholder engagement undertaken by NAC;
 - (b) updates on the abovementioned Court processes
 - (c) NAC's engagement processes with Landholders, the Community and key stakeholders;
 - (d) consultation issues reporting and complaints management;
 - (e) progress of the Project's community health, safety and social infrastructure management strategies; and
 - (f) NAC community investment and partnership outcomes.
9. NAC operated a shopfront Community Information Centre in Oakey from September 2012 to March 2021, which provided an opportunity for the public to obtain information on the Project. The Community Information Centre will be re-established as part of Stage 3 commencement activities.
10. NAC will continue to employ the use of its Community Reference Group for targeted consultation and community investment.

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11. NAC will continue its proactive six-monthly consultation sessions with individual neighbours, and other key stakeholders, which may include special proactive and/or reactive visits to specific nearby neighbours who may be or have been influenced by the Mine's operation. NAC's General Manager will also continue to participate in specialist consultation events with near neighbours (i.e. for important matters involving the Mine's operation) and will periodically host special events at the Mine for surrounding landowners.
12. NAC/NHG will maintain (or reinstate, where relevant) its Project and Company websites, and as required, will continue coverage of NAC03-related activities via the media (e.g. advertising, print, radio, television) and/or social media.
13. In addition, NAC has been using Consultation Manager (client relationship/stakeholder management software) to capture its consultation efforts related to the Project since 2012. Annexure C provides a summary of the key consultation facts for the Project for the period 1 January 2014 to 30 November 2021.



NEW HOPE
GROUP



Christmas Message



NEW ACLAND MINE GENERAL MANAGER DAVE O'DWYER WISHES STAFF AND THE LOCAL COMMUNITY A HAPPY AND SAFE FESTIVE SEASON.

And just like that, another festive season is upon us.

The past year has not been without its challenges. With approvals still outstanding for Stage 3, New Hope Group had no choice but to place New Acland Mine into care and maintenance.

This newsletter contains additional information about what the decision means for our staff and the local community, but first and foremost I would like to thank the entire team for their unwavering commitment and dedication.

I would also like to thank the wider Darling Downs community for its steadfast support, particularly local community leaders, sporting groups and landholders who have been vocal and proud advocates of Stage 3 and the benefits it will bring to the region.

As 2021 comes to a close, I would like to wish you and your family a happy and restful holiday season.

Merry Christmas!

Dave O'Dwyer
New Acland Mine General Manager

The Last Blast

A BITTERSWEET DAY

Thursday, 28 October 2021 was a bittersweet day for everyone at NAC, with the team conducting the final blast for Stage 2.

New Acland Mine General Manager, Dave O'Dwyer said it was a day of mixed emotions.

"It's been a tough year for everyone at NAC as we've edged closer to care and maintenance. The last blast allowed us to reflect on the success of Stage 2 and the hardworking team that made it possible."

Pictured are the remaining NAC workers and the Orica and DeVeth Drilling teams.





CARE AND MAINTENANCE

Mining at New Acland Mine ceased on Friday, 26 November.

The protracted approvals process and the ongoing uncertainty regarding Stage 3 has seen more than 280 valuable and highly skilled employees made redundant in the past three years.

Despite the challenges, the team at New Acland has continued to prioritise safety. I appreciate the leadership shown on site which has allowed every employee to return home safely to their family and loved ones.

Twenty employees will be responsible for care and maintenance at New Acland until the remaining approvals process is finalised.

Our departing employees leave as highly skilled professionals. Over the past two years they have undergone additional training, been awarded nationally accredited skills certification, received resume and interview coaching and had their pre-employment medical examinations updated, all in a bid to make each person more employable.

New Hope is committed to securing the remaining approvals required for Stage 3, which would enable a restart of operations and employment opportunities for hundreds of local workers, as well economic opportunities for the region more broadly.

Acland Pastoral Company Update

APC CONTINUES TO GO FROM STRENGTH TO STRENGTH.

Acland Pastoral Company's cropping and cattle operations have thrived over the past few months.

New Hope Group Agricultural Manager, Tim Burgess said APC bred weaners sent to Bengalla Agricultural Company for fattening generated excellent results.

"The partnership between APC and BAC continues to deliver strong results

for both operations," Tim said.

The herd is now growing quickly as breeder calving continues, with 1,000 of the expected 1,200 calves already on the ground.

Summer planting preparation is also progressing well, with APC taking delivery of a new planter, tractor, and spray rig.





One of the lucky ones

STAYING LOCAL.

Bec Murphy knows she is one of the lucky ones.

With care and maintenance preparations fast approaching on site, an opportunity allowed Bec to transition into the environment team and extend her association with New Hope into an eleventh year.

For more than a decade the mother of three has been driving trucks at New Acland to help offset the operating costs of a nearby farm she owns and runs with her husband Jason.

"I discovered there was an opportunity to join the New Hope team in 2011," Bec said.

"It was a dream job because it ticked all the boxes. The salary and flexibility were great and it was close to home. It was perfect."

The protracted approvals process and the ongoing uncertainty regarding Stage 3 saw Bec commence a Bachelor of Science degree at the University of Southern Queensland in 2018.

"I've always had an interest in agronomy, agriculture and the environment, but I never

thought there would be an opportunity to be part of the environment team at New Acland," Bec said.

"That changed when I discovered there was an opportunity to stay on as an environmental officer.

"Naturally, I jumped at the opportunity.

"I thought life was taking me down one path, which was full of uncertainty. I had no interest in being a FIFO worker and being away from my family for weeks-on-end. Fortunately, there was another plan."

Bec officially started in her role as New Hope's newest environmental officer on 1 December.

"I've spent the past few weeks being shown the ropes, including all the tracks and paddocks," Bec said.

I'm very grateful and feel very fortunate to be one of only 20 employees who will remain onsite while New Acland is under care and maintenance."



Stage 3 Update

A POSITIVE OUTCOME!

Earlier today (Friday 17 December) the Land Court of Queensland recommended that the New Acland Mine Stage 3 mining leases and the environmental authority amendment application be granted, subject to conditions.

This is an excellent result for New Hope Group, our employees, their families and our supporters in the Darling Downs community.

There are still a number of steps required to obtain final project approval for Stage 3. We will continue to work closely with the relevant Queensland Government departments to achieve these approvals, which would enable a restart of operations and employment opportunities for hundreds of local workers at the New Acland Mine, as well economic opportunities for the region more broadly.

Dave O'Dwyer
New Acland Mine General Manager

Enquiries & complaints

WE WOULD LIKE TO REMIND OUR COMMUNITY OF SOME HELPFUL NEW ACLAND CONTACTS.

For general, non-urgent matters please call (07) 4691 3445.

For urgent safety, environmental or operations matters requiring immediate attention, please call our 24-hour community hotline on 1800 882 142.

You can also reach us by email: community@newhopegroup.com.au

To find out more, please visit: <https://newhopegroup.com.au/>



**NEW HOPE
GROUP**

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Annexure C - Project Consultation Summary 2014 - 2021

Year	Main Consultation Facts	Top Five Discussion Topics
2014	Total Number of Consultation Events: 293 No. 1 Form of Consultation: Community Info Centre Visit (174 events) No. 1 Stakeholder Involvement: Regional Enquires (183 events)	1. Employment 2. EIS / AEIS / Supplementary EIS 3. Approvals Process 4. Acquisition Process 5. Consultation - Public
2015	Total Number of Consultation Events: 1374 No. 1 Form of Consultation: Community Info Centre Visit (268 events) No. 1 Stakeholder Consulted: Regional Enquires (361 events)	1. Employment 2. Sponsorship 3. Technical Reports / (Baseline) Studies 4. Groundwater 5. Acquisition Process
2016	Total Number of Consultation Events: 2132 No. 1 Form of Consultation: Phone Call Out (357 events) No. 1 Stakeholder Consulted: Tier 2 Landholder (459 events)	1. Employment 2. Technical Reports / (Baseline) Studies 3. Sponsorship 4. Groundwater 5. Employment
2017	Total Number of Consultation Events: 1378 No. 1 Form of Consultation: Phone Call Out (280 events) No. 1 Stakeholder Consulted: Tier 2 Landholder (458 events)	1. Technical Reports / (Baseline) Studies 2. Groundwater 3. Community Partnerships / Community / Investment Fund 4. General Enquiry 5. Business Opportunity
2018	Total Number of Consultation Events: 422 No. 1 Form of Consultation: Community Info Centre Visit (87 events) No. 1 Stakeholder Consulted: Tier 2 Landholder (125 events)	1. Technical Reports / (Baseline) Studies 2. Groundwater 3. Community Partnerships / Community / Investment Fund 4. General Enquiry 5. Business Opportunity
2019	Total Number of Consultation Events: 601 No. 1 Form of Consultation: Community Info Centre Visit (285 events) No. 1 Stakeholder Consulted: Regional Enquiries (237 events)	1. Community Partnerships / Community Investment Fund 2. Community health & wellbeing 3. Social infrastructure / Services 4. General support 5. Sponsorship
2020	Total Number of Consultation Events: 545 No. 1 Form of Consultation: Phone Call (213 events) No. 1 Stakeholder Consulted: Tier 2 Landholder (156 events)	1. Community communication and engagement 2. Community Partnerships / Community Investment Fund 3. Business Opportunity 4. General Enquiry 5. Approvals Process

NEW ACLAND COAL - REQUEST FOR PROJECT CHANGE TO CHANGE STATED CONDITIONS

2021	Total Number of Consultation Events: 134 No. 1 Form of Consultation: Stakeholder Meeting/Briefing (33 events) No. 1 Stakeholder Consulted: Tier 1 Landholder (28 events)	1. Community communication and engagement 2. Sponsorship 3. Approvals process 4. Pastoral activities 5. Community Partnerships / Community Investment Fund
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Annexure D – Chronology

Date	Description
23 April 2007	Initial Expansion Project for Stage 3 of the New Acland Mine was referred to the Federal Environment Minister under the EPBC Act.
18 May 2007	Initial Expansion Project was declared a significant project by the Coordinator-General pursuant to section 26 of the SDPWO Act.
24 May 2007	Initial Expansion Project was declared to be a controlled action under the EPBC Act, to be assessed by an EIS under the SDPWO Act pursuant to the accredited bilateral assessment process.
25 May 2007	Applicant lodged MLA 50232 pursuant to section 245 of the MR Act.
November 2009	Applicant submitted the first EIS for the Initial Expansion Project, which at that time still involved the staged expansion for the mine up to a capacity of 10 Mtpa, and which was expected to extend coal production at the mine until approximately 2042.
14 November 2009 - 3 February 2010	First EIS was released for public consultation.
23 August 2012	Certificate of Application for MLA 50232 was endorsed and issued by the DNRM.
26 October 2012	Applicant submitted a request to the Federal Environment Minister that the referral under the EPBC Act be varied to incorporate changes to the Initial Expansion Project (Revised Expansion Project).
9 November 2012	Federal Environment Minister accepted the variation to the referral for the Revised Expansion Project.
14 November 2012	Determination that the EIS process for the proposed revised Project (including reductions to its scope), would restart at the draft terms of reference stage.
22 March 2013	New ToR for the Revised Expansion Project were issued.
January 2014	Applicant submitted a revised EIS for the Revised Expansion Project to the Coordinator-General.

NEW ACLAND COAL - REQUEST FOR PROJECT CHANGE TO CHANGE STATED CONDITIONS

18 January 2014 - 3 March 2014	EIS was released for public consultation.
August 2014	AEIS submitted to the Coordinator-General.
1 September 2014 - 29 September 2014	AEIS released for public consultation.
October - December 2014	The Coordinator-General requested that the Applicant provide further information to clarify certain matters raised in the AEIS and the submissions to the AEIS.
December 2014	Information clarification to the AEIS provided to the Coordinator-General.
19 December 2014	The Coordinator-General issued his final report on the EIS.
16 January 2015	Applicant lodged the application for MLA 700002, being the MLA for the private rail spur.
13 April 2015	Applicant lodged the EA Amendment Application.
13 May 2015 - 2 July 2015	Applicant publicly notified MLAs 50232 and 700002 and the EA Amendment Application.
28 August 2015	Draft EA issued by Department of Environment and Heritage Protection.
October 2015	MLAs 50232 and 700002 and the EA Amendment Application were referred to Land Court of Queensland for Objections Hearing. The Original Objections Hearing was heard before Member Smith from March to October 2016.
18 January 2017	Commonwealth Department of Environment and Energy gave approval (EPBC Approval) to the Revised Expansion Project under the EPBC Act.
3, 4, 5, 10, 11, 20 April 2017	Further evidence and submissions in Original Objections Hearing (relating to new evidence)
31 May 2017	Member Smith delivered his judgment regarding the Original Hearing (since set aside) (Original Judgment).
15 June 2017	Applicant applied for judicial review of the Original Judgment.
March 2018	Supreme Court hearing of judicial review application.

NEW ACLAND COAL - REQUEST FOR PROJECT CHANGE TO CHANGE STATED CONDITIONS

28 May 2018	Justice Bowskill of the Supreme Court set aside the Original Judgment and ordered a limited re-hearing in the Land Court (QSC Judgment).
30 May 2018	OCAA commenced an appeal of the QSC Judgment in the Court of Appeal.
2 - 4 October 2018	Remitted Land Court hearing ordered by the QSC Judgment was heard before President Kingham in the Land Court.
7 November 2018	Land Court gave a recommendation to grant the EA Amendment Application and the MLAs, conditional upon the amendment of certain Coordinator-General conditions relating to noise limits by 31 May 2019 (First Remitted Land Court Hearing).
12 February 2019	The Coordinator-General approved the Applicant's application to reduce the noise limits, as required by the conditional First Remitted Land Court Hearing.
12 March 2019	In accordance with the First Remitted Land Court Hearing, the EA Amendment Application was granted by the DES, and an EA was issued by DES (Issued EA).
23 August 2019	Applicant gained approval of the Receiving Environment Monitoring Plan in accordance with condition 10 of the EPBC Approval.
10 September 2019	Court of Appeal delivered its reasons for dismissing OCAA's appeal of the QSC Judgment and found the Original Objections Hearing by Member Smith was affected by apprehended bias (QCA Judgment).
1 November 2019	Court of Appeal issued orders which, in effect, upheld the grant of the Issued EA and confirmed that there was no requirement for the MLAs and EA Amendment Application to be sent back to the Land Court for a rehearing.
29 November 2019	OCAA applied for special leave to appeal the QCA Judgment to the High Court of Australia, seeking to have the matter sent back to the Land Court for a full rehearing on the basis of the finding of apprehended bias in the Original Objections Hearing.
2 December 2019	Applicant gained approval of the Offset Management Plan in accordance with condition 4 of the EPBC Approval.

NEW ACLAND COAL - REQUEST FOR PROJECT CHANGE TO CHANGE STATED CONDITIONS

10 January 2020	Applicant obtained approval for Environmental Offset Strategy, approved by the Coordinator-General pursuant to Imposed Condition 13.
3 March 2020	Applicant obtained approval for Noise and Vibration Management Plan, confirmed by DES as satisfying condition F8 and F9 of the Issued EA.
13 March 2020	Applicant obtained approval for Land Suitability Reference Site Report, approved by the Coordinator-General in accordance with Imposed Condition 7.
25 March 2020	Applicant obtained approval for Topsoil Management Plan, approved by the Coordinator-General in accordance with Imposed Condition 8.
7 April 2020	Applicant obtained approval for Air Emissions Management Plan, confirmed by DES as satisfying the requirements of Condition B4 of the Issued EA.
19 May 2020	Applicant obtained approval for the Final Land Use and Rehabilitation Plan approved by the Coordinator-General pursuant to Imposed Condition 8.
	Applicant obtained approval for Koala Species Management Plan required pursuant to Condition 16 of the Coordinator-General's Report.
5 June 2020	OCAA was granted special leave by the High Court of Australia.
25 August 2020	Applicant obtained a RIDA pursuant to the <i>Regional Planning Interests Act 2014</i> (Qld).
18 September 2020	The Coordinator-General approved the Applicant's application to amend Imposed Condition 4 to require the construction of the train loadout facility within two years of the commencement of mining, rather than before the commencement of mining.
29 September 2020	The Coordinator-General approved the Applicant's application to amend stated conditions B3 and H40 to align with the latest Air Emissions Management Plan and Environment Offset Strategy, respectively.
16 November 2020	Applicant obtained approval for the Offset Delivery Plan, confirmed by DES that it is appropriate to deliver the offset in the way stated in the notice of election, offset delivery plan and financial settlement offset calculation.
26 November 2020	Applicant gained approval of the Groundwater Management and Monitoring Plan in accordance with conditions 12, 13 and 15 of the EPBC Approval.

NEW ACLAND COAL - REQUEST FOR PROJECT CHANGE TO CHANGE STATED CONDITIONS

14 December 2020	Applicant obtained approval for an Agreed Delivery Arrangement under the Environmental Offsets Act 2014, which was entered into between the Applicant and DES.
3 February 2021	High Court of Australia remitted the proceedings to the Land Court of Queensland for a full re-hearing.
25 October 2021 - 25 November 2021	Second Remitted Land Court hearing of OCAA's objection.
17 December 2021	Land Court Decision recommended approval of the mining leases and EA amendment application on condition that the Coordinator-General approves changes to the stated conditions consistent with the recommendations of the Land Court.

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Annexure E - Comparison of current and revised stated conditions

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
A1	This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.	No change. Not subject to any recommended change by the Land Court in its reasons.
A2	In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview – Mine Area): <u>a) must not carry out extraction or out of pit dumping activities within the Acland buffer zone or other exclusion areas identified on Figure 1 - Project Overview;</u> <u>b) without limiting Condition A2(a), must carry out mining activities generally in accordance with Figure 1 - Project Overview and the conditions of this environmental authority; and</u> <u>c) otherwise and subject to condition A2(d), may carry out disturbance of land for infrastructure:</u> <u>i. which infrastructure is the subject of conditions under the environmental authority; or</u> <u>ii. in accordance with a management plan or where permitted by the administering authority; or</u> <u>iii. within areas of ML50216 and ML50170 on land already disturbed; or</u> <u>iv. which is minor infrastructure, and to the extent reasonably necessary to allow other mining activities authorised by the mining leases and this environmental authority to occur; and</u> <u>d) must not construct infrastructure within the Lagoon Creek Conservation Zone, other than in accordance with Imposed Condition 15 of the Coordinator-General's Report.</u> <u>Acland buffer zone: the area identified in Figure 1 - Project Overview as the Acland buffer zone.</u> <u>Minor infrastructure includes culverts, bores, low impact telecommunications infrastructure, electricity infrastructure up to 11kV, fences, environmental monitoring infrastructure, pipelines, underground services, access tracks, roads for light vehicles.</u>	Subject to change. See Annexure F and Annexure I below.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	Management Plan is a plan or program approved under a condition of the environmental authority or the imposed conditions of the Coordinator-General's Report.	
A2- Figure 1	Figure 1 change in Annexure E1 below.	Subject to change. See Annexure F below.
A3	The holder of this environmental authority must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority b) maintain such measures, plant and equipment in a proper and efficient condition c) operate such measures, plant and equipment in a proper and efficient manner d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.	No change. Not subject to any recommended change by the Land Court in its reasons.
A4	Except where specified otherwise in another condition of this environmental authority, all monitoring records data, records or reports required by this environmental authority must be kept for a period of not less than 5 years.	Subject to change. See Annexure F below.
A5	Upon request from the administering authority, copies of all monitoring data, records and reports will be made available and provided to the administering authority's nominated office within 10 business days or an alternative timeframe agreed between the administering authority and the holder.	Subject to change. See Annexure F below.
A6	Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority should be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis, and amended promptly if required, unless a particular review date and amendment program is specified in the plan, system or program.	No change. Not subject to any recommended change by the Land Court in its reasons.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
A7	The activity must not be carried out until the environmental authority holder has given financial assurance to the administering authority as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.	No change. Not subject to any recommended change by the Land Court in its reasons.
A8	The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations is amended or replaced or the authority is amended.	No change. Not subject to any recommended change by the Land Court in its reasons.
A9	The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standards Australia Risk management – Principles and guidelines (AS/NZS ISO 31000:2009), or the latest edition of a Standards Australia for risk management, to the extent relevant to environmental management, prior to the commencement of mining activities.	No change. Not subject to any recommended change by the Land Court in its reasons.
A10	The holder of this environmental authority must notify the administering authority by written notification within 24 hours after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this environmental authority.	No change. Not subject to any recommended change by the Land Court in its reasons.
A11	Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following: a) results and interpretation of any samples taken and analysed b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm c) proposed actions to prevent a recurrence of the emergency or incident.	No change. Not subject to any recommended change by the Land Court in its reasons.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
A12	The holder of this environmental authority must record all environmental complaints received about the mining activities including: a) name, address and contact number for of the complainant b) time and date of complaint c) reasons for the complaint d) investigations undertaken e) conclusions formed f) actions taken to resolve the complaint g) any abatement measures implemented h) <u>person responsible for resolving the complaint; and</u> i) <u>records of any referrals to an independent counselling service.</u> <u>The information as outlined in Condition A12 (a) to (i) with the consent of the complainant must be sent to the administering authority (and the complainant) within 28 days of the action taken to resolve the complaint.</u>	Subject to change. See Annexure F below.
A13	The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.	No change. Not subject to any recommended change by the Land Court in its reasons.
A14	The holder of this environmental authority must: a) within 1 year of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority; b) obtain further such reports at regular intervals, not exceeding 3 yearly intervals, from the completion of the report referred to above; and c) provide each report to the administering authority within 90 days of its completion.	No change. Not subject to any recommended change by the Land Court in its reasons.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
A15	Where a condition of this environmental authority requires compliance with a standard, policy or guideline and the standard is amended or changed subsequent to the issue of this environmental authority, the holder of this environmental authority must: a) comply with the amended or changed standard, policy or guideline within 2 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to conditions H3 to H36, the time specified in that condition b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.	No change. Not subject to any recommended change by the Land Court in its reasons.
B1	<u>Condition Ba</u> The <u>holder of this environmental authority must</u> proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter <u>air</u> emissions generated by the mining activities do not cause exceedances the criteria of the following levels in Table A- Air Quality Monitoring requirements when measured to be exceeded at any sensitive or commercial place. <u>Note: the measurement of air emissions for a sensitive place or commercial place is either:</u> <u>a) at that place (if measured there); or</u> <u>b) at the monitoring location representative (whether by reason of correlation or otherwise) of the sensitive or commercial place (where there is no measure at the sensitive or commercial place).</u> <u>Condition B1</u> <u>All air quality indicators listed in Table A, must be monitored at the locations and at the frequency listed in Table A in accordance with the following methodologies:</u> a) <u>For D</u> dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of Standards Australia AS/NZS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method. b) <u>For a</u> A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time <u>1 and 25</u>	Subject to change. See Annexure F below. Change sought as a result of the hearing

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	<u>micrograms per cubic metre over a 1 year averaging time</u>, for no more than 5 exceedances recorded each year, when monitored in accordance with the most recent version of either: i. Standards Australia AS/NZS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM₁₀ high volume sampler with size-selective inlet - Gravimetric method; or ii. Standards Australia AS/NZS 3580.9.9 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM₁₀ low volume sampler - Gravimetric method; or iii. Standards Australia AS 3580.9.8 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM₁₀ continuous direct mass method using a tapered element oscillating microbalance analyser; c) <u>For a concentration of particulate matter suspended in the atmosphere of -80 micrograms per cubic metre over a 24-hour averaging time and 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - Total suspended particulate matter (TSP) - High volume sampler gravimetric method.</u> d) <u>For a-concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM_{2.5}) suspended in the atmosphere of 25 micrograms per cubic meter over a 24 hour averaging time and 8 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with:</u> i. <u>the most recent version of Standards Australia AS/NZS 3580.9.12 Methods for sampling and analysis of ambient air, Determination of suspended particulate matter – PM_{2.5} beta attenuation monitors; or</u> ii. <u>the most recent version of Standards Australia AS/NZS 3580.9.13 Methods of sampling and analysis of ambient air, Determination of suspended particulate matter – PM_{2.5} continuous direct mass method using a tapered element oscillating microbalance monitor; or</u> iii. <u>another method as agreed to in writing by the administering authority.</u> ¹ <u>These limits are based upon relevant air quality objectives contained in the Environmental Protection (Air) Policy 2019 and may be automatically amended to reflect any amendment or replacement of the relevant air quality objective in the Environmental Protection (Air) Policy 2019.</u>	

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
B2	If monitoring indicates the potential for exceedance of the relevant limits in condition B4a and B1 then the environmental authority holder must immediately implement dust abatement measures to avoid exceeding the relevant limits.	Subject to change. See Annexure F below. This is a consequential cross-reference change only.
B3	An Air Emissions Management Plan must be developed by a suitably qualified <u>and experienced</u> person <u>in relation to air emissions</u> and implemented <u>for all stages of mining</u>. <u>The Air Emissions Management Plan must be submitted to the administering authority for review and comment:</u> <u>a) within 3 months of the grant of ML50232 and ML700002, and at intervals not exceeding two (2) years thereafter;</u> <u>and</u> <u>b) prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.</u> The Air Emissions Management Plan must incorporate a program for continuous improvements for the management of dust resulting from mining operations with respect to, but not limited to: a) The collection of air quality and meteorological data in accordance with Table A: Air quality monitoring requirements; b) A system to identify adverse meteorological conditions likely to produce elevated levels of dust including PM10 at a sensitive or commercial place due to the mining conditions; and A dust control strategy which activates a timely implementation of dust control management actions aimed to avoid elevated levels of dust including PM10 at a sensitive or commercial place due to mining activities.	Subject to change. See Annexure F below.
B4	<u>The Air Emissions Management Plan must incorporate a program for continuous improvements for the management of dust resulting from mining operations with respect to, but not limited to:</u> <u>a) monitoring locations acting as and continuing to act as suitable representative sites for sensitive places (if there is no monitor at a particular sensitive place);</u> <u>b) The collection of air quality and meteorological data in accordance with Table A: Air quality monitoring requirements;</u> <u>c) monitoring PM₁₀ trends at 2 locations¹;</u>	Subject to change. See Annexure F below.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	d) <u>A trigger action response plan that requires the environmental authority holder to investigate, mitigate and manage TSP caused by mining activities at any sensitive place or commercial place when monitoring indicates exceedance of 80 micrograms per cubic metre over a 24-hour averaging time;</u> e) <u>A forecasting system that provides daily predictions of upcoming meteorological conditions in order to identify adverse meteorological conditions likely to produce elevated levels of dust including PM₁₀ at a sensitive place or commercial place due to the mining conditions activities;</u> f) <u>A dust control strategy which activates a timely implementation of dust control management actions aimed to avoid or minimise elevated levels of dust including PM₁₀ at a sensitive place or commercial place due to mining activities;</u> g) <u>Annual review of the Air Emissions Management Plan including its adequacy and effectiveness in avoiding and minimising air emissions and dust at a sensitive place or commercial place;</u> h) <u>A protocol and register for the recording of requests and installation of first flush diverter systems; and</u> i) <u>A protocol for the transport of basalt material.</u> ¹ <u>Trend monitoring as required by Condition B4(c) can be undertaken using different instruments and methods from those specified in Table A: Air quality monitoring requirements.</u> A copy of the Air Emissions Management Plan and any changes to the Air Emissions Management Plan must be provided to DEHP on request.	
B5	<u>The air quality monitoring program listed in Table A: Air quality monitoring requirements must be reviewed by a suitably qualified and experienced person(s) as part of review of the Air Emissions Management Plan and a report must be provided to the administering authority:</u> a) <u>within two (2) years and three (3) months of the grant of ML50232 and ML700002, and at intervals not exceeding two (2) years thereafter; and</u> b) <u>prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.</u> <u>The review must include:</u> i. <u>The effectiveness of the monitoring network;</u> ii. <u>The frequency and cause of any exceedances of air quality objectives measured by the monitoring program over a period of at least two (2) years;</u>	<u>New condition in response to recommendations of the Land Court. See Annexure F below.</u>

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	iii. Dust complaints; iv. Future progression of the mining activities; v. Locations of sensitive receptors relative to the mining activities; vi. Mining operating modes; and vii. The suitability of the locations, types and parameters of the monitoring network.	
B6	The air quality monitoring program in Table A may be revised where recommended in a revised Air Emissions Management Plan provided pursuant to Condition B3 or as a result of the review in Condition B5 and with the approval of the administering authority. Any additional monitors recommended in a revised Air Emissions Management Plan must be installed and must be operational as soon as practicable after receiving approval and, in the case of an approval following a revised Air Emissions Management Plan pursuant to Conditions B3 b) or B5 b), prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.	New condition in response to recommendations of the Land Court. See Annexure F below.
Table A - Air quality monitoring requirements	Table A. Air quality monitoring requirements [Refer to Annexure E2 for a copy of this table]	Subject to change. Changes to reflect change to Table A. See Annexure F
Figure 2 - Air quality monitoring locations	[Refer to Annexure E3 for a copy of this figure]	Subject to change. Changes to reflect change to Table A. See Annexure F
C1	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.	No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
		change by the Land Court in its reasons.
C2	The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.	No change. Not subject to any recommended change by the Land Court in its reasons.
C3	The holder of this environmental authority may dispose of inert waste (packing material) associated with blasting into open pits, buried in such a manner that it will not impede saturated aquifers.	No change. Not subject to any recommended change by the Land Court in its reasons.
C4	Scrap tyres resulting from the mining activities can be disposed of into open pits provided tyres are placed as deeply in the spoil as reasonably possible and this practice does not cause an unacceptable fire risk or compromise mine safety.	No change. Not subject to any recommended change by the Land Court in its reasons.
C5	Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.	No change. Not subject to any recommended change by the Land Court in its reasons.
C6	Tailings must be managed in accordance with procedures contained within the current plan of operations. These procedures must include provisions for: a) containment of tailings b) the management of seepage and leachates both during operation and the foreseeable future c) the control of fugitive emissions to air d) maintaining records of the relative locations of any other waste stored within the tailings e) rehabilitation strategy	No change. Not subject to any recommended change by the Land Court in its reasons.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request																															
	f) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.																																
D1	The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in Table D1a – Noise limits to be exceeded at a noise sensitive place or commercial place. <u>Note: the measurement of noise for a noise sensitive place or commercial place is either:</u> <u>a) at that place (if measured there); or</u> <u>b) at the monitoring location to which the noise sensitive or commercial place is correlated (where there is no measure at the noise sensitive or commercial place).</u>	Subject to change. See Annexure F.																															
Table D1	<table><tr><th colspan="4">Table D1a – Noise limits (includes construction activities)</th></tr><tr><th rowspan="2">Noise level dB(A) measured as</th><th colspan="3">All days</th></tr><tr><th>7am – 6pm</th><th>6pm – 10pm</th><th>10pm – 7am</th></tr><tr><td colspan="4">Noise measured at a ‘Noise sensitive place’</td></tr><tr><td>L_{Aeq}, adj, 15 min</td><td>42</td><td><u>35</u></td><td><u>35</u></td></tr><tr><td>L_{Amax}</td><td>-</td><td>-</td><td>50</td></tr><tr><td>L_{Amax} rail spur</td><td>-</td><td>-</td><td>56</td></tr><tr><td>L_{Aeq}(24hr) rail spur</td><td>-</td><td>-</td><td>50</td></tr></table> <u>1. All noise other than that which is distinguishable as train noise</u> <u>2. Only for noise distinguishable as train noise.</u>	Table D1a – Noise limits (includes construction activities)				Noise level dB(A) measured as	All days			7am – 6pm	6pm – 10pm	10pm – 7am	Noise measured at a ‘Noise sensitive place’				L _{Aeq} , adj, 15 min	42	<u>35</u>	<u>35</u>	L _{Amax}	-	-	50	L _{Amax} rail spur	-	-	56	L _{Aeq} (24hr) rail spur	-	-	50	Subject to change. See Annexure G below.
Table D1a – Noise limits (includes construction activities)																																	
Noise level dB(A) measured as	All days																																
	7am – 6pm	6pm – 10pm	10pm – 7am																														
Noise measured at a ‘Noise sensitive place’																																	
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L _{Amax}	-	-	50																														
L _{Amax} rail spur	-	-	56																														
L _{Aeq} (24hr) rail spur	-	-	50																														
D2	If performance or compliance monitoring indicates the potential for exceedance of the relevant limits in Table D1a – Noise Limits then the environmental authority holder must immediately implement noise abatement measures to avoid exceeding the relevant limits.	Subject to change. See Annexure F below.																															

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request											
D3	The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table D2 – Blasting noise limits to be exceeded at a sensitive place or commercial place. Table D2 – Blasting noise limits <table> <tr> <th rowspan="2">Blasting noise limits</th><th colspan="2">Noise Sensitive or commercial blasting noise limits</th></tr> <tr> <th>Monday to Friday 7am to 6pm Saturday 9am to 1pm</th><th>Monday to Friday: <u>before 7am and after 6pm</u> 6pm to 7am Saturday: <u>before 9am and after 1pm</u> to 9am Sunday and Public Holidays[^]</th></tr> <tr> <td>Airblast overpressure</td><td>115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time</td><td>No blasting</td></tr> <tr> <td>Ground vibration peak particle velocity</td><td>5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time</td><td>No blasting</td></tr> </table> [^] <u>Blasting not permitted on Sundays and public holidays</u>	Blasting noise limits	Noise Sensitive or commercial blasting noise limits		Monday to Friday 7am to 6pm Saturday 9am to 1pm	Monday to Friday: <u>before 7am and after 6pm</u> 6pm to 7am Saturday: <u>before 9am and after 1pm</u> to 9am Sunday and Public Holidays [^]	Airblast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting	Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting	Subject to clerical change to correct error. See Annexure F below.
Blasting noise limits	Noise Sensitive or commercial blasting noise limits												
	Monday to Friday 7am to 6pm Saturday 9am to 1pm	Monday to Friday: <u>before 7am and after 6pm</u> 6pm to 7am Saturday: <u>before 9am and after 1pm</u> to 9am Sunday and Public Holidays [^]											
Airblast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting											
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting											
D4	<u>Compliance</u> No noise monitoring and recording must <u>be conducted in accordance with the administering authority's Noise Measurement Manual and</u> include the following descriptor characteristics and matters: <u>LA01, adj. 15 min - day, evening & night; LA10, adj. 15 min - day, evening & night; LAeq, adj. 15 min - day, evening & night; and LA90, adj. 15 min - day, evening & night</u> LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 15 to 60 mins) - background noise LA90 - the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels - atmospheric conditions including temperature, relative humidity and wind speed and directions - effects due to any extraneous factors such as traffic noise <u>and natural sources (e.g. insects, birds and wind)</u> - location, date and time of monitoring	Subject to change. See Annexure F below.											

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	<u>g) if the a complaint concerns low frequency noise and where permitted by the owner or occupier of the noise sensitive place; L_{LINeq} 10 mins (internal), L_{Aeq} 10 mins (internal) and one third octave band measurements in L_{LINeq} 10 mins (internal) Max L_{pLIN,T} and one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range</u> <u>h) maximum (L_{Amax}) noise levels - night (for a minimum of 30 minutes)</u> <u>g)i) 1/3 octave band spectrums.-</u>	
D5	The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with Table D2 – Blasting noise limits for a) At least 90% of all blasts undertaken on this site in each year at the nearest <u>noise</u> sensitive place or commercial place to the centroid of the blast. <u>b) All blasts conducted during any time period specified by the administering authority at the nearest <u>noise</u> sensitive place or commercial place.</u> <u>Results of the blast monitoring program must be included in the monthly compliance monitoring report provided to the administering authority.</u>	Subject to change. See Annexure F below.
E1	The holder of this environmental authority must not release contaminants to groundwater.	No change. Not subject to any recommended change by the Land Court in its reasons
E2	All determinations of groundwater quality and biological monitoring must be performed by an appropriately qualified person.	No change. Not subject to any recommended change by the Land Court in its reasons
E3	Groundwater quality and levels must be monitored at the locations and frequencies defined in Table E1 - Groundwater monitoring locations and frequency for quality characteristics identified in Table E2 - Groundwater quality triggers and limits. Table E1 - Groundwater monitoring locations and frequency	No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes				Subject to change request
	Monitoring Point	Aquifer Compliance Bore (C)	Location (GDA94 – Zone 56) Easting (m) Northing (m)		Parameter ¹ and Monitoring Frequency
	2289P	Coal measures (C)	371265	6983532	Groundwater levels: monthly
	2291P	Coal measures (C)	374620	6980033	
	18P	Coal measures (C)	371028	6982641	Groundwater quality: Six monthly to include: Al, As, Ca, Se, Cl, Cu, F, Fe, Total N, K, Mg, Mn, Na, SO ₄ , HCO ₃ , TDS, EC, pH
	25P	Coal measures (C)	374146	6982057	
	26P	Coal measures (C)	374266	6982977	
	27P	Coal measures (C)	373360	6983554	
	28P	Coal measures (C)	372328	6983977	
	843	Basalt (C)	370698	6981283	
	848	Coal measures (C)	370705	6981723	
	81P	Coal measures (C)	375003	6979638	
	82P	Coal measures (C)	373697	6978814	
	83P	Coal measures (C)	371854	6979679	
	84P	Basalt (C)	370355	6982187	
	BMH1	Basalt (C)	369658	6982204	
	CSMH1	Coal measures (C)	375404	6977336	
	109P	Basalt	368263	6982378	
	122PGC	Coal measures	370656	6977837	
	114P	Coal measures	371806	6976037	
	116P	Coal measures	374220	6975132	
	119PGC	Coal measures	371609	6973337	
	120WB	Coal measures	367523	6976115	
	121WB	Coal measures	368472	6978441	

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes				Subject to change request																
	1A	Basalt	366548	6982090																	
	1B	Coal measures	366548	6982090																	
	2A	Basalt	365884	6979300																	
	2B	Coal measures	365884	6979300																	
	3A	Basalt	369416	6973707																	
	3B	Coal measures	369416	6973707																	
	4A	Basalt	365800	6977025																	
	4B	Coal measures	365800	6977025																	
	4C	Marburg Sandstone	365800	6977025																	
	5A	Oakey Creek alluvium	373845	6972482																	
	5B	Coal measures	373845	6972482																	
	5C	Marburg Sandstone	373845	6972482																	
	6	Coal measures	375435	6975738																	
	7A	Basalt	367572	6982694																	
	7B	Coal measures	367572	6982694																	
	8	Mine Pit Backfill	372514	6982689																	
1 - Aluminium (Al), Arsenic (As), Calcium (Ca), Selenium (Se), Chloride (Cl), Copper (Cu), Fluorine (F), Iron (Fe), Total Nitrogen (Total N), Potassium (K), Magnesium (Mg), Manganese (Mn), Sodium (Na), Sulphate (SO4), Bicarbonate (HCO3), Total dissolves solids (TDS), Electrical conductivity (EC), Acidity/alkalinity (pH)																					
Table E2 - Groundwater quality triggers and limits																					
<table><tr><th>Parameter</th><th>Units</th><th>Contaminant Limit1,5</th><th>Monitoring frequency</th></tr><tr><td>Al</td><td>mg/l</td><td>5.0</td><td>Half yearly</td></tr><tr><td>As</td><td>mg/l</td><td>.05</td><td>Half yearly</td></tr><tr><td>Ca</td><td>mg/l</td><td>1000</td><td>Half yearly</td></tr></table>						Parameter	Units	Contaminant Limit1,5	Monitoring frequency	Al	mg/l	5.0	Half yearly	As	mg/l	.05	Half yearly	Ca	mg/l	1000	Half yearly
Parameter	Units	Contaminant Limit1,5	Monitoring frequency																		
Al	mg/l	5.0	Half yearly																		
As	mg/l	.05	Half yearly																		
Ca	mg/l	1000	Half yearly																		

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes				Subject to change request
	Se	mg/l	0.02	Half yearly	
	Cl	mg/l	TBA	Half yearly	
	Cu	mg/l	1.0 ²	Half yearly	
	F	mg/l	TBA	Half yearly	
	Fe	mg/l	TBA	Half yearly	
	NO ₃	mg/l	400	Half yearly	
	NO ₂	mg/l	30	Half yearly	
	K	mg/l	TBA	Half yearly	
	Mg	mg/l	TBA	Half yearly	
	Mn	mg/l	TBA	Half yearly	
	Na	mg/l	TBA	Half yearly	
	SO ₄	mg/l	1000	Half yearly	
	HCO ₃	mg/l	TBA	Half yearly	
	TDS	mg/l	5000 ^{2,3}	Half yearly	
	EC	mg/l	7460 ^{2,3,4}	Half yearly	
	pH	unit	TBA	Half yearly	
	1 – Based on Stockwater limits defined in ANZECC (2000) 2 – Defined for beef cattle based on landholder bore survey results 3 – Existing bores 27P, 28P, 2289 and 118P background levels already exceed this limit prior to mine operation 4 – Based on EC to TDS conversion factor of 0.67 as per ANZECC (2000)				
E4	Groundwater levels when measured at the monitoring locations specified in Table E1 - Groundwater monitoring locations and frequency must not exceed the groundwater level trigger change thresholds specified in Table E3 - Groundwater level monitoring below.				No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request																																												
	Table E3 – Groundwater level monitoring ¹	change by the Land Court in its reasons																																												
	<table><tr><th>Monitoring Point</th><th>Level trigger threshold</th></tr><tr><td>2289P</td><td>TBA</td></tr><tr><td>2291P</td><td>TBA</td></tr><tr><td>18P</td><td>TBA</td></tr><tr><td>25P</td><td>TBA</td></tr><tr><td>26P</td><td>TBA</td></tr><tr><td>27P</td><td>TBA</td></tr><tr><td>28P</td><td>TBA</td></tr><tr><td>843</td><td>TBA</td></tr><tr><td>848</td><td>TBA</td></tr><tr><td>81P</td><td>TBA</td></tr><tr><td>82P</td><td>TBA</td></tr><tr><td>83P</td><td>TBA</td></tr><tr><td>84P</td><td>TBA</td></tr><tr><td>BMH1</td><td>TBA</td></tr><tr><td>CSMH1</td><td>TBA</td></tr><tr><td>109P</td><td>TBA</td></tr><tr><td>122PGC</td><td>TBA</td></tr><tr><td>114P</td><td>TBA</td></tr><tr><td>116P</td><td>TBA</td></tr><tr><td>119PGC</td><td>TBA</td></tr><tr><td>120WB</td><td>TBA</td></tr></table>		Monitoring Point	Level trigger threshold	2289P	TBA	2291P	TBA	18P	TBA	25P	TBA	26P	TBA	27P	TBA	28P	TBA	843	TBA	848	TBA	81P	TBA	82P	TBA	83P	TBA	84P	TBA	BMH1	TBA	CSMH1	TBA	109P	TBA	122PGC	TBA	114P	TBA	116P	TBA	119PGC	TBA	120WB	TBA
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	109P		TBA																																											
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CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request																																		
	<table><tr><td>121WB</td><td>TBA</td></tr><tr><td>1A</td><td>TBA</td></tr><tr><td>1B</td><td>TBA</td></tr><tr><td>2A</td><td>TBA</td></tr><tr><td>2B</td><td>TBA</td></tr><tr><td>3A</td><td>TBA</td></tr><tr><td>3B</td><td>TBA</td></tr><tr><td>4A</td><td>TBA</td></tr><tr><td>4B</td><td>TBA</td></tr><tr><td>4C</td><td>TBA</td></tr><tr><td>5A</td><td>TBA</td></tr><tr><td>5B</td><td>TBA</td></tr><tr><td>5C</td><td>TBA</td></tr><tr><td>6</td><td>TBA</td></tr><tr><td>7A</td><td>TBA</td></tr><tr><td>7B</td><td>TBA</td></tr><tr><td>8</td><td>TBA</td></tr></table> ¹ To be provided – Water level trigger thresholds will be proposed following 12 months of monitoring of the new bores and following the first update of the groundwater model prior to the operation of the revised project.	121WB	TBA	1A	TBA	1B	TBA	2A	TBA	2B	TBA	3A	TBA	3B	TBA	4A	TBA	4B	TBA	4C	TBA	5A	TBA	5B	TBA	5C	TBA	6	TBA	7A	TBA	7B	TBA	8	TBA	
121WB	TBA																																			
1A	TBA																																			
1B	TBA																																			
2A	TBA																																			
2B	TBA																																			
3A	TBA																																			
3B	TBA																																			
4A	TBA																																			
4B	TBA																																			
4C	TBA																																			
5A	TBA																																			
5B	TBA																																			
5C	TBA																																			
6	TBA																																			
7A	TBA																																			
7B	TBA																																			
8	TBA																																			
E5	If quality characteristics of groundwater from compliance bores identified in Table E1 - Groundwater monitoring locations and frequency exceed any of the trigger levels stated in Table E2 - Groundwater quality triggers and limits or exceed any of the groundwater level trigger threshold stated in Table E3 - Groundwater level monitoring, the holder of this environmental authority must compare the compliance monitoring bore results to the reference bore results and complete an investigation in accordance with the ANZECC and ARMCANZ 2000.	No change. Not subject to any recommended change by the Land Court in its reasons																																		
E6	Results of monitoring of groundwater from compliance bores identified in Table E1 - Groundwater monitoring locations and frequency, must not exceed any of the limits defined in Table E2 - Groundwater quality triggers and limits.	No change. Not subject to any																																		

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request																																				
		recommended change by the Land Court in its reasons																																				
E7	The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring	No change. Not subject to any recommended change by the Land Court in its reasons																																				
F1	Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.	No change. Not subject to any recommended change by the Land Court in its reasons																																				
F2	Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in Table F1 – Mine affected water release points, sources and receiving waters and depicted in Figure 2 attached to this environmental authority. Table F1 – Mine-affected water release points, sources and receiving waters <table><tr><th>Release Point (RP) 1</th><th>Latitude (decimal degree, GDA94)</th><th>Longitude (decimal degree, GDA94)</th><th>Mine-affected water source and location 1</th><th>Monitoring Point</th><th>Receiving waters description</th></tr><tr><td>ED1</td><td>27° 15' 40.5603" S</td><td>151° 41' 48.32659" E</td><td>ED1</td><td>Overflow from ED1</td><td>Spring Creek</td></tr><tr><td>ED2</td><td>27° 16' 54.96167" S</td><td>151° 41' 36.83113" E</td><td>ED2</td><td>Overflow from ED2</td><td>Lagoon Creek</td></tr><tr><td>ED3</td><td>27° 18' 29.40913" S</td><td>151° 42' 50.52694" E</td><td>ED3</td><td>Overflow from ED3</td><td>Lagoon Creek</td></tr><tr><td>ED4</td><td>27° 17' 41.49436" S</td><td>151° 41' 33.60156" E</td><td>ED4</td><td>Overflow from ED4</td><td>Lagoon Creek</td></tr><tr><td>ED5</td><td>TBA</td><td>TBA</td><td>ED5</td><td>Overflow from ED5</td><td>Lagoon Creek</td></tr></table>	Release Point (RP) 1	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine-affected water source and location 1	Monitoring Point	Receiving waters description	ED1	27° 15' 40.5603" S	151° 41' 48.32659" E	ED1	Overflow from ED1	Spring Creek	ED2	27° 16' 54.96167" S	151° 41' 36.83113" E	ED2	Overflow from ED2	Lagoon Creek	ED3	27° 18' 29.40913" S	151° 42' 50.52694" E	ED3	Overflow from ED3	Lagoon Creek	ED4	27° 17' 41.49436" S	151° 41' 33.60156" E	ED4	Overflow from ED4	Lagoon Creek	ED5	TBA	TBA	ED5	Overflow from ED5	Lagoon Creek	No change. Not subject to any recommended change by the Land Court in its reasons
Release Point (RP) 1	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)	Mine-affected water source and location 1	Monitoring Point	Receiving waters description																																	
ED1	27° 15' 40.5603" S	151° 41' 48.32659" E	ED1	Overflow from ED1	Spring Creek																																	
ED2	27° 16' 54.96167" S	151° 41' 36.83113" E	ED2	Overflow from ED2	Lagoon Creek																																	
ED3	27° 18' 29.40913" S	151° 42' 50.52694" E	ED3	Overflow from ED3	Lagoon Creek																																	
ED4	27° 17' 41.49436" S	151° 41' 33.60156" E	ED4	Overflow from ED4	Lagoon Creek																																	
ED5	TBA	TBA	ED5	Overflow from ED5	Lagoon Creek																																	

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes						Subject to change request
	ED6	TBA	TBA	ED6	Overflow from ED6	Lagoon Creek	
	ED7	TBA	TBA	ED7	Overflow from ED7	Lagoon Creek	
F3	The release of mine affected water to waters in accordance with condition F2 must not exceed the release limits stated in Table F2 – Mine-affected water release limits when measured at the monitoring points specified in Table F1 – Mine-affected water release points, sources and receiving waters for each quality characteristic. Table F2 – Mine-affected water release limits [Table not included]						No change. Not subject to any recommended change by the Land Court in its reasons
F4	The release of mine affected water to waters from the release points must be monitored at the locations specified in Table F1 – Mine-affected water release points, sources and receiving waters for each quality characteristic and at the frequency specified in Table F2 – Mine-affected water release limits.						No change. Not subject to any recommended change by the Land Court in its reasons
F5	The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows in Lagoon and Spring Creek upstream of the discharge sites.						No change. Not subject to any recommended change by the Land Court in its reasons
F6	Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition F2 must only take place during periods of natural flow in accordance with the receiving water flow criteria for discharge specified in Table F2 – Mine-affected water release limits for the release point(s) specified in Table F1 – Mine-affected water release points, sources and receiving waters.						No change. Not subject to any recommended change by the Land Court in its reasons
F7	The release of mine affected water to waters in accordance with condition F6 must not exceed the Maximum Release Rate (for all combined release point flows) for each receiving water flow criterion for discharge specified in Table F3 – Mine-affected water release during flow events when measured at the monitoring points specified in Table F1 – Mine-affected water release points, sources and receiving waters.						No change. Not subject to any recommended change by the Land Court in its reasons
F8	The daily quantity of mine affected water released from each release point must be measured and recorded.						No change. Not subject to any

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes							Subject to change request
								recommended change by the Land Court in its reasons
F9	Release to waters must be undertaken so not as to cause erosion of the bed and banks of the receiving waters or cause material build-up of sediment in such waters.							No change. Not subject to any recommended change by the Land Court in its reasons
Table F3	Receiving waters/ stream	Release Point (RP)	Gauging Station (GDA94)	Gauging Station (GDA94)	Receiving Water Flow Criteria for discharge (m3/s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity Release Limits	No change. Not subject to any recommended change by the Land Court in its reasons
	Lagoon Creek	ED2	27° 16' 54.96167" S	151° 41' 36.83113" E	Low Flow<4ML/ d for a period of 28 days after natural flow events that exceed 4 ML/d	<1.5ML/d	700	
		ED3	27° 18' 29.40913" S	151° 42' 50.52694" E				
		ED4	27° 17' 41.49436" S	151° 41' 33.60156" E				
		ED5	TBA	TBA	Medium Flow (low)>4 ML/d	<1.5ML/d	1500	
					<0.7ML/d	2,500		
		ED6	TBA	TBA	Medium Flow (high)>11.5 ML/d	<0.5ML/d	3,500	
						<4.2ML/d	1500	
		ED7	TBA	TBA	<2ML/d	2,500		
					<1.3ML/d	3,500		
					<12.5ML/d	1500		

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes							Subject to change request
					High Flow >35ML/d	<8ML/d <6ML/d	2,500 3,500	
F10	The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information: a) release commencement date/time b) details regarding the compliance of the release with the conditions of Department Interest: Water of this environmental authority (that is, contaminant limits, natural flow, discharge volume) c) release point/s d) release rate e) release salinity f) receiving water/s including the natural flow rate. Note: Notification to the administering authority must be <u>made via WaTERS</u> addressed to the Manager and Project Manager of the local Administering Authority via email or facsimile.							Subject to change. See Annexure F below.
F11	The environmental authority holder must notify the administering authority as soon as practicable and nominally no later than 24 hours after cessation of a release event of the cessation of a release notified under Condition F10 and within 28 days provide the following information in writing: a) release cessation date/time b) natural flow rate in receiving water c) volume of water released d) details regarding the compliance of the release with the conditions of Department Interest; Water of this environmental authority (i.e. contaminant limits, natural flow, discharge volume) e) all in-situ water quality monitoring results f) any other matters pertinent to the water release event. Note: Successive or intermittent releases occurring within 24 hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with							No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request						
	conditions F10 and F11, provided the relevant details of the release are included within the notification provided in accordance with conditions F10 and F11.							
F12	If the release limits defined in Table F2 – Mine-affected water release limits are exceeded, the holder of the environmental authority must notify the administering authority within 24 hours of receiving the results.	No change. Not subject to any recommended change by the Land Court in its reasons						
F13	The environmental authority holder must, within 28 days of a release that is not compliant with the conditions of this environmental authority, provide a report to the administering authority detailing: a) the reason for the release b) the location of the release c) the total volume of the release and which (if any) part of this volume was non-compliant d) the total duration of the release and which (if any) part of this period was non-compliant e) all water quality monitoring results (including all laboratory analyses) f) identification of any environmental harm as a result of the non-compliance g) all calculations h) any other matters pertinent to the water release event.	No change. Not subject to any recommended change by the Land Court in its reasons						
F14	The quality of the receiving waters must be monitored at the locations specified in Table F5 - Receiving water upstream background sites and downstream monitoring points for each quality characteristic and at the monitoring frequency stated in Table F4 - Receiving waters contaminant trigger levels.	No change. Not subject to any recommended change by the Land Court in its reasons						
Table F4 / Table C 4	Table F4 – Receiving waters contaminant trigger levels <table border="1"> <thead> <tr> <th>Quality Characteristic</th><th>Trigger Level</th><th>Monitoring Frequency</th></tr> </thead> <tbody> <tr> <td>pH</td><td>6.5 – 9.0</td><td></td></tr> </tbody> </table>	Quality Characteristic	Trigger Level	Monitoring Frequency	pH	6.5 – 9.0		Subject to change. See Annexure F below.
Quality Characteristic	Trigger Level	Monitoring Frequency						
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CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request																																								
	<table><tr><td>Electrical Conductivity (µS/cm)</td><td>700510</td><td>Daily during the release</td></tr><tr><td>Total Suspended solids (mg/L)</td><td colspan="2">To Be Determined. Turbidity may be required to assess ecosystems impacts and can provide instantaneous results.</td></tr><tr><td>Sulphate (SO₄²⁻) (mg/L)</td><td>250</td><td></td></tr><tr><td colspan="3">(Protection of drinking water Environmental Value)</td></tr></table>	Electrical Conductivity (µS/cm)	700 510	Daily during the release	Total Suspended solids (mg/L)	To Be Determined. Turbidity may be required to assess ecosystems impacts and can provide instantaneous results.		Sulphate (SO ₄ ²⁻) (mg/L)	250		(Protection of drinking water Environmental Value)																															
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Table F5	<table><tr><th colspan="4">Table F5 – Receiving water upstream background sites and downstream monitoring points</th></tr><tr><th>Monitoring Points</th><th>Receiving Waters Location Description</th><th>Latitude (GDA94)</th><th>Longitude (GDA94)</th></tr><tr><th colspan="4">Upstream Background Monitoring Points</th></tr><tr><td>LCU1</td><td>Lagoon Creek at a point upstream of mine</td><td>27° 18' 9.7728" S</td><td>151° 44' 23.136" E</td></tr><tr><td>LCU2 SCU1</td><td>Spring Creek at a point upstream of mine</td><td>27° 14' 18.7728" S</td><td>151° 41' 31.2864" E</td></tr><tr><th colspan="4">Downstream Monitoring Points</th></tr><tr><td>LCD1</td><td>Lagoon Creek downstream of mine</td><td>27° 18' 35.64" S</td><td>151° 43' 4.3536" E</td></tr><tr><td>LCD2</td><td>Lagoon Creek downstream of mine</td><td>27° 18' 37.36" S</td><td>151° 43' 1.8768" E</td></tr><tr><td>SCD1</td><td>Spring Creek at a point downstream of mine</td><td>27° 14' 47.364" S</td><td>151° 40' 36.2028" E</td></tr><tr><td>DS1</td><td>Located at the downstream boundary of ML50232* (*or any subsequent identifier for the ML required for the New Acland Coal Mine Stage 3 project)</td><td>27° 19' 26.68" S</td><td>151° 41' 7.02 E</td></tr></table>	Table F5 – Receiving water upstream background sites and downstream monitoring points				Monitoring Points	Receiving Waters Location Description	Latitude (GDA94)	Longitude (GDA94)	Upstream Background Monitoring Points				LCU1	Lagoon Creek at a point upstream of mine	27° 18' 9.7728" S	151° 44' 23.136" E	LCU2 SCU1	Spring Creek at a point upstream of mine	27° 14' 18.7728" S	151° 41' 31.2864" E	Downstream Monitoring Points				LCD1	Lagoon Creek downstream of mine	27° 18' 35.64" S	151° 43' 4.3536" E	LCD2	Lagoon Creek downstream of mine	27° 18' 37.36" S	151° 43' 1.8768" E	SCD1	Spring Creek at a point downstream of mine	27° 14' 47.364" S	151° 40' 36.2028" E	DS1	Located at the downstream boundary of ML50232* (*or any subsequent identifier for the ML required for the New Acland Coal Mine Stage 3 project)	27° 19' 26.68" S	151° 41' 7.02 E	Subject to clerical change. See Annexure F below
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CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
F15	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table F4 – Receiving waters contaminant trigger levels during a release <u>of mine affected water</u> event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and: a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no additional monitoring and reporting action is required; or b) where the downstream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority <u>within 90 days of receiving the results and</u> in the next annual return, outlining: i. details of the investigations carried out ii. actions taken to prevent environmental harm. Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.	Subject to change. See Annexure F below.
F16	All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.	No change. Not subject to any recommended change by the Land Court in its reasons
F17	The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority <u>via WaTERS upon request</u> in the specified format: a) the date on which the sample was taken b) the time at which the sample was taken c) the monitoring point at which the sample was taken d) the measured or estimated daily quantity of mine affected water released from all release points e) the release flow rate at the time of sampling for each release point f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority	Subject to change. See Annexure F below

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request															
	<u>g)</u> water quality monitoring data must be provided to the administering authority in the specified electronic format upon request g)<u>h) water level monitoring data must be provided in the specified electronic format</u>																
F18	A Water Resource Management Plan must be developed by an appropriately qualified person and implemented <u>for all stages of mining. The Water Management Plan must be submitted to the administering authority for review and comment within 3 months of the grant of ML50232 and ML700002.</u>	Subject to change. See Annexure F below															
F19	An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.	No change. Not subject to any recommended change by the Land Court in its reasons															
F20	Stormwater, other than mine affected water, is permitted to be released to waters from: a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition F19. b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition F18 for the purpose of ensuring water does not become mine affected water.	No change. Not subject to any recommended change by the Land Court in its reasons															
G1	All effluent released from the treatment plant must be monitored at the frequency and for the parameters specified in Table G1 – Sewage Effluent Quality Targets for Dust Suppression and Irrigation.	No change. Not subject to any recommended change by the Land Court in its reasons															
Table G1	<table><tr><th colspan="5">Table G1 – Sewage Effluent Quality Targets for Dust Suppression and Irrigation</th></tr><tr><th>Contaminant</th><th>Unit</th><th>Release limit</th><th>Limit type</th><th>Frequency</th></tr><tr><td>5-day Biochemical oxygen demand (uninhibited)</td><td>mg/L</td><td>20</td><td>Maximum</td><td>Quarterly</td></tr></table>	Table G1 – Sewage Effluent Quality Targets for Dust Suppression and Irrigation					Contaminant	Unit	Release limit	Limit type	Frequency	5-day Biochemical oxygen demand (uninhibited)	mg/L	20	Maximum	Quarterly	No change. Not subject to any recommended change by the Land Court in its reasons
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CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes					Subject to change request
	Faecal coliforms, based on the average of a minimum of five samples collected	Colonies/100ml	1000	Maximum	Quarterly	
	pH	pH units	6.0 – 9.0.	Range	Quarterly	
G2	Treated sewage effluent used for dust suppression or irrigation must not exceed sewage release limits defined in Table G1 – Sewage Effluent Quality Targets for Dust Suppression and Irrigation.					No change. Not subject to any recommended change by the Land Court in its reasons
G3	Sewage effluent used for dust suppression or irrigation must not cause spray drift or overspray to any sensitive place.					No change. Not subject to any recommended change by the Land Court in its reasons
G4	Subject to condition G5, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line.					No change. Not subject to any recommended change by the Land Court in its reasons
G5	In periods of wet weather or following wet weather, when no irrigation of effluent is reasonable practicable and when effluent storage ponds are full, the release of effluent to waters is permitted in accordance with the release limits in Table F2 – Mine-affected water release limits and locations specified in Table F 1 – Mine-affected water release points, sources and receiving waters.					No change. Not subject to any recommended change by the Land Court in its reasons
G6	The holder of the environmental authority must ensure that irrigation of effluent is carried out in such a manner that prevents and or minimises environmental harm.					No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
G7	The holder of this environmental authority is authorised to accept treated wastewater from the Wetalla Wastewater Reclamation Facility.	No change. Not subject to any recommended change by the Land Court in its reasons
H1	Land disturbed by mining must be rehabilitated in accordance with Table H1 – Rehabilitation Requirements.	No change. Not subject to any recommended change by the Land Court in its reasons
Table H1	Table H1 – Rehabilitation Requirements [Table not included]	No change. Not subject to any recommended change by the Land Court in its reasons
Table H2	Table H2 – Rehabilitation Acceptance Criteria – Grazing Lands [Table not included]	No change. Not subject to any recommended change by the Land Court in its reasons
Table H3	Table H3 – Rehabilitation Acceptance Criteria – Treed Areas [Table not included]	No change. Not subject to any recommended change by the Land Court in its reasons
H2	Rehabilitation must commence progressively in accordance with the plan of operations.	No change. Not subject to any recommended change by the Land Court in its reasons.

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
H3	The consequence category of any structure must be assessed by a suitable qualified and experienced person in accordance with the Manual for Assessing Categories and Hydraulic Performance of Structures (EM635) at the following times: a) Prior to the design and construction of the structure, if it is not an existing structure; or b) If it is an existing structure, prior to the adoption of this schedule; or c) Prior to any change in its purpose or the nature of its stored contents.	No change. Not subject to any recommended change by the Land Court in its reasons
H4	A consequence assessment report and certification must be prepared for each structure assessed and the report may include a consequence for more than one structure.	No change. Not subject to any recommended change by the Land Court in its reasons
H5	Certification must be provided by the suitably qualified and experienced person who undertook the assessment, in the form set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).	No change. Not subject to any recommended change by the Land Court in its reasons
H6	Condition H7 to H11 inclusive do not apply to existing structures.	No change. Not subject to any recommended change by the Land Court in its reasons
H7	All regulated structures must be designed by and constructed under the supervision of a suitable qualified and experienced person in accordance with the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).	No change. Not subject to any recommended change by the Land Court in its reasons
H8	Construction of a regulated structure is prohibited unless the holder has submitted a consequence category assessment report and certification to the administering authority has been certified by a suitably qualified person for the design and the design plan and the associated operating procedures in compliance with the relevant condition of this authority.	No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
H9	Certification must be provided by the suitable qualified and experienced person who oversees the preparation of the design plan set out in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635), and must be recorded in the Regulated Dams/Levees register.	No change. Not subject to any recommended change by the Land Court in its reasons
H10	Regulated structures must: a) be designed and constructed in accordance with and conform to the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635); b) be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of: i. floodwaters from entering the regulated dam from any watercourse or drainage line; and ii. wall failure due to erosion by floodwaters arising from any watercourse or drainage line; c) (only for regulated dams associated with a failure to contain seepage) have the floor and sides of the dam designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the dam during the operational life of the dam and for any period of decommissioning and rehabilitation of the dam.	No change. Not subject to any recommended change by the Land Court in its reasons
H11	Certification by the suitable qualified and experienced person who supervises the construction must be submitted to the administering authority on the completion of construction of the regulated structure and state that: a) The 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated structure; b) Construction of the regulated structure is in accordance with the design plan.	No change. Not subject to any recommended change by the Land Court in its reasons
H12	Operation of a regulated structure, except for an existing structure, is prohibited unless the holder has submitted to the administering authority: a) One paper copy and one electronic copy of the design plan and certification of the 'design plan' in accordance with condition H8. b) A set of 'as constructed' drawings and specifications, and c) Certification of those 'as constructed drawings and specifications' in accordance with condition H9, and	No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	d) Where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan; e) The requirements of this authority relating to the construction of the regulated structure have been met; f) The holder has entered the details required under this authority into a Register of Regulated Dams; and g) There is a current operational plan for the regulated structures.	
H13	For existing structures that are regulated structures: a) Where the existing structure that is a regulated structure is to be managed as part of an integrated containment system for the purposes of sharing DSA volume across the system, the holder must submit to the administering authority within 12 months of the commencement of this condition a copy of the certified system design plan including that structure; and b) There must be a current operational plan for the existing structures.	No change. Not subject to any recommended change by the Land Court in its reasons
H14	Each regulated structure just be maintained and operated for the duration of its operational life until decommissioned and rehabilitated in a manner that is consistent with the current operational plan and if applicable the current design plan and associated certified 'as constructed' drawings.	No change. Not subject to any recommended change by the Land Court in its reasons
H15	Conditions H16 to H19 inclusive apply to Regulated Structures which have not been certified as low consequence category for 'failure to contain – overtopping'.	No change. Not subject to any recommended change by the Land Court in its reasons
H16	The Mandatory Reporting Level (the MRL) must be marked on a regulated dam in such a way that during routine inspections of the dam it is clearly observable.	No change. Not subject to any recommended change by the Land Court in its reasons
H17	The holder must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a regulated dam reaches the MRL.	No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
		change by the Land Court in its reasons
H18	The holder must, immediately on becoming aware that the MRL has been reached, act to prevent the occurrence on any unauthorised discharges from the regulated dam.	No change. Not subject to any recommended change by the Land Court in its reasons
H19	The holder must record any changes to the MRL in the Register of Regulated Structures.	No change. Not subject to any recommended change by the Land Court in its reasons
H20	The holder must assess the performance of each regulated dam or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.	No change. Not subject to any recommended change by the Land Court in its reasons
H21	By 1 November of each year, storage capacity must be available in each regulated dam (or network of linked containment systems with a shared DSA volume) to meet the Design Storage Allowance (DSA) volume of the dam (or network of linked containment systems).	No change. Not subject to any recommended change by the Land Court in its reasons
H22	The holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated dam (or network of linked containment system) will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority.	No change. Not subject to any recommended change by the Land Court in its reasons
H23	The holder must, immediately on becoming aware that a regulated dam (or network of linked containment systems) will not have the available storage to meet the DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.	No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
		change by the Land Court in its reasons
H24	Each regulated dam must be inspected each calendar year by a suitable qualified and experienced person.	No change. Not subject to any recommended change by the Land Court in its reasons
H25	At each inspection the condition and adequacy of all components of the regulated structure must be assessed and a suitable qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure.	No change. Not subject to any recommended change by the Land Court in its reasons
H26	The suitable qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).	No change. Not subject to any recommended change by the Land Court in its reasons
H27	The holder must: c) Within 20 business days of receipt of the annual inspection report provide to the administering authority: i. the recommendations section of the annual inspection report; and ii. if applicable, any actions being taken in response to those recommendations; and d) If, following receipt of the recommendations and (if applicable) actions, the administering authority requests a full copy of the annual inspection report from the holder, provide this information to the administering authority within 10 business days of receipt of the request.	No change. Not subject to any recommended change by the Land Court in its reasons
H28	The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to and Register of Regulated Structures, consequence assessment, design plan and other supporting documentation, to a new holder on transfer of this authority.	No change. Not subject to any recommended change by the Land Court in its reasons

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
H29	Dams must not be abandoned but be either: a) Decommissioned and rehabilitated to achieve compliance with condition H30; or b) Be left in-situ for a beneficial use(s) provided that: i. it no longer contains contaminants that will migrate into the environment; and ii. it contains water of a quality that is demonstrated to be suitable for the intended beneficial use(s); and iii. the administering authority, the holder of the environmental authority and the landholder agree in writing that the dam will be used by the landholder following cessation of the resource activity.	No change. Not subject to any recommended change by the Land Court in its reasons
H30	After decommissioning, all significantly disturbed land caused by carrying out of the resource activity must be rehabilitated to meet the final acceptance criteria: a) The landform is safe for humans and fauna; b) The landform is stable with no subsidence of erosion gullies for at least three (3) years; c) Any contaminated land (e.g. contaminated soils) is remediated and rehabilitated; d) Not allowing for acid mine drainage; or e) There is no ongoing contamination to waters (including groundwater); f) All significantly disturbed land is reinstated as defined in Table H1 – Rehabilitation requirements; g) For land that is not being cultivated by the landholder: i. groundcover, that is not a declared pest species is established and self-sustaining; ii. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining; and iii. the maintenance requirements for rehabilitated land are no greater than that required for the land prior to its disturbance caused by carrying out of the resource activity. h) For land that is cultivated by the landowner, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of resource activities being completed.	No change. Not subject to any recommended change by the Land Court in its reasons
H31	A Register of Regulated Dams must be established and maintained by the holder for each regulated dam	No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
		change by the Land Court in its reasons
H32	The holder must provisionally enter the required information in the Register of Regulated Dams when a design plan for a regulated dam is submitted to the administering authority.	No change. Not subject to any recommended change by the Land Court in its reasons
H33	The holder must make a final entry of the required information in the Register of Regulated Dams once compliance with condition H12 and H13 has been achieved.	No change. Not subject to any recommended change by the Land Court in its reasons
H34	The holder must ensure that the information contained in the Register of Regulated Dams is current and complete on any given day.	No change. Not subject to any recommended change by the Land Court in its reasons
H35	All entries in the Register of Regulated Dams must be approved by the chief executive officer for the holder of this authority, or the delegate, as being accurate and correct.	No change. Not subject to any recommended change by the Land Court in its reasons
H36	The holder must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Dams, in the electronic format required by the administering authority.	No change. Not subject to any recommended change by the Land Court in its reasons
H37	Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or	No change. Not subject to any recommended

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
	which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.	change by the Land Court in its reasons
H38	Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.	No change. Not subject to any recommended change by the Land Court in its reasons
H39	Minimise the potential for contamination of land by hazardous contaminants.	No change. Not subject to any recommended change by the Land Court in its reasons
H40	Significant residual impacts to prescribed matters of state environmental significance must not exceed the maximum authorised residual impact area listed for that matter in Table H4 - Matters of State Environmental Significance. Note: Deemed conditions in Sections 18, 22, 24 and 25 of the <i>Environmental Offsets Act 2014</i> are taken to be conditions of this authority.	No change. Not subject to any recommended change by the Land Court in its reasons
Table H4	Table H4 – Maximum authorised impacts on Matters of State Environmental Significance (MSES) [Refer to Annexure E4]	Subject to change. See Annexure G below.
H41	The holder of the environmental authority must provide an environmental offset for the following maximum significant residual impacts on matters of state environmental significance in accordance with the requirements of the <i>Environmental Offsets Act 2014</i> (including deemed conditions), the Environmental Offsets Regulation 2014 and the Queensland Environmental Offsets Policy 2014.	No change. Not subject to any recommended change by the Land Court in its reasons
H42	Residual impacts are not authorised on any Matters of State Environmental Significance not identified in Table H4 – Maximum authorised impacts on Matters of State Environmental Significance (MSES) .	Subject to clerical change to correct

CG No.	CG Evaluation Report and CG Change Report Stated Conditions with proposed changes	Subject to change request
		reference. See Annexure F

Glossary for Appendix 2

Words and phrases used throughout these recommended conditions are defined below. Where a definition for a term is not provided, but is provided in the EP Act 1994 or subordinate legislation, the definition in the EP Act or subordinate legislation must be used.

Term	Definition	Subject to change request
acid rock drainage	any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture.	No change. Not subject to any recommended change by the Land Court in its reasons
affected person	someone whose drinking water can potentially be impacted as a result of discharges from a dam or their life can be put at risk due to dwellings or workplaces being in the path of a dam break flood.	No change. Not subject to any recommended change by the Land Court in its reasons
airblast overpressure	energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dBL).	No change. Not subject to any recommended change by the Land Court in its reasons
appropriately qualified person	a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.	No change. Not subject to any recommended change by the Land Court in its reasons
annual inspection report	an assessment prepared by a suitably qualified and experienced person containing details of the assessment against the most recent consequence assessment report and design plan (or system design plan): • against recommendations contained in previous annual inspections reports; • against recognised dam safety deficiency indicators; • for changes in circumstances potentially leading to a change in consequence category; • for conformance with the conditions of this authority; • for conformance with the 'as constructed' drawings; • for the adequacy of the available storage in each regulated dam, based on an actual observation or	No change. Not subject to any recommended change by the Land Court in its reasons

	observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the dam (or network of linked containment systems); • for evidence of conformance with the current operational plan.	
Annual Exceedance Probability or AEP	the probability that at least one event in excess of a particular magnitude will occur in any given year.	No change. Not subject to any recommended change by the Land Court in its reasons
assessed or assessment by a suitably qualified and experienced person in relation to a consequence assessment of a dam	a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment: • exactly what has been assessed and the precise nature of that determination; • the relevant legislative, regulatory and technical criteria on which the assessment has been based; • the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and • the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.	No change. Not subject to any recommended change by the Land Court in its reasons
associated works in relation to a dam	operations of any kind and all things constructed, erected or installed for that dam; and any land used for those operations.	No change. Not subject to any recommended change by the Land Court in its reasons
authority	an environmental authority or a development approval.	No change. Not subject to any recommended change by the Land Court in its reasons
background , with reference to the water schedule	the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.	No change. Not subject to any recommended change by the Land Court in its reasons
blasting	the use of explosive materials to fracture: • rock, coal and other minerals for later recovery; or • structural components or other items to facilitate removal from a site or for reuse.	No change. Not subject to any recommended change by the Land Court in its reasons

Certification	assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by the Manual (<i>Manual for Assessing Categories and Hydraulic Performance of Structures</i> (EM635)), including design plans, 'as constructed' drawings and specifications, construction, operation or an annual report regarding regulated structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).	No change. Not subject to any recommended change by the Land Court in its reasons
Certifying, certify or certified	a corresponding meaning as certification	No change. Not subject to any recommended change by the Land Court in its reasons
chemical	• an agricultural chemical product or veterinary chemical product within the meaning of the <i>Agricultural and Veterinary Chemicals Code Act 1994</i> (Commonwealth); or • a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or • a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997; • a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers Advisory Council and published by the Commonwealth; or • any substance used as, or intended for use as: – a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or – a surface active agent, including, for example, soap or related detergent; or – a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or – a fertiliser for agricultural, horticultural or garden use; or – a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or – manufacture of plastic or synthetic rubber.	No change. Not subject to any recommended change by the Land Court in its reasons

commercial place	a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees accommodation or public roads.	No change. Not subject to any recommended change by the Land Court in its reasons
Consequence in relation to a structure as defined	the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.	No change. Not subject to any recommended change by the Land Court in its reasons
Consequence category	a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).	No change. Not subject to any recommended change by the Land Court in its reasons
construction or constructed in relation to a dam	includes building a new dam structure and modifying or lifting an existing dam, but does not include investigations and testing necessary for the purpose of preparing a design plan.	No change. Not subject to any recommended change by the Land Court in its reasons
dam	a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.	No change. Not subject to any recommended change by the Land Court in its reasons
dam crest volume	the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (for example, via spillway).	No change. Not subject to any recommended change by the Land Court in its reasons
design plan	a document setting out how all identified consequence scenarios are addressed in the planned design and operation of a regulated structure.	No change. Not subject to any recommended change by the Land Court in its reasons
design storage allowance or DSA	an available volume, estimated in accordance with the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that Manual.	No change. Not subject to any recommended change by the Land Court in its reasons
designer for the purposes of a regulated dam	the certifier of the design plan for the regulated dam.	No change. Not subject to any recommended change by the Land Court in its reasons

development approval	a development approval under the <i>Integrated Planning Act 1997</i> or the <i>Sustainable Planning Act 2009</i> in relation to a matter that involves an environmentally relevant activity under the <i>Environmental Protection Act 1994</i> .	No change. Not subject to any recommended change by the Land Court in its reasons
disturbance of land	includes: • compacting, removing, covering, exposing or stockpiling of earth; • removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion; • carrying out mining within a watercourse, waterway, wetland or lake; • the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls; • temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc.) which is to be removed after the mining activity has ceased; or • releasing of contaminants into the soil, or underlying geological strata. However, the following areas are not included when calculating areas of disturbance: • areas off lease (e.g. roads or tracks which provide access to the mining lease); • areas previously disturbed which have achieved the rehabilitation outcomes; • by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions); • areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner;	No change. Not subject to any recommended change by the Land Court in its reasons

	disturbance that pre-existed the grant of the tenure.	
EC	electrical conductivity.	No change. Not subject to any recommended change by the Land Court in its reasons
effluent	treated waste water released from sewage treatment plants.	No change. Not subject to any recommended change by the Land Court in its reasons
emergency action plan	documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact.	No change. Not subject to any recommended change by the Land Court in its reasons
existing structure	a structure that was in existence prior to the adoption of this schedule of conditions under the authority.	No change. Not subject to any recommended change by the Land Court in its reasons
Extreme Storm Storage	a storm storage allowance determined in accordance with the criteria in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> published by the administering authority	No change. Not subject to any recommended change by the Land Court in its reasons
flowable substance	matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.	No change. Not subject to any recommended change by the Land Court in its reasons
hazard category	a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.	No change. Not subject to any recommended change by the Land Court in its reasons
holder	- where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or - where this document is a development approval, any person who is the registered operator for that development approval.	No change. Not subject to any recommended change by the Land Court in its reasons

hydraulic performance	the capacity of a regulated dam to contain or safely pass flowable substances based on the design criteria specified for the relevant consequence category in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> .	No change. Not subject to any recommended change by the Land Court in its reasons
infrastructure	water storage dams, levees, roads and tracks, buildings and other structures built for the purpose of the mining activity.	No change. Not subject to any recommended change by the Land Court in its reasons
land in the land schedule of this document	land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the <i>Environmental Protection Act 1994</i> . For the purposes of the <i>Acts Interpretation Act 1954</i> , it is expressly noted that the term land in this environmental authority relates to physical land and not to interests in land.	No change. Not subject to any recommended change by the Land Court in its reasons
land use	the selected post mining use of the land, which is planned to occur after the cessation of mining operations.	No change. Not subject to any recommended change by the Land Court in its reasons
<u>LA max</u>	<u>means the maximum A-weighted sound pressure level measured over a time period of not less than 15 minutes, using Fast response</u>	Subject to change. See Annexure F below. There are slight formatting changes.
<u>LAeq,adj 15 min intervals</u>	<u>A-weighted equivalent continuous sound level over 15 minute intervals</u>	Subject to change. See Annexure F below. There are slight formatting changes.
<u>LAr, 1 hour</u>	<u>means the specific noise level measured as the A-weighted equivalent continuous noise level (LAeq) plus any adjustment for the character of the noise (tonal and/or impulsive) determined over a reference time period of one hour</u>	Subject to change. See Annexure F below. There are slight formatting changes.
<u>LA10,adj, 15 min</u>	<u>A-weighted, sound level just exceeded for 10% of the 15 minute period</u>	Subject to change. See Annexure F below. There are slight formatting changes.
leachate	a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.	No change. Not subject to any recommended change by the Land Court in its reasons
levee	an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does	No change. Not subject to any recommended change by the Land Court in its reasons

	not store any significant volume of water or flowable substances at any other times.	
licensed place	the mining activities carried out at the mining tenements detailed in this environmental authority.	No change. Not subject to any recommended change by the Land Court in its reasons
low consequence dam	any dam that is not a high or significant consequence category as assessed using the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i>	No change. Not subject to any recommended change by the Land Court in its reasons
m	metres	No change. Not subject to any recommended change by the Land Court in its reasons
mandatory reporting level or MRL	a warning and reporting level determined in accordance with the criteria in the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> published by the administering authority.	No change. Not subject to any recommended change by the Land Court in its reasons
manual	the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> published by the administering authority.	No change. Not subject to any recommended change by the Land Court in its reasons
measures	includes any measures to prevent or minimise environmental impacts of the mining activity such as bunds, silt fences, diversion drains, capping, and containment systems.	No change. Not subject to any recommended change by the Land Court in its reasons
mine-affected water	the following types of water: i. pit water, tailings dam water, processing plant water; ii. water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity; iii. rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;	No change. Not subject to any recommended change by the Land Court in its reasons

	iv. groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated; v. groundwater from the mines dewatering activities; vi. a mix of mine affected water (under any of paragraphs i-v, above) and other water. does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with: • land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or • land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example: – areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site; – evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or – both.	
modification or modifying	see definition of construction	No change. Not subject to any recommended change by the Land Court in its reasons
NATA	National Association of Testing Authorities, Australia.	No change. Not subject to any recommended change by the Land Court in its reasons
natural flow	the flow of water through waters caused by nature.	No change. Not subject to any recommended change by the Land Court in its reasons

<u>noise sensitive place</u>	<u>means:</u> • <u>a legal dwelling, caravan park, residential marina or other residential premises; or</u> • <u>a motel, hotel or hostel; or</u> • <u>a kindergarten, school, university or other educational institution; or</u> • <u>a medical centre or hospital; or</u> • <u>a protected area; or</u> • <u>a public park or gardens; and</u> • <u>includes the curtilage of any such place.</u> <u>but does not include</u> (a) <u>places that are within the boundaries of the mining lease; or</u> (b) <u>places that are owned or leased by the holder of the environmental authority or its related companies; or</u> (c) <u>places for which an agreement has been entered into between the holder of the environmental authority and the owner of the place for the provision of alternative measures to mitigate the impact of mining activities for the Stage 3 New Acland Mine Project at the place, where those measures are reasonably expected to result in noise levels experienced at the place that are consistent with the relevant limits in Table D1 - Noise Limits.</u>	Subject to change. See Annexure F below.
non polluting	having no adverse impacts upon the receiving environment.	No change. Not subject to any recommended change by the Land Court in its reasons
operational plan	includes: • normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance); • contingency and emergency action plans including operating procedures designed to avoid and/or minimise	No change. Not subject to any recommended change by the Land Court in its reasons

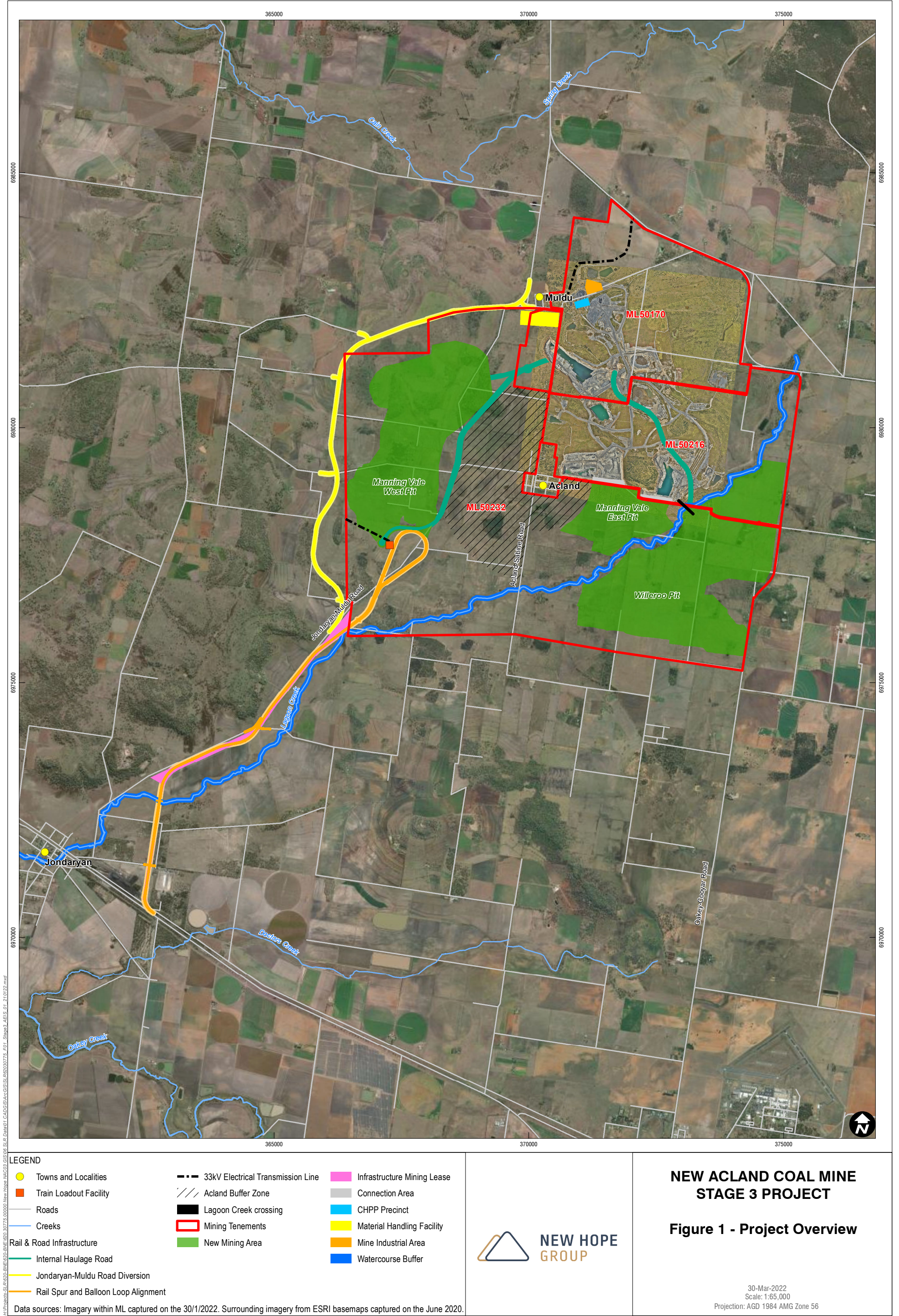
	environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated structure.	
peak particle velocity (ppv)	a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).	No change. Not subject to any recommended change by the Land Court in its reasons
receiving environment in relation to an activity that causes or may cause environmental harm	the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to): • a watercourse; • groundwater; and • an area of land.	No change. Not subject to any recommended change by the Land Court in its reasons
receiving waters	the waters into which this environmental authority authorises releases of mine affected water.	No change. Not subject to any recommended change by the Land Court in its reasons
Register of Regulated Dams	includes: • Date of entry in the register; • Name of the dam, its purpose and intended/actual contents; • The consequence category of the dam as assessed using the <i>Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i>; • Dates, names, and reference for the design plan plus dates, names, and reference numbers of all document(s) lodged as part of a design plan for the dam; • Name and qualifications of the suitably qualified and experienced person who certified the design plan and as constructed drawings; • For the regulated dam, other than in relation to any levees – – The dimensions (metres) and surface area (hectares) of the dam measured at the footprint of the dam; – Coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the dam including its storage area – Dam crest volume (megalitres); – Spillway crest level (metres AHD).	No change. Not subject to any recommended change by the Land Court in its reasons

	– Maximum operating level (metres AHD); – Storage rating table of stored volume versus level (metres AHD); – Design storage allowance (megalitres) and associated level of the dam (metres AHD); – Mandatory reporting level (metres AHD); • The design plan title and reference relevant to the dam; • The date construction was certified as compliant with the design plan; • The name and details of the suitably qualified and experienced person who certified that the constructed dam was compliant with the design plan; • Details of the composition and construction of any liner; • The system for the detection of any leakage through the floor and sides of the dam; • Dates when the regulated dam underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year; • Dates when recommendations and actions arising from the annual inspection were provided to the administering authority; • Dam water quality as obtained from any monitoring required under this authority as at 1 November of each year.	
rehabilitation	the process of reshaping and revegetating land to restore it to a stable landform	No change. Not subject to any recommended change by the Land Court in its reasons
release event	a surface water discharge from mine affected water storages or contaminated areas on the licensed place.	No change. Not subject to any recommended change by the Land Court in its reasons
RL	reduced level, relative to mean sea level as distinct from depths to water.	No change. Not subject to any recommended change by the Land Court in its reasons
representative	a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.	No change. Not subject to any recommended change by the Land Court in its reasons
regulated dam	any dam in the significant or high consequence category as assessed using the <i>Manual for Assessing Consequence</i>	No change. Not subject to any recommended change by the Land Court in its reasons

	<i>Categories and Hydraulic Performance of Structures (EM635)</i> published by the administering authority.	
regulated structure	includes land-based containment structures, levees, bunds and voids, but not a tank or container designed and constructed to an Australian Standard that deals with strength and structural integrity.	No change. Not subject to any recommended change by the Land Court in its reasons
residual drilling material	waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.	No change. Not subject to any recommended change by the Land Court in its reasons
saline drainage	the movement of waters, contaminated with salts, as a result of the mining activity.	No change. Not subject to any recommended change by the Land Court in its reasons
sensitive place	• a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or • a motel, hotel or hostel; or • an educational institution; or • a medical centre or hospital; or • a protected area under the <i>Nature Conservation Act 1992</i>, the <i>Marine Parks Act 1992</i> or a World Heritage Area; or • a public park or gardens.	No change. Not subject to any recommended change by the Land Court in its reasons
Structure	dam or levee.	No change. Not subject to any recommended change by the Land Court in its reasons
Spillway	a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges from the dam, normally under flood conditions or in anticipation of flood conditions.	No change. Not subject to any recommended change by the Land Court in its reasons
suitably qualified and experienced person in relation to regulated structures	a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the <i>Professional Engineers Act 2002</i>, and has demonstrated competency and relevant experience: • for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design. • for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments. Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has	

	demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.	
system design plan	a plan that manages an integrated containment system that shares the required DSA and/or ESS volume across the integrated containment system.	No change. Not subject to any recommended change by the Land Court in its reasons
the Act	the <i>Environmental Protection Act 1994</i> .	No change. Not subject to any recommended change by the Land Court in its reasons
µS/cm	microsiemens per centimetre.	No change. Not subject to any recommended change by the Land Court in its reasons
void	any constructed, open excavation in the ground.	No change. Not subject to any recommended change by the Land Court in its reasons
watercourse	has the meaning in Schedule 4 of the <i>Environmental Protection Act 1994</i> and means a river, creek or stream in which water flows permanently or intermittently— • in a natural channel, whether artificially improved or not; or • in an artificial channel that has changed the course of the watercourse. watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.	No change. Not subject to any recommended change by the Land Court in its reasons
Waters	includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.	No change. Not subject to any recommended change by the Land Court in its reasons
Water quality	the chemical, physical and biological condition of water.	No change. Not subject to any recommended change by the Land Court in its reasons
Water year	the 12-month period from 1 July to 30 June.	No change. Not subject to any recommended change by the Land Court in its reasons
Wet season	the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.	No change. Not subject to any recommended change by the Land Court in its reasons

Annexure E1 - Figure 1: Revised Project Overview – Mine Area



Annexure E2 - Table A - Air quality monitoring requirements

Monitoring location*	Air quality indicator	Instrument	Frequency	Air quality limit	Nuisance limit	Monitoring method
1,2 (Acland)	PM_{2.5}	BAM or TEOM	Continuous	25µg/m³ (24 hr avg) 8µg/m³ (annual)		AS/NZS 3580.9.12-2013 AS/NZS 3580.9.13:2013
	PM ₁₀	TEOM	Continuous	50µg/m ³ (24 hr avg) 25µg/m³ (annual)		AS 3580.9.8-2008
	TSP TSP ^{#1}	Hi-Vol Sampler [^]	24hr, 1 day in 6	90µg/m ³ (annual)	80µg/m ³ (24 hr avg)	AS/NZS 3580.9.3:2003
		Modified TEOM [#]	Continuous	90µg/m ³ (annual)	80µg/m ³ (24 hr avg)	Modified TEOM
	Insoluble solids	Dust gauge	Monthly	120mg/m²/day	120mg/m ² /day	AS/NZS 3850.10.1:2003
	Wind speed and direction		Continuous Hourly			AS 3580:14-2011
	Temperature 2m and 10m Temperature gradient		Continuous			AS 3580:14-2014
	Precipitation		Continuous			AS 3580:14-2014

Monitoring location*	Air quality indicator	Instrument	Frequency	Air quality limit	Nuisance limit	Monitoring method
	Relative Humidity		Continuous			AS 3580:14-2014
	Solar Radiation		Continuous			AS 3580:14-2014
	Net Radiation		Continuous			AS 3580:14-2014
7, 8 (or an alternative location to the north of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to condition B3).	PM₁₀	TEOM	Continuous	50µg/m³ (24 hr avg) 25µg/m³ (annual)		AS/NZS 3580.9.8-2008
	TSP	Hi-Vol Sampler[^]	24hr, 1 day in 6	90µg/m³ (annual)	80µg/m³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly	120mg/m³/day	120mg/m²/day	AS/NZS 3580.10.1:2003
16 (East) (Acland-Silverleigh Road)	PM₁₀	TEOM	Continuous	50µg/m³ (24 hr avg) 25µg/m³ (annual)		AS 3580.9.8-2008
	TSP #1	Hi-Vol Sampler[^]	24hr, 1 day in 6	90µg/m³ (annual)	80µg/m³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly	120mg/m²/day	120mg/m²/day	AS/NZS 3850.10.1:2003
38, 39 (or an alternative	PM₁₀	TEOM	Continuous	50µg/m³ (24 hr avg)		AS/NZS 3580.9.8-2008

Monitoring location*	Air quality indicator	Instrument	Frequency	Air quality limit	Nuisance limit	Monitoring method
location to the north-west of the Stage 3 New Acland mine identified in the Air Emissions Management Plan Developed pursuant to Condition B3).				25µg/m³ (annual)		
	TSP	Hi-Vol Sampler^	24hr, 1 day in 6	90µg/m³ (annual)	80µg/m³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly	120mg/m²/day	120mg/m²/day	AS/NZS 3850.10.1:2003
15 (East)	PM₁₀	TEOM	Continuous	50µg/m³ (24 hr avg) 25µg/m³ (annual)		AS 3580.9.8-2008
	TSP	Hi-Vol Sampler^	24hr, 1 day in 6	90µg/m³ (annual)	80µg/m³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly	120mg/m²/day	120mg/m²/day	AS/NZS 3850.10.1:2003
35,36 (west of mine site)	PM ₁₀	TEOM	Continuous	50µg/m³ (24 hr avg) 25µg/m³ (annual)		AS/NZS 3580.9.8-2008

Monitoring location*	Air quality indicator	Instrument	Frequency	Air quality limit	Nuisance limit	Monitoring method
	TSP	Hi-Vol Sampler ¹	24hr, 1 day in 6	90µg/m ³ (annual)	80µg/m ³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly	120mg/m²/day	120mg/m ² /day	AS/NZS 3850.10.1:2003
37 (West) ¹ (trend monitoring at 37 or an alternative location to the west of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to Condition B3)	PM₁₀	Trend monitor capable of measuring PM₁₀	Continuous			
	TSP	Hi-Vol Sampler[^]	24hr, 1 day in 6			AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly			AS/NZS 3850.10.1:2003
44 (Northwest) ² (trend monitoring at 44 or an alternative	PM₁₀	Trend monitor capable of measuring PM₁₀	Continuous			
	TSP	Hi-Vol Sampler[^]	24hr, 1 day in 6			AS/NZS 3580.9.3:2003

¹ [Trend monitoring can be undertaken using different instruments and methods from those specified in Table A: Air quality monitoring requirements.](#)

² [Trend monitoring can be undertaken using different instruments and methods from those specified in Table B1: Air quality monitoring requirements.](#)

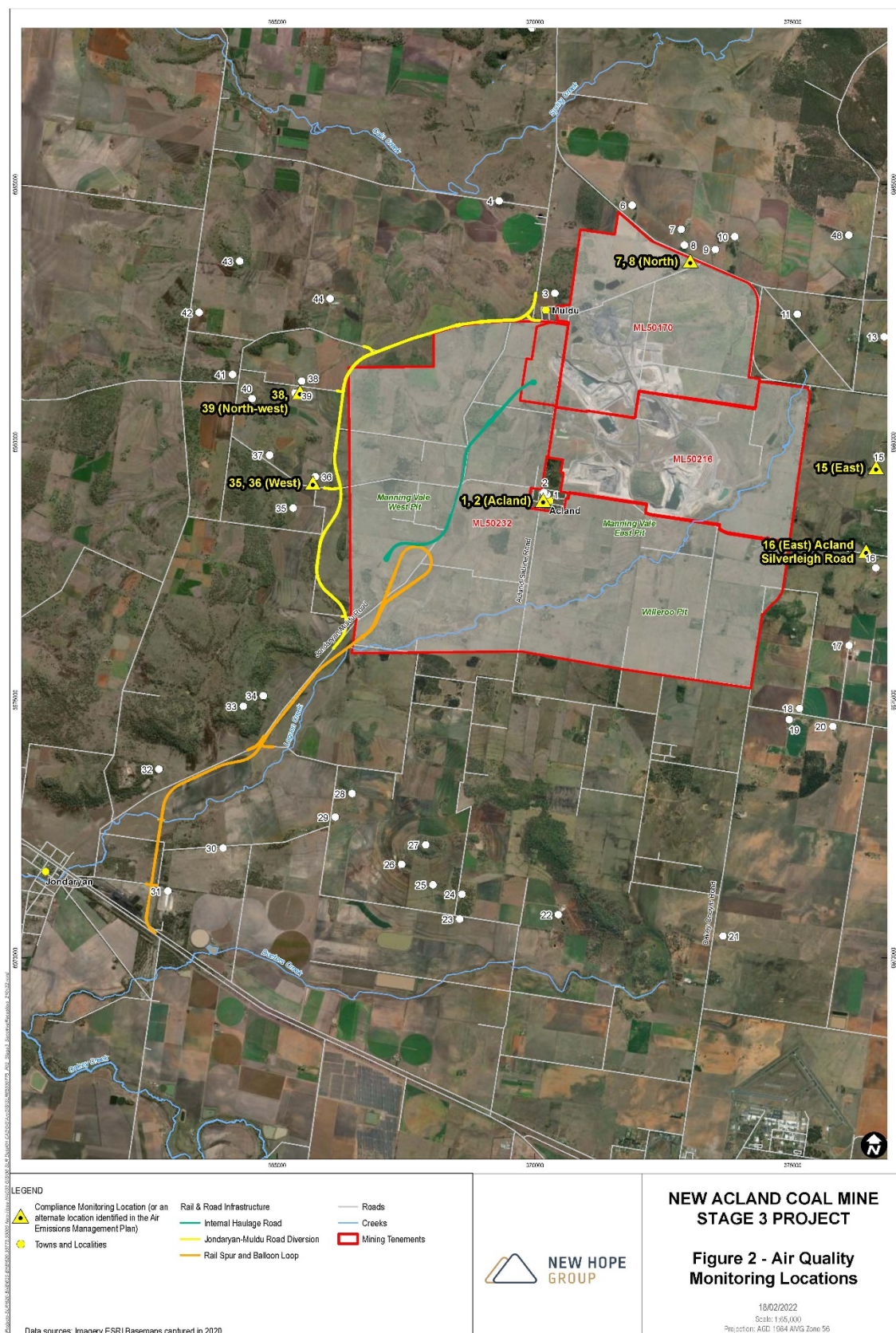
Monitoring location*	Air quality indicator	Instrument	Frequency	Air quality limit	Nuisance limit	Monitoring method
location to the north-west of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to Condition B3)	Insoluble solids	Dust gauge	Monthly			AS/NZS 3850.10.1:2003
Acland-Silverleigh Road (at site on Figure 2 where real time PM ₁₀ and dust deposition is monitored)	PM ₁₀	TEOM	Continuous	50µg/m ³ (24 hr avg)		AS/NZS 3580.9.8:2008
	TSP	Hi-Vol Sampler	24hr, 1 day in 6	90µg/m ³ (annual)	80µg/m ³ (24 hr avg)	AS/NZS 3580.9.3:2003
	Insoluble solids	Dust gauge	Monthly		120mg/m ² /day	AS/NZS 3850.10.1:2003
as per Figure 2	Insoluble solids	Dust gauge	Monthly		120mg/m ² /day	AS/NZS 3850.10.1:2003
Siting of monitoring equipment						AS/NZS 3580.1.1:2007

*See Figure 2 – Air quality monitoring locations

Data from the modified TEOM and Hi-Vol samplers to be used to calibrate the modified TEOM for monitoring TSP. Calibration needs to be undertaken over at least a 6 month period from June to December. Once the modified TEOM has been calibrated it can be used to measure TSP instead of the Hi-Vol sampler.

¹ [A modified TEOM can be used in place of a Hi-Vol Sampler to measure TSP](#) ~~The modified TEOM can be used to measure TSP at other sites.~~

Annexure E3 - Figure 2 - Air quality monitoring locations



Annexure E4 - Table H4 – Maximum authorised impacts on Matters of Environmental Significance (MSES)

<u>Applicable MSES</u>	Status	Maximum area of residual impact (ha)	Environmental offset required
<u>Threatened REs listed under the <i>Vegetation Management Act 1999</i></u>			
11.3.1#	Endangered	<u>2.58</u>	<u>Yes</u>
11.9.5#	Endangered	<u>24.53</u>	<u>Yes</u>
11.3.2	Of concern	<u>4.63</u>	<u>Yes</u>
11.3.17	Of concern	<u>5.11</u>	<u>Yes</u>
11.8.11#	Of concern	<u>34.65</u>	<u>Yes</u>
11.9.10	Of concern	<u>14.36</u>	<u>Yes</u>
<u>11.9.7</u>	<u>Of concern</u>	<u>3.24</u>	<u>Yes</u>
11.9.13	Of concern	<u>3.62</u>	<u>Yes</u>
<u>Watercourse vegetation</u> <u>(11.8.11)</u>	<u>Of concern</u>	<u>6.38</u>	<u>Yes</u>
<u>Threatened Fauna Species listed under the <i>Nature Conservation Act 1992</i></u>			
Koala <i>Phascolarctos cinereus</i>	<u>Vulnerable</u>	<u>30.96 of remnant</u> <u>vegetation and an</u> <u>additional</u> <u>18.40 of</u> <u>NJKHTs**^</u>	<u>Yes</u>

<u>Threatened Flora Species listed under the Nature Conservation Act 1992</u>			
Belson's Panic <i>Homopholis belsoni</i> #	Endangered	70.8	<u>Yes</u>
<u>Austral Cornflower</u> <u>(<i>Rhaponticum austral</i>)</u> #	Vulnerable	<u>0.7</u>	Yes

These prescribed environmental values duplicate MNES values and, in the event of an Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) decision on the project, offsets for these matters may be conditioned for by the Commonwealth. Further, any offsets conditioned by the Commonwealth are likely to address offsetting for these matters as required by this environmental authority.

* NJKHTs = Non-Juvenile Koala Habitat Trees.

^ Based on the average tree density of 250 trees per hectare for koala habitat in SEQ used in the Queensland Environmental Offsets Policy (v1.8).

Annexure F - Reasons and effect of proposed changes

Item No.	CG No./SP Draft EA No.	Land Court Decision	Proposed Stated Condition (per 35E of the SDPWO Act)	Reasons for proposed change (per 35E of the SDPWO Act)	Effect of proposed change on project (per 35E of the SDPWO Act)
1.	A2/A2	Condition A2 – the spatial extent of Stage 3 [110] The current EA does not include a condition expressly identifying the pits from which extraction was limited. NAC has mined areas of its current lease outside the areas indicated in the current EA, which was contrary to residents' expectations. Condition 2A in the draft EA states that, in carrying out the mining activity, NAC must comply with Figure 1. [111] Figure 1 shows the disturbance footprint area, the Stage 3 pit area, infrastructure areas and the revised road and rail infrastructure. Figure 1 is entitled "Revised Project Overview Indicative Only". NAC notes, and both DES and OCAA agree, that Figure 1 does not include ancillary infrastructure such as pipelines, water management infrastructure, telecommunications, access tracks, flood protection levee and monitoring equipment. [112] Both OCAA and DES say that the EA should provide certainty and clarity about the location and extent of the area to be disturbed and that reference to	In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview – Mine Area): a) <u>must not carry out extraction or out of pit dumping activities within the Acland buffer zone or other exclusion areas identified on Figure 1 - Project Overview;</u> b) <u>without limiting Condition A2(a), must carry out mining activities generally in accordance with Figure 1 - Project Overview and the conditions of this environmental authority;</u> c) <u>otherwise and subject to condition A2(d), may carry out disturbance</u>	The inclusion of the Acland buffer zone is to address the Land Court's recommendation that ideally, condition A2 should include a fixed boundary on the western edge of Manning Vale East (see paragraph [129]). The proposed buffer includes this area and extends west and south of Acland. To address the Land Court recommendation to include a condition limiting the location and extent of the disturbed area, while retaining some flexibility for the mining footprint¹: a) Condition A2 retains Figure 1 as identifying the disturbance area for the primary mining activities, but using the more conventional description to limit mining activities carried out "generally in accordance" with Figure 1.	The proposed change to stated condition A2 will not adversely affect the Project as assessed and approved by the Coordinator-General or prevent NAC from meeting its Project commitments. Instead the proposed change: a) provides more certainty as to the extent of the disturbance area for the primary mining activities including mining pits and out of pit dumps and key items of infrastructure, while enabling some flexibility as contemplated by the Land Court. The updated Figure 1 removes the "indicative" notation contained in Figure 1

¹ See paragraph [129] and [117] of the Land Court Decision.

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Item No.	CG No./SP Draft EA No.	Land Court Decision	Proposed Stated Condition (per 35E of the SDPWO Act)	Reasons for proposed change (per 35E of the SDPWO Act)	Effect of proposed change on project (per 35E of the SDPWO Act)
		Figure 1, together with specifying areas of disturbance, will achieve that certainty and clarity. [113] NAC wants the flexibility to change where the pits and overburden areas sit. It relies on the qualifying words that appear in the several documents and referred me to the mining industry experience that the design of mining activities may change after further, detailed investigation. [114] NAC has pointed to several documents that, it says, clearly show Figure 1 was never intended to be proscriptive. Figure 1, itself, is labelled "indicative only". The CG's description of the project included a reference to Figure 1 (described as Figure 2.1) as "showing the location of the project" (presumably not the extent). 116 The CG listed the key components of the project, the project infrastructure and then noted that a full project description was contained in the EIS and AEIS. The disturbance footprint was described as "around" 1,466 ha with the pits equating to "around" 1,201 ha. [115] In the evaluation section of the report, the CG notes that "the disturbance footprint for the stage 3 project, which includes pits, slope batters, out-of-pit dumps and infrastructure, is 1,815ha.	<u>of land for infrastructure:</u> i. <u>which infrastructure is the subject of conditions under the environmental authority; or</u> ii. <u>in accordance with a management plan or where permitted by the administering authority; or</u> iii. <u>within areas of ML50216 and ML50170 on land already disturbed; or</u> iv. <u>which is minor infrastructure, and to the extent reasonably necessary to allow other mining activities</u>	b) Figure 1 has been altered to remove the word "indicative" and otherwise includes the outline of the areas for the new mining areas (proposed pits and out of pit dumps), which match the outlines of the disturbance footprint in the current Figure 1 of the stated conditions. The proposed Figure 1 does not differentiate the pit and out of pit dump or infrastructure within the New Mining Area given that the precise location within the disturbance footprint may vary and consistent with the Land Court confirmation that there is scope for some limited flexibility. c) The revised Figure 1 does not separately identify the Stage 2 mining areas that have already been mined or rehabilitated. d) The proposed Figure 1 continues to identify the anticipated footprint of the rail spur, balloon loop, train	in the current stated conditions. b) ensures that potential impacts to residents of Acland are mitigated by including an exclusion zone for extraction and out of pit dump activities within the Acland buffer zone in Figure 1; c) clarifies the limitations on supporting infrastructure outside the New Mining Areas and infrastructure footprints on Figure 1. This is further discussed at Annexure I.. It is inherent in the terms of the existing Coordinator-General's stated condition A2, with reference to a figure marked "Indicative Only", that a precise definition of disturbance areas was neither necessary nor appropriate.

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Item No.	CG No./SP Draft EA No.	Land Court Decision	Proposed Stated Condition (per 35E of the SDPWO Act)	Reasons for proposed change (per 35E of the SDPWO Act)	Effect of proposed change on project (per 35E of the SDPWO Act)
		Within the MLA, the disturbance footprint has been reduced to 1,466ha". [116] NAC drew my attention to Figure 5.1 which shows all the proposed MLA as "surface rights area". To my mind, the figure is relevant only to show the location of sensitive receptors. [117] I agree that these documents indicate there is some degree of flexibility in the size and location of the area to be mined. I also agree that the numbers referred to are not intended to be precise. [118] DES raised the issue of uncertainty and clarity in a letter to NAC dated 24 March 2021. To be fair to NAC, my interpretation of that letter is less concerned with the precise location and area of the Stage 3 pits and more concerned with excising the Stage 2 mining from the hearing. However, DES did ask NAC to delete the word "indicative" from Figure 1.	authorised by the mining leases and this environmental authority to occur; and d) <u>must not construct infrastructure within the Lagoon Creek Conservation Zone, other than in accordance with Imposed Condition 15 of the Coordinator-General's Report.</u> <u>Insert new definitions:</u> <u>Acland buffer zone:</u> the area identified in Figure 1 - Project Overview as the Acland buffer zone. <u>Minor infrastructure</u> includes culverts, bores, low impact telecommunications infrastructure, electricity infrastructure up to 11kV.	load out facility, primary haul routes and mine infrastructure area and other key elements of mining infrastructure outside the New Mining Area. The final infrastructure footprint within Figure 1 may need to be refined following detailed engineering design. e) Proposed Figure 1 retains that part of Willeroo pit and its associated out of pit dump in ML50216 within the disturbance footprint as this area has not been mined. This area was assessed within the EIS and was considered in the Land Court Remittal Hearing.² f) Note that within the existing ML50216 it is intended	The Land Court noted that that the current Figure 1 does not include ancillary infrastructure such as pipelines, water management infrastructure, telecommunications, access tracks, flood protection levee and monitoring equipment.⁵ The EIS indicated that other ancillary infrastructure could occur outside the disturbance footprint shown in figure 1.⁶ The range of infrastructure contemplated by condition A2(c) was described in the EIS. This necessary infrastructure was considered in the Coordinator-General's Report and the Coordinator-General

² See reference to Willeroo south of Lagoon Creek in paragraph [128] of the Land Court Decision.

⁵ Paragraph [111] of Land Court Decision.

⁶ See for example Figures 3-9 - 3-15 Mining layout.

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		[119] DES did not receive a written response to that letter, so it filed an application seeking a revised Figure 1 showing only those areas in which mining activity was proposed and, in respect of each of those areas, details of what part of the activity was disturbance, what was out of pit dumping, the location of other surface infrastructure and the rail infrastructure. [120] In response to that application, NAC provided a Project Overview by email dated 27 May 2021. The overview retained the reference to “indicative only” and each response to specific questions referred to the “indicative” location or “anticipated” infrastructure. [121] The justification for the proposed limitation now is said to be on one of three grounds. The first is public interest. DES says that it is in the public interest to have clear spatial boundaries for the permitted activities. It says that people who might be affected by Stage 3 are entitled to know what likely impact they face and the extent of those impacts. Further, DES submits that public interest is served by “good regulation”.	<u>fences, environmental monitoring infrastructure, pipelines, underground services, access tracks, roads for light vehicles.</u> <u>Management Plan is a plan or program approved under a condition of the environmental authority or the imposed conditions of the Coordinator-General's Report.</u> (Figure 1 to be changed as attached as Figure 1 - Project Overview)	there will be a strip along the boundary to provide connection between existing mined areas, and the new Manning Vale East Pit extending further south³. Mining operations are complex, are affected by the resource, underground, economic and other conditions and mine plans need some flexibility to adapt to actual conditions as they are encountered or occur. The proposed condition A2(c) is intended to enable infrastructure necessary for mining operations and environmental management of mining, but limiting disturbance of such infrastructure outside the footprint in Figure 1. The range of infrastructure required for the Project was identified in the EIS and includes the key infrastructure specified in proposed Figure 1 and other associated	stated conditions for such infrastructure. The Coordinator-General's Report notes that the water management infrastructure is necessary to protect surface water values and levees are necessary to protect mining areas from flood impacts. Annexure I provides a more detailed discussion of the effect on the Project. The inclusion of condition A2(c) will not result in any additional disturbance of MSES as the maximum authorised areas of impact are limited to those in Stated condition H42 and Table H4 and the proposed condition limits infrastructure in the Lagoon Creek Conservation Zone except in accordance with imposed condition 15.

³ At Transcript for the Second Remitted Land Court Hearing T1-6/24-30.

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		[122] The second ground is that each of the experts gave their opinions about the potential impacts of Stage 3 by reference to Figure 1 or the shape files that underpin it. OCAA and DES argue that, because there has been no modelling of impacts from mining outside the areas shown in Figure 1, the EA should not contemplate any deviation from mining outside the areas shown in Figure 1. [123] The third ground is to avoid the uncertainty that exists in the current EA. DES referred me to the evidence of Dr McCosker.¹¹⁸ That evidence does no more than repeat, in brief, DES's view that there should be certainty and that the expert evidence is premised on Figure 1. [124] NAC maintains that there should be flexibility in the condition. It relies on the qualifying words that appear in the several documents and the mining industry experience that the design of the mine may change after further, detailed investigation. [125] I have some sympathy for NAC's argument that detailed investigation may change the location and extent of the disturbed areas. In areas that are sparsely populated and a change of a few hundred metres would have no impact on a		infrastructure (water management infrastructure, levees, roads and tracks, environmental management infrastructure, electricity infrastructure and other minor infrastructure). This infrastructure will be located as identified in the proposed Figure 1 or within the New Mining Area in Figure 1 or where otherwise authorised under this proposed condition A2(c). The inclusion of proposed subparagraph A2(c) does not authorise any new activities or infrastructure, but rather clarifies the limitations on supporting infrastructure outside that identified in Figure 1, by restricting it to minor infrastructure or infrastructure which is the subject of conditions of the environmental authority conditions or approved management plans or where otherwise permitted by the administering authority. As Figure 1 is proposed now to have no "indicative only" notation, condition A2 provides	The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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		sensitive receptor, such a change would not be important. But Stage 3 is in an area where sensitive receptors are closely co-located. The conditions about noise and air quality are strict because there is a high potential for adverse impacts on neighbours. There has been no modelling of potential impacts outside the area delineated in Figure 1. [126] It might be that a change to the location or extent of operations would result in no change to the environmental impacts. There might be some extra areas that could be mined without changing the impacts on noise and air quality. Mr O'Dwyer believes NAC has given a commitment about mining within the proximity of Acland, 119 so it is possible, but unlikely, that the parties could have crafted a condition that protected Mr Beutel absolutely but still allowed the mining footprint to slip south-west away from his property. [127] In the absence of expert opinion on these matters, I am persuaded that a condition limiting the location and extent of the disturbed area is necessary.		more certainty as to the scope of the activities authorised by the EA and where they may be undertaken, consistent with the Land Court recommendation. Further explanation of the reasons and effect of the proposed changes is discussed at Annexure I. The parties to the Second Remitted Hearing all accepted that Figure 1 as contained in the stated conditions does not identify the range of ancillary infrastructure usually associated with mining.⁴ The Land Court also appeared to accept that there was no benefit in limiting the areas for disturbance involved in the loadout facilities, haul roads and surface infrastructure as this would not give certainty that adverse impacts would be avoided (see paragraph [131]).	

⁴ Paragraph [111] of Land Court Decision.

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		[128] The shape of the disturbance area is defined by Figure 1. I note that the shape of Manning Vale West is further defined by the boundary ML50216 to the west and the new haul road to the east and south. Manning Vale East is further defined by the interface with Stage 2 to the north and Lagoon Creek to the south-east. Willeroo is further defined by Lagoon Creek to the north west and the boundary of MLA 50232 to the east. [129] It seems that there is scope for some limited flexibility. For example, OCAA conceded that a change to straighten boundaries around, say, Lagoon Creek might be acceptable. The challenge, of course, is to craft a condition that provides certainty for the public interest yet a modicum of flexibility for NAC. Mining to the west of the proposed Manning Vale East disturbance area may have unanticipated impacts on Mr Beutel's residence. Ideally, Condition A2 should include a fixed boundary on the western edge of Manning Vale East. [130] The most recent draft EA has a notation: "Agency Interest — Figures: The maximum area authorised to be disturbed on ML50232 is 1,575ha generally as shown on Figure 1 (and in which context the			

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		word 'indicative' on Figure 1 is to be understood) which comprises: a. pits, slope batters and out of pit dumps – 1,422ha; b. the train loadout facility, the material handling facility, the Balloon Loop and the Haul road – 44ha; c. surface infrastructure (being bores, roads for light vehicles, levees, culverts, hardstand areas, tracks, water storage dams, buildings and any other structures built for the purpose of mining activity) – 109ha.” [131] I do not understand how, or if, these areas are incorporated into Condition A2 as there is no drafting nexus between this note and the condition. I see some logic in limiting the size of the disturbance area because that is the area that has been the subject of expert evidence about the potential impacts. However, given my earlier comments about the inherent constraints on the disturbance area, I am not necessarily persuaded that reference to the area of disturbance improves the enforceability of the condition or the certainty that adverse impacts will be avoided. I have no confidence that the references to the areas involved in the loadout facilities, haul roads and surface			

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		infrastructure will improve the enforceability of the condition or the certainty that adverse impacts will be avoided.			
2.	A4 / A5	Land Court recommended that: [148] An EA authorises the carrying out of an environmentally relevant activity and the prevention of environmental harm unless authorised by the EA. Record keeping under an EA is for those purposes. The suggestion that NAC should keep records for the life of the mine – 30 years – in case it applies for an expansion of the mine is not consistent with the objective of carrying out an authorised activity or the prevention of harm from the authorised activity. Why should NAC keep records if there has been no recorded breach in a five-year period or, indeed, at all? Why should NAC keep records if technology has moved on and the future proposal (if any) relies on a totally different extraction method? Why should NAC keep records if the nature of the receiving environment changes? <i>If DES thinks it is relevant and necessary to keep records for a period longer than five years or for a purpose other than the</i>	Except where specified otherwise in another condition of this environmental authority, all monitoring records <u>data, records</u> or reports required by this environmental authority must be kept for a period of not less than 5 years.	The parties agreed that the monitoring data should be kept and the Land Court recommended a retention period of 5 years as sufficient. ⁷	The proposed change does not alter the intent of stated condition A4. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts. Instead, it requires the retention of monitoring data to be kept for a period of not less than 5 years.

⁷ Paragraph [149] Land Court Decision.

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		<i>authorised activity's compliance with the EA conditions, then it has that capacity.</i> [149] No one is disputing that NAC should hold its data for historical purposes, but a retention period of five years is sufficient for Condition A5. Five years of data will allow the community to make informed decisions and give it the opportunity to engage meaningfully in discussions about the effects of the mine.			
3.	A5 / A6	See item 2 above.	Upon request from the administering authority, copies of <u>all</u> monitoring <u>data</u> , records and reports will be made available and provided to the administering authority's nominated office within 10 business days or an alternative timeframe agreed between the administering authority and the holder.	As per Row 2 above, the parties agreed that the monitoring data should be kept and the Land Court recommended a retention period of 5 years as sufficient.	The proposed change does not alter the intent of stated condition A5. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts. Instead, it requires monitoring data to be made available to DES within 10 business days of a request or such other timeframe as requested by the parties.
4.	A12/L1	Recommendation of Land Court was: "The applicant applies to the Coordinator-General to amend the environmental authority (EPML 00335713) to account for	Complaints The holder of this environmental authority must record all environmental complaints received	The reasons of the Land Court discussed stated condition A12 (condition L1 in the Statutory Party EA) but did not	The proposed change does not alter the intent of stated condition A12. The changes do not introduce any changes to the

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		the conditions as amended by the hearing and/or these reasons." Condition L1 – complaints [265] OCAA wants to include a provision that the information in complaints must be updated every 28 days until action has been taken to resolve the complaint. That imposes an additional burden on DES with no apparent benefit. The complainant will know whether the complaint has been resolved and, probably, will be aware of what steps are being taken to resolve it. Updating public information to show that the complaint is outstanding will not increase public confidence in DES's regime for dealing with complaints and it will not assist DES in resolving those complaints.	about the mining activities including: a) name, address and contact number for of the complainant; b) time and date of complaint; c) reasons for the complaint; d) investigations undertaken; e) conclusions formed; f) actions taken to resolve the complaint; g) any abatement measures implemented; h) person responsible for resolving the complaint; and i) <u>records of any referrals to an independent counselling service.</u> <u>The information as outlined in Condition A12 (a) to (i) with the consent of the complainant must be sent to the administering authority (and the complainant) within 28 days of the action taken to resolve the complaint.</u>	recommend any specific change to stated condition A12. Condition A12 is proposed to be amended to reflect the changes proposed in the Statutory Party EA submitted to the Land Court (condition L1), which was accepted by NAC. The amendment includes a new subparagraph requiring NAC to hold records of any referrals to the independent counselling service, in addition to other information required to be held by NAC under stated condition A12. It is also proposed that condition A12 requires the information set out in subparagraphs (a) to (i) to be supplied to the administering authority within 28 days of the action taken to resolve the complaint, with the consent of the complainant.	project itself and will not introduce new impacts or increase the severity of impacts. The changes will increase the accountability for the Project to provide information to the administering authority on complaints received or referrals to the required independent counselling service. The change to require the complaint information to be provided to the administering authority will enable DES to have oversight of the complaint response by NAC.
5.	B1 / Ba B1	Condition Ba – compliance with air emission limits	<u>Condition Ba</u>	Stated condition B1 is proposed to be amended to reflect the Land Court findings and	The changes reflect the intended purpose of stated condition B1 such

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		[163] DES and NAC largely agree on conditions to ensure that emissions generated by the mining operations do not exceed the air quality limits. There is one area on which these parties disagree, which I will come to shortly. [164] OCAA wants some additions to the draft condition. Firstly, it wants the condition changed to read that NAC must not “cause or contribute to” exceedances. It submits that, if there is another cause of elevated particulate in the air (such as a bushfire) NAC should not “blindly carry on with the excuse that it was not the cause of the exceedance”. It relies on the evidence of Dr Taylor who said that, if the PM2.5 level is high, NAC should be managing to still achieve compliance. [165] Dr Taylor’s comment was in the context of whether NAC should monitor PM2.5 as well as PM10 and whether multiple sites were necessary to manage dust on the mine site. Dr Taylor made those comments with the admission that he had never been involved in the design of a dashboard system to monitor a mining operation. [166] Mr Welchman is familiar with designing dashboards for mining operations. He was content with monitoring PM10 and thought that would	<u>The holder of this environmental authority must ensure that air emissions generated by the mining activities do not cause the criteria in Table A - Air Quality Monitoring requirements to be exceeded at sensitive place or commercial place.</u> <u>Note: the measurement of air emissions for a sensitive place or commercial place is either:</u> <u>at that place (if measured there); or</u> <u>at the monitoring location representative (whether by reason of correlation or otherwise) of the sensitive or commercial place (where there is no measure at the sensitive or commercial place).</u> <u>Condition B1</u> The proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place:	particularly, the changes proposed by the Statutory Party and agreed to by NAC during the Land Court hearing and also which are consistent with the Land Court’s findings at paragraphs [163], [167] and [169]. At paragraph [170] the Land Court also accepted NAC’s version of the EA for the description of the monitoring location at a sensitive or commercial place. This is addressed in the proposed change to the condition. Proposed stated conditions Ba and B1 split the existing stated condition B1, so that there are separate conditions for the air emission limits and the air measurement parameters. <u>Condition Ba</u> Proposed stated condition Ba ensures that air emissions generated by the mining activities do not cause the criteria in Table A- Air Quality Monitoring requirements to be exceeded at a sensitive place or commercial place. Proposed stated condition Ba includes a note that confirms where air emissions for a sensitive place	that the mine does not exceed the <i>Environmental Protection (Air) Policy 2019</i> air quality criteria, while providing additional detail with respect to the monitoring methodology and measurement of air emissions. Proposed stated condition Ba provides additional certainty in the regulation of air emissions of the mine, as it: - sets limits that must not be exceeded, whereas the stated condition B1 required all reasonable and feasible avoidance and mitigation measures; and - confirms where air emissions for a sensitive place or commercial place must be measured. Proposed stated condition B1 imposes additional air emission controls as it would additionally include:

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		indicate whether, for example, fires in the area were affecting air quality.141 What NAC might do with that information is a matter for its AEMP and the existing parameters. [167] DES is content with a condition that refers to causation only. I have a similar view. [168] OCAA wants the condition to refer to air quality limits <i>and</i> nuisance limits. In the alternative, it wants the condition to refer to the criteria in Table B1. NAC is content with a reference to Table B1. DES is content with a reference to the “limits in Table B1”. The condition specifically refers to Table B1. That table is entitled “air quality limits and monitoring requirements”. It incorporates both an air quality limit and a nuisance limit. I do not think it is my role to be involved in this level of minutiae in draft conditions but, for what it is worth, OCAA’s desire for transparency is best achieved in simplicity. [169] OCAA wants the air quality limits to be reviewed annually and updated to reflect any change in standards or policy. NAC is already subject to conditions that require regular reviews.142 Condition A12 already deals with changes in standards or policies. OCAA’s proposed change	All air quality indicators listed in <u>Table A, must be monitored at the locations and at the frequency listed in Table A in accordance with the following methodologies:</u> a) <u>For D</u>dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of Standards Australia AS/NZS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method; b) <u>For Aa</u> concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time¹ <u>and 25 micrograms per cubic metre over a 1 year averaging time, for no more than 5 exceedances recorded each year</u>, when monitored in accordance with the most recent version of either: (1) Standards Australia AS/NZS 3580.9.6	or commercial place must be measured. <u>Condition B1</u> Proposed condition B1 differs from the existing CG stated condition B1 by: a) in relation to the monitoring of PM10, removal of the allowance of 5 exceedances per year as contained in stated condition B1(b). This change is for consistency with the <i>National Environment Protection (Ambient Air Quality) Measure</i>; b) adoption of an additional PM10 limit of 25 micrograms per cubic metre over a 1 year averaging time for consistency with the <i>Environmental Protection (Air) Policy 2019</i>; c) inclusion of a requirement for monitoring of PM2.5 suspended in the atmosphere of 25 micrograms per cubic meter over a 24 hour averaging time and 8 micrograms per cubic	c) the requirement for PM2.5 monitoring at the locations and frequency identified in Table B1 consistent with the criteria contained in the <i>Environmental Protection (Air) Policy 2019</i>; d) a daily average limit for particulate matter of 80 micrograms per cubic metre; e) acknowledgment that limits may be updated to reflect changes to the <i>Environmental Protection (Air) Policy 2019</i> These proposed changes have the effect of increasing the air emission controls that the Project will operate under consistent with the recommendations of the Land Court and the <i>Environmental Protection (Air) Policy 2019</i>. The changes do not introduce any changes to

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		does not add to the clarity or transparency of the EA. [170] The condition contains a note that the measurement of air emissions of a sensitive place or a commercial place is either at that place or at a monitoring location representative of the place. OCAA wants the representative place to be the “most” representative. NAC says this introduces unnecessary uncertainty; if a site is representative, who is to say, and why is it necessary to ask, whether another site is more representative of the site chosen. I agree with NAC that the addition does not add clarity or certainty to the condition.	Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM₁₀ high volume sampler with size-selective inlet – Gravimetric method; or (2) Standards Australia AS/NZS 3580.9.9 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM₁₀ low volume sampler – Gravimetric method; or (3) Standards Australia AS 3580.9.8 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM₁₀ continuous direct mass method using a tapered element oscillating	metre over a 1 year averaging time, consistent with the criteria under the <i>Environmental Protection (Air) Policy 2019</i>; a) inclusion of a daily average limit for particulate matter of 80 micrograms per cubic metre; d) enabling another method of monitoring for PM_{2.5} to be agreed in writing by the administering authority; and e) inclusion of a note to acknowledge that the air emission limits may be updated to reflect changes in the <i>Environmental Protection (Air) Policy 2019</i>.	the project itself and will not introduce new impacts or increase the severity of impacts.

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			microbalance analyser; c) <u>For a concentration of particulate matter suspended in the atmosphere of 80 micrograms per cubic metre over a 24-hour averaging time and 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS 3580.9.3:2003 Methods for sampling and analysis of ambient air- Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method.</u> d) <u>For a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic meter over a 24 hour averaging time and 8 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with:</u> <u>(1) the most recent version of Standards Australia AS/NZS 3580.9.12 Methods for sampling and</u>		

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			analysis of ambient air, Determination of suspended particulate matter – PM2.5 beta attenuation monitors; or (2) the most recent version of Standards Australia AS/NZS 3580.9.13 Methods of sampling and analysis of ambient air, Determination of suspended particulate matter – PM2.5 continuous direct mass method using a tapered element oscillating microbalance monitor; or (3) another method as agreed to in writing by the administering authority. ¹ <u>These limits are based upon relevant air quality objectives contained in the Environmental Protection (Air) Policy 2019 and may be automatically amended to reflect any amendment or replacement of the relevant air quality objective in the Environmental Protection (Air) Policy 2019.</u>		

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6.	B2/B2	-	If monitoring indicates the potential for exceedance of the relevant limits in condition B4a and B1 then the environmental authority holder must immediately implement dust abatement measures to avoid exceeding the relevant limits.	This is a consequential cross-reference change only.	There is no impact on the Project as a result of this cross-referencing change.
7.	B3/B3 and B4	Condition B3 – the provision of an Air Emissions Management Plan (AEMP) [171] DES and NAC agree that NAC should submit an AEMP within three months of the grant of Stage 3. OCAA wants NAC to provide the AEMP upon the grant. No party has specifically addressed me on the proposed change. I therefore have no view except that DES is in the better place to decide when it requires this information. [172] NAC has suggested that the AEMP be reviewed before it increases its rate of production over 5.1 Mtpa. Because OCAA and DES proposed that NAC's extraction rate be limited to 5.1 Mtpa, they did not	<u>Proposed Condition B3</u> Air emissions management An Air Emissions Management Plan must be developed by a suitably qualified and experienced person in relation to air emissions and implemented for all stages of mining. <u>The Air Emissions Management Plan must be submitted to the administering authority for review and comment:</u> a) <u>within 3 months of the grant of ML50232 and ML700002, and at intervals not exceeding two (2) years thereafter; and</u> b) <u>prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.</u>	Condition B3 is proposed to be split into proposed condition B3 and B4 as below. <u>Proposed Condition B3</u> Proposed condition B3a) reflects the position agreed by NAC and the Statutory Party during the objections hearing.⁸ B3 b) proposes an additional trigger for the review of the air emissions management plan prior to the mine producing more than 5.1 Mt of product coal per calendar year. The Land Court considered the amendments sought and confirmed that:	The proposed amendments to stated condition B3 provides more specificity as to the qualifications of the appropriate person to prepare the AEMP and introduce specific timing on when the AEMP is to be submitted to DES. The additional requirements of the AEMP do not change the intent of stated conditions B3 and B4. The proposed changes have the effect of providing more certainty for the implementation, review and content of the AEMP that the Project will operate under, consistent

⁸ See [171] of the Land Court Decision.

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		see the need for this condition. Given my view that the EA should not be so limited, the amendment to Condition B3 to include a review is an appropriate concession from NAC. Condition B4 – the collection of air monitoring data [173] OCAA's proposed changes to Condition B4 are based on Dr Taylor's comments about the importance of trend monitoring in investigating residents' concerns, calibration of sensitive receptor locations and assisting in compliance monitoring. [174] All parties recognise the utility of trend monitoring. DES and NAC differ from OCAA in whether the use of trend monitoring should be embedded into the conditions. [175] NAC submits that most of the detail in Condition B4 should be left to the	The Air Emissions Management Plan must incorporate a program for continuous improvements for the management of dust resulting from mining operations with respect to, but not limited to: (a) The collection of air quality and meteorological data in accordance with Table A: Air quality monitoring requirements; (b) A system to identify adverse meteorological conditions likely to produce elevated levels of dust including PM10 at a sensitive or commercial place due to the mining conditions; and	a) The timing of submission of the AEMP is a matter that DES is in a better place to decide; and b) NAC's proposal for the AEMP to be reviewed prior to the rate of mining production exceeding 5.1 million tonnes (Mt) of product coal per calendar year was an appropriate concession by NAC.⁹ The proposed changes clarify that the air emissions management plan (AEMP) be developed by a suitably qualified and experienced person and implemented for all stages of mining. The proposed changes also specify the triggers for when the air emissions management plan must be submitted to the administrative authority for review and comment. The trigger prior to the mine producing more than 5.1 Mt of product coal per calendar year is to ensure that the air	with the Land Court recommendations. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

⁹ Paragraph [172] of the Land Court Decision.

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		AEMP. I agree. While I understand OCAA's desire for transparency and certainty, which is best achieved by a condition, the reality is that some parameters will change over time. The sensitive receptors will change over time. The data NAC collects may indicate that another representative site would be more appropriate, or the correlation details may change, or the measured levels may change, or the way an exceedance is identified may change. It is easier to incorporate those changes in an AEMP, which will still be subject to DES's approval, than in a condition.	A dust control strategy which activates a timely implementation of dust control management actions aimed to avoid elevated levels of dust including PM10 at a sensitive or commercial place due to mining activities. <u>Proposed Condition B4</u> Air emissions management <u>The Air Emissions Management Plan must incorporate a program for continuous improvements for the management of dust resulting from mining operations with respect to, but not limited to:</u> a) <u>Monitoring locations acting as and continuing to act as suitable representative sites for sensitive places (if there is no monitor at a particular sensitive place);</u> b) The collection of air quality and meteorological data in accordance with Table B1: Air quality <u>Limits and</u> monitoring requirements; c) <u>Monitoring PM10 trends at 2 locations¹;</u>	emissions management plan can be adapted to avoid or mitigate air emission impacts from more intensive mine operations. <u>Proposed Condition B4</u> Proposed changes contained in proposed condition B4 are to add additional requirements for the AEMP following expert air quality evidence in the Land Court hearing. In addition to the existing requirements of stated condition B3, it is proposed that the AEMP specify: a) monitoring locations which act as and continue to act as suitable representative sites for sensitive places (if there is no monitor at a particular sensitive place); b) PM10 trend monitoring at 2 locations. The detail of these locations can be set out in the AEMP; c) a trigger action response plan that requires NAC to investigate, mitigate and manage TSP caused by mining activities at any sensitive place or	

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			d) <u>A trigger action response plan that requires the environmental authority holder to investigate, mitigate and manage TSP caused by mining activities at any sensitive place or commercial place when monitoring indicates exceedance of 80 micrograms per cubic metre over a 24-hour averaging time;</u> e) <u>A forecasting system that provides daily predictions of upcoming meteorological conditions in order to identify adverse meteorological conditions likely to produce elevated levels of dust including PM10 at a sensitive place or commercial place due to the mining conditions activities;</u> f) <u>A dust control strategy which activates a timely implementation of dust control management actions aimed to avoid or minimise elevated levels of dust including PM10 at a sensitive place or commercial place due to mining activities;</u> g) <u>Annual review of the Air Emissions Management Plan including its adequacy and effectiveness in avoiding and minimising air emissions and</u>	commercial place when monitoring indicates exceedance of 80 micrograms per cubic metre over a 24-hour averaging time; d) a forecasting system that provides daily predictions of upcoming meteorological conditions to identify adverse meteorological conditions likely to produce elevated levels of dust including PM10 at a sensitive place or commercial place due to the mining activities; e) a dust control strategy which activates a timely implementation of dust control management actions aimed to avoid or <i>minimise</i> elevated levels of dust including PM10 at a sensitive place or commercial place due to mining activities; f) annual review of the AEMP; g) a protocol and register for the recording of requests and installation of first flush diverter systems; and	

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			dust at a sensitive place or commercial place; h) <u>A protocol and register for the recording of requests and installation of first flush diverter systems; and</u> i) <u>A protocol for the transport of basalt material.</u> ¹ <u>Trend monitoring as required by Condition B3(b) can be undertaken using different instruments and methods from those specified in Table A: Air quality monitoring requirements.</u>	h) a protocol for the transport of basalt material. There was no substantive difference between NAC and the Statutory Party as to the content of the AEMP.	
8.	B4 / B4	See item 7 above.	CG Condition B4 A copy of the Air Emissions Management Plan and any changes to the Air Emissions Management Plan must be provided to DEHP on request.	Stated condition B4 is proposed to be incorporated into proposed condition B3 as set out in item 4 above.	The deletion of stated condition B4 has no substantive effect as the AEMP is to be provided to the administering authority for review and comment under the proposed condition B3.
9.	Proposed B5 / SP Draft	Condition B6 - review of air quality monitoring [176] The condition requires the Table B1 air quality limits to be reviewed within two years of the grant of Stage 3. As it has	The air quality monitoring program listed in Table A: Air quality monitoring requirements must be reviewed	New stated condition B5 is proposed to accommodate the reasons of the Land Court which specifically contemplated a review of the air quality	The inclusion of new stated condition B5 requires NAC to conduct regular review of the effectiveness of its air

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	EA No. B6	with Conditions A2 and B3, NAC proposes a further review prior to it increasing the extraction rate over 5.1 Mtpa. Given my view that there should not be a condition limiting extraction to 5.1 Mtpa, NAC's proposed concession is sensible. [177] NAC proposes a review within three months of the grant. That, too, is a sensible concession that will give OCAA some comfort. Further, NAC proposes that the review incorporate a review of the suitability of the locations, types and parameters of the monitoring network. OCAA agrees with this change. [178] Because the review incorporates a review of the monitoring network, NAC and OCAA have proposed a new condition. OCAA wants the results of that review implemented within two months of any approval to change the air monitoring locations. NAC proposes that the changes be implemented "as soon as practicable and before increasing the extraction rate". [179] A two-month window for the change in locations appears to be arbitrary. A change in locations may happen faster but it may also take some time to locate and correlate the data for a new location. NAC's concession that increased	<u>by a suitably qualified and experienced person(s) as part of review of the Air Emissions Management Plan and a report must be provided to the administering authority:</u> a) <u>within two (2) years and three (3) months of the grant of ML50232 and ML700002, and at intervals not exceeding two (2) years thereafter; and</u> b) <u>prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.</u> <u>The review must include:</u> i. <u>The effectiveness of the monitoring network;</u> ii. <u>The frequency and cause of any exceedances of air quality objectives measured by the monitoring program over a period of at least two (2) years;</u>	monitoring program and monitoring requirements by a suitably qualified and experienced person. New stated condition B5 provides for a review of the Table A air quality monitoring program within two years and three months of the grant of ML50232 and ML700002 and every two years thereafter. A review is also required prior to NAC increasing its extraction rate over 5.1 Mtpa. This review is consistent with the review of the Air Emissions Management Plan in condition B3. A report must be provided to the administering authority following the review. There are specific parameters of the review set out in proposed stated condition B5 which include review of the effectiveness of the monitoring network, review of the frequency and cause of any exceedances of air quality objectives measured by the monitoring program over a period of at least two (2) years and the suitability of the locations, types and	quality monitoring network, and operate in conjunction with the review of the AEMP provided under stated condition B3. The Land Court specifically mentioned that such regular reviews were sensible concessions by NAC (see paragraphs [176] and [177]) of the Land Court reasons. The proposed changes ensure that the Project will operate under an air quality monitoring program subject to consistent review and refinement. This condition is proposed to be included in the stated conditions as such review may result in refinement of monitoring required under Table A. The proposed changes have the effect of providing more certainty for the implementation, review and content of the AEMP that the Project will

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		extraction will not occur until the new sites are in place is sensible.	iii. <u>Dust complaints;</u> iv. <u>Future progression of the mining activities;</u> v. <u>Locations of sensitive receptors relative to the mining activities;</u> vi. <u>Mining operating modes; and</u> vii. <u>The suitability of the locations, types and parameters of the monitoring network.</u>	parameters of the monitoring network.	operate under, consistent with the Land Court recommendations. The proposed new stated condition does not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.
10.	Proposed B6 -	See item 9 above.	<u>The air quality monitoring program in Table A may be revised where recommended in a revised Air Emissions Management Plan provided pursuant to Condition B3 or as a result of the review in Condition B5 and with the approval of the administering authority. Any additional monitors recommended in a revised Air Emissions Management Plan must be installed and must be operational</u>	New stated condition B6 is proposed to enable a process for adaption of the monitoring network if required by the AEMP review contemplated by stated condition B3 and new stated condition B5. The new stated condition provides that the air quality monitoring be revised where recommended by such AEMP review as soon as practicable after approval by the administering authority and in any event prior to production of	The change is in response to the review of the monitoring network as facilitated by stated condition B3 and new stated condition B5. The effect of the proposed change provides certainty as to when the review recommendations will be implemented. The proposed new stated condition does not introduce any changes to

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			<u>as soon as practicable after receiving approval and, in the case of an approval following a revised Air Emissions Management Plan pursuant to Conditions B3 b) or B5 b), prior to the environmental authority holder producing more than 5.1 million tonnes (Mt) of product coal per calendar year.</u>	more than 5.1Mt of product coal per calendar year. This new conditions is referenced at paragraph [178] the Land Court reasons. At paragraph [179] the Land Court considered NAC's concession that increased extraction will not occur until new sites are in place as sensible. This condition is proposed to be included in the stated conditions as the review may result in refinement of monitoring required under Table A.	the project itself and will not introduce new impacts or increase the severity of impacts, but will enable the monitoring network to be adapted over time and continue to inform site mitigation measures.
11.	Schedule B: Table A. Air quality monitoring requirements /	Table B1 [188] DES and OCAA largely agree on what should be monitored and where. NAC disagrees with several of the monitoring requirements recently included. <i>TSP monitoring</i>	[Refer to Annexure E2 for a copy of this table]	The reasons of the Land Court considered a number of proposed amendments to Schedule B, Table A - Air quality monitoring requirements. To reflect the Land Court's conclusions on the air emissions monitoring required a revision to Schedule B, Table A is required.	The proposed condition aligns to the Land Court recommendations as to the monitoring locations and parameters to be monitored and included within the EA. The proposed condition includes the limits in accordance with the <i>Environmental Protection (Air) Policy 2019</i> , and

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	Table B1 Air quality limits and monitoring requirements	[189] TSP refers to the total of all particles suspended in the air. The experts were given a draft Table B1 in which TSP was monitored only at Acland. Mr Welchman considers this adequate.¹⁴⁴ He thinks that the PM10 monitors will provide sufficient warning of elevated events and that actions to reduce PM10 will be equally effective in reducing TSP. [190] Dr Taylor considers that TSP should be monitored at one site to the east of the mine and one site to the west.¹⁴⁵ He says that the extra monitoring will: “...assist understand of short-term TSP concentration variation and identification of potential source of elevated TSP levels through association with meteorological data and real-time monitoring of other particulate data.” [191] He thinks that real-time understanding of TSP impacts would be highly beneficial in relation to the management of elevated TSP events.¹⁴⁷ He states that the extra monitoring stations “will enable TSP monitoring across the predominant wind direction providing ability to understand background TSP behaviour through		NAC seeks proposed amendments of Table A by: a) including continuous PM2.5 monitoring at sensitive receptor 1 in Acland against the PM2.5 limits of 25 micrograms per cubic meter over a 24 hour averaging time and 8 micrograms per cubic metre over a 1 year averaging time in accordance with new proposed condition B1; b) including an additional PM10 limit of 25 micrograms per cubic meter over 1 year in accordance with new proposed condition B1; c) including an air quality limit for insoluble solids which is the same as the nuisance limit for insoluble solids; d) requiring measurement at monitoring location 1,2 (Acland) of temperature, precipitation, relative humidity and solar and net radiation in accordance with the Statutory Party Draft EA;	included in proposed condition B1. The effect of the proposed change is to require a more extensive air emission monitoring regime at sensitive receptors surrounding the mine. The proposed change will ensure the stated condition reflects the compliance monitoring regime for air emissions recommended by the Land Court. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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		generally having a monitor upwind of mining operations”. [192] In his oral evidence, Dr Taylor expanded on this theme. He wanted an understanding of the meteorological conditions co-incident with the actual monitored impact. He wanted to know what was coming into the region, what activities were contributing along the way, the wind conditions, and the rate of mixing. [193] Dr Taylor told the court that TSP, in particular, can decrease rapidly from the source. If so, I wonder why Dr Taylor places such emphasis on the additional monitoring stations to TSP. [194] The CG's conditions require TSP monitoring at receptor 16 by way of Hi Vol sampler. The CG did not require continuous monitoring. [195] I accept that an understanding of TSP volumes may assist in understanding the environment generally, and in the management of dust from the mine, but I am not persuaded that a condition requiring this level of monitoring for the life of the mine is appropriate. The requirement would more appropriately sit in the AEMP and it should only be necessary until the matters to which Dr		e) requiring compliance monitoring at additional sensitive receptors to the north of the mine (at sensitive receptors 7,8), to the north-west of the mine (at sensitive receptors 38,39) and to the north east of the mine (at sensitive receptor 15). Note also that the sensitive receptor on the Acland Silverleigh Road is proposed to be identified as sensitive receptor 16. This additional monitoring was agreed by the air quality experts in the Land Court hearing; f) insoluble solids to be measured at each compliance monitoring location and therefore it is consequentially proposed to delete the identification of dust gauge locations from Figure 2 as Figure 2 will include the locations required for monitoring insoluble solids. The Land Court did not consider that continuous TSP	

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		Taylor refer have been adequately explored. <i>Evaporation</i> [196] NAC points out that evaporation is calculated, not measured.¹⁵¹ NAC does measure solar radiation, rainfall and relative humidity.¹⁵² Evaporation may be a variable that should be included in the AEMP, but it should not be included in a condition. <i>PM2.5 monitoring at receptors 16, 38 and 39</i> [197] As I have already noted, Dr Taylor recommends an additional monitor to the east of the mine (R16) and one to the west (R38). He says that those receptors should monitor PM2.5. He considers that improved understanding of the PM2.5 impacts in the region immediately around		monitoring,¹⁰ calculation of evaporation¹¹, PM2.5 monitoring at receptors 16 and 38¹² and additional meteorological monitoring¹³ be required for the life of the mine and such monitoring parameters are more appropriately addressed within the AEMP, rather than conditioned in Table A. The Land Court did not require compliance monitoring at sensitive receptors 37 and 44 to be included in Table A.¹⁴ NAC's position was that trend monitoring only was warranted at these locations. The Land Court recognised that except for Acland the sensitive receptors would change over	

¹⁰ Paragraph [195] of the Land Court recommendation.

¹¹ Paragraph [196] of the Land Court recommendation.

¹² Paragraph [200] of the Land Court recommendation.

¹³ Paragraph [202] of the Land Court recommendation.

¹⁴ Paragraph [208] of the Land Court recommendation.

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		the mining operations is desirable, and that these additional sites will assist in providing better understanding of the contribution of mining activities to the PM2.5 concentration in the region and clarify compliance across the locations of highest risk of adverse particulate impacts. He also states that these sites will assist in identifying non-mine elevated PM2.5 levels. [198] Mr Welchman does not think that these additional monitors are necessary because the PM10 monitors will provide sufficient warning of elevated events and the controls NAC implements to reduce PM10 will be equally effective in reducing PM2.5. [199] Dr Taylor agrees that, given the likely ratios of PM10 to PM2.5 from normal mining activity, PM10 is the most critical, and that the dust emissions caused by PM10 would be reached before the PM2.5 level was reached. In the 2016 joint expert report, Dr Taylor expressed the view that PM2.5 monitoring in conjunction with PM10 monitoring was typically unnecessary, but he advocated a single PM2.5 monitoring station to		the life of the mine and therefore did not consider it appropriate that the location of each component of the comprehensive monitoring system proposed by NAC be written into the conditions. The air quality experts in the Land Court hearing agreed that a monitoring station to the south of the ML50232 was not necessary. This is proposed to be deleted from Figure 2.¹⁵	

¹⁵ Air Quality Joint Expert Report by Dr Taylor and S Welchman p.3.

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		understand the ratios between the two levels. [200] Once again, Dr Taylor posited a condition, which OCAA and DES adopt, which is directed to understanding the background conditions rather than ensuring compliance with identified standards. Once again, I am not persuaded that the proposed monitoring should be the subject of conditions which exist for the life of the mine. The proposed monitoring at these sites, for a limited time, should be part of the consideration of the AEMP to establish the background conditions against which compliance will then be monitored. <i>Meteorological monitoring</i> [201] Dr Taylor makes the point that at low wind speeds, the meteorology across the site varies and different locations across the mine can behave differently when terrain and thermal influence become significant.¹⁶¹ He thinks that: “Additional parameters are necessary to understand the atmospheric boundary layer structure and turbulence which is critical for understanding the rate of dispersion or mixing of the particulate released into the			

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		air by the mining operations; how much the particulate dilutes prior to impacting sensitive receptor locations.” [202] I accept that meteorology is important, but I do not accept that simply picking a site to the east and a site to the west of the mine will address Dr Taylor’s concern. Unless those sites are chosen as being representative of the terrain as well as their location, they are of limited use. Once again, it may be useful or necessary to produce an understanding of the background conditions. This exercise should be limited, not for the life of the mine, and incorporated into the AEMP. <i>Monitoring at sensitive receptors 37 and 44</i> [203] OCAA submits that all potentially affected sensitive receptors should have a monitor on site or be correlated to a monitor that represents the impacts they are likely to experience. Therefore, OCAA submits, there should be compliance monitors at sensitive receptors 37 and 44. [204] NAC submits that trend monitoring is sufficient for these two locations. It also points to the fact that the CG’s conditions do not require compliance monitoring at these sites.			

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		[205] OCAA points to Mr Welchman's "concession" that a compliance monitor would make it easier to demonstrate compliance at these locations. The proposition is unexceptional; of course, a compliance monitor will make it easier to monitor compliance than a trend monitor. [206] OCAA submits that NAC's preference for trend monitoring at these sites rather than compliance monitoring is a "clear reluctance to maintain a comprehensive monitoring network" and, therefore, any proposed changes must be subject to third-party scrutiny. It points to Dr Taylor's comment that there is no requirement for regular independent audit and review. [207] Dr Taylor's comments are well-meaning but not correct. I have already referred to the CG's condition that NAC submits monthly reports on compliance with air quality and noise conditions. The EA conditions require regular review as does the AEMP. [208] Except for Acland, the sensitive receptors of interest will change over the life of the mine. It is right that NAC should have a comprehensive monitoring system			

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		in place, but it is not appropriate that the location of each component of that system should be written into EA conditions which are inflexible and not necessarily responsive to prevailing conditions.			
12.	Figure 2 - Air quality monitoring locations / Figure 6 Air quality monitoring locations for the revised project (Stage 3)	As per Row 9 above.	The Figure referred to in Table A of the stated conditions is proposed to be updated to reflect the monitoring locations as per proposed amendments to Table A referred to in Row 9 above.	The Figure 2 referred to in Table A of the stated conditions was updated in change report No 3 to align with the monitoring proposed under the then NAC AEMP.¹⁶ The change to Figure 2 is sought in order to implement the changes to Table A as proposed in Row 9. Figure 2 identifies: a) compliance monitoring locations in accordance with proposed amendments to Table A; b) removes the identification of existing dust gauges as monitoring of insoluble solids will be undertaken at the locations identified in Table A which are to be included in Figure 2;	The proposed amendment of Figure 2 implements the changes to Table A as proposed in Row 9 above. Proposed amended Figure 2 includes the additional air quality compliance monitoring sites consistent with the monitoring regime proposed in Table A above. The proposed change will ensure the stated condition reflects the monitoring locations recommended by the Land Court. The changes do not introduce any changes to the project itself and will not introduce new impacts

¹⁶ Coordinator-General's change report no. 3 - amendment to stated conditions B3 and H40, September 2020.

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				c) provides for an additional compliance monitoring location at the north west of the mine at receptor 15; d) does not include the location of trend monitoring as this may change and is more appropriately dealt with in the AEMP as recommended by the Land Court; and e) has removed the requirement for a compliance monitor south of the mine consistent with the finding of the air quality experts. The air quality experts in the Land Court hearing agreed that a monitoring station to the south of the ML50232 was not necessary. This is proposed to be deleted from Figure 2.¹⁷	or increase the severity of impacts.

¹⁷ Air Quality Joint Expert Report by Dr Taylor and S Welchman p.3.

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13.	D1/F1	<i>Condition F1 – exceedances</i> [225] As to “cause or contributed to”, I repeat my comments in [210]–[211]. [226] OCAA suggests an addition to the condition that the measurement of noise to determine compliance with the condition not be limited to compliance monitoring. DES’s draft condition contains a note that the measurement of noise for a noise sensitive place is either at that place or at the monitoring location to which the noise sensitive place is correlated. [227] NAC is concerned that these amendments potentially confuse the question of the extent to which performance monitoring can be used to assess compliance. It does not want correlated performance monitoring data to be the measure of compliance when neither expert suggested that it be so. NAC referred to Mr Elkin’s reasons why performance monitoring should not be used for compliance monitoring. [228] Firstly, Mr Elkin states that it is not standard industry practice to use performance monitoring for compliance monitoring and, if it was to occur, that would be a disincentive to use	Noise limits The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in Table D1a - Noise limits to be exceeded at a noise sensitive place or commercial place. <u>Note: the measurement of noise for a noise sensitive place or commercial place is either:</u> a) <u>at that place (if measured there); or</u> b) <u>at the monitoring location to which the noise sensitive or commercial place is correlated (where there is no measure at the noise sensitive or commercial place).</u> <u>[See Annexure G for Table D1a - Noise limits (includes construction activities)]</u>	A change to the condition was proposed by the Statutory Party to include a note that the measurement of noise for a noise sensitive place is either at that place or at the monitoring location to which the noise sensitive place is correlated. The purpose of this change is to clarify where noise measurements could be taken. Other changes proposed by OCAA were not accepted by the Land Court.	The proposed Condition D1 wording does not alter the original stated condition, but rather has the effect of adding a note to confirm the location of monitoring at a sensitive place or commercial place. There is no effect on the Project as a result of the change. The change adds additional certainty as to monitoring locations.

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		performance monitoring generally. These are not good reasons to reject the proposed change. As OCAA has noted, this mine is unusual in its close co-location with a rural community. Standard industry practice might apply to mines in remote locations but be inapplicable here. A disincentive in the wider industry is interesting but irrelevant; as this hearing demonstrates, specific conditions will always overcome industry disinclination. [229] Secondly, Mr Elkin points out that performance monitoring lacks the ability to accurately identify the noise source, which is an essential part of a compliance assessment. He states that the centre microphone at Acland lacks directionality. He states that the performance monitoring system does not have the benefit of an acoustic professional assessing noise on the ground. It is true that the performance monitoring system lacks some elements of intensive compliance monitoring. What it lacks is more than compensated for by its advantage of real-time data. [230] Thirdly, the Noise Measurement Manual (NMM) requires background noise measurement to be taken at the same time as compliance measurements. Obviously, this is not possible if performance monitoring is used for compliance monitoring. The NMM			

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		requires measurement at the noise sensitive location, which is not possible with performance monitoring. The centre microphone at Acland cannot measure the low frequency range which is required by Condition F5(g). [231] NAC submits that Condition F6 contemplates the use of performance monitoring data to assess compliance. I do not think that Condition F6 is clear in that respect. I do think that DES should be able to use the performance monitoring data in assessing compliance, with the appropriate caveats. These conditions do achieve that. [232] OCAA wants to amend the conditions to differentiate between different types of train noise. NAC says that the addition is unnecessary because of the way Table F1 is framed, with a limit for the “mining” section of the leases and a separate limit for the rail spur. The experts agree, although Mr Tardio suggests that the wording of the Table might be clearer.			
14.	D2/F2	<i>Condition F2 – monitoring for exceedances</i> [233] OCAA wants to add a note as follows:	If <u>performance or compliance</u> monitoring indicates the potential for exceedance of the relevant limits in Table D1a — Noise Limits then the environmental authority	The proposed amendment ensures that the obligation to implement noise abatement measures to avoid exceeding the relevant limits is triggered	Proposed amended stated condition D2 is consistent with NAC's commitment to utilise real time performance

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		“the real time monitoring will indicate the potential for exceedances of the relevant limits if the noise level measured at the monitoring locations (as corrected and correlated in accordance with the Noise and Vibration Management Plan) approaches the relevant limits in Table F1 — Noise Limits.” [234] NAC submits that the note is unnecessary given the wording of Condition F2. I agree. OCAA's proposed addition defines what a potential exceedance is but, surely, this is self-evident. If NAC's monitoring shows that noise levels are approaching the limits, then, unless there are other third-party factors involved, there is scope for a potential exceedance which will require action.	holder must immediately implement noise abatement measures to avoid exceeding the relevant limits.	when either of NAC's performance or compliance monitoring indicates the potential for exceedance of the relevant limits in Table D1a — Noise Limits. This is consistent with the Land Court Decision at paragraph [234].	monitoring to manage noise emissions.
15.	Table D2 - Blastin	<i>N/A - Clerical correction</i>	[Refer to Annexure E, Table D2]	The proposed amendment is to correct a clerical error pursuant to s 35AA of the SDPWO Act. Specifically, to clarify that no blasting is to occur on a	There is no effect on the project as a result of this change. The change is a

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	g noise limits / Table F3 Blasting noise limits			Saturday before 9 am and after 1 pm, which was identified by the parties as part of the Land Court remittal hearing.	clarification of what was intended.
16.	D4 / F5	<i>Condition F5 – the conduct of noise monitoring and recording</i> [243] DES's draft applies a safety factor of 4dB for impulsive or tonal noise. None of OCAA, NAC or the experts think that this is necessary. There may be cause for a safety factor to be imposed but the experts agree this will depend on mining conditions, further work by NAC, and is unlikely to be a permanent requirement. If there is to be a safety factor, the NMP is the appropriate place for it to appear. [244] DES's condition includes a requirement for monitoring for low frequency noise. NAC wants to amend the condition so that it only takes place where permitted by the owner/occupier of the noise sensitive place. Mr Elkin gave	<u>Compliance</u> noise monitoring and recording must be conducted in accordance with the administering authority's Noise Measurement Manual and must include the following descriptor characteristics and matters: a) <u>LA01, adj, 15 min - day, evening & night; LA10, adj, 15 min - day, evening & night; LAeq, adj, 15 min- day, evening & night; and LA90, adj, 15 min - day, evening & night</u> LA_N, T (where N equals the statistical levels of 1, 10 and 90 and T = 15 to 60 mins); b) background noise LA90; c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels; d) atmospheric conditions including temperature, relative	The proposed change is to the monitoring parameters for the compliance noise monitoring program and aligns with the acoustic expert evidence provided in the Land Court. The proposed amendment confirms that compliance noise monitoring will be undertaken in accordance with the Noise Measurement Manual and include the following: a) monitoring of LA01, adj, 15 min - day, evening & night; LA10, adj, 15 min - day, evening & night; LAeq, adj, 15 min- day, evening & night; and LA90, adj, 15 min - day, evening & night; b) effects due to any extraneous factors such as traffic noise and natural	The proposed changes will ensure that noise monitoring parameters are consistent with contemporary acoustic practice and are measured in accordance with the Noise Measurement Manual. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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		evidence that low frequency monitoring needs to be done “internally”.¹⁷¹ If I interpret that evidence correctly, it seems that low frequency noise monitoring must be conducted inside the residence or place concerned. If I am correct in that interpretation, then NAC’s objection is well-founded. [245] The experts based their report on a condition that required monitoring of maximum noise levels – night for a minimum of 30 minutes. In the latest iteration of the draft EA, DES has deleted the reference to the 30-minute minimum. The experts did not recommend it, there is no evidence to suggest it should be deleted and DES has not explained why it should be deleted.	humidity and wind speed and directions; e) effects due to any extraneous factors such as traffic noise <u>and natural sources (e.g. insects, birds and wind)</u>; f) location, date and time of monitoring; g) if the a complaint concerns low frequency noise <u>and where permitted by the owner or occupier of the noise sensitive place: LLINeq 10 mins (internal), LAeq 10 mins (internal) and one third octave band measurements in LLINeq 10 mins (internal) Max LpLIN, T and one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range;</u> h) <u>maximum (LAmax) noise levels - night (for a minimum of 30 minutes); and</u> i) <u>1/3 octave band spectrums.</u>	sources (e.g. insects, birds and wind; c) monitoring of low frequency noise inside a residence or place concerned where permitted by the owner or occupier, which is consistent with the Land Court finding at paragraph [244]; d) maximum (LAmax) noise levels - night (for a minimum of 30 minutes), consistent with the Land Court finding at paragraph [245]; and e) 1/3 octave band spectrums.	
17.	D5 / F13	[60] The blast criteria in the draft EA are in accordance with DES’s guidelines, in accordance with AS2187.2-2006,63 and more stringent than the levels required by s 440ZB of the <i>Environmental Protection Act 1994</i> (EPA).	The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with Table D2 – Blasting noise limits for	Blast monitoring was the subject of submissions by OCAA and NAC accepted, in its closing submissions, that results of its blast monitoring program could be included in monthly compliance monitoring reports. The Land Court was	The proposed changes have the effect that NAC will include the results of its blast monitoring program be included in monthly compliance reports.

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			a) At least 90% of all blasts undertaken on this site in each year at the nearest <u>noise</u> sensitive place or commercial place to the centroid of the blast. b) All blasts conducted during any time period specified by the administering authority at the nearest noise sensitive place or commercial place. <u>Results of the blast monitoring program must be included in the monthly compliance monitoring report provided to the administering authority.</u> <u>Insert new definition:</u> <u>Noise sensitive place means:</u> • <u>a legal dwelling, caravan park, residential marina or other residential premises;</u> <u>or</u>	satisfied with the Draft EA blast criteria. Note also a change to refer to “noise sensitive place” for consistency with the noise condition in the Draft EA. This definition was included in the Statutory Party EA and accepted by NAC.	The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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			• <u>a motel, hotel or hostel; or</u> • <u>a kindergarten, school, university or other educational institution; or</u> • <u>a medical centre or hospital; or</u> • <u>a protected area; or</u> • <u>a public park or gardens; and</u> • <u>includes the curtilage of any such place.</u> <u>but does not include</u> (a) <u>places that are within the boundaries of the mining lease; or</u> (b) <u>places that are owned or leased by the holder of the environmental authority or its related companies; or</u> (c) <u>places for which an agreement has been entered into between the holder of the environmental authority and the owner of the place for the provision of</u>		

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			<u>alternative measures to mitigate the impact of mining activities for the Stage 3 New Acland Mine Project at the place, where those measures are reasonably expected to result in noise levels experienced at the place that are consistent with the relevant limits in Table D1 - Noise Limits.</u>		
18.	Table F4 / Table C4	[68] Gregory Roads is a civil engineer. Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.	[Refer Annexure E, Table F4]	The proposed amendments are required to incorporate the changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate standards for surface water management and monitoring in order to protect the environmental values of the receiving waters. In particular, Mr Roads confirmed that the electrical conductivity level of 700 should refer to 510 for consistency with the water quality objective in the Condamine objectives report	The proposed changes will ensure that water management and monitoring conditions are consistent with contemporary standards and are appropriate to protect the environmental values of receiving waters. The changes do not introduce any changes to the project itself and will not introduce new impacts

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				and ANZECC guidelines [see: T3-14].	or increase the severity of impacts.
19.	Table F5 / Table C5	<i>N/A - Clerical correction</i>	[Refer Annexure E, Table F5]	This proposed amendment is intended to correct a clerical error pursuant to s 35AA of the SDPWO Act.	There is no effect on the project as a result of this change. The change is a correction of a clerical error.
20.	F10	[68] Gregory Roads is a civil engineer. Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.	The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information: (f) release commencement date/time (g) details regarding the compliance of the release with the	The proposed amendments are required to incorporate the changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate standards for surface water management and monitoring in order to protect the environmental values of the receiving waters.	The proposed changes will ensure that water management and monitoring conditions are consistent with contemporary standards and are appropriate to protect the environmental values of receiving waters. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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			conditions of Department Interest: Water of this environmental authority (that is, contaminant limits, natural flow, discharge volume) (h) release point/s (i) release rate (j) release salinity (k) receiving water/s including the natural flow rate. Note: Notification to the administering authority must be made via <u>WaTERS</u> addressed to the Manager and Project Manager of the local Administering Authority via email or facsimile.		
21.	F15 / C15	[68] Gregory Roads is a civil engineer. Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be	If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table F4 – Receiving waters contaminant	The proposed amendments are required to incorporate the changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate	The proposed changes will ensure that water management and monitoring conditions are consistent with

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		able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.	trigger levels during a release of <u>mine affected water</u> event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and: (a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no additional monitoring and reporting action is required; or (b) where the downstream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority <u>within 90 days of receiving the results</u> and in the next annual return, outlining:	standards for surface water management and monitoring in order to protect the environmental values of the receiving waters.	contemporary standards and are appropriate to protect the environmental values of receiving waters. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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			(1) details of the investigations carried out (2) actions taken to prevent environmental harm. Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with (b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.		
22.	F17 / C17	[68] Gregory Roads is a civil engineer. Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.	The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority <u>via WaTERS upon request</u> in the specified format: (a) the date on which the sample was taken (b) the time at which the sample was taken (c) the monitoring point at which the sample was taken	The proposed amendments are required to incorporate the changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate standards for surface water management and monitoring in order to protect the environmental values of the receiving waters.	The proposed changes will ensure that water management and monitoring conditions are consistent with contemporary standards and are appropriate to protect the environmental values of receiving waters. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.

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			(d) the measured or estimated daily quantity of mine affected water released from all release points (e) the release flow rate at the time of sampling for each release point (f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority (g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request (h) <u>water level monitoring data must be provided in the specified electronic format</u>		
23.	F18 / C20	[68] Gregory Roads is a civil engineer. Mr Roads is satisfied that the draft EA	A Water Resource Management Plan must be developed by an	The proposed amendments are required to incorporate the	The proposed changes will ensure that water

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		conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.	appropriately qualified person and implemented for all stages of mining. <u>The Water Management Plan must be submitted to the administering authority for review and comment within 3 months of the grant of ML50232 and ML700002.</u>	changes to the Draft EA that were endorsed by Dr Gregory Roads as appropriate standards for surface water management and monitoring in order to protect the environmental values of the receiving waters.	management and monitoring conditions are consistent with contemporary standards and are appropriate to protect the environmental values of receiving waters. The changes do not introduce any changes to the project itself and will not introduce new impacts or increase the severity of impacts.
24.	Table H4 / Table I1	[64] Andrew Daniel is an ecologist and flora expert. Dr Daniel is satisfied that the biodiversity offset strategy will ensure that there will be no residual impacts to native vegetation communities in the long term. He considers that the upgrade of the electricity grid can be managed to ensure retention of most verge vegetation and will require clearing only a small amount of native vegetation. He considers that the draft EA conditions adequately protect flora and vegetation communities, and provide adequate protection against significant residual impacts.	Table H4 – Maximum authorised impacts on Matters of State Environmental Significance (MSES) [Refer to Annexure E4]	See Annexure G below.	See Annexure G below.
25.	H42 / I5	<i>N/A - Clerical correction</i>	Residual impacts are not authorised on any Matters of State	This proposed amendment is intended to correct a clerical	There is no effect on the project as a result of this

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			Environmental Significance not identified in Table H4 – Maximum authorised impacts on <u>Matters of State Environmental Significance</u> (MSES).	error pursuant to s 35AA of the SDPWO Act.	change. The change is a correction of a clerical error.

Annexure G

1. Proposed Changes

NAC request that the Coordinator-General approve changes to Schedule D of the Stated Conditions to incorporate Table D1a as follows:

1.1 Noise limits

The noise limits which are proposed to apply to the Project are as follows. These noise limits reflect Change Report No 1, except the addition of the notes to the Table D1a as set out below:

Table D1a- Noise limits (includes construction activities)

Noise level dB(A) measured as	All days		
	7am — 6pm	6pm — 10pm	10pm — 7am
Noise measured at a 'Noise sensitive place'			
$L_{Aeq, adj, 15 min}^1$	42	<u>35</u>	<u>35</u>
L_{Amax}	-	-	50
L_{Amax} rail spur ²	-	-	56
$L_{Aeq(24hr)}$ rail spur ²	-	-	50

1. All noise other than that which is distinguishable as train noise

2. Only for noise distinguishable as train noise.

The above Table D1a reflects the reduced noise limits of 35dBA LAeq, adj, 15min for both the evening (6pm to 10 pm) and night (10pm to 7am) periods. The reduced noise limits in Table D1a are proposed to apply from commencement of the environmental authority for the Project for the entire mining operation.

The original stated conditions of the Coordinator-General's Report imposed higher noise limits of 42dBA for evening and 37dBA for night periods for the Project and also imposed separate noise limits for the existing operations.

Consequential changes to the noise conditions to reflect Table D1a are as follows:

Table D1a – Noise limits (existing operations) and condition D2 from the original stated conditions are deleted. Table D1b is renumbered as Table D1a. Condition D3 is renumbered to Condition D2. Cross referencing in new condition D2 changed as follows:

~~D3~~ D2 *If performance or compliance¹ monitoring indicates the potential for exceedance of the relevant limits in Table D1a and Table D1b – Noise Limits then the environmental authority*

¹ For the addition of "performance or compliance" to condition D2 see Annexures E and F.

holder must immediately implement noise abatement measures to avoid exceeding the relevant limits.

The only other change proposed, to Table D1a is the inclusion of the notes 1 and 2 to Table D1a as underlined above.

1.2 Reason for the change

This change request is to confirm the applicable noise limits for the Project which are set out in Table D1a above. Table D1a as set out above was included in the Statutory Party EA in the Second Remitted Land Court Hearing. Although the noise limits were included in Change Report No 1, since that time, the previous Land Court decisions² have been superseded by the decision in the Second Remitted Land Court Hearing³. This request to include Table D1a in the stated conditions is made to ensure there is no uncertainty as to the applicable noise limits for the Project and also to include the addition of Notes 1 and 2 to Table D1a.

The inclusion of notes 1 and 2 is to clarify that the rail spur noise limits are applicable only to noise which is distinguishable as train noise. The other noise limits apply to all other noise from the mining activities that is not distinguishable as train noise.⁴

1.3 Effect of the Change

Table D1a as outlined above does not result in any new impacts or any change to the severity of impacts of the Project. Given that Table D1a imposes reduced noise limits for day and evening, there will be no adverse environmental effects caused by the proposed changes. Rather, if there is to be an effect, it would be a benefit to the acoustic amenity experienced by persons living in the vicinity of the Mine. These noise limits, if the EA is approved, would apply to all noise from the Mine from the date of commencement of the EA, including operations under current mining leases.

The noise limits for mining activities (excluding rail noise) were considered by the acoustic experts and were not in dispute in the Second Remitted Land Court Hearing. The acoustic experts who gave evidence in the Second Remitted Land Court Hearing agreed that the noise limits proposed (which are reflected in Table D1a) are appropriate to manage noise impacts and the (noise) conditions cover the necessary requirements for a mining related environmental authority.⁵ The Land Court Decision confirmed that the noise conditions are strict conditions against which it will be easier to determine compliance.⁶

NAC engaged SLR consulting to determine a noise mitigation strategy directed at achieving compliance with the noise limits in Table D1a. SLR's investigations identified multiple actions that NAC can implement to manage noise (See SLR report at **Annexure G1**). The most acoustically significant actions include:

- (a) fully attenuating NAC's mobile fleet by retrospectively installing noise attenuation kits and / or purchasing new factory-attenuated models. As noted in the SLR Report, NAC has already embarked on a program to silence its existing mobile plant;

² Decision on the Original Objections Hearing and decision on the First Remitted Land Court Hearing

³ The decision of the Original Objections Hearing has been set aside and the decision in the First Remitted Land Court Hearing was determined to be invalid. See *Oakey Coal Action Alliance Inc v New Acland Coal Pty Ltd & Ors* (2021) 386 ALR 212.

⁴ In the Land Court Decision, it is noted at paragraph [232], that the acoustic experts agree that it is unnecessary to differentiate different types of rail noise, although the table could be clearer.

⁵ Paragraph [69] Land Court Decision.

⁶ Paragraph [70] Land Court Decision.

- (b) constructing earth and / or other acoustic barriers between pits and sensitive receptors as contemplated in the Project commitments.⁷; and
- (c) managing the fleet and mining operations to achieve noise limits using:
 - (i) a weather forecasting system to provide daily predictions of meteorological conditions and the risk of noise and vibration impacts from the mine (in combination with noise modelling), to enable NAC to plan its daily activities to achieve compliance with noise limits; and
 - (ii) a refined Trigger Action Response Plan (TARP) and real time performance monitoring, which will allow management actions to be taken where monitoring identifies that mining activities are causing noise levels to approach or exceed noise limits.

NAC have developed and have operational a sophisticated TARP and dashboard system, which involves upgraded noise monitoring equipment and trained operators attending the dashboard full time 24 hours per day. The dashboard is an interface linked to microphone arrays positioned around the site. These microphone arrays are comprised of 26 separate microphones on each unit and allow for determination of the direction of the noise source. A trained attendant monitors the dashboard to determine whether the mining operations are working within or approaching the noise limits. Decisions are made in real time to determine if equipment should be down to remain within acceptable levels. The Court acknowledged that NAC now has a sophisticated noise performance monitoring system.⁸

Other noise management measures that can be implemented to mitigate noise from mining include modification of reversing beepers, installing electric horns and restricting the use of air horns to emergency situations, modifying exhausts on mobile equipment, as well as limiting operations at night (including minimising out-of-pit dumping as necessary) and conducting planned maintenance during night shifts to remove additional fleet from operations during night times. These measures will be outlined in the noise and vibration management plan for the Project.

SLR concluded that compliance with the 35dBA (evening/night) noise limit can be achieved for the Project, based on the above measures. The acoustic experts in the Second Remitted Land Court Hearing agreed in principle, that noise mitigation and management measures if implemented correctly will enable the Project to achieve the proposed noise limits.⁹ The Land Court Decision made specific findings on the form of the conditions for noise abatement and noise monitoring and management of complaints.

Monthly attended compliance noise monitoring is proposed. This will be supplemented by 7 days of unattended monitoring for each of the first 12 months of operations. This additional monitoring is consistent with the finding of the Land Court Decision. Monitoring results will also be reported online through the monthly Environmental Monitoring Reports required under imposed condition 3 of the Coordinator-General's Report.

As regards rail noise, while the limits for rail noise were not in dispute in the Second Remitted Land Court Hearing, Mr Tardio, considered that the separate limits for the rail spur were not well defined. The proposed Table D1a, includes notes to confirm that noise limits for the rail spur would apply only when train noise was distinguishable. The addition of the notes will improve clarity of the applicable noise limits for rail noise.

⁷ See commitments 301, 686 and 794 in Annexure H.

⁸ Paragraph [70] Land Court Decision.

⁹ Paragraph [69] Land Court Decision.

2. Condition H40 Biodiversity Offsets and Table H4 Maximum authorised impacts on matters of state environmental significance (MSES) ¹⁰

2.1 Proposed Changes

Under condition H40 significant residual impacts to prescribed matters of state environmental significance must not exceed the maximum authorised residual impact area listed for that matter in Table H4. Deemed conditions in Sections 18, 22, 24 and 25 of the *Environmental Offsets Act 2014* (Qld) are also taken to be conditions of the EA.

The Coordinator-General is requested to confirm the proposed changes to include Table H4 as set out below. Table H4 includes the changes to the applicable MSES and maximum areas of impact that were identified by pre-clearance surveys of MSES and adopted in Change Report No 3. and also now includes a notation of the MSES required to be offset.

Table H4— Maximum authorised impacts on matters of state environmental significance (MSES)

<u>Applicable MSES</u>	<u>Status</u>	<u>Maximum area of residual impact (ha)</u>	<u>Environmental offset required</u>
<u>Threatened REs listed under the <i>Vegetation Management Act 1999</i></u>			
11.3.1#	Endangered	<u>2.58</u>	<u>Yes</u>
11.9.5#	Endangered	<u>24.53</u>	<u>Yes</u>
11.3.2	Of concern	<u>4.63</u>	<u>Yes</u>
11.3.17	Of concern	<u>5.11</u>	<u>Yes</u>
11.8.11#	Of concern	<u>34.65</u>	<u>Yes</u>
11.9.10	Of concern	<u>14.36</u>	<u>Yes</u>
<u>11.9.7</u>	<u>Of concern</u>	<u>3.24</u>	<u>Yes</u>
11.9.13	Of concern	<u>3.62</u>	<u>Yes</u>
<u>Watercourse vegetation</u> (11.8.11)	<u>Of concern</u>	<u>6.38</u>	<u>Yes</u>
<u>Threatened Fauna Species listed under the <i>Nature Conservation Act 1992</i></u>			
Koala <i>Phascolarctos cinereus</i>	<u>Vulnerable</u>	<u>30.96 of remnant vegetation and an additional 18.40 of NJKHTs*^</u>	<u>Yes</u>

¹⁰ This is Table I1 of the Statutory Party EA.

<u>Threatened Flora Species listed under the Nature Conservation Act 1992</u>			
Belson's Panic <i>Homopholis belsoni</i> #	Endangered	70.8	<u>Yes</u>
Austral Cornflower (<i>Rhaponticum austral</i>) #	Vulnerable	<u>0.7</u>	Yes

These prescribed environmental values duplicate MNES values and, in the event of an Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) decision on the project, offsets for these matters may be conditioned for by the Commonwealth. Further, any offsets conditioned by the Commonwealth are likely to address offsetting for these matters as required by this environmental authority.

* NJKHTs = Non-Juvenile Koala Habitat Trees.

[^] Based on the average tree density of 250 trees per hectare for koala habitat in SEQ used in the Queensland Environmental Offsets Policy (v1.8).

2.2 Reasons for the Change to Table H4

Pre-clearance surveys were undertaken and are summarised in the Environmental Offset Strategy (NHG 2019) approved by the Coordinator-General on 10 January 2020. Table H4 has been updated to be consistent with the pre-clearance surveys and identification of additional MSES as required by Imposed Condition 14 of the Coordinator-General's Report. Table H4 therefore reflects the maximum impact areas which were adopted in the Environmental Offset Strategy (NHG 2019) and which was approved by the Coordinator-General on 10 January 2020 and reflected in Change Report No 3. Further, Table H4 also reflects NAC's commitment to offset the individual koala habitat trees. The main technical reasons for maximum authorised impacts to MSES within Table H4 are outlined in Section 1.4 of the Environmental Offset Strategy (NHG 2019).

The Statutory Party EA in the Second Remitted Land Court Hearing incorporated the Table H4 as set out above. As the previous Land Court decisions have now been superseded as discussed above, this request is made to include Table H4 as set out above in the stated conditions to confirm the maximum areas of impact for the MSES and to also include an additional column to confirm that environmental offsets are required for these MSES, in accordance with the Environmental Offset Strategy. This additional column was included in the Statutory Party Draft EA in the Second Remitted Land Court Hearing.

A further change to Table H4 which was included in the Statutory Party Draft EA is the addition of "#" next to RE 11.3.1 Brigalow, RE 11.9.5 Brigalow and RE 11.8.11 Grassland which refers to a note below Table H4 which confirms that these prescribed environmental values duplicate MNES values and offsets for these matters may be conditioned for by the Commonwealth under the Project's EPBC Act Approval. Further, any offsets conditioned by the Commonwealth are likely to address offsetting for these matters as required by this environmental authority.

The Coordinator-General is requested to confirm the change to include Table H4 as set out above as a stated condition.

2.3 Effect of the Change

The Table H4 will provide consistency between the Coordinator-General imposed conditions, the environmental authority and the offset requirement under the approved Environmental Offset Strategy. The maximum impact areas reflect the results of the pre-clearance surveys which determined the extent of impacts within the proposed disturbance footprint for the Project. Table H4 includes those maximum impact areas which have been included in the approved Environmental Offset Strategy lodged with the Coordinator-General pursuant to imposed condition 13.

In line with imposed Condition 13, NAC has developed an environmental offsets delivery package which includes the Environmental Offset Strategy, New Acland Coal Mine Stage 3 Project (December 2019) approved 10 January 2020, the Commonwealth EPBC Act Offset Management Plan, New Acland Stage 3 (dated 7 November 2019) which relevantly contains approval to impacts on and offsets for both Belson's Panic (*Homopholis belsonii*) and commitments to offset Austral Cornflower (*Rhaponticum australe*) and an Offset Delivery Plan New Acland Coal Mine Stage 3 Operations (dated 4 March 2020) approved on 16 November 2020. The offsets delivery package quantifies impacts to MSES and Matters of National Environmental Significance and calculates areas required to offset the resultant significant residual impacts and prescribes how offsets will be achieved.

Dr Andrew Daniel, an ecologist and flora expert, gave evidence in the Second Remitted Land Court Hearing. His analysis was that the draft EA conditions were adequate to protect flora and vegetation communities and provided adequate protection against significant residual impacts.¹¹ The impact area and offsets required in the above table is a direct result of refinements to the regional ecosystem mapping, pre-clearance surveys and a change to the offset requirements since that time which now require individual koala habitat trees to be offset. Adrian Caneris who is a Certified Environmental Practitioner with Ecology Specialist accreditation also gave evidence in the Second Remitted Land Court Hearing as regards impact on fauna. He concluded that the potential for detrimental impacts on koalas and their habitat has been avoided by the Project and there will be no residual significant impact on koalas, and he expected an overall net benefit in available habitat and habitat quality.¹² Dr Daniel's statement of evidence and Mr Caneris' statement of evidence were considered and referenced in the Land Court Decision.¹³

¹¹ Paragraph [64] Land Court Decision.

¹² Paragraph [63] Land Court Decision.

¹³ Paragraphs [63] and [64] of the Land Court Decision.

3 December 2018

620.10963 New Acland Stage 3 - 35 dBA Investigation Overview 20181203.docx

New Acland Coal Pty Ltd
PO Box 47
IPSWICH QLD 4305

Attention: Andre Du Preez

Dear Andre

New Acland Coal Mine Stage 3 - 35 dBA Investigation Overview

1 Effectiveness of Noise Mitigation Options Investigated

SLR Consulting Australia Pty Ltd (SLR) was engaged by New Acland Coal Pty Ltd (NAC) to determine if a noise mitigation strategy could be designed for New Acland Coal Mine (Mine), located in Acland, Queensland to achieve compliance with the noise limits recommended by the Land Court in its decision of 7 November 2018, being:

- 42 dBA LAeq(15minute) for the day (7am - 6pm)
- 35dBA LAeq(15minute) for the evening (6pm - 10pm)
- 35 dBA LAeq(15minute) for the night (10pm - 7am)

A list of potential noise mitigation options were identified in consultation with NAC staff, some based on SLR's experience with other mining/industrial facilities where the applicable noise limits were 35 dBA LAeq or lower at night. Each of these options were initially considered separately and those showing potentially significant reduction in noise emissions were then also assessed in combination to determine an optimal strategy for the Mine.

Each of the noise attenuation strategies was investigated (based on preliminary modelling) to determine if it was acoustically "insignificant" or "significant" on the basis of the investigation results. These outcomes are summarised in the **Table 1**.

Table 1 Summary of Investigation Outcomes

Option	Strategy	Effectiveness
1	Removing a production fleet from operations (undertaken in conjunction with TARP – see Option 2)	Significant
2	Fast response mitigation – TARP/Dashboard (undertaken in conjunction with removing mobile plant – see Option 1)	Significant
3	Earth bunds and/or other barriers between pits and sensitive receptors	Significant
4	Replace 793 fleet with quieter 789 class trucks (which would involve an increase in the number of 789 truck to keep an equivalent capacity)	Insignificant

Option	Strategy	Effectiveness
5	Consider changing the direction of mining within the pit areas to shield noise sources from sensitive receptors	Insignificant
6	Mine plan that provides more distance (additional 500m) between pit and sensitive receptors early in life of mine	Insignificant
7	ROM conveyor from pit to reduce rom trucking	Insignificant
8	Fixed plant attenuation	Not Required
9	Diggers replaced with Front-end-loaders	Insignificant
10	Conveyor for product coal transport from Process Plant to Train Loading Facility	Insignificant

In addition to the above list, there is the option to fully attenuate the mobile fleet by retrospectively installing noise attenuation kits to existing plant and/or purchasing new factory-attenuated models to replace existing plant. NAC have already embarked on a program to silence their existing mobile plant at the Mine.

SLR undertook modelling utilising (1) the existing (partly silenced) fleet and (2) a fully attenuated fleet. This investigation showed that a fully attenuated fleet was likely required to achieve compliance with the night-time 35 dBA noise limit.

Based on the results of all investigations, the following mitigation measures are recommended:

- All mobile fleet is fully attenuated to appropriate 'sound power levels'.
- Noise bunds (common on mine sites), noise barriers (common within road/rail corridors) or a combination of both are constructed and strategically located. Bunds/barriers are expected to be most effective during the evening and night periods in the following locations:
 - western edge of the Manning Vale West pit (bund/barrier);
 - eastern side of internal haul road (barrier); and
 - south-east corner and north-western edge (partial) of the Willeroo pit (bund/barrier).

Further modelling is being undertaken to refine the location (within the approved disturbance footprint) and height of bunding/barriers.

- The mobile mining fleets are managed to achieve the required noise goals under adverse weather conditions [see Options 1 and 2].

NAC will be required to implement a Noise and Vibration Management Plan (NVMP) under Condition F10 of the Draft Environmental Authority. Under the NVMP, NAC will implement a weather forecasting system to provide daily prediction of meteorological conditions and the risk of noise/vibration impacts from the Mine (in combination with noise modelling). This process will enable NAC to plan its daily activities to achieve compliance with the EA noise limits.

In addition, the NVMP will also include the operation of NAC's Trigger Action Response Plan (TARP). This management strategy involves the use of real-time noise monitoring (with 1/3 octave-band analysis capabilities) to the north, east and west of the Mine, as well as in the township of Acland. Dashboard attendants will monitor the TARP during the day, evening and night periods, and will monitor the dominant observed noise sources, wind speed, rain rate and hourly noise levels. Where monitoring positively identifies that mining activities are causing noise levels to approach or exceed the noise limits, immediate management actions will be applied including to proactively relocate, reduce or stop noisier mining operations when necessary. NAC personnel will be required to highlight any noise and vibration management issues at shift changes.

Based on the modelling described above, compliance with the 35 dBA (evening/night) noise limit is predicted to be achieved for the Stage 3 operations.

In relation to the daytime, this investigation was conservatively based on 40 dBA Leq, which is less than the Court recommended 42 dBA Leq. Compliance during the day is predicted to be achieved through the use of the mitigation measures recommended above. As a result, additional daytime mining activities/fleet (to that which formed the basis of this investigation) could be employed by NAC during the daytime and still achieve the Court recommended daytime noise limit. In theory, a 2 dB increase in noise would equate to a 60% increase in the amount of plant (assuming the increase involved the same mix of attenuated mobile plant, with equivalent noise emissions, working in the same areas of the Mine). Further investigations would be required to optimise mining operations for the daytime period.

2 At-Property Noise Treatments

This investigation did not consider property-based noise control measures at neighbouring homes. However, it should be noted that very good (and, typically, cost effective) noise attenuation for internal noise levels can be achieved through measures such as:

- upgraded glazing to windows and doors (including acoustic seals), and
- air-conditioning (including fresh air ventilation) to allow windows/doors to be closed.

Such measures are regularly utilised across Australia to mitigate noise (from a variety of industries) subject to agreements being reached with affected landowners. In broad terms, building façade noise reductions of 20 dBA or greater are typically achieved with closed windows/doors (up from 7 dBA or more façade noise reductions with open windows/doors).

3 Precedence of 35 dBA Leq as a Noise Limit

There have been many instances where a night-time noise limit (for mining and other industries) has been set at 35 dBA LAeq(15minute) or lower. Some examples are:

- In *Xstrata Coal Queensland Pty Ltd & Ors v Friends of the Earth – Brisbane Co-Op Ltd & Ors and Department of Environment and Resource Management* [2012] QLC 013 recommended approval of the draft EA for the Wandoan coal mine, which incorporated limits of 35dB(A), as imposed by the Coordinator-General.
- At New South Wales mines:
 - Mach Energy Australia Pty Ltd's coal mine under EP Licence 20850;
 - Ivanhoe Coal Pty Limited's coal mine under EP Licence 13063;
 - Maules Creek Coal's coal mine under EP Licence 20221; and
 - Moolarben Coal Operations Pty Ltd's coal mine under EP Licence 12932.
- At coal seam gas operations in Queensland:
 - Australia Pacific LNG Pty Limited's Walloons Development Area under EA EPPG00968013;
 - Arrow Energy's petroleum activities under EA EA0001399;
 - Australia Pacific LNG Pty Limited's Australia Pacific LNG Facility under EA EPPG00715613;
 - Australia Pacific LNG Pty Limited's Combabula Development Area under EA EPPG00853213;
 - Australia Pacific LNG Pty Limited's Condabri Development Area under EA EPPG00853013; and
 - Australia Pacific LNG Pty Limited & Australia Pacific LNG CSG Marketing Pty Limited's Spring Gully under EA EPPG00885313.

These examples show that it is not unusual for industry (inclusive of the mining industry) to have a night-time limit of 35 dBA $L_{Aeq}(15\text{minute})$ imposed on their operations.

Yours sincerely



SHANE ELKIN
Operations Manager

Checked/ Authorised by: Jennifer Walker
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Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
1.	19	Chapter 4	Land Resources	NAC has prepared a Water Resource Management Plan (WRMP) to include the management of the mining activities and infrastructure within MLA 50232. The WRMP will be implemented as part of the revised Project's future Plan of Operations and is presented in Appendix J.4.	No effect. A Water Management Plan will be implemented for the Project and updated as required throughout the life of the Project. Inclusion of a Water Management Plan is consistent with Dr Gregory Roads' evidence in the Second Remitted Land Court Hearing. The Plan of Operations document has been superseded by the Progressive Rehabilitation & Closure Plans. Accordingly, the Water Management Plan will be administered as a standalone document and not as an accompanying document to the Plan of Operations document.
2.	118	Chapter 5	Surface Water Resources	The following management strategies will be implemented by the revised Project to protect surface water quality and the downstream receiving environment. - An operational separation distance of approximately 150 m will be maintained from the edge of the mining pits to Lagoon Creek, which will include a 50 m conservation buffer where no mining activities will be undertaken. - The current conservation zone, 50 m either side of Lagoon Creek, from the Mine will be extended into the revised Project area to promote the re-establishment of the riparian zone. No mining activities will occur within the proposed conservation zone. - Sediment dams, environmental dams, pit water storage and other water management structures (e.g. bunds and drains) will be used appropriately by the revised Project as per the Water Resource Management Plan (WRMP). - The revised Project's water management will be based on the separation and management of clean and dirty water catchments. - Water capture within the revised Project's clean areas will be diverted around operational areas and where practical, allowed to discharge off site as part of normal overland flow. - Water from disturbed areas within the revised Project site will be diverted to sediment dams for treatment and possible reuse as a supplementary supply for the revised Project's water requirement. - Surface runoff from the revised Project's potentially contaminated areas, such as infrastructure areas, will receive additional levels of treatment (e.g. oil-water separators and bunding). Water captured by	No effect. A Water Management Plan will be implemented for the Project and updated as required throughout the life of the Project. The Water Management Plan will be submitted to the administering authority for review and comment within 3 months upon the grant of ML50232 and ML700002. Stated conditions which regulate surface water quality and the downstream receiving environment, and which were subject to expert evidence from Dr Gregory Roads, are proposed to be amended to reflect contemporary standards for surface water management and monitoring.

Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				these devices will be preferentially reused on site, while captured oil will collected for recycling by a licensed contractor. - Progressive rehabilitation will be undertaken as the revised Project's operational areas become available to reduce the amount of disturbed areas. - Fuel, dangerous goods and hazardous chemicals will be managed as outlined by current standards, guidelines and in compliance with statutory requirements. - Refuelling locations and handling of fuels will be undertaken away from all waterways including creeks and drainage paths. - NAC's existing SOP for spills and emergency response procedures will be expanded to incorporate the revised Project. Spill recovery and containment equipment will be available when working adjacent to sensitive drainage paths and within other areas, such as workshops. - NAC will continue to commit to investigating all legitimate surface water complaints, and if a genuine problem is identified, conduct immediate remediation measures and establish standard operating procedures to minimise the possibility of a reoccurrence of the original issue. - NAC's current water quality monitoring program will be expanded to incorporate the operational and decommissioning phases of the revised Project. The program is designed to ensure the WRMP is effective, to demonstrate compliance with the Mine's strict discharge limits, and to ensure the downstream water quality (physico-chemical parameters, at a minimum) is not being adversely impacted. In general, the monitoring program will include the following actions. - Water quality will be measured upstream and downstream of the revised Project site. Basic water quality indicators (i.e. Salinity, pH, DO, EC, temperature) will continue to be monitored on a monthly basis, or when water is present, and heavy metals, nutrients, anions and cations monitored twice annually. - During any release event, the receiving water will be monitored upstream (50 m to 100 m upstream of the release point) and downstream (200 m downstream of the release point) locations. Water quality variables will include basic water quality indicators, suspended solids, heavy metals, nutrients, anions and cations. - Progressive rehabilitation of areas impacted by operational activities will be undertaken as soon as practical in order to reduce the amount of exposed soil.	

Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				- Fuel, dangerous goods, hazardous chemicals and workshop wastes will be managed to ensure compliance with current industry standards and guidelines for safety and environmental protection. These management actions will focus on handling, storage, spill containment, emergency response, establishment of 'standard operating procedures' for key operational aspects, and development of a responsibility matrix for operational and reporting matters.	
3.	119	Chapter 5	Surface Water Resources	A WRMP will be developed for the revised Project to ensure the protection of surrounding waterways (downstream receiving environment). A draft of WRMP is provided in Appendix J.4.	No effect. A Water Management Plan will be implemented for the Project and updated as required throughout the life of the Project. The Water Management Plan will be submitted to the administering authority for review and comment within 3 months upon the grant of ML50232 and ML700002. See above.
4.	186	Chapter 7	Terrestrial Ecology	Predictions from the dust forecasting system will allow operators to identify locations and times of potentially increased risk of dust generation and to facilitate appropriate planning to minimise or avoid potential impacts. An adaptive air quality management plan has been prepared for the revised Project.	No effect. An air quality forecasting system is already partly installed and implemented as part of the New Acland dashboard. Further, the proposed changes to stated condition B4 requires the Air Emissions Management Plan (AEMP) to include a daily forecasting system of upcoming meteorological conditions to manage potential dust emissions. The AEMP is required to be provided to the administering authority for review and comment.
5.	187	Chapter 7	Terrestrial Ecology	The adaptive management measures will include the suspension or modification of operations in response to the following triggers: - potential dust risk predictions from the dust forecasting system; - warning or exceedance alarms from the strategic real time air quality monitoring system; and - observation(s) of significant dust generation during visual monitoring of mining activities.	No effect. The AEMP will continue to enable these adaptive management measures as the AEMP will be required to include a daily forecasting system of upcoming meteorological conditions to manage potential dust emissions as well as a dust control strategy which implements dust control management actions aimed to avoid or minimise elevated levels of dust.
6.	188	Chapter 7	Terrestrial Ecology	In summary, the adaptive management measures include: - increase watering rate applied to haul roads in the Manning Vale West Pit, Manning Vale East Pit and Willeroo Pit; - suspension of overburden/interburden blasting if meteorological conditions are unfavourable; - suspension or modification of dozer operations on overburden dumps; and	No effect. The AEMP will be capable of incorporating these adaptive management measures as per the proposed changes to stated condition B4.

Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				- suspension or modification of all or selected overburden and/or coal handling activities (including excavation, loading, dumping and hauling).	
7.	189	Chapter 7	Terrestrial Ecology	NAC will undertake veneering and profiling of the loaded coal to minimise dust emissions during the transport of coal from the Train Loadout Facility.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be implemented as defined under the AEMP.
8.	244	Chapter 9	Air Quality	Dust control measures for operation of the revised Project Material extraction and handling: -Loading/dumping overburden -The drop height of material from excavators will be minimised when loading trucks. -Modification of operations will occur during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions). -Water carts will be employed to keep mine roads and work areas in a moist condition. -Dozer operations on overburden dumps will be modified or suspended if dust generation is excessive.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
9.	245	Chapter 9	Air Quality	Dust control measures for operation of the revised Project Drilling and Blasting : -Dust curtains will be installed on drill rigs (i.e. under the drill deck with fabric filters to collect dust). -Water injector will be used on drill rigs to minimise dust emission. -Local residents (neighbours) will be advised of blasting events (date and time). -Blasting operations will be modified during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions). -Blasts will occur during daytime hours only and not on weekends or public holidays. -Gravel/basalt stemming will be used in blast holes.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP. Blasting times will be limited under the New Acland Stage 3 Environmental Authority to occur during daytime hours only and not on weekends or public holidays. See also Row 3 above.
10.	246	Chapter 9	Air Quality	Dust control measures for operation of the revised Project Haul roads: -Water carts will maintain moisture conditions on haul roads. -Road grading and maintenance will be undertaken on a regular basis. Key actions include: - Application of coarse rejects on haul roads to reduce dust generation. - Grading procedures to achieve constant spread of fines and	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.

Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				coarser material. -Speed on haul roads will be limited to 60km/h (20 km/h on selected corners). -Where feasible, the volumes of trays on haul trucks will be maximised to increase carrying capacity and to reduce vehicle kilometres travelled on haul roads. -Visual monitoring of haul roads and major work areas will be undertaken to identify noticeable dust generation for corrective actioning. -Certain site roads will be sealed (near administration area – site access and employee car park). -Efficient watering will be conducted during peak periods of activity and within areas of concentrated activity. -Well defined and planned haul routes and internal roads will be developed to maximise efficiency of travel. -Obsolete mine roads will be rehabilitated. -The private haulage route from the Materials Handling Facility to Train Loading Facility will be a sealed road.	
11.	247	Chapter 9	Air Quality	Dust control measures for operation of the revised Project Exposed areas: -The pre-strip areas will be planned to minimise the time of exposure following clearing in advance of mine development. -Exposed areas/active areas will be watered if dust generation is observed. -Where possible, topsoil will be stripped when its moisture content is elevated but not sodden. -A vegetative cover will be established as soon as feasible on areas prepared for rehabilitation. -Progressive rehabilitation will be conducted behind the active pit areas to minimise exposed areas. -Unauthorised clearing of non-mine areas will be prevented using a 'permit to disturb' system.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
12.	248	Chapter 9	Air Quality	Dust control measures for operation of the revised Project ROM Pad: -Water will be applied on a regular basis by a water cart on trafficked areas within the ROM Pad's operational area. -Visual monitoring of ROM coal stockpiles will be undertaken to identify noticeable dust generation for corrective action.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.

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				-Water will be applied on the ROM coal stockpiles if significant dust levels are being generated.	
13.	249	Chapter 9	Air Quality	Dust control measures for operation of the revised Project CHPP and ROM Bin -ROM Bin -Automatic water sprays will be installed at the ROM hopper bin to produce a fine mist to suppress dust generated when sensors are triggered. -Surge Bin -Dust curtains will be installed. -Waters sprays will be used. -Crushing -Wet crushing will be employed. -This activity will be fully enclosed. -Conveyors -Water sprays will be used on transfer points.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
14.	250	Chapter 9	Air Quality	Dust control measures for operation of the revised Project MHF: -An automatic sprinkler system will be employed to moisten product coal stockpiles. -Water sprays will operate at transfer points on conveyors. -Coal spills will be removed regularly to minimise the potential for dust generation. -A vacuum sweeper will operate on roads near the MHF. -The washed coal will normally retain a moisture level of approximately 10%.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
15.	253	Chapter 9	Air Quality	Dust control measures for construction of the revised Project Mine and Mine Infrastructure: -The size of cleared areas will be kept to an operational minimum to limit exposed areas available for dust emissions by wind erosion. -The speed of light vehicles on-site will be limited to reduce wheel-generated dust. -A watering truck will be employed to control dust in dry and/or windy conditions. -Cease works if excessive dust generation from construction activities occurs.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
16.	254	Chapter 9	Air Quality	Dust control measures for construction of the revised Project Rail Spur and Balloon Loop:	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority.

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				-The size of cleared areas will be kept to an operational minimum to limit exposed areas available for dust emissions by wind erosion. -The speed of light vehicles on-site will be limited to reduce wheel-generated dust. -A watering truck will be employed to control dust in dry and/or windy conditions. -Cease works if excessive dust generation from construction activities occurs.	Management measures and mitigation activities will be incorporated and implemented under the AEMP.
17.	256	Chapter 9	Air Quality	Fume management The fume management procedures form part of the Air Quality Management Plan in Appendix J.10. Key fume management actions include: - review weather forecast; - establish 300 m machine and 500 m personnel exclusion zones; - establish Fume Management Zone based on expected meteorological conditions; - notify neighbours on blast contact list of time and date of blast, and whether their residence is in the fume management zone; - set up portable weather station to monitor field meteorological conditions; - blast when meteorological conditions favourable; and - capture, record and review relevant blast data.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be incorporated and implemented under the AEMP and PHMP-03 – Use of Explosives & Blasting. Stated condition D5 also requires a blast monitoring program to be implemented to monitor compliance and to ensure no adverse impacts are caused to a noise sensitive place or commercial place.
18.	258	Chapter 9	Air Quality	Dust Forecasting System NAC proposes to implement a dust forecasting system to provide daily predictions of upcoming meteorological conditions and potential risk of air quality impacts from mining operations from the revised Project. A proposed hierarchy of adaptive management measures for key sources of dust from mining operations is outlined in Section 9.5.5.	No effect. A dust control system and a meteorological forecasting system will be incorporated into the AEMP and mining activities will be carried out in accordance with the AEMP.
19.	260	Chapter 9	Air Quality	Air quality monitoring An air quality monitoring program has been designed based on the dispersion modelling results presented in Section 9.4.4. The air quality monitoring requirements for the revised Project are presented in Table 9 23. The locations of air quality monitoring equipment for the revised Project are presented in Figure 9 37.	Air quality monitoring and the locations of monitoring will be augmented by proposed changes to stated conditions which ensure that air quality parameters align with the <i>Environmental Protection (Air) Policy 2019</i> and the <i>National Environment Protection (Ambient Air Quality) Measure</i> . Additional monitoring locations and parameters are also proposed in the proposed change to Table A and condition B1 of the stated conditions.

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20.	261	Chapter 9	Air Quality	Air quality monitoring The rationale for each component of the air quality monitoring program is: -Real time PM10 – determine compliance with EPP (Air) objective of 50 µg/m3 and facilitate adaptive air quality management; -Real time TSP – determine potential nuisance impacts to west of Manning Vale West Pit and determine compliance with EPP (Air) objective of 90 µg/m3; -Quarterly PM10 monitoring - continue historical monitoring and determine compliance with EPP (Air) objective of 50 µg/m3; -Dust deposition gauges – determine potential nuisance impacts and to continue historical monitoring; and - Meteorological Station – analysis of data to provide supporting data to assess potential for air quality impacts following any investigations of dust concerns raised.	This commitment will still apply but with additional air quality and management measures following expert air quality evidence heard in the Second Remitted Land Court Hearing. Additional monitoring locations and parameters are also proposed in the proposed change to Table A and condition B1 of the stated conditions.
21.	263	Chapter 9	Air Quality	Adaptive Air Quality Management In addition to the dust controls identified in Table 9 21, a series of adaptive management measures are included in the Air Quality Management Plan for the revised Project in Appendix J.10. An indicative hierarchy of controls in response to potential dust risk predictions from the dust forecasting system is presented in Table 9 24.	No effect. The AEMP will be capable of incorporating adaptive management measures as per the proposed changes to stated condition B4. A dust control system and a meteorological forecasting system will be incorporated into the AEMP and mining activities will be carried out in accordance with the AEMP.
22.	273	5.1.3.4	Air Quality, Noise & Vibration	NAC propose to publicly issue an environmental monitoring report on a monthly basis. The environmental monitoring report will present a summary of air quality, noise and vibration monitoring data. The environmental monitoring report will be made available to the public through the Proponent's website.	No effect. This is now addressed by imposed condition no. 3 of the Coordinator-General's Report.
23.	274	5.1.3.5	Air Quality, Noise & Vibration	NAC will undertake consultation with local stakeholders where dispersion modelling predicts there is a potential for dust nuisance from the revised Project. The processes for communicating with local stakeholders are provided in the Local Stakeholder Management Plan (Appendix J.18 of the draft EIS).	No effect. Stakeholder management processes remain unchanged. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
24.	275	5.1.3.5	Air Quality, Noise & Vibration	All concerns about air quality, noise and vibration will be investigated promptly and appropriate action will be taken to reduce legitimate nuisance impacts. A register of dust, noise and vibration concerns will be maintained. The processes for recording and investigating dust concerns are provided in the Air Quality Management Plan (Appendix J.10 of the draft EIS). The processes for recording and investigating	The proposed changes will result in augmented requirements regarding complaints handling, including the recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant. Management

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				noise and vibration concerns are provided in the Noise and Vibration Management Plan (Appendix J.11 of the draft EIS).	measures and mitigation activities will be implemented as defined under the AEMP and Noise and Vibration Management Plan (NVMP).
25.	276	5.1.3.7	Air Quality, Noise and Vibration	Community consultation and engagement activities addressing environmental concerns, including air quality, noise and vibration are provided in Table 5.1.3 – A of the AEIS.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
26.	277	5.1.5.2	Water Resources	In consultation with affected landholders, NAC is committed to sampling of water quality sampling in rainwater tanks should air quality monitoring exceed the air quality objectives in the EPP (Air) or the dust nuisance goals. NSW Health (2007) Options to protect water quality in rainwater tanks include: - use drinking water grade PVC for fittings; - inlet and overflow of the tank should incorporate a mesh cover and a strainer to keep out materials, such as leaves; - cover the tank to prevent light reaching the water; - discharge pipes from roof mounted appliances such as air conditioners should not be allowed to discharge onto the roof catchment; - clean roof catchments and gutters of leaves and other debris every three or four months; and - installation of first flush devices to prevent bird droppings and dust entering the rainwater tank after first rains. NAC will undertake immediate actions to resolve these issues in consultation with affected residents if any future testing demonstrates non-compliance with the above guidelines. As standard practice NHG will investigate the matter, which generally includes sampling for water quality and sludge in the tank.	The proposed changes to the requirements for the AEMP are to include a requirement for a protocol and register for the recording of requests and installation of first flush diverter systems.
27.	278	5.1.8.2	Health Impacts	NAC has instituted veneering of coal trains, has committed to the relocation of the JRLF, consultation with residents living closest to the mine, and has committed to an adaptive management approach for air quality and noise. For additional information on these matters, please refer to Section 5.1.3 of the AEIS.	No effect. Management measures and mitigation activities will be implemented as defined under the approved AEMP and the NVMP.
28.	286	5.3.8.1	Responses to Submissions	NAC is committed to delivering a comprehensive air quality management strategy that will comply with the ambient air quality objectives in the EPP (Air) and prevent adverse air quality impacts at its neighbours' properties.	No effect. Management measures and mitigation activities will be implemented as defined under the approved AEMP.
29.	287	5.3.8.1	Responses to Submissions	All concerns about air quality will be investigated promptly and appropriate action will be taken to reduce legitimate dust nuisance. A register of dust concerns will be maintained.	The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an

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					independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.
30.	288	5.3.17.1	Responses to Submissions	NAC will also continue to report the results of this monitoring on a regular basis to the Jondaryan residents, the wider public and the DEHP (main regulatory authority).	No effect.
31.	290	5.3.41.2	Responses to Submissions	The submission (Private submitter 487.1) recommended the expansion of the air quality monitoring network to include a dust deposition gauge. NAC have accepted the recommendation and will consult with the landowner to determine the most appropriate monitoring location.	The proposed changes to the air quality monitoring network include the installation of dust monitoring equipment at each monitoring location identified in Table A and include assessment of insoluble solids and nuisance dust.
32.	299	Chapter 11	Noise and Vibration	Mining activities will typically be conducted either on a six day, 24 hour basis or a seven day, 24 hour basis depending on the mining schedule and the type of mining equipment used. The CHPP activities will be conducted on a seven day, 24 hour basis. Certain mining related activities such as blasting will only be undertaken during daylight hours and will not generally be carried out on Sundays or public holidays. Conducting mining operations on a 24 hour basis is standard practice in Queensland, with various measures in place to ensure a safe operation. The TLF will operate on a seven day, 24 hr basis. Train operations will also occur on a seven day, 24 hr basis.	No effect to these standard operational practices. Where real time noise monitoring identifies the risk for mine noise to exceed limits, NAC will implement noise abatement measures including adjusting its mine planning or turning off equipment to keep within limits.
33.	300	Chapter 11	Noise and Vibration	By implementing noise management and mitigation measures including reduced night time operation (only two pits operating at night in adverse weather or atmospheric conditions) and using attenuated equipment (including excavators, track dozers, loaders and rear dump trucks), the predicted noise levels from the mining operation will achieve noise level consistent with the EPP (Noise) LAeq,adj,1 hr criteria of 42 dB(A) in daytime and evening hours, and 37 dB(A) in night time hours at all noise sensitive receptors.	NAC seeks amendment to stated conditions to operate under lower noise limits as set out in the proposed stated condition D1 and Table D1a. Accordingly, this commitment will be adjusted to manage mining activities to address the lower limits. NAC has already commenced attenuation of equipment. The conditions of the Environmental Authority defines that noise monitoring will be undertaken in accordance with the Noise Measurement Manual and proposes additional noise monitoring parameters. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority.
34.	301	Chapter 11	Noise and Vibration	The following mitigation measures are proposed by NAC as commitments to reduce the revised Project's potential noise impact.	This commitment will continue to apply and has been augmented by the additional conditions proposed by NAC and recommended by the Land

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				- NAC will establish a real-time noise monitoring network, which will be used in conjunction with a weather forecasting system and an adaptive management process, to proactively relocate, reduce or stop noisier mining operations. - NAC has developed a Noise and Vibration Management Plan (NVMP) for the revised Project. The NVMP will be administered as an accompanying document to the revised Project's Plan of Operations. A copy of the NVMP is provided in Appendix J.11. - Based on ambient conditions (climate and the current mine plan) and feedback from the real-time noise monitoring (warning and alarm protocols), NAC may be required to limit or stop mining operations in the Manning Vale East pit during the night time period. This requirement is based on the noise assessment work completed for the revised Project's EIS. - NAC will ensure noisier mining equipment, including excavators, track dozers, loaders and rear dump trucks, is fully attenuated. This requirement is based on the noise assessment work completed for the revised Project's EIS. - Where possible, NAC will schedule noisier operations in-pit at night or during daylight hours only. For example, dumping of overburden and dozer activity on overburden dumps at or above ground surface may be restricted during night periods (10pm to 7am). - If no suitable or acceptable noise amelioration solutions are available for a particular noise issue, NAC will negotiate in good faith with all affected property owners for property purchase or by agreement implement some other form of amicable arrangement (e.g. acoustic treatment of the dwelling, relocation or replacement of the dwelling at another suitable location, relocation of the landowner to another living arrangement for the period of the issue or any other suitable innovative solution). NAC would be responsible for all reasonable costs associated with any agreed solution to a noise issue. In the event agreement cannot be reached, NAC will enter into mediation with the affected party and employ the services of a third party to facilitate this process - NAC will ensure proper maintenance and operational procedures will be undertaken to minimise noise emissions from equipment, including proper servicing and maintenance of exhaust systems on mine equipment. - NAC will implement its Noise and Vibration Management Plan as presented in Appendix J.11 to minimise the risk of noise complaints	Court following the Second Remitted Land Court Hearing. The real-time noise monitoring network and the NVMP will be implemented for the duration of the Project. It is noted that the Plan of Operations document has been superseded by the Progressive Rehabilitation & Closure Plans. Accordingly, the NVMP will be administered as a standalone document and not as an accompanying document to the Plan of Operations. The proposed changes will result in augmented requirements regarding complaints handling, including the recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.

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				from nearby sensitive receptors to the revised Project. All complaints received in relation to the revised Project's operation will be managed as outlined in NAC's Local Stakeholder Engagement Plan as presented in Appendix J.18. NAC's approach to complaints management is based on the key principles of timeliness, sensitivity, fairness and impartiality, and confidentiality. NAC is committed to open communication with its local stakeholders and active complaint resolution when issues or concerns are raised about its mining operations. - If a complaint is received and/or a noise issue is identified by investigation, NAC will modify mining operations until a satisfactory solution for the noise issue is developed and implemented. - NAC will ensure all complaints will be investigated to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented by agreement. NAC has purchased a specialist noise logger that can be placed at a complainant's residence for a length of time to record the problem periods. This equipment will be maintained and the results will be interpreted by a qualified professional. - Where practicable, NAC using the mine planning process will utilise topsoil and other dumps as noise barriers between active mine operations and nearby noise receptor locations. - NAC will continue to utilise broad band alarms instead of reverse beepers on all mobile equipment. - NAC will continue to limit the speed of heavy vehicle traffic on haul roads. - NAC will continue its current proactive monthly noise monitoring program and will expand its coverage around the revised Project site. - NAC will continue its proactive assessment of possible noise attenuation options for both mobile or stationary noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.	
35.	302	Chapter 11	Noise and Vibration	For the management of airblast overpressure and vibration, the following measures will be adopted for the revised Project. - Field data will be used to best determine blast conditions and the type of stemming required for the area.	This commitment will continue to apply. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. The management of airblast overpressure and vibration will be undertaken in accordance with the NVMP.

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				- In the event of a blast issue, the maximum instantaneous charge of subsequent blasts will be reduced using delays, reduction of hole diameter, etc. (i.e. until the blast issue is resolved). - In the event of a blast issue, the burden and spacing of subsequent blasts will be changed by altering the drilling pattern and/or delay layout, or altering the hole inclination (i.e. until the blast issue is resolved).; - The stemming depth and type will be adequate for each blast event. - Blast events will only be conducted during favourable weather conditions. - The monitoring of blasts will continue at the nearest sensitive receptors based on the interpretation of pre-blast weather data. - The practice of advising near neighbours will continue in advance of each blast. All new near neighbours surrounding the Project site will be proactively invited to join the blast notification contact list. - A qualified professional with suitable experience will be responsible for the Project's blast management. - All blast complaints will be investigated in a timely manner to determine the extent of the issue. Where appropriate, blast monitoring will be conducted at the affected residence, and as required, blast mitigation solutions will be investigated and implemented by agreement.	The proposed changes will result in augmented requirements regarding complaints handling, including the recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant
36.	303	5.1.3.4	Air Quality, Noise and Vibration	NAC propose to publicly issue an environmental monitoring report on a monthly basis. The environmental monitoring report will present a summary of air quality, noise and vibration monitoring data. The environmental monitoring report will be made available to the public through the Proponent's website.	No effect. This commitment will continue to apply. Monthly Environmental Monitoring Reports are required to be prepared and be made available under Coordinator-General's Report Imposed Condition 3.
37.	304	5.1.3.5	Air Quality, Noise and Vibration	All concerns about air quality, noise and vibration will be investigated promptly and appropriate action will be taken to reduce legitimate nuisance impacts. A register of dust, noise and vibration concerns will be maintained. The processes for recording and investigating dust concerns are provided in the Air Quality Management Plan (Appendix J.10 of the draft EIS). The processes for recording and investigating noise and vibration concerns are provided in the Noise and Vibration Management Plan (Appendix J.11 of the draft EIS).	No effect. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions. The changes proposed also require information about environmental complaints to be provided to the administering authority within 28 days of the action taken to resolve the complaint.
38.	305	5.2.4.8	Advisory Agency Responses	NAC commits to provide interpreted data within a week, or earlier if possible, from DEHP requesting the data.	No effect. Data provision will be undertaken in accordance with the New Acland Stage 3 Environmental Authority conditions.

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39.	306	5.2.4.14	Advisory Agency Responses	NAC will comply with the operational mining noise (all noise sources).	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority.
40.	307	5.3.1.3	Responses to Submissions	NAC will establish a real-time noise monitoring network, which will be used in conjunction with a weather forecasting system and an adaptive management process, to proactively relocate, reduce or stop noisier mining operations and other noise sources.	No effect. A real-time noise monitoring network will be implemented to manage potential noise impacts from mining operations and other noise sources. Management measure and mitigation strategies will be managed through the NVMP and in accordance with the New Acland Stage 3 Environmental Authority. Proposed change to stated condition D2 confirms that if performance or compliance monitoring indicates the potential for exceedance of the relevant limits then the environmental authority holder must immediately implement noise abatement measures to avoid exceeding the relevant limits.
41.	308	5.3.1.3	Responses to Submissions	If a legitimate complaint is received and/or a noise issue is identified by investigation, where possible NAC will modify mining operations until a satisfactory solution for the noise issue is developed and implemented.	All complaints and the complaint investigation process will be managed under the New Acland Stage 3 Environmental Authority and the NVMP. The NVMP outlines the process for recording and responding to complaints. The changes proposed also require information about environmental complaints to be provided to the administering authority within 28 days of the action taken to resolve the complaint.
42.	309	5.3.1.5	Responses to Submissions	NAC will undertake a specific consultation approach for local landholders/neighbours that may be potentially affected by air quality, noise or groundwater impacts from the revised Project. Depending on individual circumstances, NAC will seek to negotiate a landholder agreement with potentially affected local landholders/neighbours for either property acquisition, relocation of their living arrangements or physical treatment of their residence.	No effect. This commitment will continue to apply.
43.	311	5.3.23.1	Responses to Submissions	Noise issues in relation to the Western Railway line are under Aurizon's jurisdiction and management. Therefore, it is suggested that all noise concerns about rail transport be raised directly with Aurizon. Longer term, NAC will use its monitoring results to continuously review its compliance status and to develop new and modify existing mitigation strategies to minimise potential adverse noise impacts from	No effect. This commitment will continue to apply.

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				the JRLF's operations affecting Jondaryan. NAC is committed to operating the JLRF in compliance with the noise conditions of its environmental authority up until closure of the facility.	
44.	432	Chapter 16	<i>Social Environment</i>	Dust, noise and visual impacts from mining operations. - NAC will continue to implement the environmental impact control strategies and measures described in Appendix J.19. - Use of enclosed hoppers, veneering and dust suppression measures at the rail loading facility. - NAC will implement visual screening measures, such as tree planting, along roads and neighbouring properties.	No effect. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management measures and mitigation activities will be implemented under the AEMP and NVMP.
45.	463	5.1.9	<i>Complaints and Dispute Resolution</i>	Wherever possible, the NAC will seek resolution to concerns through dialogue and joint problem solving with affected stakeholders. The way in which complaints are resolved will vary according to the particular issue, and may range from a reasonable rejection of the complaint (with a full explanation provided to the complainant) to mitigation or change in practices.	No effect. Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority. The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.
46.	464	5.1.9	<i>Complaints and Dispute Resolution</i>	Upon receipt of a complaint, the responsible Manager will commence an investigation into the cause of the complaint and where mitigation is required, take any reasonable actions required to address the complaint.	No effect. Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority and appropriate management and mitigation measures as detailed in the relevant Management Plans. The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.
47.	465	5.1.9	<i>Complaints and Dispute Resolution</i>	A verbal response on the facts identified and progress with the investigation will be provided to the Complainant within two business days (unless the complainant agrees otherwise).	No effect. Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority. The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority

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					within 28 days of the action taken to resolve the complaint, with consent of the complainant.
48.	466	5.1.9	Complaints and Dispute Resolution	Upon closing out a complaint, the Complainant will be contacted by the relevant NAC representative to determine if they are satisfied with the resolution. If dissatisfied, the Complainant can appeal to NAC for further consultation and investigation. In the event that a Complainant rejects a proposed resolution, they will be invited to resubmit the complaint with an explanation or reconsideration and a response. Further dispute resolution processes are in place for sensitive receptors and are communicated through the relevant Landholder Agreement.	The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.
49.	467	5.1.9	Complaints and Dispute Resolution	Upon closing out a complaint, the Complainant will be contacted by the relevant NAC representative to determine if they are satisfied with the resolution. If dissatisfied, the Complainant can appeal to NAC for further consultation and investigation. In the event that a Complainant rejects a proposed resolution, they will be invited to resubmit the complaint with an explanation for reconsideration.	Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority. The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint.
50.	468	5.1.9	Complaints and Dispute Resolution	Technical Dispute If the dispute is in relation to a technical matter (Technical Dispute): a) within 10 Business Days of the receipt of a Notice of Dispute, a senior officer of NAC must meet with the Complainant to seek to resolve the Technical Dispute; and b) failing resolution of the Technical Dispute, within 20 Business Days of receipt of the Notice of Dispute, the Technical Dispute may be referred to determination by an Independent Expert by both parties. c) If the parties are unable to agree upon the appointment of an independent expert within 10 Business Days, any party may refer the matter to the President for the time being of the Australasian Institute of Mining and Metallurgy or, if no longer in existence, other professional body that includes a similar group of professions, to nominate a suitably qualified and experienced person to act as the independent expert to determine the Technical Dispute. An independent expert appointed must; a) have reasonable qualifications and practical experience in the area of the Technical Dispute; b) have no interest or duty which conflicts or may conflict with his or	No effect. Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority. The proposed changes will result in augmented requirements regarding complaints handling, including recording of any referrals to an independent counselling service and provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.

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				her function as an expert, he or she being required to disclose fully any relevant interest or duty before his or her appointment; c) not be a current employee or officer of NAC or of the Complainant; or d) related to the Complainant. e) act as an expert and not as an arbitrator. Within 20 Business Days after the independent expert is appointed, each party must produce to the other party and the independent expert a written submission that sets out its opinion about the Technical Dispute and the party's proposed method for resolution of the Technical Dispute and any materials or evidence which that party believes is relevant to the matter in question. Each party will make available to the independent expert and the other party all materials requested by the independent expert and all other materials which are relevant to the independent expert's determination. Within 10 Business Days of the receipt of the last of the written submission, each party may make a further written submission or modify its previously provided written submission. A copy of any new submission must be provided to the other party.	
51.	469	5.1.9	Complaints and Dispute Resolution	Legal Dispute If the dispute is in relation to a legal matter (Legal Dispute): a) within 10 Business Days of the receipt of a Notice of Dispute, a senior officer of NAC must meet with the Landholder to seek to resolve the Legal Dispute; and b) failing resolution of the Legal Dispute, within 20 Business Days of receipt of the Notice of Dispute, either party may refer the Legal Dispute to a court of competent jurisdiction for determination. Determination Within 50 Business Days after the independent expert is appointed, the independent expert must make a determination to the Technical Dispute. The independent expert may, with the prior written consent of both parties (such consent not to be unreasonably withheld), engage such consultants or advisors as are reasonably necessary to assist the independent expert in making its determination. In the absence of fraud or manifest error, the determination of the independent expert will be final and binding upon the parties.	No effect. Complaints will continue to be managed in accordance with the New Acland Stage 3 Environmental Authority.

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52.	470	5.1.9	<i>Complaints and Dispute Resolution</i>	To ensure stakeholders are informed about the enquiry, concern and complaint procedures, proactive engagement will be undertaken. A particular focus will be on ensuring High Priority Landholders understand the processes for raising concerns and complaints should they occur. Table 5.1.9-A of the AEIS outlines NAC's community engagement activities regarding the complaints procedures.	No effect. Community consultation and engagement activities will continue to be undertaken.
53.	519	Appendix H.2	<i>IESC Submission</i>	The following management strategies will be implemented by the revised Project to protect surface water quality and the downstream receiving environment - An operational separation distance of approximately 150 m will be maintained from the edge of the mining pits to Lagoon Creek, which will include a 50 m conservation buffer where no mining activities will be undertaken. - The current conservation zone, 50 m either side of Lagoon Creek, from the Mine will be extended into the revised Project site to promote the re-establishment of the riparian zone. No mining activities will occur within the proposed conservation zone. - Sediment dams, environmental dams, pit water storage and other water management structures (e.g. bunds and drains) will be used appropriately by the revised Project as per the water management plan (WMP). - The revised Project's water management will be based on the separation and management of clean and dirty water catchments where practicable. - Water capture within the revised Project's clean areas will be diverted around operational areas and where practical, allowed to discharge off site as part of normal overland flow. - Water from disturbed areas within the revised Project site will be diverted to sediment dams for treatment and possible reuse as a supplementary supply for the revised Project's water requirement. - Surface runoff from the revised Project's potentially contaminated areas, such as infrastructure areas, will receive additional levels of treatment (e.g. oil-water separators and bunding). Water captured by these devices will be preferentially reused on site, while captured oil will be collected for recycling by a licensed contractor. - Progressive rehabilitation will be undertaken as the revised Project's operational areas become available to reduce the amount of disturbed areas.	The commitments will continue to apply and will be managed as part of the respective site management plans and strategies implemented for the duration of the Project. Amendments proposed to surface water monitoring also ensure that such conditions align with contemporary standards in relation to water quality monitoring.

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				- Fuel, dangerous goods and hazardous chemicals will be managed as outlined by current standards, guidelines and in compliance with statutory requirements. - Refuelling locations and handling of fuels will be undertaken away from all waterways including creeks and drainage paths. - NAC's existing SOP for spills and emergency response procedures will be expanded to incorporate the revised Project. Spill recovery and containment equipment will be available when working adjacent to sensitive drainage paths and within other areas, such as workshops. - NAC will continue to commit to investigating all legitimate surface water complaints, and if a genuine problem is identified, conduct immediate remediation measures and establish standard operating procedures to minimise the possibility of a reoccurrence of the original issue. - NAC's current water quality monitoring program will be expanded to incorporate the operational and decommissioning phases of the revised Project. The program is designed to ensure the WMP is effective, to demonstrate compliance with the Mine's strict discharge limits, and to ensure the downstream water quality (physico-chemical parameters, at a minimum) is not being adversely impacted. In general, the monitoring program will include the following actions. - Water quality will be measured upstream and downstream of the revised Project site. Basic water quality indicators (i.e. Salinity, pH, DO, EC, temperature) will continue to be monitored on a monthly basis, or when water is present, and heavy metals, nutrients, anions and cations monitored twice annually. - During any release event, the receiving water will be monitored upstream (50 m to 100 m upstream of the release point) and downstream (200 m downstream of the release point) locations. Water quality variables will include basic water quality indicators, suspended solids, heavy metals, nutrients, anions and cations. - Progressive rehabilitation of areas impacted by operational activities will be undertaken as soon as practical in order to reduce the amount of exposed soil. - Fuel, dangerous goods, hazardous chemicals and workshop wastes will be managed to ensure compliance with current industry standards and guidelines for safety and environmental protection. These management actions will focus on handling, storage, spill containment, emergency response, establishment of 'standard operating	

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				procedures' for key operational aspects, and development of a responsibility matrix for operational and reporting matters.	
54.	527	Appendix J.1	<i>In pit Tailings Storage Facility Management Plan</i>	The surface water from all receiving and holding dams on ML50170 and ML 50216 will be monitored regularly to ensure their operation is not causing unauthorised environmental harm either on or off-lease. Surface water will be managed upstream of the ITSFs to ensure runoff into the ITSFs is minimised through the use of water diversion bunds and drainage channels. A detailed Water Resource Management Plan for the revised Project is provided in Appendix J.4. Water levels within the ITSFs will be managed via the maximisation of water recycling from the ITSFs to the CHPP. The rupture of a pipe transporting reclaimed tailings water to the CHPPs will be dealt with under current spill procedures.	No effect. A Water Management Plan will be implemented for the Project and updated as required throughout the life of the Project. The Water Management Plan will be submitted to the administering authority for review and comment within 3 months upon the grant of ML50232 and ML700002.
55.	528	Appendix J.1	<i>In pit Tailings Storage Facility Management Plan</i>	The location of the ITSFs below surface level reduces the impacts of dust generated by exposed tailings to the environment. In the event that exposed tailings do become a source of excessive dust, the following strategies will be applied on an 'as required' basis: • If operationally possible, additional water is applied to exposed tailings surface via spraying or flooding. • Disturbance of the exposed tailings surface is kept to a minimum. • If operationally possible, the exposed tailings surface will be armoured with moist coarse rejects. • Rehabilitation activities will be commenced as early as operationally possible. • If necessary, the use of suitable alternate dust mitigation measures (e.g. chemical surfactants and foggers) will be investigated.	No effect.
56.	663	Appendix J.10	<i>AIR QUALITY MANAGEMENT PLAN</i>	The air quality management actions to reduce emissions from mining operations are presented in Table 3 1.	This commitment will still apply but air quality management has been augmented following the Second Remitted Land Court Hearing and is reflected in the proposed changes to Schedule B - Air stated conditions.
57.	664	Appendix J.10	<i>AIR QUALITY MANAGEMENT PLAN</i>	Material extraction and handling Loading/dumping overburden • The drop height of material from excavators will be minimised when loading trucks. • Modification of operations will occur during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions). • Water carts will be employed to keep mine roads and work areas in a moist condition.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.

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				• Dozer operations on overburden dumps will be modified or suspended if dust generation is excessive.	
58.	665	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Drilling and blasting • Dust curtains will be installed on drill rigs (i.e. under the drill deck with fabric filters to collect dust). • Water injector will be used on drill rigs to minimise dust emission. • Local residents (neighbours) will be advised of blasting events (date and time). • Blasting operations will be modified during adverse weather conditions (e.g. dust storms, gale force winds and storm conditions). • Blasts will occur during daytime hours only and not on weekends or public holidays. • Gravel/basalt stemming will be used in blast holes. • A pre-blast environmental checklist will be used. Key actions will include:: - Review of the current weather forecast. - Establishment of 300 m and 500 m minimum machine and personnel exclusion zones, respectively. - Establishment of a Fume Management Zone based on expected meteorological conditions. - Neighbours on blast contact list will be notified of whether their residence is in the fume management zone. - A portable weather station will be set up to monitor field meteorological conditions. - Blast will only be conducted when meteorological conditions are favourable. - Relevant blast data will be captured, recorded, and as required reviewed.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP and PHMP-03 – Use of Explosives & Blasting.
59.	666	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Haul roads • Water carts will maintain moisture conditions on haul roads. • Road grading and maintenance will be undertaken on a regular basis (refer to Standard Operation Procedure (SOP 05 12.02 Maintain and Water Mine Roads in Appendix A.2). Key actions include: - Application of coarse rejects on haul roads to reduce dust generation. - Grading procedures to achieve constant spread of fines and coarser material. • Speed on haul roads will be limited to 60km/h (20 km/h on selected corners). • Where feasible, the volumes of trays on haul trucks will be maximised	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.

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				to increase carrying capacity and to reduce vehicle kilometres travelled on haul roads. • Visual monitoring of haul roads and major work areas will be undertaken to identify noticeable dust generation for corrective actioning. • Certain site roads will be sealed (near administration area – site access and employee car park). • Efficient watering will be conducted during peak periods of activity and within areas of concentrated activity. • Well defined and planned haul routes and internal roads will be developed to maximise efficiency of travel. • Obsolete mine roads will be rehabilitated. • The private haulage route from the Materials Handling Facility to Train Loading Facility will be a sealed road.	
60.	667	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Exposed areas • The pre-strip areas will be planned to minimise the time of exposure following clearing in advance of mine development. • Exposed areas/active areas will be watered if dust generation is observed. • Where possible, topsoil will be stripped when its moisture content is elevated but not sodden. • A vegetative cover will be established as soon as feasible on areas prepared for rehabilitation. • Progressive rehabilitation will be conducted behind the active pit areas to minimise exposed areas. • Unauthorised clearing of non-mine areas will be prevented using a 'permit to disturb' system.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
61.	668	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	ROM Pad • Water will be applied on a regular basis by a water cart on trafficked areas within the ROM Pad's operational area. • Visual monitoring of ROM coal stockpiles will be undertaken to identify noticeable dust generation for corrective actioning. • Water will be applied on the ROM coal stockpiles if significant dust levels are being generated.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
62.	669	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Coal Handling and Preparation Plant & ROM Bin ROM Bin • Automatic water sprays will be installed at the ROM hopper bin to produce a fine mist to suppress dust generated when sensors are triggered.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.

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				Surge Bin • Dust curtains will be installed. • Waters sprays will be used. Crushing • Wet crushing will be employed. • This activity will be fully enclosed. Conveyors • Water sprays will be used on transfer points.	
63.	670	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Material Handling Facility • An automatic sprinkler system will be employed to moisten product coal stockpiles. • Water sprays will operate at transfer points on conveyors. • Coal spills will be removed regularly to minimise the potential for dust generation. • A vacuum sweeper will operate on roads near the Materials Handling Facility. • The washed coal will normally retain a moisture level of approximately 10%.	No effect. Management measures and mitigation activities will be incorporated and implemented under the AEMP.
64.	672	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	NAC proposes to implement a dust forecasting system to provide daily predictions of upcoming meteorological conditions for use in the proactive assessment of potential risks from air quality impacts from the revised Project's mining operations.	No effect. The proposed changes to stated condition B4 requires the AEMP to include a daily forecasting system of upcoming meteorological conditions to manage potential dust emissions. This forecasting system will be incorporated and implemented in the AEMP.
65.	673	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	The proposed air quality monitoring program for the revised Project consists of • Tapered Element Oscillating Microbalances (TEOMs) for real time measurement of PM10 concentrations; • Tapered Element Oscillating Microbalances (TEOMs) or Beta Attenuation Monitors (BAMs) for real time measurement of Total Suspended Particulates (TSP); • High Volume Air Samplers for measurement of PM10 particulates; • Dust Deposition Gauges for measurement of general dust fall out; and a • Meteorological Station for the measurement of local weather conditions. The locations of air quality monitoring equipment for the revised Project are presented in Figure 3-1.	This commitment will still apply but air quality management has been augmented following the Second Remitted Land Court Hearing and is reflected in the proposed changes to Schedule B - Air stated conditions and particularly condition B1 and Table A which adopt contemporary air quality parameters and methodology for monitoring and specify monitoring locations and methodology.

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66.	674	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	The proposed number of monitoring equipment, frequency of monitoring and relevant monitoring standards are summarised in Table 3 2. The siting and installation of air quality monitoring instruments will be in accordance with the requirements of AS/NZS 3580.1.1:2007 Methods for sampling and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment.	This commitment will still apply but air quality management has been augmented following the Second Remitted Land Court Hearing and is reflected in the proposed changes to Schedule B - Air stated conditions and particularly condition B1 and Table A which adopt contemporary air quality parameters and methodology for monitoring and specify monitoring locations and methodology.
67.	675	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	The Adaptive Air Quality Management framework for the revised Project is presented in Table 3 3. NAC will continue to expand its corrective actions list for air quality management over the life of the revised Project.	Management measures and mitigation activities will be incorporated and implemented as defined under the AEMP.
68.	676	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	A legible record of all concerns will be kept by NAC's Environmental Team, who are responsible for the revised Project's environmental concerns management. Each concern received in relation to the revised Project will be formally documented and record of the following information is maintained for legal and compliance purposes.	No effect. The proposed changes will result in augmented requirements regarding complaints handling, including provision of records to the administering authority within 28 days of the action taken to resolve the complaint, with consent of the complainant.
69.	677	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Standard actions taken by NAC's Environmental Team in relation to air quality (dust) concerns will include reviewing in relation to the time of the concern: • meteorological data; • relevant available air quality monitoring data; and • mine operations.	No effect. Management measures and mitigation activities will be incorporated and implemented as defined under the AEMP.
70.	678	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Follow up actions taken by NAC's Environmental Team in relation to air quality (dust) concerns may include depending on circumstances: • a site inspection of the complainant's residence; • targeted sampling at the complainant's residence of: – general surface dust and/or rainwater tank sludge for compositional analysis, and/or – collected rainwater for water quality analysis; • an investigation of other potential dust generating sources in the vicinity of the complainant's residence; • if the complainant's residence is outside NAC's proactive air quality monitoring network, installation of an applicable monitoring station at the complainant's residence (e.g. dust deposition gauge); and • engagement of an air quality specialist to assist the concerns investigation process.	No effect. Management measures and mitigation activities will be incorporated and implemented as defined under the AEMP.

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71.	679	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	NAC is committed to rectifying all air quality issues that are legitimately attributed to the revised Project's operations through proper scientific evaluation, in an appropriate timeframe, using accepted and practical mitigation measures, and if reasonably possible, to the satisfaction of the affected party.	No effect. Management measures and mitigation activities will be incorporated and implemented as defined under the AEMP.
72.	680	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	NAC will advise the DEHP in a timely manner of all non-compliances identified in relation to the revised Project's future EA (e.g. 'exception reporting').	No effect.
73.	681	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	If a definite case where material or serious environmental harm or the potential for material or serious environmental harm is clearly established by an air quality investigation into an unforeseen impact, NAC will ensure the notification requirements of Section 320 of the Environmental Protection Act 1994 are fully addressed.	No effect.
74.	682	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	As required, NAC will prepare and submit to the DEHP any requested information about environmental management and other related matters in relation to the revised Project's operations, including air quality monitoring data.	No effect. This commitment will still apply and proposed amendments to stated conditions A4 and A5 explicitly require the retention of monitoring data for 5 years.
75.	683	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	Over the life of the revised Project, NAC will regularly audit the performance of the AQMP using both internal and third party auditing processes. Internal and third party audits will be conducted on annual and three yearly timeframes, respectively. The audit process will generally be designed to examine the status of the key components of the AQMP, review air quality concerns management, and evaluate the overall performance of NAC's air quality management for the revised Project. The strategy for NAC's audit processes is to ensure compliance and promote continuous improvement as part of the revised Project's air quality management regime.	Proposed amendments to stated condition B3 ensure that the AEMP is to be submitted to the administering authority for review and comment every 2 years and prior to NAC producing more than 5.1 million tonnes (Mt) of product coal per calendar year.
76.	685	Appendix J.10	AIR QUALITY MANAGEMENT PLAN	NAC will continue to review the dispersion modelling over the life of the revised Project, and in particular, will compare collected monitoring data and the modelled results at specific locations (e.g. sensitive receptors) to help guide future air quality mitigation strategies ahead of the mine path.	The AEMP will be subject to regular review as set out in proposed amendments to stated condition B3.
77.	686	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	The following mitigation measures are proposed by NAC as management commitments to reduce the revised Project's potential noise impact. • NAC will establish a real-time noise monitoring network, which will be used in conjunction with a weather forecasting system and an adaptive management process, to proactively relocate, reduce or stop noisier mining operations and other noise sources.	This commitment will continue to apply and are in most cases to be implemented through the NVMP. Management actions and mitigation strategies will be managed through the NVMP, which itself will be implemented for the duration of the Project. All

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				• Based on ambient conditions (climate and the current mine plan) and feedback from the real-time noise monitoring (warning and alarm protocols), NAC may be required to modify (limit) or stop mining operations in the Manning Vale East pit during the night time period. This requirement is based on the noise assessment work completed for the revised Project's EIS. • NAC will ensure noisier mining equipment such as excavators, track dozers, loaders and rear dump trucks are fully attenuated. This requirement is based on the noise assessment work completed for the revised Project's EIS. • If a legitimate complaint is received and/or a noise issue is identified by investigation, where possible NAC will modify mining operations until a satisfactory solution for the noise issue is developed and implemented. • Where possible, NAC will schedule noisier operations in-pit at night or during daylight hours only. For example, dumping of overburden and dozer activity on overburden dumps at or above ground surface may be restricted during night periods (10pm to 7am). • If no suitable or acceptable noise amelioration solutions are available for a particular noise issue, NAC will negotiate in good faith with all affected property owners for property purchase or by agreement implement some other form of amicable arrangement (e.g. acoustic treatment of the dwelling, relocation or replacement of the dwelling at another suitable location, relocation of the landowner to another living arrangement for the period of the issue or any other suitable innovative solution). NAC would be responsible for all reasonable costs associated with any agreed solution to a noise issue. • NAC will ensure proper maintenance and operational procedures will be undertaken to minimise noise emissions from equipment, including appropriate servicing and maintenance of exhaust systems on mine equipment. • NAC will ensure all complaints are investigated in a timely manner to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented by agreement. NAC has purchased a specialist noise logger that can be placed at a complainant's residence for a length of time to record the problem periods. This equipment will be maintained and the results will be interpreted by a qualified professional. • Where practicable, NAC using the mine planning process will utilise	complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.

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				topsoil and other dumps as noise barriers between active mine operations and nearby noise receptor locations. • NAC will continue to utilise broadband alarms instead of reverse beepers on all mobile equipment. • NAC will continue to limit the speed of heavy vehicle traffic on haul roads. • NAC will continue its current proactive monthly noise monitoring program and will expand its coverage around the revised Project area. • NAC will continue its proactive assessment of possible noise attenuation options for both mobile or stationery noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.	
78.	687	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	For the management of airblast overpressure and vibration, the following measures will be adopted for the revised Project: • Field data will be used to best determine blast conditions and the type of stemming required for the area. • In the event of a blast issue, the maximum instantaneous charge of subsequent blasts will be reduced using delays, reduction of hole diameter, etc. (i.e. until the blast issue is resolved). • In the event of a blast issue, the burden and spacing of subsequent blasts will be changed by altering the drilling pattern and/or delay layout, or altering the hole inclination (i.e. until the blast issue is resolved).; • The stemming depth and type will be adequate for each blast event. • Blast events will only be conducted during favourable weather conditions. • The monitoring of blasts will continue at the nearest sensitive receivers based on the interpretation of pre-blast weather data. • The practice of advising near neighbours will continue in advance of each blast. All new near neighbours surrounding the Project area will be proactively invited to join the blast notification contact list. • A qualified professional with suitable experience will be responsible for the Project's blast management. • All blast complaints will be investigated in a timely manner to determine the extent of the issue. Where appropriate, blast monitoring will be conducted at the affected residence, and as required, blast mitigation solutions will be investigated and implemented by agreement.	No effect. Stated condition D5 also requires a blast monitoring program to be implemented to monitor compliance and to ensure no adverse impacts are caused to a noise sensitive place or commercial place. Management actions and mitigation strategies will be managed through the NVMP, which itself will be implemented for the duration of the Project. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.

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79.	688	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	NAC proposes to implement a weather forecasting system to provide daily predictions of upcoming meteorological conditions and potential risk of noise and vibration impacts from mining operations from the revised Project.	This commitment will continue to apply, but will be incorporated in the NVMP.
80.	689	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	The weather forecasting system predicts potential risk of noise and vibration impacts using dispersion modelling tools for up to two days in advance. The weather forecasts will be updated on a daily basis, generating a daily automated email of forecast meteorological conditions.	This commitment will continue to apply, but will be incorporated in the NVMP.
81.	690	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Predictions from the weather forecasting system will allow Mine management to identify locations and times of potentially increased risk, and to facilitate appropriate planning to minimise or avoid potential impacts.	This commitment will continue to apply, but will be incorporated in the NVMP.
82.	691	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Significant noise and vibration issues will be highlighted at shift changes between the Production Supervisors or are and will be conveyed to the general workforce on a regular basis through 'Tool Box Talks'. This approach ensures that the day-to-day business focuses on good work practices to help reduce the potential for noise and vibration impacts from the revised Project.	This commitment will continue to apply, but will be incorporated in the NVMP.
83.	692	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	NAC will establish a permanent real-time noise monitor in Acland and a mobile real-time noise monitor to be placed depending on ambient conditions (climate and the current mine plan). This monitoring system will be used in conjunction with the weather forecasting system and will operate on a risk based approach. Warning and exceedance alarms will be used to inform the Mine of the status of the noise limits at the monitoring locations. In the event of an alarm, the Mine will attend the monitoring location as soon as possible to establish if the Mine is the source of the high noise levels. This unattended monitoring system will not always be practical during the warmer months due to other intrusive noise sources (e.g. insect noise). However, it will be ideal during the cooler months when background noise levels are lower and temperature inversions are common. NAC will ensure use of the real-time monitoring equipment is appropriate and practical for the circumstances.	This commitment will continue to apply, but will be incorporated in the NVMP. Noise monitoring locations will be identified in accordance with the requirements of the Environmental Authority and monitoring methodologies will be included in the NVMP.
84.	693	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	In the event monitoring positively identifies that noise from the Mine is approaching or exceeding the specified noise limits, immediate management actions will be applied at the site that may involve modification or cessation of mining activities at one or more of the revised Project's mine pits.	No effect. Noise abatement measures are to be implemented if performance or compliance monitoring indicates the potential exceedance of noise limits (proposed stated condition D2).

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85.	694	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Based on noise assessment work completed for the revised Project's EIS, the Manning Vale East Pit will most likely require specific management actions under these circumstances. Modification of mining activities may mean reducing the intensity of noisier operations or moving particular noisier equipment to other areas or mine pits within the revised Project site. The actions taken will depend on the mine noise sources identified by the appropriate Mine staff following alert by the real-time monitoring system and the level of exceedance at the time (e.g. warning or alarm) NAC will ensure that the scheduling of the Mine's activities at night proactively considers potential noise issues from the various areas of operational activities. The weather forecasting system will help guide these mine planning decisions (e.g. wind conditions and temperature inversion conditions).	This commitment will continue to apply, with noise monitoring methodologies and management actions to be incorporated in the NVMP, which itself will be implemented for the duration of the Project.
86.	695	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	NAC will continue its proactive assessment of possible noise attenuation options for both mobile or stationary noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.	No effect. This commitment will continue to apply. NAC has an on-going noise attenuation program to continually improve the noise emissions from their mobile mining fleet. This program will continue throughout the life of the New Acland Stage 3 Project.
87.	696	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	The current proactive monthly noise monitoring program will continue in an expanded form to cover the broader revised Project area. As explained, a permanent noise monitor will be located in Acland to continuously monitor the noise levels.	This commitment will continue to apply, but will generally be managed under the NVMP. Noise monitoring locations will be identified in accordance with the requirements of the New Acland Stage 3 Environmental Authority and monitoring methodologies will be included in the NVMP, which itself will be implemented for the duration of the Project.
88.	697	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	All complaints will be investigated to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented. NAC has purchased a specialist noise logger that can be placed at a complainant's residence for a length of time to record the problem periods. This equipment will be maintained and the results will be interpreted by a qualified professional.	This commitment will continue to apply and will be managed under the New Acland Stage 3 Environmental Authority and the NVMP.
89.	698	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Monitoring of blasts will continue at the nearest sensitive receivers around the revised Project based on climatic conditions (e.g. wind conditions).	No effect. See stated condition D5 which is only proposed to be amended to require the results of the blast monitoring program to be included in the monthly compliance monitoring report to be

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					provided to the administering authority. Blast monitoring will be managed in accordance with the New Acland Stage 3 Environmental Authority and the NVMP.
90.	699	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Concerns and other issues raised will be managed in accordance with the revised Project's Local Stakeholder Management Plan, which is provided in Appendix J.18. A register will record details of the concern, the complainant(s), a summary of the investigations completed, any management actions taken, and the status of the concern.	No effect.
91.	700	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	A twenty four hour telephone number is made available to near neighbours for receiving concerns. This 'fast response' approach is designed to ensure access to the NAC employee on site at the time with the necessary responsibility to take immediate actions if required. NAC's Environmental Team will be available for contact during business hours by email (with the email address available through a web-site), and by telephone through the Mine's reception.	No effect. Stakeholder engagement activities will continue during the Project. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.
92.	701	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	A legible record of all concerns will be kept by NAC's Environmental Team, who are responsible for the revised Project's environmental concerns management. Each concern received in relation to the revised Project will be formally documented and record of the following information is maintained for legal and compliance purposes. 1) The date and time of concern. 2) The nature of concern (e.g. noise). 3) The method by which the concern was received (e.g. telephone). 4) The name and title of the person who receives the concern. 5) The personal details of the complainant, if made available, or if no details were provided, a note to that effect. 6) The action taken in relation to the concern, including any follow-up contact, the outcome of investigations and any required on-going actions. 7) If no action was taken, then the reason why no action was taken. 8) The final status of the concern (e.g. resolved, continuing or unresolved).	This commitment has been augmented through a proposed amendment to stated condition A12 which requires NAC to provide records of environmental complaints to the administering authority within 28 days of the action taken to resolve the complaint, with the consent of the complainant.
93.	702	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Standard actions taken by NAC's Environmental Team in relation to noise concerns will include reviewing the following: • meteorological data; • relevant available noise monitoring data; and • mine operations.	No effect.

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Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
94.	703	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Follow up actions taken by NAC's Environmental Team in relation to noise concerns may include depending on circumstances: • a site inspection of the complainant's residence; • targeted sampling at the complainant's residence; • an investigation of other potential noise generating sources in the vicinity of the complainant's residence; and • engagement of an noise and vibration specialist to assist the concerns investigation process.	No effect.
95.	704	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	NAC is committed to rectifying all noise issues that are legitimately attributed to the revised Project's operations through proper scientific evaluation, in an appropriate timeframe, using accepted and practical mitigation measures, and if reasonably possible, to the satisfaction of the affected party.	No effect.
96.	705	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Non-compliant Monitoring Results NAC will advise the DEHP in a timely manner of all non compliances identified in relation to the revised Project's future EA (e.g. 'exception reporting').	No effect.
97.	707	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	General As required, NAC will prepare and submit to the DEHP any requested information about environmental management and other related matters in relation to the revised Project's operations, including applicable noise monitoring data.	No effect. This commitment will still apply and proposed amendments to stated conditions A4 and A5 explicitly require the retention of monitoring data for no longer than 5 years.
98.	709	Appendix J.11	NOISE AND VIBRATION MANAGEMENT PLAN	Review The NVMP will be formally reviewed on an annual basis and updated as required. The NVMP may also be updated based on the findings of internal and third party audit processes, based on the outcomes of a complaint investigation or following a regulatory inspection (i.e. as corrective actions). The DEHP will be advised of all significant revisions of the NVMP.	No effect. The NVMP will be implemented in accordance with the New Acland Stage 3 Environmental Authority and no changes to the NVMP are the subject of this Request for Project Change.
99.	788	Appendix J.18	Local Stakeholder Management Plan	The rationale for each component of the air quality monitoring program is: • Meteorological Station – analysis of data to will provide supporting data Real time PM10 – determine compliance with EPP (Air) objective of 50 µg/m3 and facilitate adaptive air quality management; • Real time TSP – determine potential nuisance impacts to west of Manning Vale West Pit and determine compliance with EPP (Air) objective of 90 µg/m3; • Quarterly PM10 monitoring - continue historical monitoring and determine compliance with EPP (Air) objective of 50 µg/m3;	The proposed changes to stated conditions in Schedule A - Air Quality include two new air quality monitoring locations and updated air quality monitoring parameters to be included in the New Acland Stage 3 Environmental Authority.

Annexure H - Proponent Commitment Assessment

Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				• Dust deposition gauges – determine potential nuisance impacts and to continue historical monitoring; and • to assess potential for air quality impacts following any investigations of dust concerns raised.	
100.	789	Appendix J.18	Local Stakeholder Management Plan	• The Proponent will implement the AQMP for the site prior to the commencement of any vegetation clearing or construction activities. • The Proponent will achieve and maintain the level of dust control outlined in the EA. • The Proponent will investigate all substantiated dust related complaints and implement corrective actions resulting from substantiated complaint investigations as required. • All monitoring and sampling techniques will be consistent with the Queensland Government's Air Quality Sampling Manual and applicable Australian Standards as outlined in Section 3.3.7. • The revised Project will maintain plant and equipment in a proper condition. • The revised Project will investigate energy efficiency ratings of plant and equipment for consideration in [plant installations. • A greenhouse gas inventory will be maintained and reported as required by the NGER legislation	No effect.
101.	794	Appendix J.18	Local Stakeholder Management Plan	The following mitigation measures are proposed by NAC as commitments to reduce the revised Project's potential noise impact. • NAC will establish a real-time noise monitoring network, which will be used in conjunction with a weather forecasting system and an adaptive management process, to proactively relocate, reduce or stop noisier mining operations. • NAC has developed a NVMP for the revised Project, and is presented in Appendix J.11. The NVMP will be administered as an accompanying document to the revised Project's Plan of Operations. • Based on ambient conditions (climate and the current mine plan) and feedback from the real-time noise monitoring (warning and alarm protocols), NAC may be required to limit or stop mining operations in the Manning Vale East pit during the night time period. This requirement is based on the noise assessment work completed for the revised Project's EIS. • NAC will ensure noisier mining equipment, including excavators, track dozers, loaders and rear dump trucks, is fully attenuated. This requirement is based on the noise assessment work completed for the revised Project's EIS.	This commitment will continue to apply. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management actions and mitigation strategies will be managed through the NVMP, which will be implemented for the duration of the Project. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.

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Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				• Where possible, NAC will schedule noisier operations in-pit at night or during daylight hours only. For example, dumping of overburden and dozer activity on overburden dumps at or above ground surface may be restricted during night periods (10pm to 7am). • If no suitable or acceptable noise amelioration solutions are available for a particular noise issue, NAC will negotiate in good faith with all affected property owners for property purchase or by agreement implement some other form of amicable arrangement (e.g. acoustic treatment of the dwelling, relocation or replacement of the dwelling at another suitable location, relocation of the landowner to another living arrangement for the period of the issue or any other suitable innovative solution). NAC would be responsible for all reasonable costs associated with any agreed solution to a noise issue. In the event agreement cannot be reached, NAC will enter into mediation with the affected party and employ the services of a third party to facilitate this process • NAC will ensure proper maintenance and operational procedures will be undertaken to minimise noise emissions from equipment, including proper servicing and maintenance of exhaust systems on mine equipment. • NAC will implement its Noise and Vibration Management Plan, as presented in Appendix J.11 to minimise the risk of noise complaints from nearby sensitive receptors to the revised Project. All complaints received in relation to the revised Project's operation will be managed as outlined in NAC's Local Stakeholder Engagement Plan as presented in Appendix J.18. NAC's approach to complaints management is based on the key principles of timeliness, sensitivity, fairness and impartiality, and confidentiality. NAC is committed to open communication with its local stakeholders and active complaint resolution when issues or concerns are raised about its mining operations. Where practicable, NAC using the mine planning process will utilise topsoil and other dumps as noise barriers between active mine operations and nearby noise receptor locations. • NAC will continue to utilise broad band alarms instead of reverse beepers on all mobile equipment. • NAC will continue to limit the speed of heavy vehicle traffic on haul roads. • NAC will continue its current proactive monthly noise monitoring program and will expand its coverage around the revised Project site. • NAC will continue its proactive assessment of possible noise	

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Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				attenuation options for both mobile or stationery noise emitting equipment. Noise emissions with tonal, impulsive and/or intermittent characteristics will be targeted for noise attenuation.	
102.	795	Appendix J.18	Local Stakeholder Management Plan	For the management of airblast overpressure and vibration, the following measures will be adopted for the revised Project. • Field data will be used to best design blasts with an adequate buffer in place to meet noise/ vibration limits and the type of stemming required for the area. • In the event of a blast issue, the maximum instantaneous charge of subsequent blasts will be reduced using delays, reduction of hole diameter, etc. (i.e. until the blast issue is resolved). • In the event of a blast issue, the burden and spacing of subsequent blasts will be changed by altering the drilling pattern and/or delay layout, or altering the hole inclination (i.e. until the blast issue is resolved). • The stemming depth and type will be adequate for each blast event. • Blast events will only be conducted during favourable weather conditions. • The monitoring of blasts will continue at the nearest sensitive receptors based on the interpretation of pre-blast weather data. • The practice of advising near neighbours will continue in advance of each blast. All new near neighbours surrounding the revised Project site will be proactively invited to join the blast notification contact list. • A qualified professional with suitable experience will be responsible for the revised Project's blast management.	This commitment will continue to apply. All operations will be carried out in accordance with the conditions and limits defined in the New Acland Stage 3 Environmental Authority. Management actions and mitigation strategies will be managed through the NVMP, which will be implemented for the duration of the Project. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.
103.	796	Appendix J.18	Local Stakeholder Management Plan	A monitoring program will be implemented as per a NVMP and will include the following activities: • NAC will continue its current proactive monthly noise monitoring program and will expand its coverage around the revised Project site. • NAC will ensure all complaints will be investigated in a timely manner to determine the source of the nuisance noise. Where appropriate, noise monitoring will be conducted at the affected residence, and as required, noise amelioration solutions will be investigated and implemented by agreement. • The monitoring of blasts will continue at the nearest sensitive receptors based on the interpretation of pre-blast weather data. • All blast complaints will be investigated in a timely manner to determine the extent of the issue. Where appropriate, blast monitoring will be conducted at the affected residence, and as required, blast	This commitment will continue to apply. The NVMP will be implemented for the duration of the Project. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions.

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Item	No.	CHAPTER	TITLE	Commitment	Effect of Proposed Change
				mitigation solutions will be investigated and implemented by agreement.	
104.	797	Appendix J.18	Local Stakeholder Management Plan	• Noise and vibration monitoring will be undertaken as per the EA. • The Proponent will implement the NVMP. • All substantiated noise and vibration complaints will be investigated and corrective action will be implemented as required.	This commitment will continue to apply. The NVMP will be implemented for the duration of the Project.
105.	804	Appendix J.18	Local Stakeholder Management Plan	Monitoring results are interpreted on receipt and action taken to address any adverse results. Substantiated complaints in relation to water issues are dealt with promptly using NAC's complaint handling procedure. The surface water and groundwater monitoring regime will be expanded to cover the revised Project's development. As is currently practised, the Mine's current Monitoring Plan will be updated to reflect changes to the monitoring regime.	This commitment will continue to apply. All complaints lodged regarding the New Acland Stage 3 Project will be managed in accordance with the relevant Environmental Authority conditions, as amended by this Request for Project Change. Proposed changes are sought to be made to surface water quality conditions to reflect appropriate standards for surface water management and monitoring.

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

1. Proposed stated condition A2

NAC requests that the Coordinator-General approve changes to stated condition A2 to include A2c) as follows.

~~In carrying out the mining activity authorised by this environmental authority,~~ The holder of this environmental authority: ~~must comply with Figure 1 (Revised Project Overview – Mine Area):~~

- a) must not carry out extraction or out of pit dumping activities within the **Acland buffer zone** or other exclusion areas identified on Figure 1 - Project Overview;
- b) without limiting Condition A2(a), must carry out mining activities generally in accordance with Figure 1 - Project Overview and the conditions of this environmental authority; and
- c) otherwise and subject to condition A2(d), may carry out **disturbance of land for infrastructure**:
 - i. which infrastructure is the subject of conditions under the environmental authority; or
 - ii. in accordance with a **management plan** or where permitted by the administering authority; or
 - iii. within areas of ML50216 and ML50170 on land already disturbed; or
 - iv. which is **minor infrastructure**, and to the extent reasonably necessary to allow other mining activities authorised by the mining leases and this environmental authority to occur; and
- d) must not construct **infrastructure** within the Lagoon Creek Conservation Zone, other than in accordance with Imposed Condition 15 of the Coordinator-General's Report.

Insert new definitions:

Acland buffer zone: the area identified in Figure 1 - Project Overview as the Acland buffer zone.

Minor infrastructure includes culverts, bores, low impact telecommunications infrastructure, electricity infrastructure, fences, environmental monitoring infrastructure, pipelines, underground services, access tracks, roads for light vehicles.

Management Plan is a plan or program approved under a condition of the environmental authority or the imposed conditions of the Coordinator-General's Report.

Disturbance of land and infrastructure are defined in the stated conditions.

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

1.1 Reason for the proposed change to A2c)

- (a) Mining related infrastructure is required for the Project. The range of infrastructure required for the Project was identified in the EIS and AEIS and includes the key infrastructure specified in Figure 1 to the stated conditions and other associated infrastructure (water management infrastructure, levees, roads and tracks, environmental management infrastructure, electricity infrastructure and other minor infrastructure). This infrastructure will be located as identified in the updated Figure 1 or within the New Mining Area in Figure 1 or where otherwise authorised under this proposed condition A2.
- (b) Condition A2 is not intended to authorise new activities or infrastructure that was not identified in the EIS and AEIS, but rather clarifies the limitations on supporting infrastructure, by restricting it to minor infrastructure or infrastructure under the EA conditions or approved management plans or otherwise permitted by the administering authority. Condition A2 does not propose a change to the Project. It is inherent in the terms of the existing Coordinator-General's stated condition A2, with reference to a figure marked "Indicative Only" and other stated conditions that require supporting infrastructure, that a precise identification of the location of and size of disturbance areas for a limited range of supporting infrastructure was neither necessary nor appropriate.
- (c) Condition A2 also confirms that infrastructure for the Project may also be constructed on the existing mining leases ML50216 and ML50170 in areas that have already been disturbed and which are not yet rehabilitated.
- (d) As Figure 1 is proposed now to have no "indicative only" notation, condition A2 provides more certainty as to the scope of the activities authorised by the EA and where they may be undertaken, consistent with the Land Court recommendation.¹
- (e) A2 limits infrastructure associated with mining to that which is identified expressly in Figure 1 or constructed within the New Mining Areas in Figure 1 or to ancillary infrastructure which is the subject of a condition of the EA, such as environmental dams and environmental monitoring infrastructure, infrastructure which is required by way of an approved management plan under the EA, such as groundwater monitoring bores or minor infrastructure, where reasonably necessary for the mining activities. Figure 1 in the stated conditions does not document all the locations required for associated infrastructure. In three Land Court hearings, no party indicated that infrastructure associated with the mining was not authorised by the mining leases and environmental authority and neither did three separate Land Court judges.
- (f) Mining operations are complex, are affected by the location of the resource, ongoing exploration of its extent, underground, economic and other conditions and mine plans need some flexibility to adapt to actual conditions as they are encountered or occur. Environmental monitoring may also require adaption of mining activities. It is therefore necessary and appropriate that there is opportunity for the locations of associated infrastructure to adapt with mine planning.
- (g) The proposed condition A2c) is therefore intended to enable infrastructure necessary for mining operations and environmental management, but limiting disturbance by such infrastructure outside the footprint in Figure 1.

¹ Paragraph [127] and [128] Land Court Decision.

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

- (h) The extent of mining activities proposed for the Project including associated infrastructure was expressly considered by the Second Remitted Land Court Hearing based on correspondence provided to the Court by NAC.²
- (i) The Land Court accepted that it is not usual at this stage of mine planning to identify all infrastructure required by a mine and its spatial extent.³ Further, as the mine progresses, the location and scale of infrastructure required over the life of mine will evolve and in all cases will be required to be established and operated in accordance with the conditions relevantly specified in the EA. The President of the Land Court stated *“And it is routine that mine plans change over the life of the mine, depending on a range of factors, including the extent of the resource as well as the impacts on the environment and on people. And even for a short-term mining lease, which I understand this to be – 12 years – I expect that details of the mine would evolve with time, increased knowledge of the resource, changes in technology and economics.”*⁴ The Land Court did not see utility in a condition to limit the area of surface infrastructure⁵.
- (j) Adopting hard limits, especially for ancillary and minor infrastructure, may put NAC in a position where it is difficult or impossible for it to comply with the terms of the EA. This is because the stated condition A2 must be read together with stated condition A3 which requires NAC to “install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority”. For example, if at some point in the future, a further sediment dam or pipeline is required to manage surface water impacts, NAC would be in contravention of the EA if it constructed that infrastructure which was not identified, and also in contravention of the EA if it did not. This would plainly be an inappropriate outcome.
- (k) The Land Court accepted that location of certain environmental infrastructure was best left to the management plans prepared under the EA, e.g. monitoring locations⁶. This is also consistent with the stated conditions contained within the Coordinator-General's Report, for example, condition F20 requires stormwater to be released from water management infrastructure that is installed and operated in accordance with a Water Management Plan required under condition F18.
- (l) The defined terms of 'Acland buffer zone', 'Minor infrastructure' and 'Management Plan' are included to assist with the interpretation of the stated condition.

² Paragraph [120] Land Court Decision

³ Land Court Order 11 June 2021 in response to application by Statutory Party

⁴ Transcript 1-3 dated 11 March 2021 at [27]-[32]

⁵ Paragraph [131] Land Court Decision

⁶ Paragraph [208] Land Court Decision, where in respect of air quality monitoring, the Land Court stated: *“Except for Acland, the sensitive receptors of interest will change over the life of the mine. It is right that NAC should have a comprehensive monitoring system in place, but it is not appropriate that the location of each component of that system should be written into EA conditions which are inflexible and not necessarily responsive to prevailing conditions.”*

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

- (m) There is no change to the project proposed, but rather refinement of conditions to respond to the Land Court recommendation to provide more certainty on the spatial extent of mining disturbance.
- (n) The defined terms of 'Acland buffer zone', 'Minor infrastructure' and 'Management Plan' are included to assist with the interpretation of the stated condition.

1.2 Effect of the change to A2c)

- (a) The change to the stated condition A2 is to respond to the Land Court recommendation to provide more certainty on the spatial extent of mining disturbance.
- (b) The limitation on mining within the Acland buffer zone ensures that potential impacts to residents of Acland are mitigated by including an exclusion zone for extraction and out of pit dump activities within that zone in Figure 1. The Acland buffer zone has a fixed boundary on the western edge of Manning Vale East to accommodate the recommendation of the Land Court at paragraph [129]. The buffer zone has been extended between Acland and the haul route to the west to provide further protection for Acland. The inclusion of the Acland buffer zone provides additional environmental protection for residents of Acland from the impacts of mining extraction.
- (c) There is no change to the project proposed as the EIS, the Coordinator-General's Report and the stated and imposed conditions include this supporting infrastructure.
- (d) The disturbance of land for infrastructure outside the New Mining Area and other infrastructure specified in Figure 1 is limited by condition A2c) to infrastructure ordinarily required to support mining activities and which is:
 - (i) infrastructure that which was identified, assessed through the EIS and the Coordinator-General's Report and contemplated in the EA conditions, such as water management infrastructure, the levees and monitoring bores; or
 - (ii) infrastructure that is required by management plans approved under the EA or permitted by the administering authority; or
 - (iii) minor infrastructure which is defined in proposed condition A2c) and includes low impact infrastructure, such as culverts, bores, low impact telecommunications infrastructure, electricity infrastructure, fences, environmental monitoring infrastructure, pipelines, underground services, access tracks, roads for light vehicles; or
 - (iv) infrastructure within areas of the existing mining leases (ML50216 and ML50170) which is already disturbed and has not been rehabilitated.
- (e) The revised condition does not change the scope of activities that were assessed and authorised for the Project in the Coordinator-General's Report. The range of infrastructure contemplated by condition A2c) was described in the EIS and includes water management infrastructure, levees along Lagoon Creek and the haul road crossing of Lagoon Creek, access tracks, light vehicle roads, electricity infrastructure, environmental management and monitoring infrastructure and bores. The Coordinator-General's Report considered and expressly assessed

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

supporting infrastructure as identified in **Table 1**. The impacts that have been assessed and the associated mitigation measures are set out in **Table 1**.

- (f) The inclusion of condition A2c) will not result in any additional disturbance of Matters of State Environmental Significance (MSES) as the maximum authorised areas of impact are limited to those in Stated condition H42 and Table H4. Both Dr Andrew Daniels (flora expert) and Adrian Caneris (fauna expert) who gave evidence in the Second Remitted Land Court Hearing considered the limitations on impact areas under the proposed Table H4 together with the offset conditions to protect flora and fauna.⁷ Dr Daniels and Mr Caneris' reports are attached as **Annexure K** and **Annexure L** respectively.
- (g) Water management infrastructure including Levees are designed and have been assessed by the Coordinator-General as providing appropriate protection of surface water and protection of the mining areas from flooding of Lagoon Creek. This is also consistent with the assessment of Mr Greg Roads, who gave evidence in the field of surface water management in the Second Remitted Land Court Hearing. Mr Roads evidence was accepted by the Land Court Decision.⁸ Mr Roads Report is attached at **Annexure J**.
- (h) The condition A2c) does not change or increase the activities and impacts that were assessed and approved under the Coordinator-General's Report.

⁷ Paragraphs [63] and [64] Land Court Decision

⁸ Paragraph [68] Land Court Decision

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Table 1

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
Water Management	EIS Reference	Description	Coordinator-General's Report Consideration of infrastructure	Coordinator-General's Report Assessment	Mitigation Measures
The key components of the Project's water management system include: • Wetalla Wastewater Reclamation Facility (WWRF) pipeline; • process water dams; • environmental dams; • sedimentation dams; • associated pipelines; • associated works in relation to a dam. Section 2.2.1 of the Coordinator-General's Report identifies 'Project Components' to include	• EIS, Appendix J.4: Water Resource Management Plan, Table 1-3 • EIS, Chapter 3, Table 3-25 • EIS, Chapter 5, section 5.13.1 (p. 5-63) • EIS Chapter 5, Table 5-14 (p. 5-65) • EIS, Chapter 4, Table 3-27 • AEIS, Appendix C (p. 20)	The EIS includes plans that identify the water infrastructure and conceptual locations including sediment basins and pipelines located south and east of Manning Vale East and west of Manning Vale West. EIS Table 3-25 sets out NAC's proposed water management infrastructure size and location. Figure 3-6, Appendix C of the AEIS, shows the conceptual locations of the proposed water management structures. A description of the Site Water Management Strategy is included in the EIS at Chapter 5, section 5.13 (p. 5-62). Specifically, it outlines	The Coordinator-General's Report considered the water infrastructure applied for by NAC in its EIS and AEIS. At p. 88, the Coordinator-General confirmed NAC had committed to mitigation measures that seek to protect and enhance the ecological values at the project site, reducing impacts on Matters of National Environmental Significance (MNES), including "[s]urface water management measures including clean water	Section 8.5 of the Coordinator-General's Report considers potential impacts to water resources from the project. At p. 145, the Coordinator-General commented that: <i>The project's mine water strategy to divert clean water flows away from the operations, along with any releases the project will make into the Lagoon Creek system, will work to alleviate the project's impact on surface water availability.</i> At p. 139, the Coordinator-General's Report notes that stated conditions in Appendix 2 have been imposed to ensure sufficient controls are in place for the protection of surface	Chapter 5 (p. 5-84) of the EIS describes that work methods will be developed in the Contractor Environmental Management Plans that detail appropriate control and mitigation measures for the revised Project. Surface Water control strategies, including for erosion and sediment control are contained within AEIS Appendix C from section 3.7.10. Noise and dust impacts associated with construction are controlled by stated conditions including the requirement to meet noise and dust limits and the noise and vibration management plan and air quality management plan. Section 8.6.1 of the Coordinator-General's Report considers the key principals for

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
water management structures and additional supporting infrastructure as 'essential infrastructure' required for the project (p. 3). The scope of that infrastructure was described in the EIS. Coordinator-General's Report assessed the surface water management infrastructure and at p. 88 concludes that surface water management measures have been conditioned in Appendix 2 to avoid and minimise environmental harm. Schedule F of the stated conditions identifies environmental dams (ED1-7) as monitoring and release points and conditions F18-F20 require water management infrastructure and erosion and sediment control structures be installed and operated in accordance with a water management plan and		that the Water Management Strategy seeks to provide adequate water to the revised Project Site while minimising environmental impacts by collecting and managing mine affected runoff water.	<i>diversion, flood levees, diversion drains, sediment control structures, storage dams have been conditioned to avoid and minimise environmental harm (Appendix 2)'.</i>	water quality values due to site contaminants and works in Lagoon Creek. At p. 142, the Coordinator-General states, in their conclusions, that the EM Plan (AEIS) confirms: <i>design and construction of all water management structures will use practical hydraulic parameters based on an appropriate risk based considerations of rainfall event, catchment size, slopes, discharge design and soil types</i> <i>Commitment 233 (Appendix D, AEIS): culverts will be constructed for the rail spur in the area of the Lagoon creek flood plain to allow for overland flow of run-off</i> Coordinator-General's Report confirms at p. 144 that the effects of the mine's capture of surface water for the life of mine to be minimal and that the project is not expected to have an	water management, specifically at p. 139, the Coordinator-General notes that the procedures for ensuring effective protection of surface water quality include: <i>Progressive rehabilitation will be undertaken to reduce the amount of disturbed areas, with reseeding to occur as soon as possible</i> <i>Control strategies for erosion and sediment management to avoid and minimise water quality impacts and scouring are included in the EM Plan.</i> Conditions F18-F20 of stated conditions require water management infrastructure and erosion and sediment control structures be installed and operated in accordance with a water management plan and erosion and sediment control plan. Schedule F specifies controls for mine water releases and monitoring. In addition to these measures, Chapter 5 of the EIS, notes that the specific environmental management conditions will be

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
erosion and sediment control plan.				impact on downstream watercourses or environmental values.	implemented to mitigate the impacts of construction, for example, measures that are outlined in the <i>EPA Urban Stormwater Management Erosion and Sediment Control (2008)</i> and <i>IECA Best Practice Erosion and Sediment Control Guidelines (2008)</i> to comply with the EPP (Water). NAC must comply with stated condition H40 and Table H4 - Maximum authorised impacts on MSES. Proposed amended condition F18 provides for a water management plan to be developed by an appropriately qualified person and implemented for all stages of mining. The plan must be submitted to the administering authority for review and comment within 3 months of the grant of the mining leases. Condition A6 of the stated conditions requires any management plans under the EA to be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis and amended promptly if required, unless a particular review date

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
					and amendment program is specified.
<i>Additional expert material</i>	Greg Roads prepared an expert report in the Second Remitted Land Court Hearing that assessed the draft EA conditions in Schedule C (Schedule F of the corresponding Coordinator-General Stated Conditions). The Land Court Decision at paragraph [68] stated that "Mr Roads is satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters...". Mr Roads recommended changes to an Electrical Conductivity (EC) trigger limit to align with the current Condamine River Basin Water Quality Objectives. Mr Roads' expert report is attached at Annexure J.				
Levees	EIS Reference	Description	Coordinator-General's Report Consideration of infrastructure	Coordinator-General's Report Assessment	Mitigation measures
The flood levees are identified in the Coordinator-General's Report as part of the proposed water management infrastructure to protect mining and infrastructure areas from future Lagoon Creek flood events. The Coordinator-General's Report references Figure 3-6 of	- EIS, Chapter 5: Surface Water (p. 5-40) - EIS, Chapter 5 Figure 5-18 - EIS Table demonstrating 'Revised Project Water Management Infrastructure' (p. 5-66) - AEIS, Appendix C (p. 81) and section 3.7.12 (p. 87),	The EIS includes plans that demonstrate the location of and scale of flood levees along the Manning Vale East and Willeroo Pits, which location will be finalised on detailed engineering design and survey. The EIS confirms that new permanent and temporary levees will be constructed within ML 50232 to protect mining and	The Coordinator-General's Report considered the flood levees and associated infrastructure applied for by NAC in its EIS and AEIS. At section 5.6.2, the Coordinator-General notes that to reduce impacts on aquatic flora and fauna, NAC committed to	At p. 142, the Coordinator-General's Report states, in conclusions, that the EM Plan (AEIS) confirms: <i>Flood protection for resource areas will be provided through two flood levees designed to provide protection from a PMF flood event</i> <i>NAC has committed to ensuring the project's final landform is outside the existing PMF flood</i>	Levees will be constructed to provide protection from flood events (EIS, Chapter 5 (p. 5-86 and AEIS, Appendix C (p. 81). The design criteria for each new levee will be based on a strict risk management protocol for safety and environmental factors. Levee stabilisation (e.g. grass cover) and flood flow protection (e.g. rock armouring) will also be carefully considered, particularly for the design and operation of the revised

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description	Coordinator-General's Report	Mitigation measures
Appendix C of the AEIS identifying the levees. The impact of flood levees was assessed by the Coordinator-General who imposed stated conditions to ensure the structures are built to minimise risks to people and the environment. (See description and references in "mitigation" column).	Figure 3-6 and p. 77 - EIS, Chapter 3, Table 3-25 infrastructure areas from future Lagoon Creek flood events. EIS Table 3-25 sets out NAC's proposed levees, infrastructure size and description of location, which will be subject to detailed engineering design. The Site Water Management strategy details that flood levees will be constructed to protect infrastructure and mining areas from flooding. See: - EIS, Chapter 5, section 5.13 (p. 5-62) and - AEIS, Appendix C (p. 81). Decommissioning is addressed in Appendix C of the AEIS (p. 77)	implement a range of mitigation measures in its EM Plan that include the construction of flood levees. At p. 81, the Coordinator-General confirmed NAC had committed to mitigation measures that seek to protect and enhance the ecological values at the project site, reducing impacts on MNES, including "flood levees, diversion drains, sediment control structures, storage dams have been conditioned to avoid and minimise environmental harm (Appendix 2)". <i>extent, and as a result, there will be no flooding impacts on voids and elevated landforms."</i> The Coordinator-General considered the potential impacts to water resources from the project at section 8.5.1. The Coordinator-General specifically noted that: <i>The mine pit flood levees will be built outside of the 1-in-10 AEP and so will have no impact during low flow events. The proponent has committed to build these structures to withstand a PMF event to ensure overtopping of floodwaters into the pits does not occur. The levees will each be 3.5m high and between 1.5–2km wide.</i> <i>Modelling indicated that for a 1-in-1,000 AEP, an increase of around 0.5m in flood depth will occur at the levees. This reduces to pre-mine flow conditions within 3km of the mining lease boundary.</i>	Project's permanent levees (see AEIS, Appendix C, section 3.7.12 (p. 87)). At p. 143, the Coordinator-General noted that Appendix 2 contains conditions to ensure on-site structures are built to minimise risks to people and the environment during high flow events, including: <i>The final design level of the flood levee crest must be designed and constructed to protect mine areas from a predicted 1 000 ARI flood event</i> <i>The condition of the levee must at a minimum be assessed:</i> - By the environmental authority holder within one week of any storm of intensity greater than 25 mm of rain within three hours; and - By a suitably qualified and experienced person at least once per year between the months of May and October inclusive (i.e. during the 'dry'

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
				<i>Only minimal changes to velocities are anticipated in high-flow scenarios. Therefore no changes outside of the project site are anticipated from the development of the flood levees.</i>	<i>season and before the onset of the 'wet' season)</i> <i>Any remedial works identified as needing to be undertaken to the structure must be commenced within 30 days</i> <i>Land disturbed by mining must be rehabilitated in accordance with extensive rehabilitation requirements as detailed in the conditions</i> <i>All regulated structures such as dams and levees must be designed by and constructed under the supervision of a suitable qualified and experienced person in accordance with the requirements of the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> <i>All regulated structures are to be designed and constructed with due consideration given to ensuring that the design integrity would not be compromised on account of floodwaters from entering the regulated dam from any watercourse or drainage line;</i>

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
					<i>and wall failure due to erosion by floodwaters arising from a watercourse</i> <i>There is required to be a current operational plan in place for the regulated structures</i> <i>The performance of each regulated dam must be assessed over a November to May period based on actual observations of the available storage in each regulated dam taken prior to 1 July of each year</i> <i>By 1 November of each year, storage capacity must be available in each regulated dam to meet the Design Storage Allowance (DSA) volume of the dam</i> <i>The holder must, as soon as possible and within forty-eight (48) hours of becoming aware that the regulated dam will not have the available storage to meet the DSA volume on 1 November of any year, notify the administering authority</i> <i>The holder must, immediately on becoming aware that a regulated dam will not have the available storage to meet the</i>

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
					<i>DSA volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam</i> <i>Annual inspection reports: each regulated dam must be inspected each calendar year by a suitable qualified and experienced person</i> <i>At each inspection the condition and adequacy of all components of the regulated structure must be assessed and a suitable qualified and experienced person must prepare an annual inspection report containing details of the assessment and include recommended actions to ensure the integrity of the regulated structure</i> <i>The suitable qualified and experienced person who prepared the annual inspection report must certify the report in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635)</i> <i>Requirements for safe decommissioning and</i>

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
					<i>rehabilitation of structures are detailed in the conditions.</i> NAC must comply with stated condition H40 and Table H4 - Maximum authorised impacts on MSES.
<i>Additional expert material</i>	Greg Roads prepared an expert report in the Second Remitted Land Court Hearing that assessed the draft EA conditions in Schedule C (Schedule F of the corresponding Coordinator-General Stated Conditions). Mr Roads was satisfied that the draft EA conditions are sufficient to protect the environmental values of the local receiving waters, that Stage 3 would be able to comply with the EA conditions, and that it would have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek. Mr Roads' expert report is attached at Annexure J.				
Electricity Infrastructure	EIS Reference	Description	Coordinator-General's Report Consideration of infrastructure	Coordinator-General's Report Assessment	Mitigation measures
The electricity infrastructure for the project involves the relocation and potential upgrade requirements to the current power supply. The Coordinator-General's Report acknowledges this is a key component of the project (section 2.2.1). A new 33 kV connection will be required to the Train Loadout facility.	- EIS , Chapter 3 (p. 3-48) - EIS, Chapter 3, section 3.8.2 (p. 3-67) - EIS, Chapter 3 (p. 3-68 to 3-71) - EIS Chapter 3, Figure 3-26. - AEIS, Appendix C (p. 10) - AEIS, Chapter 5.3, Section 5.3.15.5 (p. 117)	The EIS outlines the relocation and proposed upgrade requirements to the current power supply at section 3.8.2 of Chapter 3. Specifically, the relocation of the district 11 kV power supply ring feeder power line and of the mine 33kV power supply.	The Coordinator-General's Report considered the electricity infrastructure applied for by NAC in its EIS and AEIS. At section 2.2.1 the Coordinator-General's Report recognises that a key component of the project includes the relocation and potential upgrade of	At section 4.2.5, the Coordinator-General's Report notes that the project will require the realignment of electricity infrastructure, works in the vicinity of power lines and the installation of telecommunications, which may require approvals under other state legislation. The Coordinator-General states that after a detailed design has been	Some existing 11 kV and 33 kV lines will be removed as part of the mine expansion. The 11 kV network will be augmented so that power supply to local consumers is not affected. Underground cable will be installed in areas where the placement of an overhead line could impede traffic. Impacts to category A & B regional ecosystems will be avoided. NAC must comply with stated condition H40 and

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Ancillary Infrastructure	EIS / AEIS Description	Coordinator-General's Report	Mitigation measures
Otherwise, minor infrastructure up to 11 kV is required to integrate the mine's power reticulation network with existing infrastructure. Off-tenure infrastructure is not the subject of this change request as that infrastructure will be assessed by the relevant administering authorities.	The preferred line route is illustrated conceptually in Figure 3-26 (see also: EIS, Chapter 3, section 3.8.2 (p. 3-67 to 3-68)). The EIS identifies the new power supply system is required to integrate with the Mine's power reticulation network. Some existing 11 kV and 33 kV lines will be removed as part of the mine expansion. The 11 kV network will be augmented so that power supply to local consumers is not affected. Underground cable will be installed in areas where the placement of an overhead line could impede traffic.	the current power supply for the mine operation, including the relocation of the mine's 33 kV power supply and the district's 11kV power supply ring feeder power line. completed for these works, NAC will need to apply to the relevant administering authorities.	Table H4 - Maximum authorised impacts on MSES.
<i>Additional expert material</i>	Andrew Daniel is an ecologist and flora expert, who gave evidence in the Second Remitted Land Court Hearing. Dr Daniel is satisfied that the biodiversity offset strategy will ensure that there will be no residual impacts to native vegetation communities in the long term. He considers that the upgrade of the electricity grid can be managed to ensure retention of most verge vegetation and will require clearing only a small amount of native vegetation.⁹		

⁹ Paragraph [64] Land Court Decision.

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Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
	Dr Daniel's report is attached at Annexure K.				
Tracks and Roads	EIS Reference	Description	Coordinator-General's Report Consideration of infrastructure	Coordinator-General's Report Assessment	Mitigation measures
Dedicated internal light vehicle network will use existing roads/tracks to the extent possible. New and internal service roads will be constructed within the mining leases on an as required basis. Construction of new access tracks or roads within the mining lease will be subject to the controls imposed under the Coordinator-General conditions requiring: - a road impact assessment; - a road management plan; - a traffic management plan for implementation of impact mitigation strategies prior to	- EIS, Chapter 3 (p. 3-40) - EIS, Chapter 3 (p. 3-48) - EIS, Chapter 3, section 3.6.12 (p. 3-42) - Figure 3-18: Site Access and Internal Haulage Route Description of the site access and haul roads are located at: - EIS, Chapter 3, section 3.6.10 - 3.6.11 (p. 3-39 - 3-40) and Figures 3-18 and 3-19. - EIS, Chapter 13, section 13.6.2 (p. 13-14)	The EIS described the proposed internal access arrangements. <i>“Existing internal access tracks will be used for all mining operations to minimise disturbance areas. Current haul and internal service roads on MLs 50170 and 50216 will be maintained and upgraded as required to accommodate the expansion in mining operations. Access and egress through the revised Project site will be limited to controlled access points only.</i> <i>The existing Jondaryan-Muldu Road that traverses to the east of the Manning</i>	At section 5.4.1, the Coordinator-General observes that “[i]n seeking to close or divert roads, the proponent is obligated to obtain approval prior to construction from DNRM as administrator of the Land Act 1994. Where local roads are involved, TRC will be consulted by DNRM as part of the application process. The proponent has committed to consult with DNRM about road	Section 5.4.4 of the Coordinator-General's Report sets out the Coordinator-General conclusions on evaluation of road impacts. <i>“Based on the mitigation and management commitments included in the EIS and AEIS, as well as implementation of the conditions I have set, I conclude that impacts on all transport networks will be effectively managed to ensure that no worsening of current network conditions occurs.</i> <i>I note the proponent's commitment to engage with various transport authorities during the construction and operational phases of the</i>	The EIS set out the design requirements for roads within the mine. Mine haul roads will follow existing design criteria subject to the requirements of the CSMH Act, including a design speed of 60 km/h, at least 30 m wide and two-way lanes. The maximum grade of the haul roads outside the mine pit areas will be 10% with a maximum cross fall of 3%. Safety barriers will be constructed in areas where required (EIS, Chapter 13 (p. 13-15)). Appendix 3, Schedule 2 of the Coordinator-General's Report sets the following transport related conditions: Condition 2 which requires a road impact assessment for each stage of the project to assess impacts on the safety efficiency and

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description	Coordinator-General's Report	Mitigation measures
commencement of significant construction works.¹⁰ Construction will also be controlled by the various management plans required under the EA in respect of any construction related impacts e.g. air quality management plan for management of dust, erosion and sediment control management plan for management of surface water impacts and noise and vibration management plan for management of noise during construction works.	<i>Vale West resource area will be used as an internal haul road connecting the CHPP Precinct within the MIA to the TLF as shown in Figure 3–18. The northern section of the Jondaryan-Muldu Road at Campbells Creber Road will be re-aligned to the east of the Manning Vale West resource area to accommodate mining operations.</i> <i>Other new haul and internal service roads will be constructed on an as required basis and where possible will utilise existing tracks within the new mining lease area...</i> The EIS also outlined the project's requirements for the following tracks and road infrastructure: • Dedicated internal light vehicle	<i>closures prior to the commencement of construction works".</i> <i>project to achieve this outcome."</i> At p. 30, the Coordinator-General indicates that: <i>"To ensure that any changes to road impacts during the detailed design and planning stage of the project are adequately considered, I have conditioned the proponent to finalise a road impact assessment (RIA) during this phase.</i> <i>The proponent is required to finalise a Road-use Management Plan (RMP) for all project stages, and reach agreement with TRC and DTMR on the plan in advance of construction. The RMP must show how the project will ensure the efficient use of the road network, and minimise road-based trips on all state controlled and local roads".</i> The report at p.32 also discussed the	condition of state-controlled and local roads. • Condition 4 requires any required works and other impact mitigation strategies under the road impact assessment and Road Management Plan in accordance with the latest relevant Department of Transport and Main Roads and Toowoomba Regional Council policies and standards at the time of the approval or agreement, prior to commencement of significant construction works. • Condition 6 requires the proponent to... <i>prepare Traffic Management Plan/s (TMP) in accordance with DTMR's Guide to preparing a Traffic Management Plan and/or as required by TRC. A TMP must be prepared and implemented during the construction and commissioning of each site where road works are to be undertaken, including site access points, road</i>

¹⁰ Appendix 3 Schedule 2 Conditions 2, 3, 4 and 6 of the CG Report.

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Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
		network using existing roads/tracks to the extent possible. New and internal service roads will be constructed on an as required basis. ○ The proposed tracks and roads are identified in EIS, Figure 3-19.		Coordinator-General's assessment of the road closures required for the Project. A number of these are existing roads which will be used for internal access within the mine.	<i>intersections or other works undertaken in the state-controlled road corridor.</i> AEIS Appendix C section 3.8.6 sets out strategies for management of construction including topsoil stripping, topsoil stockpile management and erosion control measures for infrastructure such as haul roads, hardstands and/or access roads. NAC must comply with stated condition H40 and Table H4 - Maximum authorised impacts on MSES.
Lagoon Creek Haul Road Crossing	EIS Reference	Description	Coordinator-General's Report Assessment		Mitigation measures
A haul road crossing of Lagoon Creek has been assessed and conditioned by the Coordinator-General pursuant to Imposed Condition 15.	• EIS Chapter 8, section 8 • AEIS, section 3.7.7: EM Plan	Development of a haul road crossing across Lagoon Creek for access to and from the Willeroo resource area was included as part of the impact assessments of aquatic ecology values in Chapter 8 of the EIS. Potential impacts of the Project on water quality may result from	Haul road crossing of Lagoon Creek was assessed at p. 43 of the Coordinator-General's Report and it was noted that the proponent has committed to appropriately designed and constructed crossings of Lagoon Creek that consider its hydraulic behaviour, fauna movement and existing locations of crossings. At page 44, of the Coordinator-General's Report, the Coordinator-General advised that NAC is required to abide by the directions included in the Queensland Government <i>Guideline</i> –		Under Imposed Condition 15, NAC is authorised to construct and maintain an appropriately engineered haul road crossing of Lagoon Creek as part of the access route for coal haulage. The haul road crossing structure within Lagoon Creek must not significantly impede the ephemeral flow regime or create a barrier for fish movement during periods of flow within the creek.

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Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
		construction of a haul road crossing at Lagoon Creek.	<i>Activities in a Watercourse, Lake or Spring associated with Mining Activities.</i>		NAC must comply with stated condition H40 and Table H4 - Maximum authorised impacts on MSES.
Groundwater bores	EIS Reference	Description	Coordinator-General's Report Consideration of infrastructure	Coordinator-General's Report Assessment	Mitigation measures
The Coordinator-General's Report notes that NAC will be required to develop and implement a robust groundwater monitoring program during the life of the project.¹¹ The groundwater bore monitoring locations will be contained within the groundwater monitoring and impact management plan. The Coordinator-General imposed	- AEIS, Appendix C section 3.6.7 and Table 3-12, Figure 3-3 shows the existing and proposed monitoring bores. - EIS, Chapter 6 (p.6-78) - AEIS Appendix H, Revised Groundwater Monitoring and Impact Management Plan	Appendix C, paragraph 3.6.7 of the AEIS details the groundwater monitoring program, which combines the existing Mine monitoring bores together with the additional bores already installed around the revised Project site. It notes that in addition, a further 16 bores will be added to the monitoring network. .	The Coordinator-General's Report considered the groundwater infrastructure proposed for the Groundwater Monitoring and Impact Management Plan (Appendix H AEIS).¹³	Coordinator-General's Report concluded that “ <i>I am satisfied that the project's proposed monitoring locations achieve a balanced spatial distribution of bores across all aquifers and adequately represent current and predicted future modelled impacted areas and aquifers at site.</i>”¹⁴ Coordinator-General's Report also noted that “<i>If the impact is determined</i>	The monitoring program for the new bores will be established prior to the commencement of mining to ensure there is sufficient baseline information on groundwater levels and quality for those bores (EIS, Chapter 6 (p.6-77)). EIS, Chapter 6 (p. 6-78) outlines that the groundwater monitoring network will: be installed and maintained by a person possessing appropriate qualifications and experience in the fields of

¹¹ p. vii CG Report.

¹³ p. 146 CG Report.

¹⁴ p. 146 CG Report.

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Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
conditions in Appendix 2 for the EA which identify groundwater monitoring sites and bore locations.¹² The Coordinator-General's Report noted that additional monitoring bores may be required to be incorporated. Additional or varied groundwater bore locations may be required under the Associated Water licence required for the Project or the Underground Water Impact Report.				<i>to be the result of mining activities, the proponent may be required to construct additional monitoring bores. Additional monitoring bores are to be incorporated in the Groundwater Monitoring and Management Plan.</i>¹⁵	hydrogeology and groundwater monitoring program design to be able to competently make recommendations about these matters; • be constructed in accordance with methods prescribed in the "Minimum Construction Requirements for Water Bores in Australia" (National Uniform Drillers Licensing Committee, 2012) by an appropriately qualified driller; and • include a sufficient number of 'bores of compliance' that are located at an appropriate distance from potential sources of impact from mining activities and provide the following: ○ representative groundwater samples from the uppermost aquifer; ○ background water quality in hydraulically up-gradient or

¹² Table E1 of the Stated Conditions for the EA.

¹⁵ p. 149 CG Report.

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report		Mitigation measures
					background bore(s) that have not been affected by any mining activities conducted by NAC; and ○ the quality of groundwater down gradient of potential sources of contamination. The groundwater management and monitoring program is to be prepared by an appropriately qualified person and approved under Imposed condition 10 of the Coordinator-General's Report.
Construction of Infrastructure	EIS Reference	Description	Coordinator-General's Report Assessment		Mitigation measures
The construction of infrastructure was assessed as part of the Coordinator-General's assessment.	• AEIS, Appendix C - Revised Environmental Management Plan	Construction of infrastructure was addressed in the EM Plan in AEIS Appendix C. See above rows.	Under Imposed Condition 14, pre-clearance surveys for flora and fauna are required before construction. Annexure 3 Schedule 2 Condition 6 of the Coordinator-General's Report requires a <i>Traffic Management Plan/s (TMP)</i> in accordance with <i>DTMR's Guide to preparing a Traffic Management Plan and/or as required by TRC. A</i>		Surface water management control measures and erosion and sediment control measures are addressed in AEIS Appendix C sections 3.7.10 and 3.7.11. AEIS Appendix C section 3.8.6 sets out strategies for

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report	Mitigation measures
			<i>TMP must be prepared and implemented during the construction and commissioning of each site where road works are to be undertaken, including site access points, road intersections or other works undertaken in the state-controlled road corridor.</i>	management of construction including topsoil stripping, topsoil stockpile management and erosion control measures for infrastructure such as haul roads, hardstands and/or access roads. Noise and dust impacts associated with construction are controlled by stated conditions including the requirement to meet noise and dust limits and the noise and vibration management plan and air quality management plan. NAC must comply with stated condition H40 and Table H4 - Maximum authorised impacts on MSES.
<i>Other Expert Material</i>	Dr Andrew Daniel, provided expert evidence in relation to ecology and flora in the Second Remitted Land Court Hearing and in his report noted minor changes to the impact area including for ancillary infrastructure identified in the Project Overview provided by NAC. In that regard, Dr Daniel noted that these do not affect any vegetation communities which are MNES and Matters of State Environmental Significance (MSES). Dr Daniel's report is attached at Annexure K. Adrian Caneris, an expert in relation to fauna expertise, gave evidence in the Second Remitted Land Court Hearing. In his report he noted that the calculations for the significant residual impacts on MNES and MSES reflected the project design, including associated ancillary infrastructure, and further advanced field assessments to identify the actual impacts more accurately. These are reflected in the impact areas contained in the proposed updated Table H4. Mr Caneris stated that "The proposed amendment to Table H4 of Condition H40 is consistent with the approved Environmental Offset Strategy and reflect the revised maximum areas of residual impact identified through the project's pre-clearance surveys and the flora expert evidence provided during the original Land Court proceedings. The proposed changes provide consistency between the			

Annexure I - A2c) Infrastructure - Reasons and effect of proposed changes

Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report	Mitigation measures
	Coordinator-General Imposed Conditions, the Statutory Party Environmental Authority and the approved Environmental Offset Strategy. Mr Caneris concluded that the imposed conditions and identified offset areas in combination with the Lagoon Creek Conservation Zone and associated management actions will provide an increase in overall fauna habitat values and habitat connectivity and that the mitigation responses in combination with the imposed offsetting conditions will result in an overall net benefit for fauna and fauna habitats which would otherwise be unlikely to occur. Mr Caneris' Report is attached at Annexure L.			
Decommissioning of Infrastructure	EIS Reference	Description	Coordinator-General's Report Assessment	Mitigation measures
Site infrastructure will generally be decommissioned and demolished in the line with the post mine land use. Rehabilitation conditions are stated in Schedule H including for Mine Infrastructure Areas, Tailings Dams and Linear Infrastructure Areas. Imposed condition 7 further specifies rehabilitation requirements.	- EIS, Chapter 3, section 3.11.2 (p. 3-100) - AEIS, Appendix C, section 3.10 and Table 3-24	Proposed decommissioning control strategies were outlined in the EIS and AEIS. AEIS, Appendix C, section 3.10.6 at p. 133 outlines the Life of Mine (LoM) Plan developed for New Acland Coal Mine. It states relevantly that the decommissioning and final rehabilitation of the revised Project will occur on a staged basis over several years. On the completion of mining,	Water management infrastructure including levees are to be rehabilitated in accordance with the rehabilitation requirements set in the Coordinator-General's Stated Conditions.¹⁶ Imposed condition 7 of the Coordinator-General's Report sets criteria for rehabilitation for mine disturbance. Imposed condition 8 requires the Final Land Use and Rehabilitation Plan (FLURP) to be submitted to the Coordinator-General for approval. Stated condition C6 requires a rehabilitation strategy and rehabilitation monitoring for tailings disposal. Stated conditions H29 and H30 specifies requirements for rehabilitation and decommissioning of dams. At page 144, the Coordinator-General concluded in relation to regulated structures, that the requirements for	Rehabilitation generally is addressed in the Final Land Use and Rehabilitation Plan (FLURP) under Imposed Condition 8. Strategies for rehabilitation are also discussed for Tailings Dams, Mine Infrastructure areas and Linear infrastructure in Tables 3-23 and 3-24 Appendix C of the AEIS. Progressive rehabilitation practices will continue for Stage 3 to target rehabilitation of those areas no longer required for mining activities.

¹⁶p. 143 CG Report.

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Ancillary Infrastructure	EIS / AEIS Description	Coordinator-General's Report	Mitigation measures
	infrastructure will be treated as follows: • mine roads will be left behind for use as farm roads or if not required, rehabilitated; • water dams will remain if required by the relevant landowner and approved by regulators, otherwise, they will be rehabilitated; • buildings, plant and equipment will be removed and the surface rehabilitated, including the CHPP, workshop, offices, storage tanks and material handling facility and train loadout facility; • concrete pads will be covered with benign waste rock, topsoiled and revegetated or removed and disposed to the nearest landfill;	safe decommissioning and rehabilitation of structures are detailed in the conditions. At p. 4 of the Coordinator-General's Report, in consideration of the development of the Project, it was stated that a Mine Closure Plan would be developed by the proponent in advance of closure and decommissioning of the project.	

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Ancillary Infrastructure	EIS / AEIS Description		Coordinator-General's Report	Mitigation measures
		- contaminated land management will be completed as required under the EP Act; and - all tailings facilities will possess a competent final cover system.		

IN THE LAND COURT
OF QUEENSLAND

LAND COURT

27/09/2021

FILED

MRA026-21

MRA027-21

EPA028-21

BETWEEN

New Acland Coal Pty Ltd

Applicant

AND

Oakey Coal Action Alliance Inc & Ors

Respondents

STATEMENT OF EVIDENCE TO THE LAND COURT BY GREGORY KENNETH ROADS

1. **Expert's details and qualifications**

1.1 My name is Gregory Kenneth Roads.

1.2 My business address is Level 9 135 Wickham Terrace Spring Hill, Queensland.

1.3 I hold the following qualifications:

(a) Bachelor of Engineering (Civil) (Honours) from the University of Technology, Sydney

(b) Registered Professional Engineer of Queensland (#6413)

1.4 Annexure A to this statement is my curriculum vitae.

2. **Background**

2.1 I was previously engaged by the Applicant, New Acland Coal Pty Ltd (**NAC**) as an expert witness in the initial Land Court proceedings for New Acland Coal Mine Stage 3 Expansion project (**the Project**), which commenced in 2015 and concluded in 2017 (**Original Proceedings**).

2.2 I am aware that as a result of a series of subsequent challenges to the decision in the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).

2.3 I am engaged by the Applicant to act as an expert witness in the Rehearing in respect of the surface water aspects of the application, namely flooding and water quality. My letter of instructions from Clayton Utz is provided in Annexure B.

2.4 In summary, my instructions are to prepare a statement of evidence to the Land Court in relation to matters relevant to my field of expertise that are raised in the Mining Lease Application (MLA) and Environmental Authority (EA) amendment objections and that considers:

(a) my statements of evidence filed in the Original Proceedings;

(b) the material I have been briefed with;

- (c) those objections raised in the MLA and EA amendment objections hearing which relate to surface water; and
- (d) the conditions in the Applicant's Draft EA and Statutory Party EA relevant to my area of expertise.

3. Statement of Evidence for Original Proceedings

3.1 I prepared the following statements and reports for the Original Proceedings:

- (a) My statement of evidence dated 19 February 2016, recorded as Exhibit 413 in the Original Proceedings (**Original Statement**) and provided in Annexure C to this statement.
- (b) My joint expert report prepared with Dr John Standley dated 25 January 2016, recorded as Exhibit 398 in the Original Proceedings (**JER**), and provided in Annexure D to this statement.
- (c) My supplementary statement of evidence dated 20 February 2017, recorded as Exhibit 1908 in the Original Proceedings (**Supplementary Statement**), and provided in Annexure E to this statement.
- (d) My second supplementary statement of evidence dated 20 March 2017 recorded as Exhibit 1912 in the Original Proceedings (**Second Supplementary Statement**) and provided in Annexure F to this statement.

3.2 Parts of the statements have been redacted where they refer to the opinions of an expert called by an objector in the Original Proceedings who I am advised by Clayton Utz is not being called by that objector in the Rehearing.

3.3 I have reviewed the opinions in my statements, which were based on the Draft EA issued in August 2015 (2015 Draft EA). I am instructed that the '2015 Draft EA' is the draft EA dated 28 August 2015 issued by the Department of Environment and Heritage Protection pursuant to section 181 of the *Environmental Protection Act 1994 (Qld)*. The opinions I expressed in my statements continue to be held by me. That is:

- (a) The water conditions in the 2015 Draft EA are sufficient to protect the environmental values of the receiving waters (noting there are new draft EAs to consider and some suggested changes to these EA's (see Section 4)).
- (b) The Applicant's proposed water management strategy outlined in Chapter 5 (Surface Water Resources) of the Environmental Impact Statement (EIS) has been demonstrated through modelling to be sufficient to comply with the Draft EA conditions.
- (c) The EIS has sufficiently demonstrated (through flood modelling) that:
 - (i) the proposed flood protection levees will prevent floodwater from inundating the mining areas;
 - (ii) these works would not impact on the geomorphic characteristics of Lagoon Creek; and
 - (iii) the flooding impacts on neighbours are minimal and have been sufficiently described and assessed.
- (d) The compliance monitoring program proposed in the EA is practical and reasonable and generally consistent with contemporary Queensland Government guidelines¹.
The only material difference being that the 2015 Draft EA (and the

¹ Model Mining Conditions for resource activities guideline updated by the Department of Environment and Science (DES) in March 2017

Coordinator General Evaluation report) require the water quality constituents listed in Table C4 of the 2015 Draft EA to be monitored and assessed in the receiving waters. The Model Mining Conditions require these constituents to be monitored at the release point and in the receiving waters, with the release water quality used to trigger when further investigation is required. In my view, both monitoring requirements achieve the same goal, which is to determine whether a release could have caused environmental harm and to prompt the applicant to undertake actions to prevent future environmental harm.

4. Changes since the original proceedings

Updated DRAFT EA

- 4.1 At the commencement of the second Land Court remittal hearing, the Applicant and the Statutory Party each provided the draft EAs they are proposing, being respectively the 'Applicant's Draft EA' filed 15 February 2021 (Document No. F.0003) and the Statutory Party EA filed with the Affidavit of Juliana McCosker dated 10 March 2021 (Document No. F.0020). I have considered the conditions in the Applicant's Draft EA and Statutory Party EA relevant to my area of expertise, being the water conditions in Schedule C, and note there are no substantive differences between them and Schedule C of the 2015 Draft EA upon which my opinions in the original proceedings were based.
- 4.2 Condition 24 of the 2015 Draft EA has been removed from the Applicant's Draft EA, which appears to have been included in error in the 2015 Draft EA, as it is partly duplicated in Condition C15. The removal of this condition is therefore not a material change.

Condamine River Environmental Values and Water Quality Objectives

- 4.3 At the time of the Original Proceedings, the Queensland Government had not completed the process of defining the environmental values (EV's) and water quality objectives (WQO's) of the receiving waters of the Project (Lagoon Creek and Spring Creek). As stated in paragraph 4.4 of my Supplementary Statement, the EV's and WQO's are determined through a process of biological and ecological technical studies (amongst others) as well as by community consultation. As a result, the ANZECC and ARMCANZ (2000) water quality guidelines were used as interim WQO's in the 2015 Draft EA.
- 4.4 Since the Original Proceedings the Condamine River Basin Environmental Values and Water Quality Objectives² have been finalised. The Project is located within the Plan area defined by this Policy. The Condamine WQO's are based on local water quality monitoring data collected in the Condamine River catchment and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality Guidelines (2018, as amended) (ANZG) where local data is not available. The ANZG (2018) guidelines have replaced the ANZECC and ARMCANZ (2000) guidelines that are referenced in the 2015 Draft EA as well as the subsequent EA's. In my view, the EA for the Project should be updated to be consistent with the Condamine WQO's and the ANZG (2018) guidelines. In particular:
- (a) The electrical conductivity (EC) release limits in Table C3 of the EA may need to change. These release limits were determined by targeting an EC of 700 microSiemens per centimetre ($\mu\text{S}/\text{cm}$) in the receiving water downstream of the release point during a release event, which would be fully mixed with the release water. This target EC limit is referenced in Table C4 of the EA. The Condamine WQO's suggest that an EC of 510 $\mu\text{S}/\text{cm}$ should be used as the downstream receiving water target. In my view, the Condamine WQO EC limit should be used to define the EC release limits in Table C3.
 - (b) The Receiving Water Contaminant Trigger Levels in Table C4 of the EA

² Prepared by Environmental Policy and Planning Division, Department of Environment and Science (2020) pursuant to the provisions of the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*

should reference the ANZG (2018) guideline and not the ANZECC and ARMCANZ (2000) guidelines. If updated, some water quality trigger levels would reduce, particularly the EC value, and some would increase.

- 4.5 In my view, the proposed surface water management system outlined in the EIS would be able to comply with the above changes without requiring significant change for the following reasons:
- (a) The adopted EC of the receiving water used to define the Table E3 dilution ratios is conservatively high and much higher than the recorded EC in Lagoon Creek as reported in the EIS (Table 5-6). It is also higher than recorded EC of the receiving water that has been collected since the EIS was prepared and provided to me by the Applicant. The use of a more realistic (lower) background EC in the receiving water provides more opportunity to release than what has been adopted in the EIS, in effect balancing out the reduced release opportunity due to the lower EC target.
 - (b) The Applicant could increase the capacity of some of the mine water management dams or additional water may be stored in pit to comply with the lower downstream EC target. These are typical adaptive management measures that would be used on mine sites across Queensland to comply with the EA conditions when conditions change or are conditions are different to model predictions.
- 4.6 The suggested changes to the EA conditions are not a significant change to the existing conditions but are more contemporary and reflect the latest available data.

Receiving Environment Monitoring Plan

- 4.7 The approval conditions of the Project under the *Environmental Protection and Biodiversity Act 1999* (EPBC) required the Applicant to submit a Receiving Environment Monitoring Plan (REMP) to the Minister for written approval (condition 10).
- 4.8 I have been instructed that the REMP has been prepared and approved by the Minister.

5. Conclusions

- 5.1 Overall, I am satisfied that the draft EA conditions for the Project are sufficient to protect the environmental values of the local receiving waters. The suggested changes to the Draft EA conditions to be consistent with the Condamine WQO's and ANZG (2018) guidelines would further protect the environmental values, if adopted.
- 5.2 I am satisfied that the Project would be able to comply with the EA conditions, should they be updated to be consistent with the Condamine WQO's and ANZG (2018) guidelines.
- 5.3 I remain satisfied that the Project will have no material flooding impacts on neighbours or impact on the geomorphology of Lagoon Creek.

6. Expert's Statement

- 6.1 I confirm that:
- (a) the factual matters stated in this statement are, as far as I am aware, true;
 - (b) I have made all enquiries that I consider appropriate;
 - (c) the opinions stated in this statement are genuinely held by me;
 - (d) this statement contains references to all matters I consider significant;
 - (e) I understand I have a duty to the court and have complied with that duty;
 - (f) I have read and understand the rules contained in Part 5 of the *Land Court*

Rules 2000 (Qld), as far as they apply to me; and

- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

A handwritten signature in black ink, appearing to read 'GKR', with a long horizontal flourish extending to the right.

Gregory Kenneth Roads

24 September 2021

Annexure A – Curriculum Vitae



Curriculum Vitae

Greg Roads

BE (Civil) MIEAust RPEQ (6413)

DIRECTOR / SENIOR PRINCIPAL ENGINEER

Professional history

2004 to present

Director

WRM Water & Environment

1997 to 2004

Senior Engineer

Water Studies

1993 to 1997

River Engineer/Floodplain Engineer

NSW Dept of Land and Water Conservation

1988 to 1993

Cadet Engineer

NSW Dept of Land and Water Conservation

Fields of expertise

- Expert evidence
- Hydrological modelling
- 2D and 1D hydraulic modelling
- Extreme flood estimation
- Floodplain management
- River engineering and fluvial geomorphology
- Water allocation and resource planning
- Mine site water management
- Water balance and yield studies
- Water quality management.

Education

- Bachelor of Engineering (Civil) (First Class Honours), University of Technology, Sydney, 1993.

Professional affiliations

- Member, Engineers Australia
- Registered Professional Engineer, Queensland, Australia
- Member Australian Water Association
- Member Stormwater Industry Association.

Regions

- Australia
- Canada
- Solomon Islands
- Philippines
- Indonesia
- Thailand.

29 years of experience

Profile

Greg is a founding director of WRM and has 29 years experience in the water industry. He offers clients expertise in environmental planning, water allocation, river engineering and the management of riverine corridors and floodplains.

Greg spent the first decade of his career in largely 'hands-on' roles developing his technical and practical skills in the construction of river engineering works as well as undertaking hydraulic and hydrological modelling studies. For the past 20 years, he has provided expert water resource management advice to clients in local and state governments and the mining, development, insurance and agricultural sectors. He has worked on major dam and flood studies across Australia and appeared as an expert witness in numerous court cases and before government inquiries.

Greg combines technical expertise with strong stakeholder liaison and communication skills. He was highly commended by his then employer for his work with the community on the Tumut and Upper Murray River Works Program. He has also lectured in water resource management, extreme flood estimation, hydraulic modelling and river engineering at the Queensland University of Technology.

Major Mining Assessments

- BHP Water Management Standard, Qld
- Middlemount Mine Stage 1, Stage 2 Western and Southern Extension Assessments, Qld
- Narrabri Mine Surface Water Assessments, Stage 1, Stage 2, and Southern Assessments, NSW
- Pembroke Olive Downs Surface Water Assessment and Land Court, Qld
- Maxwell Project Surface Water Assessment, Qld
- BHP Goonyella Riverside Flood Study, Qld
- BHP Norwich Park Flood Study, Qld
- BHP Rain on grid flood assessments, Daunia, Poitrel and South Walker, Qld
- Moranbah North Extension Flood and Geomorphic assessment, Qld
- Ensham Mine Geomorphic Impact Assessment, Qld

Experience

Expert witness experience

Pembroke Olive Downs v Sunland Cattle & ors Queensland (2020)

Prepared and presented evidence to the Qld Land Court in relation to the objections lodged in opposition to the Pembroke Olive Downs Coking Coal Project. [Allens](#)

New Acland Coal Ltd Vs Frank Ashman & Ors Queensland (2016-17)

Prepared and presented evidence to the Qld Land Court in relation to the objections lodged in opposition to the New Acland Coal Mine Stage 3 Expansion project near Oakey in Queensland. [Clayton Utz](#)

Holcim's Innes Park South Quarry Project Ministerial Call in Queensland (2014)

Prepared an independent review of the stormwater impacts of Holcim's proposed Innes Park South Quarry near Bundaberg to assist the Deputy Premier in deciding the application. [Qld Department of State Development, Infrastructure and Planning](#)

Endocoal Ltd Vs Glencore Coal Pty Ltd Queensland (2014)

Prepared and presented evidence to the Qld Land Court on a dispute over potential water quality impacts of a mining lease and environmental authority granted for the Meteor Downs South Project near Rolleston. Assisted in the preparation and negotiations of a make good agreement with the objector. [Clayton Utz](#)

Commission of Inquiry into the operation of Wivenhoe Dam Queensland (2011 and 2012)

Prepared an independent review and provided expert evidence at the Commission of Inquiry into the operation of Wivenhoe Dam during the January 2011 flood of Brisbane and Ipswich. [Seqwater and the Commission of Inquiry](#)

Flood Studies

Isaac River Flood Study Queensland (2019)

Determined the flood risk from the Isaac River and Eureka Creek for the Goonyella Riverside and Broadmeadow mines. A RAFTS and TUFLOW models were developed for the study. [Anglo Coal](#)

Saddlers Creek Flood Study New South Wales (2015)

Determined the flood risk from Saddlers Creek, a tributary of the Hunter River for the proposed Drayton South Mine using the RAFTS and HEC-RAS models. [Anglo Coal](#)

Condamine River Flood Study Queensland (2014)

Developed an URBS hydrologic model of the Condamine River to Chinchilla. The model was calibrated to seven stream gauges for four historical floods. A TUFLOW 2D hydraulic model of the Condamine River was developed to estimate design flood levels for large and rare floods. [CS Energy](#)

Tomahawk and North Creek Flood Study Queensland (2014)

Determined the flood risk along Tomahawk and North Creek (and tributaries) across the proposed Project China Stone Mine in the Gallilee Basin using the RAFTS and TUFLOW models. [Macmines Austasia Pty Ltd](#)

German Creek Flood Study Queensland (2014)

Determined the flood risk along German Creek and Cattle Creek across the German Creek mining complex using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Amagula and Emerald River Flood Study Northern Territory (2014)

Determined the flood risk for a proposed expansion to the Manganese Mine on Groote Eyelandt in the Gulf of Carpentaria using the RAFTS and TUFLOW models. [BHP Billiton Manganese Australia Pty Ltd](#)

Isaac River Cherwell Creek Flood Study Queensland (2013)

Determined the flood risk along the Isaac River, Cherwell Creek, Grosvenor Creek (and tributaries) across the proposed Moranbah South Project area, near Moranbah using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Hail Creek Flood Study Queensland (2013)

Determined the flood risk along Hail Creek across the Hail Creek Mine using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Blackwater Creek Flood Study Queensland (2013)

Determined the flood risk along Blackwater and Taurus creeks across the proposed Minyango Coal Mine using the RAFTS and TUFLOW models. [Blackwater Coal Pty Ltd](#)

Namoi River Flood Study New South Wales (2012)

Developed and calibrated a TUFLOW two dimensional hydraulic model of the Namoi River from Gunnedah to Boggabri to assess the impact of a proposed rail spur on the Namoi River Carroll to Boggabri Floodplain Management Plan. [Coalworks](#)

Hunter River Flood Study New South Wales (2010)

Developed a TUFLOW hydraulic model of the Hunter River to determine the impact of proposed flood protection levees for the Carrington West Wing Extension. [Coal & Allied Operations Pty Ltd](#)

Isaac River Flood Study Queensland (2009)

Developed an XP-RAFTS rainfall runoff model and a TUFLOW hydraulic model of the Isaac River and Cherwell Creek at the proposed Isaac Plains South mine to determine the impact of mine infrastructure and flood protection levees on flood levels and creek erosion potential. [Isaac Plains Coal](#)

Namoi River Flood Study New South Wales (2009)

Developed a TUFLOW hydraulic model of the Namoi River to assess the impact of a proposed rail crossing for the Boggabri Coal Mine. [Boggabri Coal](#)

Roper Creek Flood Study Queensland (2008)

Developed a TUFLOW model of Roper Creek at the Middlemount Coal Mine to determine the impact of mine infrastructure and flood protection levees on flood levels and creek erosion potential. [Middlemount Coal](#)

Einasleigh River Flood Study Queensland (2008)

Developed an URBS rainfall runoff routing model and a TUFLOW model of the Einasleigh River and Coppermine Creek at Einasleigh. [Copperstrike](#)

Glennies Creek/Bettys Creek Flood Study and Mine Subsidence Study New South Wales (2006)

Developed and calibrated an URBS hydrologic model and HEC-RAS hydraulic models of Glennies Creek and Bettys Creek. Assessed impact of mine subsidence on flooding and channel degradation. [Glennies Creek Colliery](#)

Condamine/Kogan Creek Flood Study Queensland (2003-2006)

Developed URBS hydrologic models and a TUFLOW 2D hydraulic model of the Condamine River and Kogan Creek to determine the impact of the Kogan Creek power station and coal mine. Designed stream diversion and bridge crossing. [CS Energy](#)

Neubecks Creek/Cox's River Flood Study New South Wales (2005)

Prepared a floodplain management plan of Neubecks Creek and Cox's River for the Pine Dale Coal Mine. Estimated design flood flows and flood levels and assessed the impact of flood protection levees on flood levels and creek erosion measures. [Enhance Place Pty Ltd](#)

Hinadladan and Tandawa River Flood Study, Adlay Philippines (2001)

Estimated peak discharges and flood levels along the Hinadladan and Tandawa rivers in the Southern Philippines where annual rainfalls exceed 5 m. Assessed the impact of blocking up to one-third of the floodplain on peak flood levels at a nearby highway crossing. Developed an URBS hydrological and Mike 11 quasi- 2D hydraulic model of the two creeks. [QNI Resources](#)

Project Stone Coal Project Flood Risk Management Study Queensland (2014)

Developed a series of diversion drains and flood levees to protect the open cut mining areas on the Project Stone Coal mine in the Gallilee Basin. A RAFTS rainfall runoff model and a TUFLOW hydraulic model were developed to assess the flood risk management strategies. [Macmines Austasia Pty Ltd](#)

River Engineering Studies

Roper Creek Diversion Functional Design Queensland (2019)

Developed a functional design of a realignment of the Roper Creek channel at Middlemount Coal mine. [Middlemount Coal Pty Ltd](#)

Ensham Mine Residual Void Study Geomorphic Impact assessment Queensland (2018)

Assessed the potential geomorphic impacts of a range of final landform scenarios of the Ensham mine on the Nogoa River and its floodplain. [Ensham Resources Pty Ltd](#)

Saraji East Project Stream diversion peer review Queensland (2018)

Undertook an independent review of potential stream diversion options of Phillips Creek and Spring Creek for the Saraji East Project. [BMA Coal Operations Pty Ltd](#)

Thirteen Mile Gully Realignment Concept Design Queensland (2018)

Developed a functional design of a realignment of a stream diversion of Thirteen Mile Gully for the Middelmont Coal mine. [Middelmont Coal Pty Ltd](#)

Moranbah North Mine Expansion Geomorphic Assessment and Mine Subsidence Impact Study Queensland (2018)

Undertook hydraulic and geomorphic characterisation of Teviot Brook and Skeleton Gully and assessed the impact of mine subsidence on flooding and geomorphic behaviour. [Anglo American Metallurgical Coal Pty Ltd](#)

Flying Doctor Mine Stream Diversion Design New South Wales (2017)

Developed concept designs of two stream diversions of minor gullies draining the proposed Flying Doctor Mine. The designs of the proposed channels were based on the hydraulic and geomorphic characteristics of the existing channels that were replaced. [Perilya Broken Hill Pty Ltd](#)

Project China Stone - EIS Open Cut Mine Drainage, Queensland (2014)

Developed detailed hydrologic and two-dimensional hydraulic models of proposed highwall diversion drains to convey runoff from upstream catchments around proposed open cut mining areas at the Project China Stone site. The hydraulic models were used to investigate the hydraulic characteristics of the drainage features that were being diverted, and ensure the designs of the diversion drains replicated (where possible) the existing drainage features. The hydraulic models were also used to investigate the impact of the proposed diversion drains on neighbouring landholders and downstream watercourses. [Hansen Bailey](#)

Aquila and Grasstree Mine Geomorphic Assessment and Mine Subsidence Impact Study Queensland (2013)

Undertook hydraulic and geomorphic characterisation of German Creek and Cattle Creek and assessed the impact of mine subsidence. [Anglo American Metallurgical Coal Pty Ltd](#)

Minyango Project Geomorphic Assessment and Mine Subsidence Impact Study Queensland (2013)

Undertook hydraulic and geomorphic characterisation of Blackwater Creek and assessed the impact of mine subsidence. [Blackwater Coal Pty Ltd](#)

Moranbah South Geomorphic Assessment and Mine Subsidence Impact Study Queensland (2013)

Undertook hydraulic and geomorphic characterisation of the Isaac River, Grosvenor Creek and Cherwell Creek across the Moranbah South Project near Moranbah. Assessed the impact of mine subsidence on the watercourses. [Anglo American Metallurgical Coal Pty Ltd](#)

Carbine Creek and Crystal Creek Diversion Feasibility Study Queensland (2012)

Developed concept design options for the diversion of Carbine and Crystal creeks for the proposed Valeria Project. [Rio Tinto Coal Australia Pty Ltd](#)

Thirteen Mile Gully Diversion Concept Design Queensland (2012)

Developed concept design of a stream diversion of Thirteen Mile Gully for the Middlemount Coal mine. [Middlemount Coal Pty Ltd](#)

Roper Creek Stream Diversion Study Queensland (2010)

Developed concept design of a stream diversion of Roper Creek for the Middlemount coal mine. [Middlemount Coal Pty Ltd](#)

Dareton Quarry Expansion Hydraulic Geomorphic Assessment New South Wales (2010)

Assessed the potential changes in the hydraulic and geomorphic characteristics of the Murray River due to the proposed extension of a sand dredge. [Boral Pty Ltd](#)

Bettys Creek Stream Diversion Study New South Wales (2009)

Used natural channel design principles to develop a concept design of a stream diversion of Bettys Creek, a tributary of the Hunter River, for a proposal to that involved longwall mining lowering ground levels by up to 4.5m. Changes in stream power and shear stresses, estimated using a hydraulic model, were used to define potential erosion problem areas. The concept design was submitted as part of the Barrett and Hebden Seam longwall mining EIS. [Integra Coal](#)

Conrock Gully Diversion Concept Design, Moranbah Queensland (2008)

Developed a concept design of a stream diversion of Conrock Gully, a minor tributary of the Isaac River, using natural channel design principles. The changes in stream power and shear stresses, estimated using a hydraulic model, were used to define potential erosion problem areas. The concept design was submitted as part of the Isaac Plains Expansion EIS. [Isaac Plains Coal](#)

South Pine River Erosion and Stability Assessment, Draper Queensland (2006)

Assessed the stability of a section of the South Pine River using geomorphic principles to determine the appropriate set-back distance for a proposed development. [Oakwood Australia](#)

Bettys Creek Geomorphic Assessment and Mine Subsidence Study New South Wales (2006)

Assessed erosion potential along Bettys Creek, a tributary of the Hunter River, for a proposal that involved longwall mining lowering ground levels by up to 1.5 m. The changes in stream power and shear stresses, estimated using a hydraulic model, were used to define potential erosion problem areas. Erosion protection measures were designed using natural channel design principles. [Glennies Creek Colliery](#)

Kogan Creek/Eastern Branch Creek Diversion Queensland (2006)

Developed a detailed design of the Eastern Branch Creek diversion around the proposed Kogan Creek Coal Mine. The hydraulic and geomorphic characteristics of the existing creek were used as the template to design the new diversion. Highly dispersive soils in the area meant that velocities and shear forces could not be increased. A 2D model of the area was developed. [CS Energy](#)

Minesite Water Management Studies

BHP Mines Rain-on-Grid Drainage studies, Queensland (2020)

Developed rain-on-grid hydraulic models of Daunia, Poitrel and South Walker Mines to assess local stormwater flood risk and pit inundation [BHP Metcoal Holdings](#)

Middlemount Mine Southern Extension Surface Water Assessment, Queensland (2020)

Prepared a surface water technical report to support a consent modification for Middlemount Mine. The modification required a stream diversion and a significant change to the final landform [Middlemount Coal](#)

Narrabri Mine Southern Extension Surface Water Assessment, New South Wales (2020)

Developed a Goldsim water and salt balance of the Narrabri Mine water management system, including dirty, saline and mine affected water management dams, and micro-filtration and reverse osmosis water treatment plants. The impact of the proposed modification on the approved mine subsidence and existing surface drainage features was also investigated. The Narrabri Mine Water Management Plan was updated to incorporate the proposed changes. [Whitehaven Coal Pty Ltd](#)

Goonyella Riverside Mine Flood Study, Queensland (2019)

Developed rain-on-grid hydraulic models of the mine to assess local stormwater flood risk and pit inundation. Developed hydrological and hydraulic models of the Isaac River to assess flood risk. [BHP Metcoal Holdings](#)

Peak Downs Mine Flood Study, Queensland (2020)

Developed rain-on-grid hydraulic models of the mine to assess local stormwater flood risk and pit inundation. Developed hydrological and hydraulic models of Downs Creek, Stevens Creek, Scott Creek and Roper Creek to assess flood risk. [BHP Metcoal Holdings](#)

BMA Erosion and Sediment Control and Mine Affected Water Standard, Queensland (2019)

Worked with BMA staff to facilitate the development of a standard to implement Best Practice Erosion and Sediment Control and Mine affected water management across the Queensland BMA sites. [BHP Mitsubishi Alliance](#)

Maxwell Project EIS - Surface Water Assessment, New South Wales (2019)

Prepared a surface water technical report EIS to support an application for an underground coal mine in the Upper Hunter. A water management strategy was developed for the operational phase and assessed using OPSIM water balance model. Final void assessments were undertaken for the old Drayton Mine pits, which forms part of the project. [Malabar Coal Limited](#)

Narrabri Mine Brine Management Plan, New South Wales (2019)

Developed and assessed a range of proposed strategies to manage the long term production of brine at the Narrabri Mine micro-filtration and reverse osmosis water treatment plants. [Whitehaven Coal Pty Ltd](#)

Olive Downs Project EIS - Surface Water Assessment, Queensland (2018)

Assisted in the preparation of a surface water technical report EIS to support an application for a major open cut coal mine in the Bowen Basin. A water management strategy was developed for the operational phase and assessed using OPSIM water balance model. [Pembroke Resources](#)

Middlemount Mine Western Extension Surface Water Assessment, Queensland (2018)

Prepared a surface water technical report to support a consent modification for Middlemount Mine. The modification required a stream diversion and a significant change to the final landform [Middlemount Coal](#)

Due diligence assessment Kestrel and Hail Creek Mine Queensland (2018)

Prepared an independent audit of the Kestrel and Hail Creek mine water management issues as part of a due diligence assessment [South32](#).

Wilkie Creek Coal Mine – Final Void Water Balance Model Queensland (2018)

Developed a GOLDSIM final void water balance model final void model with the aim of providing site with forecast water balance and assist in managing operational risk associated with water management. [Peabody Australia](#)

Cambey Downs Mine – Surface Water Assessment Surat Basin Queensland (2017-18)

Undertook a surface water impact assessment for an extension to an existing open-cut coal mine located near the Condamine River in the Surat Basin, Qld. Study included conceptual design and water balance modelling, including the sizing of mine storages and development of water management procedures. [Yancoal](#)

Middlemount Mine North East Extension Surface Water Assessment, Queensland (2016)

Prepared a surface water technical report to support a consent modification for Middlemount Mine. The modification required a modification of the final landform and additional water management structures. The Water Management Plan was updated to incorporate the modification. [Middlemount Coal](#)

New Acland Coal Water Management Plan Review Queensland (2016)

Provided an independent review of the proposed surface water impact assessment for the Stage 3 expansion of New Acland Coal [New Hope Group](#)

Narrabri Mine Modification 5 Surface Water Assessment, New South Wales (2015)

Developed a Goldsim water and salt balance of the Narrabri Mine water management system, including dirty, saline and mine affected water management dams, and micro-filtration and reverse osmosis water treatment plants. The impact of the proposed modification on the approved mine subsidence and existing surface drainage features was also investigated. The Narrabri Mine Water Management Plan was updated to incorporate the proposed changes. [Whitehaven Coal Pty Ltd](#)

Balranald Mineral Sands Project Surface Water Management Report New South Wales (2015)

Prepared a surface water management report for a proposed mineral sands mining operation in south-western NSW. The surface water management report included details of proposed surface water management infrastructure, detailed daily water balance modelling of the proposed water management system, a flood study of the project area and an assessment of potential impacts to surface water due to the project. [Iluka Resources](#)

Ulan Mine Water Management Plan Audit, New South Wales, (2013 and 2016)

Investigated the surface water aspects of the Ulan Coal Mine for an independent environmental compliance audit for the Department of Planning and Environment. [Hansen Bailey](#)

Isaac Plains Mine Water Management Plan, Queensland (2015)

Prepared a Water Management Plan for the care and maintenance phase of the mine. [Middlemount Coal](#)

Bengalla Coal Mine Modification, Surface Water Assessment and Water Management Plan New South Wales, (2015)

Prepared a surface water technical report to support a consent modification for Bengalla Mine. The modification required diversion of a floodplain watercourse and construction of new sediment control dams. [Hansen Bailey](#)

Middlemount Mine Residual Void Hydrology Study, Queensland (2015)

Prepared a surface water assessment of the final landform of the mine including a water balance of the final void and an assessment of long term mine drainage [Middlemount Coal](#)

White Dam Gold Mine Mine Closure Water Management Plan, South Australia (2014)

Prepared a water management strategy for the closure of the White Dam Gold Mine. Developed a water balance model of the final void and prepared a drainage strategy for the final landform. [Exco Resources](#)

Meteor Downs Surface Water Impact Assessment, Queensland (2012-13)

Prepared a surface water impact assessment for a proposed open-cut coal mine located within the floodplain of Spring Creek, north of Rolleston. Study included detailed hydrologic and hydraulic modelling, and water balance modelling, including the sizing of mine storages and development of water management procedures (e.g. controlled releases of water in accordance with Fitzroy Basin Model Water Conditions). [McCollum Environmental Management Pty Ltd](#)

Peabody Energy Australia – Erosion and Sediment Control Standard Queensland (2013)

Developed an Erosion and Sediment Control (ESC) Standard for all Peabody mines in Queensland, incorporating the preparation of ESC implementation plans for a number of sites. [Peabody Energy Australia](#)

Moranbah South Project Surface Water Assessment, Queensland (2013)

Development of a water balance model and assessment of surface water impacts as part of an EIS for the proposed Moranbah South Project. [Anglo American Metallurgical Coal Pty Ltd](#)

Isaac Plains South - Surface Water Infrastructure Concept Design and Assessment, Queensland (2013)

Development of concept design of flood protection levees, a stream diversion and mine water management infrastructure. [TMM Group](#)

Minyango Project Surface Water Assessment, Queensland (2013)

Development of a water balance model and assessment of surface water impacts as part of an EIS for the proposed Minyango Project. [Blackwater Coal Pty Ltd](#)

Drayton South Project Surface Water Assessment, New South Wales (2012- 2014 - 2015)

Development of a water balance model and assessment of surface water impacts as part of an EIS for the proposed Drayton South Project. The mine plan was altered three times following feedback from the community and the Planning Assessment Commission. A draft Water Management Plan was developed for the project. [Anglo American Metallurgical Coal Pty Ltd](#)

Coalpac Project Surface Water Assessment, New South Wales (2012)

Development of a water balance model and assessment of surface water impacts as part of an EIS for the Cullen Valley and Invincible Colliery Expansion Project. [Coalpac](#)

Middlemount Coal Water Management Plan and consequence assessment, Queensland (2012)

Prepared a Water Management Plan including a consequence assessment of the mine water management storages. [Middlemount Coal](#)

Middlemount Coal Erosion and Sediment Control Plan, Queensland (2012)

Prepared an Erosion and Sediment Control plan to manage non mine affected surface water on the site. [Middlemount Coal](#)

Drayton Mine Modification Surface Water Assessment, New South Wales (2011)

Prepared a surface water technical report to support a consent modification. A water balance model was used to assess the performance of the modified water management system. [Anglo American Metallurgical Coal Pty Ltd](#)

Isaac Plains Mine Water Management Plan Review, Queensland (2010 and 2011)

Review of the water management system at the Isaac Plains Coal Mine and provide advice on measures required to meet their water quality release criteria. [Isaac Plains Coal](#)

North Goonyella Mine Water Management Review, Queensland (2010 - 2014)

Review of the water management system at the North Goonyella Minesite and provide advice on measures required to meet their water quality release criteria. [Peabody Energy Australia](#)

Middlemount Coal Mine Stage 2 Surface Water Assessment, Queensland (2011)

Assessment of surface water impacts of the Stage 2 Middlemount Coal Mine. Flood and stream diversion studies of Roper Creek and a minesite water management plan was prepared. [Middlemount Coal](#)

Warkworth Expansion Environmental Assessment New South Wales, (2010)

Prepared a surface water assessment report for the proposed expansion of the Warkworth open-cut pit. Included a flood study of Wollombi Brook and liaison with other project consultants to assess water balance impacts of the proposal. [Mitchell McLennan](#)

Eagle Downs Mine Site Water Balance, Queensland (2010)

Development of a daily minesite water balance model of the proposed Eagle Downs Underground mine to size a dirty water storage. [Bowen Basin Joint Venture](#)

Carrington Pit Extension Surface Water Assessment, New South Wales (2010)

Assessment of surface water impacts for the Carrington West Wing Extension at HVO North as part of an Environmental Assessment. Flood and geomorphic studies of the Hunter River were undertaken and a water management plan prepared. [Coal & Allied Operation Pty Ltd](#)

Coppabella Mine Water Management Plan, Queensland (2009)

Development of a surface water management plan for the Coppabella Coal Mine. Modifications were made to the minesite water management plan to satisfy the Fitzroy Basin Water Conditions for Coal Mines. A mine site water balance model was developed to design the various water management storages and release rules to meet the new requirements. [Isaac Plains Coal](#)

Isaac Plains Mine Water Management Plan, Queensland (2009 & 2013)

Development of a surface water management plan for the Isaac Plains Coal Mine. Modifications were made to the minesite water management plan to satisfy the Fitzroy Basin Water Conditions for Coal Mines. A mine site water balance model was developed to design the various water management storages and release rules to meet the new requirements. [Isaac Plains Coal](#)

Narrabri Coal Mine Stage 2 EA, Surface Water Management Studies, New South Wales (2009)

Undertaking the surface water component of an Environmental Assessment for the stage 2 longwall project near Narrabri. Mitigation strategies were developed to manage the significant volumes of highly saline water that was expected from underground and to manage the impact of mine subsidence on the local water ways. [Narrabri Coal Operations Pty Ltd](#)

Integra Coal Barrett and Hebden Seam Mine Subsidence Study, New South Wales (2008)

Estimation of the impact of mine subsidence from the Barrett and Hebden Seam on flood behaviour and creek erosion along Bettys Creek, Main Creek and Glennies Creek. [Integra Coal Pty Ltd](#)

Middlemount Coal EMPlan, Surface Water Management Study, Queensland (2008)

Development of a minesite water management plan and water balance model of the proposed new coal mine near Middlemount. Controlled release rules were developed from the water management storages to meet Roper Creek water quality thresholds. A flood study was undertaken to determine the impact of flood protection levees on creek flood levels and flood velocities. [Middlemount Coal](#)

Isaac Plains Mine EIS, Surface Water Management Studies, Queensland (2008)

Undertaking the surface water component of an Environmental Impact Study for the proposed new above ground coal mine near Moranbah. A mine site water balance model was developed to design the various water management storages and release rules to meet EPA requirements. Development of a concept design of a stream diversion around the proposed mine. [Isaac Plains Coal](#)

Lake Lindsay Mine Flood and Stormwater Management Study, Queensland (2007)

Estimation of flood levels along German Creek and its tributaries at a proposed coal conveyor, ROM pad and haul road. [Bonnacci/ Anglo Coal](#).

Belvedere Coal Mine, Water Supply Investigation, Queensland (2006)

Investigation of surface water supply options for the proposed Belvedere Coal Mine. [Rio Doce Australia Pty Ltd](#)

Narrabri Coal Mine Stage 1 EA, Surface Water Management Studies, New South Wales (2006)

Undertaking the surface water component of an Environmental Impact Assessment for the proposed new underground coal mine at Narrabri. A flood study and stormwater management

plan was developed for the site. A water balance model was developed to design the size of evaporation basins and an irrigation management plan was developed to manage the significant volumes of highly saline water that was expected from underground. [Narrabri Coal Pty Ltd](#)

Tennant Heap Leach Operations Stormwater Management Plan, Queensland (2006)

Estimation of heap leach stormwater pond storage volumes to satisfy EPA requirements. [Tennant Limited](#)

Northparkes Mine Extension EIS, New South Wales (2005-2006)

Preparation of a surface water management plan for the extended mine site and estimation of the mine site water balance for pre and post extension mining activities. [Northparkes](#).

Glennies Creek Mine Subsidence Study, New South Wales (2005)

Estimation of the impact of Glennies Creek mine subsidence on Betty's Creek flood behaviour and creek erosion. Undertake the surface water component of an Environmental Impact Assessment for the proposed extension [Integra Coal Pty Ltd \(formally Glennies Creek Coal Management Pty Ltd\)](#)

Pinedale Coal Mine Flood Study, New South Wales (2005)

Estimation of flood levels along Neubecks Creek and Coxs River across the Pine Dale Coal Mine, near Lithgow. A series of levees were designed to protect the proposed mine from floodwater. [Enhance Place Pty Ltd](#).

Great Australia Mine Water Management Study, Queensland (2004)

Development of a concept design of a tailings storage facility and water recycle management system for the proposed Great Australia Mine. A flood study of the adjacent Coppermine Creek was prepared. [Exco Resources NL](#)

Ardlethan Tin Mine Surface Water Management, New South Wales (2004)

Development of a surface water management plan for the proposed White Crystal Lead alluvial tin operation. The plan incorporated a series of diversion drains and detention basins that are to be used during mining and following the closure of the mine. The plan forms part of the EIS for the project. [Telminex NL](#)

Karreman Quarry Water Balance Investigation, Queensland (2003)

Development of a Water Balance Model of the various storages, pumps and operational rules of Karreman Quarry to assess the impact on releases to Tingalpa Creek and the reliability to meet water requirements. Water balances of existing development conditions, proposed development conditions and post quarrying development conditions were investigated. Post quarry development conditions determined the time it takes for the final voids to fill and spill. The Integrated Quantity Quality Model (IQQM) was used for the analyses. [Karreman Quarry](#).

Glen Wilga Coal Mine Audit, Queensland (2002)

Peer review the flooding and storm water management measures proposed for the Glen Wilga Coal Mine located on the Condamine River floodplain. A two dimensional flood model of the Condamine River was developed to assess the impact of proposed flood protection levees. [Tarong Energy](#)

Ernest Henry Mine Surface Water Management, Queensland (2002)

Development of a surface water management plan for the waste dumps and tailings dams at Ernest Henry Mine. Diversion drains and erosion control measures were developed. [MIM](#)

Selwyn Mine Water Stormwater Management and Water Supply Study, Queensland (2002)

Development of a rainfall runoff model and a water balance model to investigate options to supply minesite makeup water from stormwater runoff. A conceptual design of a new water supply dam including spillway was developed. [Selwyn Mine](#)

Adlay Nickel Surface Water Management Plan, Philippines (2001)

Development of a surface water management plan for the Adlay Nickel Mine in Southern Philippines. The plan consisted of several diversion drains to separate clean and dirty runoff and a series of sediment basins to treat dirty runoff from a site that receives 5 metres of rainfall per year. A flood study of the Hinadladan River was undertaken to design the fill platform for the mine infrastructure [QNI Resources](#).

Lady Loretta Mine Surface Water Management Plan, Queensland (2000)

Development of a preliminary surface water management plan for the proposed Lady Loretta Mine. Conceptual designs of sediment dams and containment dams were developed for all 'dirty' runoff and 'contaminated' runoff areas respectively. Development of Sacramento rainfall runoff models and daily water balance models (IQQM) of two catchments to determine the hydrological feasibility of two dam options to supply water to the proposed Lady Loretta Mine [Noranda P/L](#).

Sand and Soil Quarry Sediment and Erosion Control Plan, New South Wales (2000)

Development of a sediment and erosion control plan for the proposed extension to the Sand and Soil Quarry at Menangle. Measures were developed to reduce the impact of flooding from the Nepean River and local flooding from the surrounding area. The plan was approved by the NSW EPA and DLWC. [The Strategic Partners Group](#).

Cooljarloo Mine Rehabilitation Plan, Western Australia (2000)

Development of an end of mine rehabilitation plan of Cooljarloo mineral sands mine, near Cataby. The old overburden dump was re-contoured to contain drainage lines and ridges to match the surrounding landscape. Cut and fill volumes were estimated using GIS. Interim sediment control measures were developed to minimise downstream sedimentation until the final landform could be completed. [TIWEST](#).

Surface Water Management System, Chatree Gold Deposit - Thailand (1999)

Design of a surface water management plan for the proposed Chatree Gold Mine to enable reuse of runoff water for mineral processing. Design and sizing of storages using a water balance model. [Coffey Geosciences Pty Ltd](#).

Bega Road Solid Waste Dump Sediment and Erosion Control Plan, Queensland (1999)

Development of an operation plan for the proposed solid waste dump to manage drainage runoff during the various stages of landfill. Effective sediment and erosion control measures were

developed to ensure full compliance with regulations and minimal impact on the long term management of the proposed dump. [Logan City Council](#).

Timbarra Mine Stormwater Management Monitoring, New South Wales (1998)

Development of a monitoring program for the upgrade of the Timbarra Road through an environmentally sensitive area. Undertaking a monthly audit of the works through the construction program. Advice was provided to improve sediment and erosion control management of the upgrade to ensure best management practices are adhered to. [Ross Mining NL](#).

Londonderry Clay Quarry Water Management Audit, New South Wales (1998)

Undertake an audit of the water management and sediment and erosion control measures utilised at the quarry. Estimate the size and adequacy of the existing sediment dams on site. [Londonderry Clay Quarry](#).

Gold Ridge Mine Stormwater Management Plan, Solomon Islands (1998)

Audit erosion control techniques used during construction of the Gold Ridge Mine. Environmental Officers were trained to audit and understand the erosion processes and erosion control techniques at the site. [Ross Mining NL](#).

Moura Mine Water Management Plan, Queensland (1998)

Development of a daily water balance model of 30 inter-connected open cut pits and dams to simulate daily water quantity and quality behaviour of Moura Open Cut Coal Mine. The model was used to investigate various management strategies, including enlarging certain dams, controlled releases and directing inflows past particular storages. [BHP Moura Mine](#).

Timbarra Mine Water Supply Study, New South Wales (1997)

Assessment of capacity and reliability of local creeks to meet the minesite water demand of Timbarra Gold Mine by undertaking a series of stream gaugings to measure baseflows and comparing to recent rainfall behaviour. An Environmental Effects Statement for the proposed water supply system was prepared for the licence application. [Ross Mining NL](#).

Annexure B – Letter of Instructions

Confidential**Email**

15 September 2021

Greg Roads

WRM

Level 9, 135 Wickham Terrace, Spring Hill, QLD
 groads@wormwater.com.au

Dear Greg

MRA026-21, MRA027-21, EPA028-21 - New Acland Coal Pty Ltd v OCAA Inc. & Ors**1. Introduction**

- 1.1 We act for New Acland Coal Pty Ltd (**NAC**) in the above Land Court proceedings involving objections to NAC's mining lease applications (**MLA**) under the *Mineral Resources Act 1989* (**MRA**) and environmental authority (**EA**) amendment application under the *Environmental Protection Act 1994* (**EPA**) for the New Acland Coal Mine Stage 3 Project.
- 1.2 You were previously engaged by NAC as an expert witness in the initial Land Court proceedings, which concluded in 2017 (**Original Proceedings**). As you are aware, as a result of a series of subsequent challenges to the decision in the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).
- 1.3 The parties are:
- (a) Applicant - NAC;
 - (b) Objector- Oakey Coal Action Alliance (OCAA); and
 - (c) Statutory Party - the Chief Executive of the Department of Environment and Science.
- 1.4 All other objectors to the MLA and EA applications have elected to be non-active parties in this hearing. Notwithstanding the other objectors are non-active parties, the Court must consider their objections.
- 1.5 OCAA has not nominated a surface water expert in the Rehearing and you will not be required to participate in a joint expert process.

2. Draft Approval Documents

- 2.1 NAC and the Statutory Party have both filed draft EAs for the Land Court to consider in the event that it does recommend approval of the Project.
- (a) On 15 February 2021 the Applicant filed a letter attaching a draft EA for stage 3. The Applicant's draft EA (Exhibit No. F.0003) represents NAC's current position on the conditions that ought to be included in any EA that may be issued for the Project, if the Project is approved. Proposed conditions relating to surface water commence at p 13 of the document.
 - (b) On 10 March 2021 the Statutory Party filed a draft EA for stage 3 (Exhibit No. F.0020) which identified further changes to the Draft EA proposed by the Statutory Party. Proposed conditions relating to surface water commence at p 14 of the document.

- (c) Condition A2 of both of the draft EA's states:

In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview - Mine Area).

- 2.2 Figure 1 is found at page 71 of the Applicant's draft EA and p 79 of the Statutory Party's draft EA.
3. **Background**
- 3.1 The objection hearing concerns a proposed expansion for stage 3 of an existing mine.
- 3.2 In 2007, the Applicant first proposed the Project and the Coordinator-General declared the Project to be a significant project (later renamed as a "coordinated project") under the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).
- 3.3 In May 2007, MLA 50232 was applied for. Figure 1 (referred to above) shows the extent of MLA 50232 which is the subject of the current MLA.
- 3.4 In January 2014 NAC submitted the environmental impact statement (**EIS**) for the Stage 3 Project and in July 2014 an Additional Information to the EIS (**AEIS**). In December 2014, the Information Clarification to the AEIS was submitted. The Coordinator-General's Report on the EIS was release in December 2014.
- 3.5 In 2015 the application for the rail spur (MLA 700002) under the MRA and the environmental authority (**EA**) amendment were lodged. The draft EA was issued on 28 August 2015 and the MLs and EAs referred to the Land Court on 14 October 2015.
- 3.6 There were multiple objections to the MLA and the EA, some of which raised surface water issues.
- 3.7 The recommendation decision of the Land Court in the Original Proceeding has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.8 In June 2017 NAC applied for judicial review of the Original Decision. Bowskill J decided that Member Smith's decision in respect of the Original Decision was set aside, with the matter being remitted to President Kingham of the Land Court to make a recommendation (**2018 Remitted Decision**).
- 3.9 The Land Court's recommendation in the 2018 Remitted Decision, was conditional on the Coordinator-General (**CG**) lowering the noise limits. NAC applied to the CG for the noise limits to be lowered on 3 December 2018. The CG approved that change on 12 February 2019. The Department of Environment and Science (**DES**) issued the Stage 3 EA on 12 March 2019. That EA was conditional on the granting of the MLs, which never occurred. As set out below, that the March 2019 EA was subsequently set aside.
- 3.10 The recommendation decision of the Land Court in the 2018 Remitted Decision has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.11 On 8 May 2019, NAC also applied to the CG to amend Stated Conditions B3 and H40, regarding the location of air quality monitoring points and the required environmental offsets. These updates were due to more recent surveys to land, the CG approved Environmental Offsets Strategy and the Air Emissions Management Plan. The change was approved in September 2020.
- 3.12 On 24 May 2019, NAC applied for a third change to the CG's conditions to Imposed Condition 4 (**IC4**). IC4 required the train load out facility to be built before the commencement of Stage 3 mining, so that it was the sole distribution point for the Stage 3 Project. In September 2020 the

CG approved the change to IC4 which now requires the train load-out facility to be built within 2 years of the commencement of mining of Stage 3.

- 3.13 In 2019 the Court of Appeal declared that the Original Proceeding was affected by apprehended bias but allowed the EA to stand.¹
- 3.14 In October 2020, DES issued an amended EA, adopting the approved changes to the CG conditions.
- 3.15 In February 2021 the High Court determined that New Acland Coal's objections hearing should be remitted to the Land Court as the decision in the Original Proceedings and the 2018 Remitted Decision, which relied on findings of the decision in the Original Proceedings, were affected by apprehended bias. The High Court also set aside the Stage 3 EA.
- 3.16 The matter has therefore been remitted to the Land Court again for a recommendation, which will then be followed by a decision on the EA and the MLs.
- 3.17 In February 2021, the High Court determined that the First Remitted Hearing recommendation decision be set aside and the Stage 3 Project's objections hearing should be re-heard by the Land Court. The High Court also set aside the EA issued by the Statutory Party on 12 March 2019. Hence the March 2019 and October 2020 EAs have no effect.
- 3.18 The matter has therefore been remitted to the Land Court again for a new recommendation.
- 3.19 By letter dated 27 May 2021, NAC provided further information to the Statutory Party in relation to the activities that it says will be regulated by the proposed EA and attached a Project Overview figure.
- 3.20 The only mining (extraction) which is to be assessed for the proposed amended EA is as follows:
 - (a) on ML50216, mining (extraction) which is related to and would not occur in the absence of ML50232, being:
 - (i) that part of Willeroo in ML50216 shown as "new mining area"; and
 - (ii) a strip of contiguous land generally 15-40m wide, with a maximum width of 100m in a limited area for the connection of existing mining on ML50216 into Manning Vale East, which is identified as "Extent of mining progression across shared boundary" in the Project Overview figure; and
 - (b) on ML50232 are those areas marked as 'Manning Vale West', 'Manning Vale East' and that part of 'Willeroo' all shown as "new mining area".

Instructions

- 3.21 You are engaged by NAC to act as an expert witness in the Rehearing in respect of Surface Water.
- 3.22 In your role as expert witness, you are instructed to prepare a statement of evidence to the Land Court in relation to matters relevant to your field of expertise that are raised in the MLA and EA amendment objections and that considers:
 - (a) your statements of evidence filed in the Original Hearing;
 - (b) the material you have been briefed with;

¹ Oakey Coal Action Alliance Inc v New Acland Coal Pty Ltd & Ors [2019] QCA 23.

- (c) those objections raised in the MLA and EA amendment objections hearing which relate to surface water; and
 - (d) the conditions in the Applicant's Draft EA and Statutory Party EA relevant to your area of expertise.
- 3.23 You may also be required to appear in person as an expert witness in the Rehearing.
- 3.24 You have been provided with access to an e-brief containing information relevant to your engagement. As additional information that is relevant to your engagement becomes available before and during the Rehearing, we will update your e-brief accordingly.
- 4. **Your statement of evidence**
- 4.1 Your statement of evidence must be addressed to the Land Court and signed by you, and must include the following information:
 - (a) your qualifications;
 - (b) all material facts, whether written or oral, on which the statement is based;
 - (c) references to any literature or other material relied on by you to prepare the statement;
 - (d) for any inspection, examination or experiment conducted, initiated or relied on by you to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was done by you or under your supervision;
 - (iii) the name and qualifications of any other person involved; and
 - (iv) the result;
 - (e) if there is a range of opinion on matters dealt with in the statement, a summary of the range of opinion and the reasons why you adopted a particular opinion;
 - (f) a summary of the conclusions reached by you; and
 - (g) a statement about whether access to any readily ascertainable additional facts would assist you in reaching a more reliable conclusion.
- 4.2 You should also confirm at the end of your statement of evidence, each of the following:
 - (a) the factual matters stated in the statement are, as far as you are aware, true;
 - (b) you have made all enquiries that you consider are appropriate;
 - (c) the opinions stated in the statement are genuinely held by you;
 - (d) the statement contains references to all matters you consider significant;
 - (e) you understand your duty to the court and have complied with that duty;

- (f) you have read and understand the rules contained in Part 5 of the *Land Court Rules 2000* (Qld)² (**Rules**), as far as they apply to you; and
- (g) you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

5. **Your responsibilities as an expert witness**

- 5.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 5.2 We draw your attention to Part 5 of the Rules, which sets out the duties of expert witnesses. Specifically, under rule 24C of the Rules you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 5.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

6. **Timeframes**

- 6.1 Your statement of evidence is due to be filed on Friday, 24 September 2021.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely



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Our ref 12408/17428/80196876

² A copy of Part 5 of the Rules is contained in your e-brief (**Part 1 Document G1**) and is also attached. Also in your e-brief and attached is a copy of Land Court Practice Direction 6 of 2020 "Expert evidence in the Land Court" (**Part 1 Document G2**). Note that, if the Land Court directs a case to Court Managed Expert Evidence in accordance with the Practice Direction, Part 5 Division 2 of the Rules (regarding joint expert meetings) does not apply.

**Annexure C – Statement of evidence
dated 19 February 2016**

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

STATEMENT OF EVIDENCE TO THE LAND COURT BY GREGORY KENNETH ROADS

1. **Expert's details and qualifications**

1.1 **Name**

(a) My name is Gregory Kenneth Roads.

1.2 **Insert address**

(a) My business address is Level 9, 135 Wickham Terrace Spring Hill
Queensland.

1.3 **Qualifications**

(a) I hold the following qualifications:

(i) Bachelor of Engineering (Civil) (Honours) from the University of
Technology, Sydney

(ii) Registered Professional Engineer of Queensland (#6413)

(b) Annexure A to this statement is my curriculum vitae.

2. **Instructions**

2.1 I have been instructed by Clayton Utz on behalf of New Acland Coal Pty Ltd (**NAC**) to prepare a statement of evidence to the Land Court in relation to the objections lodged in opposition to NAC's New Acland Coal Mine Stage 3 Expansion project (**the Project**).

- 2.2 A copy of my letter of instructions from Clayton Utz dated 5 February 2016 is Annexure B to this statement.
- 2.3 In summary, my instructions are to prepare a statement of evidence to the Land Court addressing:
- (a) the propositions identified in paragraphs 36 to 41 of Part 2 of the Applicant's Notice of Additional Issues, a copy of which is Annexure C to this statement; and
 - (b) certain matters relevant to my field of expertise that have been raised in lay witness statements and objections filed by objectors in these proceedings.

3. **Facts and assumptions**

In producing this statement, I have relied on the following:

- (a) an inspection of the existing New Acland mine site and surrounding areas on 19 November 2016;
- (b) the new Environmental Impact Statement prepared for the project (New EIS)¹ and in particular Chapter 5 Surface Water Resources²;
- (c) a review of the water balance and flood models prepared for the New EIS; and
- (d) the surface water sections in the Additional Information to the Environmental Impact Statement (AEIS)³.

4. **Structure of statement**

- 4.1 In accordance with my instructions summarised in paragraph 2.3 above, my evidence comprises the following two parts:
- (a) Part A addresses the propositions identified in paragraphs 36 to 41 of Part 2 of the Applicant's Notice of Additional Issues; and
 - (b) Part B addresses certain matters relevant my field of expertise that have been raised in lay witness statements and objections filed by objectors in these proceedings.

¹ Document ID: EHP.0017 - EHP.0086.

² Document ID: EHP.0023.

³ Document ID: EHP.0087 - EHP.0113.

5. **Opinion and findings addressing Part A propositions**

- 5.1 The objectors have raised a number of surface water flooding and water quality issues with respect to the project. A discussion of these issues and my response is given below.

Surface Water Environmental Values

- 5.2 The water conditions in the Draft EA⁴ have been designed to protect the environmental values of the receiving waterways for all surface water users including ecosystem protection and human/agricultural users. The proposed water management system has been designed to achieve these Draft EA conditions and therefore will protect the environmental values of the receiving waters. Details of the proposed surface water management system are given in Section 5.13 of the New EIS⁵.
- 5.3 The proposed water management system has been developed in accordance with the Department of Environment and Heritage Protection (DEHP) guidelines on the *Preparation of water management plans for mining activities* (EM324). These guidelines state that a mining project water management system should achieve the following outcomes:
- (a) Minimisation of the generation of contaminated water;
 - (b) Minimisation of the contaminants discharged from the mining project; and
 - (c) Minimisation of the impact of releases of contaminated water through a strategy for the timing and manner of release.
- 5.4 To achieve these outcomes, the surface water management system proposed for the project has been based around the separation of water types on the mine site based on quality.
- (a) Water of the poorest quality (mine affected water) is recycled and reused to wash coal or for dust suppression. Mine affected water can only be released to the receiving waters in accordance with the end of pipe release limits and flow thresholds given in the Draft EA. The EA rules have been developed to protect the environmental values of the receiving waters.
 - (b) Water that has not come in contact with coal or carbonaceous material, which is runoff from the disturbed areas such as overburden dumps, is captured in sediment dams and either reused on site or released if appropriate.

⁴ Document ID: EHP.0009.

⁵ Document ID: EHP.0023, pp 64-84.

- (c) Clean runoff from undisturbed areas are diverted around the minesite and not captured within the mine water management system wherever possible.
- 5.5 The DEHP guidelines on the *Preparation of water management plans for mining activities* (EM324) also require that the proponent “review the currency and adequacy of the mining project water management plan and its continual improvement. The plan should be reviewed and updated prior to the end of September each year, and after any event involving the uncontrolled release of water to the environment.”
- 5.6 Overall, I believe that the water management system and the release rules in the Draft EA are sufficient to protect the environmental values of the waterways.

Water Management System Assessment

- 5.7 The proponent has developed a Goldsim water balance model of the surface water management system proposed for the project. The purpose of the water balance model is to demonstrate that the water management infrastructure (water storage dams and pumps) and operational rules including the release conditions given in the Environmental Authority (EA) proposed for the project will sufficiently protect the environmental values of the receiving waterways. Details of the water balance model are given in Section 5.13 of the New EIS⁶.
- 5.8 The water balance modelling of the proposed water management system is commensurate with a concept level assessment and is sufficient to demonstrate the operation of the water management system. The model has not been calibrated to site data but uses estimates of runoff rates that would be expected from the various catchments on the project site (based on my experience of developing water balance models at other sites in Queensland). The performance of the system has also been demonstrated using a wide array of climate sequences that would be expected throughout the life of the project.
- 5.9 It must be recognised that the EA release rules are the primary mechanism to protect the environmental values of the receiving waters and the water balance model is only used to demonstrate that the water management system can comply with these rules. If the current assessment has underestimated the water balance, then off-site releases will be less than has been predicted in the New EIS and therefore the impact of releases on Lagoon Creek will be less. If the assessment has overestimated the water balance (i.e there is more groundwater inflow than predicted), then the EA release restrictions will mean that water builds up in the open cut pit rather than causing non-compliant discharges to the downstream waterways that may cause an environmental impact. NAC would then need to construct additional out of pit infrastructure and possibly

⁶ Document ID: EHP.0023, pp 64-84.

change the mine water management system to mitigate this impact on operations. This active management approach is typical of most mining operations.

- 5.10 The Draft EA conditions are designed to protect the environmental values at the location of the release points. The impact of any releases would be further reduced as the flows drain downstream as catchment area and flows increase. The impact of a release would be minimal once Lagoon Creek waters drain into Oakey Creek, given the area of the catchment increases eight-fold at this location.

Flood Impact Assessment

- 5.11 The proponent has adequately assessed the potential Lagoon Creek flood impacts of the proposed flood protection levees and the rail. A XP-RAFTS model has been developed to estimate Lagoon Creek catchment discharges and a TUFLOW two dimensional hydraulic model was developed to estimate Lagoon Creek flood levels. The TUFLOW model has been also used to assess the impacts of the levee and rail infrastructure on flood levels and velocities for a range of moderate, large and extreme flood events. Details of the model development are given in Section 5.9 and Section 5.10 of the New EIS⁷.
- 5.12 The hydrological and hydraulic models have been properly developed and have been prepared in accordance with best practice commensurate with a concept level assessment of the proposed infrastructure. Additional modelling will be undertaken during the detailed design phase once the locations of the levees and the rail and associated drainage culverts have been better defined.
- 5.13 The hydrological model has included all of the Lagoon Creek catchment, as shown in Figure 5-10 in the New EIS⁸ and has modelled the catchment flows appropriately. The hydraulic model covers the full extent of the proposed impacts. It does not extend to Peachy MacLagan Road or the flow path to the west of the Manning Vale West Pit, as one objector stated, because there are no rail or levees located near these areas. One objector was concerned that there would be an impact at the village of Byrmaroo. Byrmaroo is not located within the Lagoon Creek catchment so cannot be impacted by the levees or rail.
- 5.14 The design events used (1 in 10, 1 in 100 and 1 in 1000 annual exceedance probability (AEP) events and the probable maximum floods (PMF)) are an appropriate range of events to assess flood impacts. An assessment of climate change is not required because the purpose of the study is to assess the flood impacts of the infrastructure, not impacts of climate change. The flood protection levees are required to be designed to

⁷ Document ID: EHP.0023, pp 35-48.

⁸ Document ID: EHP.0023, p 38.

have a specific flood immunity level and this level may be impacted by climate change. However the proponent has committed to design the levees to protect the open cut pit for the PMF. The PMF is determined from the greatest depth of precipitation that is physically possible and is generally some 5 to 7 times larger than the 1 in 100 AEP design flood. Government guidelines only require pits to have a flood immunity of 1 in 1000 AEP and therefore the PMF standard is conservatively high.

Flood Impacts

- 5.15 Section 5.11 of the New EIS⁹ has demonstrated that the levee banks and rail will impact on flood levels but the impacts are minor. The impacts of the levee banks are all located on the mine lease and the impact of the rail is mostly confined to land owned by the proponent.
- 5.16 Figure 5-21, Figure 5-25 and Figure 5-29 in the EIS¹⁰ show flood impacts associated with the levees and rail for the 1 in 10, 1 in 100 and 1 in 1000 AEP design flood events respectively. The impact of a 1 in 10 AEP event, which is more likely to occur over the life of the mine, is generally less than 0.2 m and at most 0.35 m and these impacts are not near existing infrastructure. An impact of 1.2 m occurs at the rail occurs for the 1 in 1000 AEP design storm but this impact is located in a very isolated area and occurs for a very rare event. Where impacts have been identified on land not owned by the proponent, a commitment has been made “to reduce this impact to zero through detailed design or through a compensation agreement with the land owner”¹¹.
- 5.17 The flood modelling shows that the proposed flood protection levees have no impact on the 1 in 10 flood velocities along Lagoon Creek and minimal impact on the 1 in 100 AEP and 1 in 1000 AEP flood velocities. This suggests to me that the impacts of the flood protection levees on the geomorphic characteristics of Lagoon Creek will be negligible.

Monitoring requirements

- 5.18 The Draft EA¹² proposes a monitoring programme that is both practical and reasonable given the potential risk of the project, which from a surface water perspective is low. The monitoring programme is also consistent with *Model Mining Conditions for resource activities* guideline prepared by DEHP (EM944).
- 5.19 In my opinion, no additional monitoring points are required. The suggestion of an additional monitoring point at Muldu-Plainview Road would duplicate the end of pipe

⁹ Document ID: EHP.0023, pp 49-63.

¹⁰ Document ID: EHP.0023, p 54, 58 & 62.

¹¹ Document ID: EHP.0023, p 51.

¹² Document ID: EHP.0009.

monitoring required from Environmental Dam 1 (ED1). ED1 monitoring would determine whether the mine is polluting the complainants' property. The catchment between ED1 and Muldu-Plainview Road is agricultural land and therefore the monitoring would collect combined runoff from ED1 and the agricultural land. The water management system also proposes to remove all mine affected water draining to ED1, which may eventually remove the requirement to monitor Spring Creek at all.

- 5.20 The surface water monitoring programme includes both end-of-pipe monitoring and receiving water quality monitoring as described below.
- (a) End-of-pipe monitoring is proposed for releases from the mine affected dams called environment dams in the New EIS (Table C1 in the Draft EA¹³ and Table F1 in the Coordinator General's report¹⁴). The monitoring of these dams is required to measure compliance with the water quality release limits proposed in the Draft EA.
 - (b) Receiving water monitoring is proposed both upstream and downstream of the mine on both Lagoon Creek and Spring Creek (Table C5 in the Draft EA¹⁵ and Table F5 in the Coordinator General's report¹⁶.)
 - (c) Sewage effluent monitoring is proposed for effluent released from the treatment plant (Table G1 in the Draft EA¹⁷ and the Coordinator General's report¹⁸.)
- 5.21 The water quality parameters to be tested are appropriate for each monitoring location.
- (a) The end-of-pipe monitoring, which tests water that is being released, includes parameters that can be tested in the field such as pH and electrical conductivity (EC). Total suspended solids (TSS) can be inferred by a field measurement of Turbidity. These water quality characteristics are typical parameters that can be elevated at a coal mine.
 - (b) The receiving water monitoring includes a broader array of parameters including metals and metalloids to check whether there has been an impact on water quality. Given the short window of opportunity that is available to

¹³ Document ID: EHP.0009, p 11.

¹⁴ Document ID: EHP.0016, pp 191-192.

¹⁵ Document ID: EHP.0009, p 17.

¹⁶ Document ID: EHP.0016, p 195.

¹⁷ Document ID: EHP.0009, p 31.

¹⁸ Document ID: EHP.0016, p 197.

release water, water quality parameters that require laboratory analysis, such as metals, are not appropriate for use in end-of pipe monitoring to allow or not allow releases.

- (c) Schedule G (Sewage treatment) in the Draft EA¹⁹ requires the monitoring of parameters that are appropriate for treated sewage including faecal coliform. There is no reason to monitor heavy metals given that it is related to human waste and not mine affected water.

Historical water quality impacts of the existing mine

- 5.22 The proposed Stage 3 expansion is to be operated under the Draft EA that has more stringent release conditions and monitoring conditions than those that existed for the existing operation. In particular, the Draft EA includes upstream flow thresholds in Lagoon Creek and Spring Creek that must be attained before releases can occur. The upstream flow and the end-of-pipe release limits are designed such that the water quality, in particular EC, will achieve the water quality objectives set to protect the environmental values of the waterways as the flows leave the site. These flow thresholds were not in the EA's for the existing site.
- 5.23 With respect to historical impacts, the water quality data provided in Appendix G3 of the New EIS²⁰ and summarised in Table 5.6 and 5.7 of the New EIS²¹ show that elevated EC levels were recorded in Lagoon Creek following the January 2011 flood event. This was a significant rainfall event with almost 500 mm of rain falling in a six week period. NAC staff (Tom Shepherd) advised that the elevated levels were due to minor releases from the mine water dams at that time. He also advised that the issues that caused the elevated releases at that time have been identified and rectified on site. Further separation of the mine affected water and sediment affected water in the proposed water management system will reduce the likelihood of this occurring in the future.

6. Opinion and findings addressing Part B propositions

- 6.1 See tables at Annexure D and Annexure E to this statement.

7. Expert's statement

- 7.1 I confirm that:

- (a) the factual matters stated in this statement are, as far as I know, true;

¹⁹ Document ID: EHP.0009, pp 31-32.

²⁰ Document ID: EHP.0051.

²¹ Document ID: EHP.0023, pp 18-19.

ANNEXURE C

- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains reference to all matters I consider significant;
- (e) I understand I have a duty to assist the court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the Land Court Rules 2000, as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in these proceedings.



.....
Greg Roads 19 February 2016

Annexure A - Curriculum vitae



Curriculum Vitae

Greg Roads

BE (Civil) MIEAust RPEQ (6413)

DIRECTOR / PRINCIPAL ENGINEER

Professional history

2004 to present

Director

WRM Water & Environment

1997 to 2004

Senior Engineer

Water Studies

1993 to 1997

River Engineer/Floodplain Engineer

NSW Dept of Land and Water Conservation

1988 to 1993

Cadet River Engineer

NSW Dept of Land and Water Conservation

Fields of expertise

- Expert evidence
- Hydrological modelling
- 2D and 1D hydraulic modelling
- Extreme flood estimation
- Floodplain management
- River engineering and fluvial geomorphology
- Water allocation and resource planning
- Mine site water management
- Water balance and yield studies
- Water quality management.

Education

- Bachelor of Engineering (Civil) (First Class Honours), University of Technology, Sydney, 1993.

Professional affiliations

- Member, Engineers Australia
- Registered Professional Engineer, Queensland, Australia
- Member Australian Water Association
- Member Stormwater Industry Association.

Regions

- Australia
- Canada
- Solomon Islands
- Philippines
- Indonesia
- Thailand.

26 years of experience

Profile

Greg is a founding director of WRM and has 26 years experience in the water industry. He offers clients expertise in environmental planning, water allocation, the operation of irrigation areas and dams, and management of riverine corridors and floodplains.

Greg spent the first decade of his career in largely 'hands-on' roles developing his technical skills, particularly in hydraulic and hydrological modelling and project management. For the past 16 years, he has provided expert advice on water resource management to clients in local and state government and the mining, development, insurance and agricultural sectors. He has worked on major dam and flood studies across Queensland, and appeared as an expert witness in numerous court cases and before government inquiries.

Greg combines technical expertise with strong stakeholder liaison and communication skills. He was highly commended by his then employer for his work with the community on the Tumut and Upper Murray River Works Program. He has also lectured in water resource management, extreme flood estimation, hydraulic modelling and river engineering at the Queensland University of Technology.

Career highlights

- Drayton South Project EIS, NSW
- Moranbah South Project EA Surface Water Assessment, Qld
- German Creek Aquila Longwall mine subsidence impact assessment, Qld
- Eagle Downs Project Optimisation studies, Qld
- Middlemount Coal Mine Stage 1 and Stage 2 EIS, water management plan and stream diversion studies, Qld
- Minyango Project EA Surface water assessments, Qld
- Isaac Plains Coal Water Management Plans, Qld
- Isaac Plains South stream diversion and water management optimisation study, Qld.
- North Goonyella Water Management Plans, Qld.
- Coppabella Mine Water Management Plans, Qld.
- Expert Advice to the Commission of Inquiry into the Operation of Wivenhoe Dam, Qld

Experience

Mine site water management studies

Narrabri Mine Modification 5 Surface Water Assessment Narrabri, New South Wales (2015)

Prepared a surface water impact assessment of proposed modifications to the long wall mine. The impact on the water balance was assessed using a Goldsim water and salt balance of the Narrabri Mine water management system, including dirty, saline and mine affected water management dams, and micro-filtration and reverse osmosis water treatment plants. The impact of the proposed modification on the approved mine subsidence and existing surface drainage features was also investigated. [Whitehaven Coal Pty Ltd](#)

Bengalla Modification Surface Water Assessment Queensland (2015)

Surface-water impact assessment of the proposed modifications to the approved operations at Bengalla Mine using a minesite water balance model. [Anglo American Metallurgical Coal Pty Ltd](#)

Balranald Mineral Sands Project Surface Water Management Report Balranald, New South Wales (2015)

Prepared a surface water impact assessment report as part of an EIS for a proposed mineral sands mining operation in south-western NSW. Water balance modelling and flood modelling was undertaken to assess the potential impacts and develop management strategies for the project. [Iluka Resources](#)

Meteor Downs Project Surface Water Assessment Queensland (2013)

Prepared a surface water management strategy for the proposed mine and assessed its impacts as part of an EIS. Developed a water management plan, an erosion and sediment control plan and receiving environment monitoring plan for the approved project. [U&D Mining Industry \(Australia\) Pty Ltd](#)

Moranbah South Project Surface Water Assessment Queensland (2013)

Developed a water balance model and assessed as part of an EIS for the proposed Moranbah South Project. [Anglo American Metallurgical Coal Pty Ltd](#)

Ulan Coal Mine Independent Surface Water Audit New South Wales (2013)

Prepared an independent audit of the surface water aspects of the mine to assess compliance with the project approvals and EIS commitments. [Hansen Bailey](#)

Minyango Project Surface Water Assessment Queensland (2013)

Developed a water balance model and assessed surface-water impacts as part of an EIS for the proposed Minyango Project. [Blackwater Coal Pty Ltd](#)

Drayton South Project Surface Water Assessment New South Wales (2012-2015)

Prepared surface water management strategies for three different mine plans for the proposed Drayton South Project and assessed the surface-water impacts as part of three separate EIS's. [Anglo American Metallurgical Coal Pty Ltd](#)

Isaac Plains Mine Water Management Plan Review
Queensland (2010-2015)

Reviewed the water management system at the Isaac Plains Coal Mine and provided advice on measures required to meet their water-quality release criteria. [Isaac Plains Coal](#)

North Goonyella Mine Water Management Review
Queensland (2010 and 2011)

Reviewed the water management system at the North Goonyella Mine site and provided advice on measures required to meet their water-quality release criteria. [Peabody Energy Australia](#)

Middlemount Coal Mine Stage 2 Surface Water Assessment
Queensland (2011)

Assessed surface-water impacts of the Stage 2 Middlemount Coal Mine. Prepared flood and stream diversion studies of Roper Creek and a mine site water management plan.
[Macarthur Coal Pty Ltd](#)

Eagle Downs Mine Site Water Balance Queensland (2010)

Developed a daily mine site water balance model of the proposed Eagle Downs Mine to size a dirty-water storage. [Bowen Basin Joint Venture](#)

Carrington Pit Extension Surface Water Assessment
New South Wales (2010)

Assessed surface-water impacts for the Carrington West Wing Extension at HVO North as part of an environmental assessment. Undertook flood and geomorphic studies of the Hunter River and prepared a water management plan. [Coal & Allied Operation Pty Ltd](#)

Coppabella Mine Water Management Plan Queensland (2009/2013)

Developed a surface-water management plan for the Coppabella Coal Mine. Modified mine site water management plan to satisfy the Fitzroy Basin Water Conditions for Coal Mines.
Developed mine site water balance model to design the various water management storages and release rules to meet the new requirements. [Isaac Plains Coal](#)

Flood studies

Condamine River Flood Study Queensland (2014)

Developed an URBS hydrologic model of the Condamine River to Chinchilla. The model was calibrated to seven stream gauges for four historical floods. A TUFLOW 2D hydraulic model of the Condamine River was developed to estimate design flood levels for large and rare floods.
[CS Energy](#)

Tomahawk and North Creek Flood Study Queensland (2014)

Determined the flood risk along Tomahawk and North Creek (and tributaries) across the proposed Project China Stone Mine in the Gallilee Basin using the RAFTS and TUFLOW models.
[Macmines Austasia Pty Ltd](#)

German Creek Flood Study Queensland (2014)

Determined the flood risk along German Creek and Cattle Creek across the German Creek mining complex using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Amagula and Emerald River Flood Study Northern Territory (2014)

Determined the flood risk for a proposed expansion to the Manganese Mine on Groote Eyelandt in the Gulf of Carpentaria using the RAFTS and TUFLOW models. [BHP Billiton Manganese Australia Pty Ltd](#)

Bogan River at Nyngan Flood Study New South Wales (2014)

Determined the flood risk for the areas outside the town levee from an annual series flood frequency analysis of recorded flows and a TUFLOW hydraulic model of the Bogan River at Nyngan. [Bogan Shire Council](#)

Ooralea Development Area Flood Study Queensland (2014)

Developed a RAFTS rainfall runoff model and a TUFLOW hydraulic model of Bakers One catchment through the proposed Ooralea Development Area, near Mackay to determine development constraints. [Mackay Regional Council](#)

Isaac River Cherwell Creek Flood Study Queensland (2013)

Determined the flood risk along the Isaac River, Cherwell Creek, Grosvenor Creek (and tributaries across the proposed Moranbah South Project area, near Moranbah using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Pioneer River Flood Study Queensland (2011)

Developed an URBS rainfall runoff model and a TUFLOW hydraulic model of the Pioneer River to determine design flood levels for the Mackay Region. [Mackay Regional Council](#)

Hunter River Flood Study New South Wales (2010)

Developed a TUFLOW hydraulic model of the Hunter River to determine the impact of proposed flood protection levees for the Carrington West Wing Extension. [Coal & Allied Operations Pty Ltd](#)

Isaac River Flood Study Queensland (2009)

Developed an XP-RAFTS rainfall runoff model and a TUFLOW hydraulic model of the Isaac River and Cherwell Creek at the proposed Isaac Plains South mine to determine the impact of mine infrastructure and flood protection levees on flood levels and creek erosion potential. [Isaac Plains Coal](#)

Namoi River Flood Study New South Wales (2009)

Developed a TUFLOW hydraulic model of the Namoi River to assess the impact of a proposed rail crossing for the Boggabri Coal Mine. [Boggabri Coal](#)

Todd River Flood Mapping Study, Alice Farms Area Northern Territory (2006)

Developed and calibrated an URBS hydrological model and TUFLOW 2D hydraulic model of the Todd River downstream of Alice Springs. [NT Department of Planning and Infrastructure](#)

Somerset Dam Break Flood Risk Study Queensland (2004)

Estimated design discharges for events ranging from the 50-year ARI to the probable maximum flood at the dam. Developed breach hydrographs for 2 concrete dam-failure mechanisms and several gate-failure scenarios. Assessed the impact of Somerset Dam failure on the safety of Wivenhoe Dam located immediately downstream. [SEQ Water](#)

Wivenhoe Dam Break Flood Risk Study Queensland (2003-2005)

Estimated Wivenhoe Dam breach hydrographs for several auxiliary spillway designs. The breach hydrographs were routed through a Mike 11 model of the Brisbane River downstream of the dam to Moreton Bay to determine flood extents and flood wave travel times. [SEQ Water](#)

Brisbane River Flood Study, Wivenhoe Dam Queensland (2003-2004)

Estimated design flood discharges at Wivenhoe Dam using the WT42D rainfall runoff routing models for floods up to the probable maximum flood to design an auxiliary spillway. Investigated the impact of GTSM-R temporal patterns on design flows. Developed a MIKE 11 model of the Brisbane River to estimate design flood levels from Wivenhoe Dam to Moreton Bay for floods up to the probable maximum flood. [SEQ Water](#)

Tallow Creek Flood Study New South Wales (2002)

Estimated peak discharges and flood levels along Tallow Creek, near Byron Bay for events ranging from the two-year to the probable maximum flood. A RAFTS rainfall runoff model of the catchment and a TUFLOW fully 2D hydraulic model of the creek were developed. [Byron Shire Council](#)

Floodplain management studies

Project Stone Coal Project Flood Risk Management Study Queensland (2014)

Developed a series of diversion drains and flood levees to protect the open cut mining areas on the Project Stone Coal mine in the Gallilee Basin. A RAFTS rainfall runoff model and a TUFLOW hydraulic model were developed to assess the flood risk management strategies. [Macmines Austasia Pty Ltd](#)

Mackay Ring Road Planning Study Queensland (2013)

Provided hydrological and hydraulic modelling advice to the study team, led by AECOM, on the proposal to construct a ring road around Mackay that would cross 10 watercourses. Developed concept designs of the waterway crossings for costing various options. Undertook hydraulic modelling of the various designs to assess flood impacts. [Department of Transport and Main Roads](#)

Ooralea Development Area Trunk Infrastructure Study Queensland (2013/2015)

Developed concept designs of future trunk drainage infrastructure for the proposed Ooralea Development Area near Mackay. A RAFTS rainfall runoff model and a TUFLOW hydraulic model were developed to assess the concept designs. [Mackay Regional Council](#)

McCreadys Creek South Catchment Trunk Infrastructure Study Queensland (2011)

Developed a RAFTS rainfall runoff model and a TUFLOW hydraulic model of McCreadys Creek to determine design flood levels and develop concept designs of future trunk drainage infrastructure. [Mackay Regional Council](#)

Mount Crosby Weir Dam Break Investigation Queensland (2007)

Undertook 3 sunny-day failure impact assessments of Mount Crosby Weir, the main water supply storage for Brisbane and Ipswich. [Brisbane Water](#)

Tallow Creek Flood Mitigation Study New South Wales (2008)

Developed a flood mitigation strategy for Tallow Creek at Suffolk Park and Byron Hills. Developed concept designs of stormwater drains and detention basins to mitigate existing flood problems. Assessed the concept designs using the XP-RAFTS and TUFLOW models. [Tain Investments and Byron Shire Council](#)

Terrors Creek Flood Mitigation Project, Dayboro Queensland (2007)

Assessed flood management options for the town of Dayboro using the RAFTS hydrologic rainfall-runoff-routing model and the MIKE FLOOD 2D hydraulic model. Used model results in a flood-damage model established to undertake an economic evaluation of 13 flood management options. Assessed social, environmental and cost/benefit analysis of the various management options. [Pine Rivers Shire Council](#)

Wivenhoe Dam Gate Operation Procedures Queensland (2004)

Developed modifications to floodgate operating procedures for Wivenhoe Dam to incorporate a new auxiliary spillway. The procedures were used to mitigate flooding and flood damage through Brisbane and Ipswich. Used flood routing and MIKE 11 modelling of downstream areas to develop optimum operating procedures to minimise flood damage and improve dam safety. [Seqwater](#)

Brisbane River Flood Damage Study Queensland (2006)

Estimated flood levels and flood extents along the Brisbane River and Lockyer Creek in Esk Shire to estimate potential flood damage in the Brisbane Valley from Brisbane River flooding, as part of a study to assess the operation rules for the Wivenhoe Dam floodgates. The results of the study were used to determine whether the rules could be modified to reduce flood damage in the valley. [Brisbane and Ipswich City and Esk Shire Councils](#)

Moora Floodplain Management Study Western Australia (2000)

Developed a comprehensive floodplain management plan for Moora township in response to the March, May and August 1999 floods. Flood-damage costs were estimated for a range of design floods using the FLDAMAGE model. Flood levels throughout the town were estimated using the MIKE 11 hydraulic model. Determined the impact on flood levels and flood damage costs of several management options, such as two detention basins, levees and creek widening. A range of non-structural flood mitigation options were developed to reduce future flood damage costs. Public consultation was undertaken to address community concerns. [WA Water and Rivers Commission](#)

Expert witness/ Expert Review

Austcorp's Coral Cove Residential Development Ministerial Call in Queensland (2014)

Prepared an independent review of the stormwater impacts of Austcorps proposed master planned, residential community at Coral Cove, Bundaberg to assist the Deputy Premier in deciding the application. [Qld Department of State Development, Infrastructure and Planning](#)

Holcim's Innes Park South Quarry Project Ministerial Call in Queensland (2014)

Prepared an independent review of the stormwater impacts of Holcim's proposed Innes Park South Quarry near Bundaberg to assist the Deputy Premier in deciding the application. [Qld Department of State Development, Infrastructure and Planning](#)

Endocoal Ltd Vs Glencore Coal Pty Ltd Queensland (2014)

Prepared and presented evidence to the Qld Land Court on a dispute over potential water quality impacts of a mining lease and environmental authority granted for the Meteor Downs South Project near Rolleston. Assisted in the preparation and negotiations of a make good agreement with the objector. [U&D Mining Ltd](#)

Commission of Inquiry into the operation of Wivenhoe Dam Queensland (2011 and 2012)

Prepared an independent review and provided expert evidence at the Commission of Inquiry into the operation of Wivenhoe Dam during the January 2011 flood of Brisbane and Ipswich. [Seqwater and the Commission of Inquiry](#)

Bottlebrush Crescent Development Suffolk Park V Byron Shire Council New South Wales (2010)

Prepared expert evidence including a flood study and stormwater management report to determine the impact on flood levels of the proposed development in Suffolk Park. [Tain Investments](#)

Salt Pan Creek Erosion and Flooding Advice Queensland (2005)

Provided advice at a pre-court meeting on the appropriate set-back distance and erosion protection measures for a proposed development on Salt Pan Creek in Oxenford following council's objection to a development application. [Gold Coast City Council /King and Company Solicitors.](#)

Chelmer Bowls Club Re-development Stormwater Management Queensland (2005)

Prepared a flood study report to determine the impact on flood levels of filling associated with the proposed Chelmer Bowls Club. The findings of the report were presented at the Queensland Planning and Environment Court. [Deacons Lawyers](#)

January 1998 Flooding at Lot 3 Katherine Terrace, Katherine Northern Territory (2003)

A commercial property owner was appealing against a decision by CGU Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment together with a detailed hydraulic model of the area to determine whether the property was inundated by stormwater prior to Katherine River flood water. The findings were presented at the Northern Territory Supreme Court. [Hunt & Hunt Lawyers /CGU Insurance](#)

Sandy Creek Flood Study at 280 Indooroopilly Road, Indooroopilly Queensland (2002)

Prepared a flood study of Sandy Creek at Indooroopilly Road to assess the impact of the proposed development at 280 Indooroopilly Road on creek flood levels. The findings of the study were presented in the Queensland Planning and Environment Court. [Taiwan Investment Management](#)

August 1998 Flooding at Three properties in Wollongong New South Wales (2001)

Completed project on behalf of two residential owners and one commercial property owner who were appealing against a decision by QBE Insurance to reject their claim for damage following the 1998 Wollongong storm event. Developed site-specific flood assessments to determine whether their properties were inundated by stormwater prior to flooding from a local creek. The matter was resolved out of court. [Curwood and Partners](#)

January 1998 Flooding at 16 Tindal St, Katherine Northern Territory (2001)

The owner of 16 Tindal St was appealing against a decision by CGU Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment and a detailed hydraulic model to determine whether the property was inundated by stormwater prior to Katherine River flood water. The findings were presented at the Ballarat Magistrates Court. [Tress Cocks Maddox Lawyers](#)

January 1998 Flooding at Katherine Terrace, Katherine Northern Territory (2001)

A commercial property owner was appealing against a decision by HIH Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment and a detailed hydraulic model to determine whether the property was inundated by stormwater prior to Katherine River floodwater. The findings were presented in the Northern Territory Supreme Court. [Lawson Downs Lawyers](#)

Anchorage Farms Licence Application Appeal, St George Queensland (2001)

Anchorage Farms was appealing against a decision by the Queensland Department of Natural Resources and Mines to reject an application to amalgamate two waterworks licences on the Lower Balonne River. Developed on-farm water balance models of existing and amalgamated licence conditions to assess the impact of abstractions on downstream flows, which were presented in the Queensland Planning and Environment Court. [Fox and Thomas](#)

Corish Farms Licence Application Appeal, Talwood Queensland (2001)

The Queensland Department of Natural Resources and Mines imposed significant pumping restrictions on Corish Farms for moving its water-harvesting pump site on the lower Weir River further upstream. Developed an IQQM water balance model of the Lower Weir River to assess the impact on other water harvesters of moving the water-harvesting pump site. The model was used to assist Corish Farm's appeal against the restrictions. The matter was settled out of court. [Fox and Thomas](#)

Nelsons Creek Water Licence Application Appeal New South Wales (2000)

Objections were received to the licensing of a pump on Nelsons Creek for Timbarra Mine. A daily rainfall runoff Sacramento model and a daily behavioural model (IQQM) were developed and calibrated for Nelsons Creek at the pump site to assess the impacts of the pumping regime on downstream flows. The findings of the study were defended in a Land and Environment Court hearing on the matter. [Phillips Fox Lawyers](#)

Flooding Impacts of a Levee On the Lachlan River, Forbes New South Wales (1997-1998)

Several objections were received following the licence application of a levee across the Buyuma Runner near the Lachlan River upstream of Forbes. Developed a hydraulic model of the Lachlan River and adjacent flood runners to assess the impact of the levee on upstream flood levels. The findings were presented in a Land Board Hearing in Forbes and a subsequent appeal in the Land and Environment Court. [Department of Land and Water Conservation, NSW](#)

Publications

Conference papers and technical presentations

Roads, G. (2007) 'Flood Hydrology – Crystal Ball Gazing or Science' Keynote presentation made at the AICLA and ANZIIF Claims Convention, Sydney 2007.

Maher, B., Roads, G. (2004) 'Wivenhoe Dam Upgrade – Adopted Strategy and Downstream Impacts' Paper accepted for presentation at the 8th National Conference on Hydraulics in Water Engineering, Gold Coast, Australia, July 2004

Ahmed-Zeki, A., Roads, G. (2003) 'Option Investigation and Design Approach – On the Wivenhoe Dam Spillway Augmentation' Paper published at the 43rd Annual Australian National Committee on Large Dams (ANCOLD) Conference, Hobart, Australia, October 2003.

Chandler, K, Gill, D, Macnish, S., Maher, B., Roads, G. (2003) 'Coping with the Probable Maximum Flood – An Alliance Project Delivery for Wivenhoe Dam' Paper accepted for presentation at the 43rd Annual Australian National Committee on Large Dams (ANCOLD) Conference, Hobart, Australia, October 2003.

Annexure B - Letter of instructions from Clayton Utz

Confidential**Email**

5 February 2016

Greg Roads
 WRM Water & Environment Pty Ltd
 Level 9, 135 Wickham Terrace
 SPRING HILL QLD 4000

groads@wormwater.com.au

Dear Greg

New Acland Coal Mine Stage 3 Project**1. Introduction**

- 1.1 We refer to our letter of engagement dated 1 October 2015. Capitalised terms in this letter have the same meaning as provided in the engagement letter, unless otherwise defined.
- 1.2 As you are aware, on behalf of NAC, we have filed and served a notice of NAC's additional issues (**List of Issues**) that NAC's various experts propose to either:
- (a) seek agreement on at joint expert meetings where there is an expert proposed by the objectors relating to that issue (**Part 1**); or
 - (b) address in individual statements of evidence where there is no expert proposed by the objectors relating to that issue (**Part 2**).
- 1.3 A copy of the List of Issues is **enclosed**.

2. Instructions

- 2.1 You are instructed to prepare a statement of evidence to the Land Court in relation to the objections lodged in opposition to the Project (the **Objections**). Specifically, your statement of evidence will be required to address:
- (a) the propositions identified in Part 2 of the List of Issues at paragraphs 36 - 41;
 - (b) certain matters relevant to your field of expertise that have been raised in the lay witness statements, which we will send to you separately; and
 - (c) certain matters relevant to your field of expertise that have been raised in the MLA and EA objections, which we will also send to you separately.
- 2.2 Your report must be limited to addressing issues to the extent they fall within your field of expertise.
- 2.3 You may also be required to appear in person as an expert witness in the Land Court proceedings.
- 2.4 Please see section 4 below regarding your duties as an expert witness.

Greg Roads, WRM Water & Environment Pty Ltd

5 February 2016

2.5 Pursuant to the order of the Land Court, your statement of evidence must be filed in the Land Court by 4pm on **12 February 2016**.

3. **Format of report**

3.1 Any statement that you prepare should include the following:

- (a) a copy of these instructions;
- (b) details of your relevant qualifications, experience and expertise (preferably as an annexure to the report);
- (c) all material facts, whether written or oral, on which the statement is based;
- (d) references to any literature or other material on which you have relied to prepare the statement;
- (e) details of any assumptions you have relied on for the purposes of the statement;
- (f) details of any additional facts or documents which would assist you in reaching a more reliable conclusion on any aspect about which you have been instructed to prepare the statement;
- (g) in respect of any inspection, examination or experiment conducted, initiated or relied on to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was undertaken by you or under your supervision;
 - (iii) the names and qualifications of any other person involved; and
 - (iv) the result;
- (h) if there is a range of opinions or values on matters dealt with in the statement, a summary of the range of opinions or values and the reasons why you have adopted a particular opinion or value in respect of that matter; and
- (i) a summary of the conclusions that you have reached.

3.2 You should also confirm at the end of your report each of the following:

- (a) the factual matters stated in the statement are, as far as you are aware, true;
- (b) that you have made all enquiries that you consider are appropriate for the purpose of providing the opinions that you have expressed;
- (c) the opinions stated in the report are genuinely held by you;
- (d) the statement contains references to all matters you consider significant in reaching the conclusions that you have expressed;

Greg Roads, WRM Water & Environment Pty Ltd

5 February 2016

- (e) that you understand your duty to the court and have complied with that duty;
- (f) that you have read and understand the rules contained in Part 5 of the Land Court Rules 2000 (Qld) (**Land Court Rules**), a copy of which is **enclosed**, as far as they apply to you; and
- (g) that you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

4. **Your responsibilities as an expert witness**

- 4.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 4.2 Again, we draw your attention to Part 5 of the Land Court Rules, which set out the duties of expert witnesses. Specifically, under rule 24C of the Land Court Rules, you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 4.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely



Mark Geritz, Partner
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Karen Trainor, Partner
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ktrainor@claytonutz.com

Our ref 12408/17428/80145086

Annexure C - Applicant's Notice of Additional Issues

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

APPLICANT'S NOTICE OF ADDITIONAL ISSUES

PART 1: Additional issues that the Applicant's notified experts propose to seek agreement on at the joint expert meeting, where there is an expert proposed by the objectors relating to that issue

AGRICULTURAL ECONOMICS

OCAA LIST OF ISSUES

1. In relation to paragraph 24(a) of the OCAA List of Issues, if groundwater impacts occur and they are mitigated by the groundwater mitigation measures to be implemented for the Revised Expansion Project there will be no impacts on regional economic issues or agricultural production.
2. In relation to paragraph 24(c) of the OCAA List of Issues, the reduced output during the life of mine and post mining due to disturbance to SCL is not significant from a regional perspective and will be further ameliorated with increased productivity and increased intensity of operations of other cropping land in the region, as has occurred over the last 40 years.

APPLICANT'S NOTICE OF ADDITIONAL ISSUES
Filed on behalf of Applicant

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AIR QUALITY, DUST

OCAA LIST OF ISSUES

3. In relation to paragraphs 14(a) to 14(e), 14(g), 15 and 19 of the OCAA List of Issues:
 - (a) the methodology adopted for the air quality assessment is in accordance with industry accepted techniques and is appropriate;
 - (b) whilst in some instances alternative assumptions and factors might have been adopted to configure the meteorological model and the dispersion model, ultimately the same conclusion would be reached, that is the adoption of an Air Quality Management Plan with Adaptive Management will ensure that the Environment Protection (Air) Policy objectives will not be exceeded by the Revised Expansion Project;
 - (c) the horizontal resolution of the model is sufficient and is consistent with regulatory recommendations. The terrain is adequately addressed in both the meteorological model and the dispersion model. Terrain and land-use changes associated with mining are addressed through pit retention factors; and
 - (d) particulate emissions from the combustion of diesel in vehicles were included in the New EIS air quality assessment.
4. In relation to paragraphs 14(f) and 19 of the OCAA List of Issues, blasting at the Revised Expansion Project can be conducted and managed so that the Revised Expansion Project does not cause air quality objectives to be exceeded and does not adversely affect air quality or human health.
5. In relation to paragraph 14(g) of the OCAA List of Issues:
 - (a) the emission sources and meteorological conditions with potential to affect air quality at sensitive receptors is available in the dispersion modelling that was conducted; and
 - (b) in any event, is not critical to determining the suitability of the assessment in the New EIS.
6. In relation to paragraphs 14, 15, 16, 17(a) to 17(c), 18(a), 18(b) and 19 of the OCAA List of Issues, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health and amenity.
7. In relation to paragraphs 15 and 18 of the OCAA List of Issues, additional monitoring and reporting to that required by the CG's imposed conditions and the Draft EA conditions is not required.

8. In relation to paragraph 15(f) of the OCAA List of Issues:
- (a) the objector has misconstrued the Draft EA conditions referred to in paragraph 15(f)(i) of the OCAA List of Issues;
 - (b) the conditions of the Draft EA for the Revised Expansion Project are adequate and appropriate to manage air emissions;
 - (c) the compliance monitoring regime required in the Draft EA conditions is adequate to inform the operators of ongoing air quality impacts such that the mine operators can manage activities to not cause elevated levels of TSP, PM₁₀ and PM_{2.5}; and
 - (d) the PM₁₀ and PM_{2.5} objectives have been formulated such that if a mining activity achieves compliance with the objective for PM₁₀, compliance with the PM_{2.5} objective will also be achieved. Consequently, parallel monitoring requirements for PM₁₀ and PM_{2.5} are not necessary.

ECONOMICS

OCAA LIST OF ISSUES

9. The input/output modelling done in the New EIS:
- (a) was appropriately applied to measure the economic impact of the Revised Expansion Project and was appropriately undertaken for the purposes of the New EIS; and
 - (b) was not designed to measure whether the Revised Expansion Project will demonstrate a net economic benefit or whether the mine is economically viable.

FLOODING, SURFACE WATER QUALITY

OCAA LIST OF ISSUES

10. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(a)(ii) and 2(b)(ii) of the OCAA List of Issues, extensive baseline surface water monitoring data is available for the key parameters and given in the NEW EIS. The use of end of pipe release limits, receiving water flow criteria and trigger investigation levels in the Draft EA is appropriate to protect the environmental values of the receiving waters.
11. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(ii) and 2(d) of the OCAA List of Issues any potential for impacts on water quality due to waste rock leachate can be managed.

12. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(i) of the OCAA List of Issues, the drainage system will not be inadequate and will be designed to meet or exceed any relevant guideline criteria.

DR JOHN STANDLEY'S LIST OF ISSUES

13. Relevant details regarding surface flows and surface flow impacts of the existing operation and the Revised Expansion Project are contained in the New EIS.
14. Relevant details regarding surface water quality, including analyses, are contained in the New EIS.
15. The water management system and the Draft EA conditions are designed to protect the environmental values of surface waters. Monitoring water quality in pit is not required.
16. The flood assessment for the proposed rail line is given in Section 5.11 of the New EIS. The impact of a one in ten year AEP event, which is likely to occur over the life of the rail line is generally less than 0.2 m and at most 0.35 m.
17. There is no evidence of contaminated water seeping into the groundwater from surface waters. Water is released from the mine to surface waters in accordance with the EA conditions and these conditions are designed to protect the environmental values of surface waters, which would in turn protect the environmental values of groundwater if seepage occurred.

GROUNDWATER CONCEPTUALISATION

OCAA LIST OF ISSUES

18. In relation to paragraph 1 of the OCAA List of Issues:
 - (a) the groundwater impacts for the Revised Expansion Project were assessed at a regional scale, and were based on an appropriate conceptualisation of the hydrogeology of the area;
 - (b) there is sufficient data for the various aquifers to provide a suitable basis for assessing aquifer properties; and
 - (c) predicted impacts on the basalt aquifer are conservative as they do not take into consideration likely compartmentalisation through discrete fracturing that forms the aquifer.
19. In relation to paragraphs 1(c), 2(a), 2(b)(i) and 3 of the OCAA List of Issues, there is sufficient long term water level and groundwater quality data to provide a baseline for the

Revised Expansion Project and the Draft EA conditions and CG's imposed conditions are adequate to detect and assess any other impacts on groundwater.

20. In relation to paragraphs 2(c)(ii) and 2(d) of the OCAA List of Issues, there is minimal waste-rock-acid generating potential and there are mitigation measures proposed to minimise impact on the groundwater receiving environment.
21. In relation to paragraph 4 of the OCAA List of Issues:
 - (a) the impact and risks to groundwater from the Revised Expansion Project were defined, and were assessed to be manageable;
 - (b) the CG's conditions and Draft EA conditions provide for ongoing review and assessment and are adequate; and
 - (c) the potential impacts on groundwater and on water users will be addressed and managed through compliance with conditions 10, 11 and 12 of the CG's imposed conditions and Schedule D of the Draft EA and implementation of a Bore Baseline Assessment Program and Make Good Agreements.

GROUNDWATER MODELLING

OCAA LIST OF ISSUES

22. In relation to paragraphs 5 and 6 of the OCAA List of Issues:
 - (a) the predictive numerical model is 'fit for purpose' to undertake assessment of potential impacts resulting from the Revised Expansion Project; and
 - (b) there are no modelling deficiencies that detract from its fitness for purpose.

NOISE, VIBRATION

OCAA LIST OF ISSUES

23. In relation to paragraphs 7 and 9 of the OCAA List of Issues:
 - (a) assessment of health and wellbeing impacts of noise is not reliant on an assessment of "background plus" noise levels;
 - (b) it is not appropriate for the Revised Expansion Project to comply with the Planning for Noise Control Guideline as it is not relevant to mining projects; nor is AS 1055 appropriate as it states "[This Standard] excludes the setting of environmental noise criteria.";

- (c) the noise and vibration criteria nominated in the Draft EA noise conditions adequately deal with impacts on human health and wellbeing for neighbouring residences;
 - (d) compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing; and
 - (e) corrections for tonality and impulsivity should be taken into account when assessing compliance with the Draft EA noise conditions.
24. In relation to paragraph 8 of the OCAA List of Issues:
- (a) the noise modelling undertaken for the Revised Expansion Project was adequate to appropriately determine the extent of the impacts and compliance with the Draft EA noise conditions can occur with mitigation and management measures in place;
 - (b) utilisations of mobile fleet justify the 2 dB noise reduction and also provide margin for the need to apply tonality or impulsivity (or both) penalty corrections (should such corrections be appropriate); and
 - (c) by limiting the Leq noise levels to the values stated in the Draft EA noise conditions, compliance with recognised sleep disturbance criteria for maximum noise levels (ie WHO, Environment Protection (Noise) Policy, L1 Acoustic Quality Objectives) will be achieved.
25. In relation to paragraphs 10 and 11 of the OCAA List of Issues, the TARP (including “live dashboard”) is an effective approach to manage noise impacts from the Revised Expansion Project due to its “live” assessment of noise levels in combination with real-time management interventions as required.
26. In relation to paragraph 10 of the OCAA List of Issues, the noise mitigation options (eg silencing of mobile plant, broad-band reversing alarms), which are detailed and modelled in the New EIS and are appropriate.
27. In relation to paragraph 11 of the OCAA List of Issues:
- (a) technical capabilities of commercially available directional noise loggers are satisfactory; and
 - (b) the noise monitoring system of the TARP and the proposed Noise and Vibration Management Plan will be adequate to monitor and manage noise from the Revised Expansion Project.
28. In relation to paragraph 12 of the OCAA List of Issues:
- (a) the operation of the rail loadout facility is expected to meet the Draft EA noise limits (as the EIS modelling has accounted for mobile plant at the rail loadout facility as well as

train movements along the spur itself) and therefore will not substantially impact on the surrounding sensitive receptors;

- (b) aside from a typographical error (in the last paragraph of Section 5.2.1 of the CG's Report) the recommended noise limits of the CG's Report are contained in the Draft EA; and
- (c) low frequency noise is not a phenomenon associated with train noise from a rail loadout facility.

HEALTH

TANYA PLANT LIST OF ISSUES

29. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:

- (a) the Revised Expansion Project will not cause unacceptable adverse health effects associated with:
 - (i) fine particulates PM₁₀ and PM_{2.5};
 - (ii) blast fumes;
 - (iii) diesel fumes;
 - (iv) water quality; and
 - (v) noise;
- (b) the proposed transport of coal from the proposed mine will not cause unacceptable adverse health effects associated with:
 - (i) particle pollution; and
 - (ii) diesel combustion.

MENTAL HEALTH

TANYA PLANT LIST OF ISSUES

30. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:
- (a) there is no reliable evidence that there will likely be any increase in mental health illness as a consequence of the Revised Expansion Project;
 - (b) solastalgia is not a recognised psychiatric condition;
 - (c) mental illness is a multi-faceted condition and highly unlikely to be caused by a single specific factor such as the development or expansion of a mine;
 - (d) complaints of stress, anxiety or unhappiness do not fulfil the Diagnostic and Statistical Manual of Mental Disorders DSM-V criteria for a mental illness.

PART 2: Additional issues that the notified experts of the applicant will address, where there is no expert proposed by the objectors relating to that issue

ECONOMICS

1. CGE modelling calculates the direct and indirect impact over time on the regional, Queensland and Australian economies of the construction and operation of a project and is the most comprehensive assessment that can be made of a project on an economy.
2. A CGE analysis, unlike an input/output analysis:
 - (a) does take account of the fact that there are limited productive resources in the economy;
 - (b) does not ignore the opportunity costs associated with using resources from one project rather than another;
 - (c) does not assume fixed prices; and
 - (d) does include substitution between goods in consumption and inputs to the production of goods and services, as relative prices change.
3. A CGE analysis comprehensively accounts for the indirect impact on other industries.
4. A CGE analysis takes into account the impact on the economy of the project relative to a scenario where the mine does not go ahead.
5. CGE modelling undertaken for the Revised Expansion Project shows that the impact on the State and local economies will be positive.
6. A CBA estimates the net social benefits for the community as a whole that result from a project.
7. A CBA for the Revised Expansion Project shows that the benefits of the project will greatly exceed its costs.
8. This CBA analysis for the Revised Expansion Project takes account of the mine's costs including environmental and social costs.
9. Even when adopting assumptions that make the benefits unrealistically small and the costs unrealistically large, the CBA for the Revised Expansion Project shows that the benefits greatly exceed its costs.
10. Even on a very unrealistic assumption that all agricultural land upon which there is drawdown of one metre or more will be rendered immediately worthless for agricultural

production, the CBA analysis for the revised Expansion Project shows the benefits of the Revised Expansion Project far outweighs its costs.

11. The CGE and CBA modelling shows that the value of the coal mined over the mine's life far exceeds the value of agriculture in the district into the indefinite (indeed, infinite) future.
12. The environmental effects of burning thermal coal are properly considered in CBAs of coal fired power plants, not coal mines.

TERRESTRIAL FAUNA

13. There have been database reviews and sufficient survey effort, utilising appropriate methodology, conducted to understand fauna habitats and species.
14. There are no conservation significant fauna present or likely to be present in the area of the Revised Expansion Project that have not been considered or for which there is no appropriate management response in the approval conditions (the CG's imposed conditions and Draft EA).
15. The site provides habitats for a range of common wildlife. The Revised Expansion Project will not result in the loss of any common species or reduce their long term security in the local landscape.
16. Taking into consideration the current and prospective uses of the area of the Revised Expansion Project, the proposed mining operation and associated habitat restoration will provide commensurate and strategically placed fauna movement options with increased management, such as to provide improved habitat connectivity and safe movement options.
17. Appropriate management responses can and will be adopted to mitigate potential impacts on fauna and fauna habitats.
18. Appropriate management of pest species for the Revised Expansion Project will be provided through an integrated Pest Management Plan.
19. The Revised Expansion Project will not result in the loss of any fauna species in the local landscape due to traffic.

TERRESTRIAL FLORA

20. The occurrence of threatened flora species have been identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions, leading to no net loss of threatened species.

21. The type, extent and condition of threatened vegetation communities were identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions and the Draft EA conditions. It is not expected that there will be any additional significant impacts not subject to management conditions in place under the CG's imposed conditions and the Draft EA conditions.
22. The upgrade of the local electricity grid with new powerlines is located outside the MLAs, other than the connection from the rail loop, and will be subject to a separate approvals. In any event, the design and upgrade to the electricity grid can be managed to ensure retention of most of the verge vegetation and requires clearing of only a small amount of native vegetation.
23. The implementation of the Pest and Weed Management Plan will avoid significant impacts from listed weed species.
24. Given:
 - (a) much of the native vegetation that will be removed by the proposed mine extension occurs on areas previously cleared for agriculture; and
 - (b) vegetation communities that are MSES will be offset on land that similarly has been previously cleared for agriculture,rehabilitation is considered to be an adequate response to the loss of any native vegetation communities.
25. The Draft EA conditions are adequate to protect significant flora and vegetation communities within the footprint of the Revised Expansion Project.
26. In relation to paragraph 1(e)(v) of the OCAA List of Issues based on vegetation community composition it is unlikely that any of the relevant communities mapped are groundwater dependant. Regardless of whether or not drawdown will impact mapped vegetation communities, it is unlikely to impact vegetation that is otherwise mapped as MSES.

COAL MARKETS AND CLIMATE CHANGE

27. In absolute terms, during the life of the Revised Expansion Project, demand for thermal coal is forecast to grow, particularly in India and South East Asia.
28. Thermal coal is a vital component of the global energy mix during the life of the Revised Expansion Project.
29. Uncertainties over domestic and international energy policies have been taken into account in forecasts undertaken by reputable agencies such as the International Energy Agency.

30. There are many good reasons as to why the Revised Expansion Project is economically viable.
31. The incremental tonnes that will be produced because of the Revised Expansion Project are negligible additions from the perspective of global volumes. Should the Revised Expansion Project not produce and supply its customers the additional volume, the coal will be supplied from another source. The consequence of this is that CO₂ emissions will not vary materially. Furthermore, as the New Acland Mine produces high-energy thermal coal, which compares favourably to lower quality coals from Indonesia and domestic Chinese and India coals, if the Revised Expansion Project does not proceed global CO₂ emissions may increase depending upon the country involved and the quality of the coal.

VISUAL AMENITY AND LIGHTING

32. Lighting for the Revised Expansion Project can be managed to avoid unacceptable impacts.
33. There will be no unacceptable visual or character impacts on the receiving environment, including those from lighting that cannot be adequately managed using standard measures.

GROUNDWATER

34. The Applicant's current mining impacts to groundwater have been restricted to immediately adjacent to the active mining area, with minimal impact observed on the surrounding groundwater environment.
35. The predicted water usage is within the New Acland Mine's allocation under existing authorisations to take water.

FLOODING, SURFACE WATER QUALITY

36. The water balance modelling for the Revised Expansion Project water management system is sufficient to demonstrate the operation of the water management system and the indicative sizes of the water management infrastructure. The Draft EA release limits have been developed to limit the extent of the impact of the mine regardless of the water balance assessment.
37. The New EIS demonstrates that the levee banks and rail line will impact on flood levels but the impacts are acceptable. The impact of the levee banks are all located on the mine lease and the impact of the rail line is mostly confined to land owned by the Applicant.

38. The flood modelling of the New EIS has fully considered the catchment upstream of the mine. The models were prepared in accordance with best practice commensurate with a concept level assessment. Additional modelling will be undertaken during the detailed design phase to minimise any impacts identified in this study.
39. The adopted monitoring program covers both end of pipe water quality investigation limits and receiving water triggers. The monitoring program is both practical and reasonable given the low potential risk of impacts on surface water quality of the Revised Expansion Project
40. The issues that caused the elevated historical releases have been identified and rectified on site. The Draft EA also requires separation of mine affected and sediment affected water, which will further reduce the potential for elevated releases.
41. The assessment of impacts of the Revised Expansion Project on surface water and water quality is appropriate.

NOISE AND VIBRATION

TANYA PLANT LIST OF ISSUES

31. In relation to the issues raised by Tanya Plant notified on 27 November 2015 and 15 December 2015, compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing. The proposed Draft EA conditions are adequate to protect human health.

OTHER

42. The noise and vibration criteria nominated in the Draft EA noise conditions in conjunction with the Noise and Vibration Management Plan will adequately manage the impacts on wildlife from the Revised Expansion Project.
43. The blasting criteria documented in the Draft EA are appropriate to protect the amenity of residents and their homes from the Revised Expansion Project.
44. The extraction of basalt already occurs on the mining lease and will not result in additional (measurable) noise.
45. The Revised Expansion Project does not rely on untypical and unproven measures to manage noise.
46. With regard to the suggestion by one objector that mine noise was measured at 40.1 dB LAeq at a property 8 kilometres from the existing New Acland Mine, it is not possible for mine noise to be dominant at this distance.

- 47. It is not appropriate to set environmental authority conditions for certification of noise levels from items of plant or prescribing specific noise management measures.
- 48. Inaudibility is both an unreasonable and unfeasible condition.

LAND USE, SOILS

- 49. The offset areas identified for priority agricultural land use and the rehabilitation proposed and required by the CG's imposed conditions and the Draft EA will be more than sufficient to compensate for any loss of cropping land disturbed by the Revised Expansion Project.
- 50. The Revised Expansion Project will not reduce productivity or alienate areas outside of the mined areas from cropping use.
- 51. There will be no indirect impacts (such as through land fragmentation, flooding or adverse impacts on water supplies) on the cropping capacity of non-disturbed areas arising from the Revised Expansion Project that cannot be mitigated.
- 52. Apart from the lands of SCL status that will be in the depressed landform all other lands of SCL status will be rehabilitated to SCL compliant conditions as required by the CG's imposed conditions.
- 53. Adequate offset arrangements are in place to mitigate the impact on land within the depressed landform that cannot be returned to SCL compliant status.
- 54. Good Quality Agricultural Land designation is irrelevant as the State Planning Policy SPP1/92 lapsed in Dec 2012.
- 55. The impact of the Revised Expansion Project on the extent of regional cropping soils is insignificant.
- 56. The conclusions reached in relation to the Revised Expansion Project areas with respect to the quality of land and subsequent rehabilitation are valid for the land located inside ML50216 that will be impacted for the Revised Expansion Project.

COMMUNITY, SOCIAL

- 57. The Applicant has made significant efforts to engage with landholders and other community members. The stakeholder engagement program for the Revised Expansion Project is equal to or better than industry best practice.

58. The Revised Expansion Project was revised to address community concerns and avoid direct impacts on Acland and the Applicant has committed to the Acland Management Plan, which will conserve existing values.
59. Tom Doherty Park will be retained by the State and will not be directly impacted by the Revised Expansion Project.
60. The Revised Expansion Project is likely to have a positive effect on a number of Acland sites that have cultural heritage values through the Acland Management Plan.
61. Whilst some people will see the Revised Expansion Project as a detraction from sense of place, others value the New Acland Mine as an important part of the area's social and economic fabric.
62. A population decline was already being experienced in Acland before the Applicant began property acquisitions.
63. The Applicant has made significant contributions to supporting community cohesion through its community investment fund, sponsorships and donations.
64. Community members hold differences of opinion about the Revised Expansion Project and divisions are likely to continue whether the Revised Expansion Project is approved or not.
65. Failure of the Revised Expansion Project to proceed is likely to have negative impacts on community cohesion through loss of mining families from the area.
66. The New EIS including the SIA and SIMP was reviewed by Government agencies and approved in December 2014 after a lengthy process of consideration. The additional information and clarifications provided as part of the AEIS addressed the substantive issues raised by submitters in relation to the SIA and SIMP.
67. The Applicant consulted with Traditional Owners about their values relating to the Revised Expansion Project area, employment opportunities and cultural awareness and is involved in a range of activities with the Western Wakka Wakka people (eg social investment, engagement and CHMP implementation). The outcomes of this consultation are represented in the CHMP developed for the Revised Expansion Project.
68. The Revised Expansion Project would provide significant benefits for employees, families, community organisations and regional economic outcomes, as documented in the New EIS. The Revised Expansion Project offers security of employment and additional employment at a time when mining industry employment opportunities are very limited.
69. The numbers of registered businesses (including agricultural businesses) in Oakey and Toowoomba have remained stable during the past three years. The Revised Expansion Project also offers benefits for businesses in Oakey and the Toowoomba region. There is no evidence that the Revised Expansion Project would cause negative impacts on businesses.

- 70. Both families and the local community are likely to experience negative social impacts if the Revised Expansion Project does not proceed.
- 71. There is evidence of strong community support for the Revised Expansion Project to proceed.
- 72. An independent mental health study is beyond the usual scope for an SIA.
- 73. The New EIS adequately addresses the impact of the Revised Expansion Project on the amenity experienced by people who live in the affected area.
- 74. The social impacts of the Revised Expansion Project will be managed effectively by the SIMP and the CG's imposed conditions.

AIR QUALITY AND GREENHOUSE EMISSIONS

TANYA PLANT LIST OF ISSUES

- 75. In relation to the issues raised by Tanya Plant as notified on 27 November 2015 and 15 December 2015, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health.

OTHER

- 76. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect flora and fauna.
- 77. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect agriculture.
- 78. Air quality associated with the existing mine has been consistently shown to be within the objectives of the Environment Protection (Air) Policy and the existing Environmental Authority.
- 79. The appropriate air quality assessment criteria are the air quality objectives that are specified in the Environment Protection (Air) Policy. The New EIS assessed impacts against these objectives and demonstrated that compliance could be achieved.
- 80. The measures under the proposed Air Quality Management Plan for the materials handling facility and associated infrastructure are appropriate to minimise dust emissions from that infrastructure.

81. A number of studies in Queensland and New South Wales, including studies conducted on the South West System have demonstrated that coal dust emissions from coal carrying trains and empty coal trains do not cause exceedances of air quality objectives for PM₁₀ and PM_{2.5}. A dispersion modelling study of coal dust from trains therefore provides no practical benefit to demonstrating the appropriateness of the Revised Expansion Project.
82. Coal dust emissions from trains can be adequately and reliably managed through the use of the measures proposed in the New EIS. The Revised Expansion Project will implement strategies consistent with the South West System Coal Dust Management Plan which has been adopted by Aurizon to manage the impact of coal dust emissions from trains.
83. The Revised Expansion Project is not responsible for nor in control of the emissions from diesel locomotives, which are owned and operated by Aurizon. Notwithstanding this, a number of studies in Queensland and New South Wales, including studies conducted on the South West System, have demonstrated that particulate levels in the vicinity of coal rail networks with diesel locomotives do not exceed of air quality objectives for PM₁₀ and PM_{2.5}.
84. Scope 1 and 2 emissions have been calculated in accordance with relevant regulatory requirements at the time of the New EIS. Greenhouse gas emission estimates included the key greenhouse gases: carbon dioxide, methane and nitrous oxide.
85. Scope 3 emissions from the Revised Expansion Project are likely to be 198,485 kt CO₂-e for the Revised Expansion Project life. This equates to an annual average Scope 3 emission rate of 15,268 kt CO₂-e, which is a very small percentage of Australia's emission reduction target for 2020. The Revised Expansion Project's Scope 3 emissions are almost entirely generated offshore and therefore fall under the control, and emissions target, of another jurisdiction.

AGRICULTURAL ECONOMICS

86. The Revised Expansion Project will not cause significant displacement or loss of agricultural enterprises.
87. The Revised Expansion Project will not cause significant loss of business or jobs for lost agricultural enterprises.
88. The Revised Expansion Project is not inconsistent with the expansion of rural tourism.
89. Draw-down of groundwater levels will not adversely affect regional economics due to the resulting impacts on agriculture.
90. The Revised Expansion Project will not significantly restrict the use of land for alternative uses.

91. The claim that agriculture brings \$155 billion to the Australian economy and creates 1.6 million jobs is incorrect.

LIVESTOCK, REHABILITATION

92. The impact of the Revised Expansion Project on cropping land will not reduce grazing land to marginal, low intensity grazing.
93. The Revised Expansion Project will not adversely affect the health of livestock.
94. The performance of livestock and pasture on rehabilitated soils is currently comparable to livestock and pasture on unmined soils.

TRAFFIC, TRANSPORT, ROADS

95. The closure and/or diversion of public roads, whilst being acknowledged as having an impact, has been considered in the context of the small number of road users impacted by the closure and/or diversion and such impacts are small and are manageable.
96. There are no significant matters of road safety that are not capable of being addressed and if necessary improved by the road upgrading conditions imposed upon the Revised Expansion Project by the CG's imposed conditions.
97. Additional road usage created by the expansion will be appropriately managed by a Road Impact Assessment and a Road Use Impact Management Plan.
98. The impacts of additional traffic at the materials handling facility were appropriately considered in the EIS process and such impacts are satisfactorily addressed in the CG's imposed conditions.
99. Any perceived or real errors or inadequacies in the New EIS or AEIS raised by objectors regarding roads, traffic, bus routes or transport do not undermine the integrity of the EIS process or its findings and the resulting conditions issued by the CG are appropriate.
100. Upgrading of the surrounding road network in the vicinity of the Revised Expansion Project as proposed by the Applicant is appropriate to address the impacts of the Revised Expansion Project.
101. The necessary road closures for blasting will be of a short duration and infrequent, such that impacts on Oakey-Cooyar Road are reasonable and acceptable.

102. The impacts on traffic generated by the Revised Expansion Project have been considered and determined to be reasonable, acceptable and manageable and are satisfactorily addressed in the CG's imposed conditions.

VALUATION

103. There is no evidence of diminution in property values in the Acland area.

Definitions used in this document

In this document, unless otherwise defined, capitalised terms in this document have the meanings given to them in the Affidavit of Bruce Douglas Denney sworn 10 December 2015 and filed with the Court on 11 December 2015, and:

AEP means annual exceedance probability.

CBA means cost benefit analysis.

CGE means Computable General Equilibrium.

Draft EA means the draft EA issued by the Department of Environment and Heritage Protection dated 28 August 2015.

ha means hectare.

MNES means Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*.

MR Regulations means the Mineral Resources Regulation 2013.

MSES means matters of State Environmental Significance.

New Hope Group means the New Hope group of companies.

OCAA List of Issues means the Updated Notice of Issues by Oakey Coal Action Alliance Inc (undated).

SCL means strategic cropping land.

SIA means Social Impact Assessment.

SIMP means Social Impact Management Plan.

Annexure D - Opinion and findings on matters raised in lay witness statements filed by objectors

No.	Objectors' issues to be addressed	Paragraph reference	Response
1.	JOHN COOK		
	32) We are also concerned about runoff from the New Acland Mine Stage 3 pits into places like the Lagoon Creek, which then feeds into the Murray Darling system. In the last lot of heavy rains in 2011 the dams overflowed into the Lagoon Creek so I don't see any reason to expect Stage 3 will be any different. 33) This may have significant downstream effects in the Murray Darling system, including the Condamine. For example I believe the floods coming out of tailings contain heavy metals, this could contaminate farms irrigated from the Condamine River. Runoff is still permitted into local streams from mine site.	32 - 33	This issue has been addressed in the section entitled "Historical water quality impacts of the existing mine" on page 8 of my statement. Further to this, the water management system for the proposed stage 3 expansion has been designed to minimise the need for mine affected water to be released from the site. Any water from the tailings system is stored within the pit or reused and not released from site. Any releases would also need to meet strict water quality limits defined in the Draft EA that would ensure that the downstream environmental values in Lagoon Creek are protected. If there are no impacts in Lagoon Creek, there will be no impacts on the Condamine River and the greater Murray Darling system because of the much greater volumes of runoff that would occur from the total catchment at the time of a release. In addition to this, water quality monitoring data given in the New EIS (Table 5-7)²² shows that the water quality in Lagoon Creek at the time of the historical releases was not significantly different from the background concentrations. Improvements in the water management system proposed as part of the EIS should further reduce the impact of releases. I also note that Mr Cook's properties are not located in the Lagoon Creek or even the Oakey Creek catchment.
2.	AILEEN HARRISON		
	105) The rail loop is located in the flood plains and I believe there is the potential of seeing run off of contaminated mine water leading into Lagoon and Doctors creek. 106) The impacts of this would be so wide that the whole district could be affected. Jondaryan Town ship water would be contaminated from Lagoon Creek	105 - 106	The impacts of the rail and rail loop on water quality are likely to be insignificant. First, it is only the coal product that will be transported from the site. Mine affected water will remain within the mine site managed by the mine water management system and the EA conditions. If a coal spill occurred from a train or the train load out area, it can be readily cleaned up without impacting on Lagoon Creek as the creek is generally dry and not flowing. The impacts of a coal spill that occurred from a train as it was crossing the creek during a flood

²² Document ID: EHP.0023, p 19.

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No.	Objectors' issues to be addressed	Paragraph reference	Response
			event would also not be significant. Coal is insoluble in water and readily settles out of solution, which means the impact on water quality would be visual impacts only and not impact on human health. It would also be very quickly diluted if it occurred during a flood event. In addition Jondaryan does not receive township water from Lagoon Creek.
3.	NOEL WIECK		
	We are concerned about the modelling and monitoring procedures the company has in place. We are also concerned that there isn't proper natural resource management in the area, and that the new Stage 3 proposal is a step backwards. We have concern relating to: a) The self monitoring of water released after rain events;	169	The modelling issues have been addressed in the section entitled “Water Management System Assessment” on page 4 of my statement. The monitoring issues have been addressed in the section entitled “Monitoring requirements” on page 6 of my statement. It is a requirement of the Draft EA²³ for NAC to monitor water released from the mine. Condition A6 of the Draft EA²⁴ also requires that the monitoring data to be made available to the department within 10 days of a request. It is not practical for the government to monitor the releases at the site because there is only a very small window of opportunity to release given the ‘flashy’ nature of the creek flows. The government monitoring staff would need to be on site during the event. It is not practical for the government to monitor every mine in Queensland because mine water releases generally occur at the same time, meaning there would need to be one government person per mine.

²³ Document ID: EHP.0009.

²⁴ Document ID: EHP.0009, p 4.

Annexure E - Opinion and findings on surface water quality and flooding matters raised in MLA and EA objections

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
Surface water quality						
1	If the project proceeds, it will have an unacceptable impact on other users of surface water and on the environmental values of those waters, which include Lagoon Creek. This includes potential discharges from the mine.	DDEC; OCAA; Meryl Plant; Tanya Plant; Paul and Angela Mason	Paragraph 31 (DDEC; OCAA); AEIS submission (Feb 2014), Page 42, AEIS submission (29/09/13), page 8, 9 (MP); EIS submission, page 8, 32, 33, AEIS submission p34 (TP); Paragraph 24 (Mason)	Tanya Plant; Sid Plant; Max and Jane Scholefield; Meryl Plant; Paul Evans; Carolyn Lunt; John Millane; Nardi Rowe; Frances Scarano; Aileen Harrison; Karen Lavin; OCAA David and Cheryl Vonhoff; Christopher and Naomi Cleary; John Cook; Patricia Cook	EA submission paragraph 65 (TP); EA submission paragraph 65 (SP); Page 6, paragraph 24 (MJS EA submission); Page 6, paragraph 33 and page 7, paragraph 54 (MP EA Submission); Annexure "Acland Stage Three Take Four" under heading "8 - Water and food - safety and security"; Page 1, dot point 2 (PE EA Submission); Page 1, dot point 2 (CL EA submission); Page 1, dot point 2 (JM EA submission); Page 1, dot point 2 (NR EA submission); Page 1, dot point 2 (FS EA submission); Page 4 of Appendix (AH); Point 2 on email (KL);	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					Paragraph 28 (OCAA); Page 2 paragraph 25 (EA Submission) (DCV); EA Submission para 31 (Cleary); EA Objection Attachment page 4 (Cleary); EA Submission page 5 para 22 (JC); EA Submission page 5 para 22 (PC)	
2	The surface water assessments done for the project were inadequate to appropriately determine the extent of those impacts.	DDEC; OCAA; Tanya Plant; Sid Plant	Paragraph 32 (DDEC; OCAA); Paragraph 75, EIS submission p32, 33 (TP); Paragraph 77 (SP); AEIS submission (Feb 2014), Page 53 (MP)	Max and Jane Scholefield; OCAA; David and Cheryl Vonhoff; Christopher and Naomi Cleary; John Cook; Patricia Cook	Page 6, paragraph 25 (MJS EA submission); Paragraph 29 (OCAA); Page 2 paragraph 26 (EA Submission) (DCV); EA Submission para 32 (Cleary); EA Objection Attachment page 4 (Cleary); EA Submission page 5 para 23 (JC); EA Submission page 5 para 23 (PC)	This issue has been addressed in the section entitled "Water Management System Assessment" on page 4 of my statement.
3	The proposed project will change the landform and underlying soil structure	Tanya Plant; Sid Plant	Paragraph 69 (TP); Paragraph 70 (SP)	Tanya Plant; Sid Plant	EA submission paragraph 57 (TP); EA submission paragraph 57 (SP)	The impact of changing the landform and underlying soil structure at the location of the mining areas on the environmental values of the surface water will be minimal. This issue has been addressed in the section entitled

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
						"Water Management System Assessment" on page 4 of my statement.
4	The proposed project and levee banks will impact on runoff, drainage and flooding, and the flow of flood waters.	Tanya Plant; Sid Plant; Merilyn Plant	Paragraph 70, 71 (TP) Paragraph 71, 72 (SP); Paragraph 38(f), EIS submission, under heading 3 (MP)	Tanya Plant; Sid Plant; Aileen Harrison	EA submission paragraph 58, 59 (TP); EA submission paragraph 58, 59 (SP); Page 4 of Appendix (AH)	This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.
5	The proposed project will discharge water into surface waters (see for example CG report p140 "The EIS states that controlled releases to Lagoon Creek and Spring Creek are a necessary aspect of the mine water balance to prevent good quality water increasing in salinity if retained on site."). This risks impacts on flow and on water quality.	Tanya Plant; Sid Plant; Merilyn Plant	Paragraph 72 (TP); Paragraph 73 (SP); AEIS submission (Feb 2014), Page 42, AEIS submission (29/09/13), page 8 (MP)	Tanya Plant; Sid Plant	EA submission paragraph 60 (TP); EA submission paragraph 60 (SP)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.
6	It is acknowledged in the EIS/AEIS and CG Report that the construction of the rail spur may result in additional flooding on private properties and that compensation may need to be negotiated (see for example CG report p144).	Tanya Plant; Sid Plant	Paragraph 73 (TP); Paragraph 74 (SP)	Tanya Plant; Sid Plant	EA submission paragraph 61 (TP); EA submission paragraph 61 (SP)	This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.
7	The detailed rail design had not been finalized to be considered in	Tanya Plant; Sid Plant	Paragraph 74 (TP); Paragraph 75	Tanya Plant; Sid Plant	EA submission paragraph 62 (TP); EA submission	This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	the EIS modelling.		(SP)		paragraph 62 (SP)	of my statement.
8	The modelling/surface water assessments done for the project is/were inadequate to determine the full extent of the surface water impacts. The hydrological model also did not seem to sufficiently consider the catchment upstream or the impacts of the changes in runoff or the changes that may occur due to climate change.	Tanya Plant; Sid Plant	Paragraph 75 (TP); Paragraph 76 (SP); AEIS submission (Feb 2014), Page 53 (MP)	Tanya Plant; Sid Plant	EA submission paragraph 63 (TP); EA submission paragraph 63 (SP)	This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement.
9	There are concerns in relation to the pollution of waters through pollutants leaving the mine site. (MP, TP, SP) Pollution of water supply - Colo River last pristine river left in NSW. (NR)	Tanya Plant; Sid Plant; Merilyn Plant	Paragraph 76 (TP); paragraph 77 (SP); AEIS submission (Feb 2014), Page 40 (MP)	Tanya Plant; Sid Plant Nardi Rowe	EA submission paragraph 64 (TP); EA submission paragraph 64 (SP) Page 4, dot point 2 (NR EA Objection)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement. It is not reasonable to compare Lagoon Creek with the Colo River. Colo River drains a relatively inaccessible and fully forested National Park. Some 95% of the Lagoon Creek catchment is disturbed by existing agricultural and mining activities. It could be argued that farming has a bigger impact on Lagoon Creek water quality than mining given the extent of farming in comparison to mining.
10	The loss of stream flow in Myall Creek (and Spring Creek) as a result of mining activities (see Figure 6-31) is a concern to us. Our property relies on beneficial flows and floods from Spring and Station Creek.	Tanya Plant	EIS submission p31 (TP)			The predicted loss of stream flows shown in Section 6 of the New EIS are associated with groundwater draw down and have been estimated to be 0.2 ML/d or 75 ML/yr. It is outside my area of expertise to comment on the groundwater modelling assessment or its impact estimates. However, I note that the average annual flow for Myall Creek at the Spring Creek confluence

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
						(assuming a runoff coefficient 4%) is about 14,000 ML/yr. The potential loss of flow estimated in the groundwater study equates to about 0.5%, which is not significant.
11	In figure 5-18, the "Hydraulic Model Extent" does not include the proposed levee bank in at least one location and that it certainly doesn't even come close to including the catchment for the creek or the local area. Further, it doesn't indicate that it includes the new mine landform and the likely increase in water runoff and speed due to the slopes and the thin topsoil and the lower vegetation coverage. The model outputs don't seem to show any "inundation" upstream of the mine, even where lagoon creek crosses the road on the Peachey MacLagan (Oakey-Cooyar) road near the Goombungee turnoff and often stops traffic. If the graphics are designed to show the increase in inundation due to the mine then this should be made clear and considered appropriately. If indeed it is just the increase in inundation then it seems to show a high and unacceptable level of impact from the proposed project.	Tanya Plant	EIS submission p32 (TP)			This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement.
12	It is hard to rationally reach a conclusion that a creek that takes	Tanya Plant	EIS submission			This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	massive volumes of water for short periods and floods quite frequently can be artificially contained within high walls on one or in some cases both sides, and not result in faster and deeper water during flooding and greater risk of serious adverse effects on site and downstream as well as erosion.		p32			statement.
13	It is too simplistic for the EIS to say that volume released from dams (including contaminated dams) on the min site is insignificant compared to the flood volumes. The contaminants are of concern and even the more so as it is likely that the water will be released from the mine site after the bulk of the floodwaters have passed, making it more likely that the mine's contaminants won't be particularly diluted and could damage land and ecosystems.	Tanya Plant	EIS Submission p32, 33 (TP)			This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.
14	It is not clear where the water from the CHPP facilities flows to. These will be increased and so this water might be even more contaminated. Anything that flows to the north risks contaminating our property and further restrictions on flow would reduce our beneficial overland flow even	Tanya Plant	EIS submission p33 (TP)			Figure 3-9 of the New EIS ²⁵ shows that the CHPP facilities catchment does not change for the project. The runoff from the CHPP facilities drains to SD1 under existing and proposed conditions. The new mine handling facility drains to the south and will require a new environmental dam to be constructed to manage runoff from this area. It does not drain to the north. This has been shown as ED8 in

²⁵ Document ID: EHP.0021, p 25.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	further than Environmental Dam 1 already has.					the AEIS.
15	The EIS indicates that there are high levels of arsenic (more than 100 times the guideline limits) and other toxics in the surface water near the mine (see Table 5-7). This is a concern. I understand that soil tests done by Land Reclamation Services as part of a report "to indicate the nature of the wastes that may be generated by mining..." when Shell was considering mining and having a power plant near Acland found "elevated levels of As, Bi, Cd, S and Se with lesser Cs, Hg and Zn present in some strata". Such high levels of arsenic and other heavy metals in some of the layers surrounding the coal are a concern. It isn't only the coal itself that can cause problems. The mining process disturbs a lot more material than just the coal. Other dust particles and toxic substances that may be disturbed, brought to the surface and contaminate the water or air as a result of mining operations. This needs to be carefully considered.	Tanya Plant	EIS submission p33 (TP)			The units in Table 5-7 of the New EIS²⁶ relating to metal toxicants is not correct. Metal toxicant guideline values are reported in units of micrograms per litre (µg/l), whereas the values shown are in units of milligrams per litre. i.e. are out by a factor of 1000. The unit issues were addressed in the AEIS. The guideline values for Arsenic, Chromium, Copper, Manganese, Nickel and Zinc shown in Table 5-7 of the New EIS are low by a factor of 1000. Therefore, the water quality of the samples collected are well below the guideline values.

²⁶ Document ID: EHP.0023, p 19.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
16	Need to keep a bigger separation from Lagoon Creek. P5-85 only indicates 150m from the pits to the creek and only 50m actual buffer to the creek. This is of concern regarding the impact on the creek but also in regards to the impact during flooding.	Tanya Plant	EIS submission p35 (TP)			This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.
17	Management of the mine's wastes is a concern, particularly where this is any risk of contaminating ground water or other important resources. The disposal of wastes in the pits is of concern in this regard as pits are not designed for this and it is not apparent that there will be adequate measures in place to avoid contamination of ground water, surface waters or ground. Care must also be taken to avoid air pollution. Subsidence issues on land that has been disturbed for mining are also of concern and must be addressed. Such issues impact adversely on future land use potential and particularly on the capacity for building on the relevant land.	Tanya Plant	EIS submission p108 (TP)			This issue (with respect to surface water issues) has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement. It is outside my area of expertise to comment on the groundwater impacts
18	Contaminated runoff from the mine feeds Lagoon Creek. The runoff from the haul road forms a black sludge which also feeds Lagoon Creek. Under certain conditions the mine is allowed to release	Kevin and Desley Spies	Paragraph 19	Kevin and Desley Spies; Patricia Cook; Christopher and Naomi	Paragraph 19 of Attachment A, Final paragraph of page 1 of Objection (Spies); EA Objection	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	contaminated storage water into Lagoon Creek. Lagoon Creek eventually feeds into the Murray Darling River System.			Cleary	grounds (PC); EA Submission para 33 (Cleary); EA Objection Attachment page 4 (Cleary)	
19	The list of water quality indicators listed to be monitored every 6 months also seems inadequate. Are there any other potential contaminants (e.g. chemicals or things from the holding ponds) that should be monitored? What about other carbonates or sulphates for example?			Tanya Plant; Sid Plant	EA submission paragraph 198 (TP); EA submission paragraph 208 (SP)	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement. Monitoring of surface water holding ponds is not undertaken on a 6 monthly basis but during release events.
20	Schedule F seems somewhat negligent in terms of the monitoring required and the avoidance of adverse impacts. For example, as it seems to authorise the release of effluent it should also require things such as faecal coliforms to be tested for. Other potential mine contaminants should also be tested for (eg arsenic etc as per the groundwater requirements).			Tanya Plant; Sid Plant	EA submission paragraph 203 (TP); EA submission paragraph 213 (SP)	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement.
21	The site for monitoring spring creek seems to be on our property. Obviously this relies on our consent and must not adversely impact on us.			Tanya Plant; Sid Plant	EA submission paragraph 204 (TP); EA submission paragraph 214 (SP)	Access will be required to monitor the downstream Spring Creek station

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
22	The draft conditions only refer to monitoring water in Spring Creek. In terms of contaminants from the spill of Enviro Dam 1 that flow into our place it would seem very pertinent to require measurement of this where it crosses the Muldu-Plainview Road before entering our property. Regardless of the extent that contaminants may be diluted once they enter the creek, it is of significant environmental (and social and economic concern) whether the mine is actually polluting our land before these waters get to Spring Creek. The suggested gully for measuring the water released from the mine site would be the one that crosses Muldu-Plainview road approx. 500m north of Balgowan Rd (well before the intersection with the Oakey-Cooyar Rd) and measuring this before it reaches our property (approx. -27.249679, 151.690983?.)			Tanya Plant; Sid Plant	EA submission paragraph 205 (TP); EA submission paragraph 215 (SP)	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement. The additional monitoring point suggested would duplicate the end of pipe monitoring required from Environmental Dam 1 (ED1). ED1 monitoring would determine whether the mine is polluting the complainants' property. The catchment between ED1 and Muldu-Plainview Road is agricultural land and therefore the monitoring would collect combined runoff from ED1 and the agricultural land. The Water management system also proposes to remove all mine affected water draining to ED1, which may eventually remove the requirement to monitor Spring Creek at all.
23	The locations listed as latitude and longitude relating to Spring Creek (for sampling and release) as listed in Tables F1, F3 and F5 don't seem appropriate. These should be checked on a map and a map provided so that landholders and mine officers have a similar understanding. (This issue has been problematic in the past when new Environmental			Tanya Plant; Sid Plant	EA submission paragraph 206 (TP); EA submission paragraph 216 (SP)	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	Officers and other mine staff have had different interpretations of such requirements than other staff previously for example).					
24	The note below F15(b) 2 doesn't make sense. I don't understand why no further reporting is required.			Tanya Plant; Sid Plant	EA submission paragraph 208 (TP); EA submission paragraph 218 (SP)	It is assumed that the objector is referring to F15(b) 2 in the stated conditions in the CG report ²⁷ which is C15(b) 2 in the Draft EA ²⁸ . The Note prevents several identical reports being prepared that addresses the same issue. If the exceedance is found to have caused environmental harm, then the actions taken will need to address the issue for both exceedances.
25	G5 in Schedule G relating to sewerage treatment should also require that the water meetings the criteria listed in Table G1.			Tanya Plant; Sid Plant	EA submission paragraph 209 (TP); EA submission paragraph 219 (SP)	G5 in Schedule G ²⁹ already requires the release of treated sewage to meet the criteria listed in Table G1 ³⁰ .
26	There are always accidents and spills at a mine and it is near protected and sensitive water			Frances Scarano	Page 4 (FS EIS Objection)	This issue has been addressed in the Section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement. The

²⁷ Document ID: EHP.0016, p 196.

²⁸ Document ID: EHP.0009, p 17.

²⁹ Document ID: EHP.0016, p 197.

³⁰ Document ID: EHP.0016, p 197.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	supplies.					release or a spill of mine affected water is regulated under Schedule C of the Draft EA ³¹ . The management of risk is defined in Condition A10 of the Draft EA ³² .
27	The Dewfish Demonstration Reach is the state's first native fish strategy demonstration reach and has become the flagship project for the Condamine River Rescue Program financed by the Commonwealth and Queensland Governments. It lies directly in the flood basin where the new western mine will be located. This area will be impacted by routine discharges into creek systems and overflow during flood events, threatening the program.			Aileen Harrison	Page 4 of Appendix (AH)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.
28	The proposal straddles Lagoon Creek which flows through Jondaryan and will affect the headwaters of Doctors Creek. The mine pumps water from the pits directly into creeks and escape is inevitable during major flood events spreading contaminants along the system. There is a potential in flood events for wastewater to flow into systems			Aileen Harrison; Glenn Beutel	Page 4 of Appendix (AH); EA Submission Attachment A page 8/17 (GB)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement. No mine affected water is proposed in the Doctors Creek catchment.

³¹ Document ID: EHP.0009, pp 10-20.

³² Document ID: EHP.0009, p 5.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	feeding Myall Creek affecting Dalby's water supply. No information in the amendments to the EA considering impacts and testing of Doctors Creek.					
29	The existing mine operation has contaminated surface water supplies through planned and unplanned discharges into waterways which head the Murray Darling Basin. The expansion will raise the risk to fish and other aquatic life to unacceptable levels and risk the quality of water licence holders and irrigates downstream.			Aileen Harrison	Paragraph 6 (AH)	This issue has been addressed in the section entitled "Water Management System Assessment" on page 4 and "Historical water quality impacts of the existing mine" on page 8 of my statement.
30	An approval cannot be granted while there is the certainty that further discharges from the mine, planned and approved, planned by not approved, inadvertent or unplanned will destroy work of Queensland Government and Queensland Government-funded projects re establishing native fish populations in surrounding creeks			Aileen Harrison	Paragraph 7 (AH)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.
31	Draft EA Condition F15(b): this condition requires a written report of a water quality release exceedance at downstream			Dr Steven Ward	Para 66 Ward EA Submission and	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	monitoring points to be submitted to the administering authority in the next annual return. This appears highly unacceptable since, under current conditioning, should a significant water quality breach occur immediately after an annual return has been submitted to the administering authority, it may then be almost 12 months until the administering authority is made aware of the breach. It is recommended that a statement is included in either condition F15 or (preferably) condition A10 and A11 that clearly states the precedence of conditions A10 and A11 where other conditions in the EA appear to conflict.				Objection	my statement. It would be a breach of draft condition A14 ³³ if the administering authority was not provided information on a breach for 12 months. Also, draft conditions C10 to C12 ³⁴ require the proponent to notify the administering authority of the end of pipe water quality characteristics given in Table C2 ³⁵ .
32	Draft EA Conditions Table F2: there appears to be a very limited scope of water quality parameters to be met by the proponent for “mine-affected” water releases. This should be expanded to include other relevant water quality parameters that are pertinent to the risk of operations, such a			Dr Steven Ward	Para 65 Ward EA Submission and Objection	This issue has been addressed in the section entitled “Monitoring requirements” on page 6 of my statement.

³³ Document ID: EHP.0009, p 6.

³⁴ Document ID: EHP.0009, p 14.

³⁵ Document ID: EHP.0009, p 11.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	heavy metals and hydrocarbons.					
33	Draft EA Condition G5: this condition allows the proponent to release waste effluent to water (creeks) in accordance with the very limited scope of parameters in Table F2. However, this removes a requirement on the proponent to limit the concentration of faecal coliforms in its release to waters. As such, condition G5 should require the proponent to meet parameters outlined in Table G1 in addition to parameters outlined in Table F2, at a minimum.			Dr Steven Ward	Para 68 Ward EA Submission and Objection	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement. The objector has misread Draft EA condition G5³⁶ as it actually achieves what has been requested. G5 means that the proponent can only release wastewater that meets the water quality characteristics in Table G1³⁷, which includes faecal coliform. It also means the proponent can only release waste water from the existing release locations identified in Table C1.
34	The massive holes left in the landscape after mining operations cease present a very real ongoing water management issue: a. the hole continues to fill from aquifers being exposed as the pits continue to expand in all directions in particular depth thereby taking water from farmers b. should the pit ever fill the amount of evaporation is substantial.			Russell Byron	EA Submission Page 5 (RB)	The impact of the final voids on surface water flows is not significant as the loss of catchment area due to the final voids is not significant. It is outside my area of expertise to comment on the impact of the final voids on groundwater.

³⁶ Document ID: EHP.0009, p 32.

³⁷ Document ID: EHP.0009, p 31.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
35	Building materials are dumped on parts of MLA 50232 in Lagoon Creek and its tributaries.			Glenn Beutel	EA Submission Attachment A page 5/17 (GB)	There is no evidence that building materials will be dumped in Lagoon Creek or its tributaries. Some infrastructure such as the rail will cross some of the tributaries of Lagoon Creek, which has been assessed in the section entitled "Flood Impacts" on page 6 of my statement.
36	Surface water flow to Doctors Creek will be diminished if all outflow is to Lagoon Creek.			Glenn Beutel	EA Objection Attachment B page 2/2 (GB)	The total disturbance footprint within the Doctors Creek catchment is estimated to be 1.8km ² . The total catchment area of Doctors Creek is approximately 230 km ² . That is, the maximum impact on the Doctors Creek catchment would be less than 0.8% if it is assumed that all of the 1.8km ² would be removed.
37	Adverse effects on Murray Darling Basin.			John Cook	EA Objection ground 3 (JC)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement.
Flooding						
38	Notification of flood water discharges by mining company two days after the event is unacceptable	Noel and Fay Wieck	Paragraph 1 under Surface water heading	Noel and Fay Wieck	Paragraph 1 under Surface water heading of EA submission	Condition C10 and C11 of the Draft EA ³⁸ requires NAC to notify of a release no later than 24 hours after a release.
39	Monitoring of environmental outcomes for Dust, Noise and Flood Water Discharge by the mining company is unacceptable.	Noel and Fay Wieck	Paragraph 1 under Environmental Monitoring	Noel and Fay Wieck	Paragraph 1 under the Environmental Monitoring heading of EA	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement.

³⁸ Document ID: EHP.0009, p 13.

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No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	This must be conducted by the Department of Environment and Heritage		heading		Submission	
40	The project may cause indirect impacts, such as land fragmentation, flooding and impacts on water supplies	Tanya Plant; Sid Plant	Paragraph 44 (TP); Paragraph 45 (SP)			The impacts on flooding have been addressed in the section entitled "Flood Impacts" on page 6 of my statement. This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 of my statement. The impacts on water supply volumes have been assessed in Section 5.4 of the New EIS and were found to be minimal.
41	Failure to account for the hydrology of the floodplain has the potential to destroy the floodplain and the village of Brymaroo	Sid Plant	Submission on AEIS, page 3, para 4 (SP)			This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement.
42	We live on a flood plain. NAC need to be very careful not to disturb the lay of the land.	Merilyn Plant	AEIS submission (Feb 2014), Page 42 (MP)			This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.
43	It is hard to rationally reach a conclusion that a creek that takes massive volumes of water for short periods and floods quite frequently can be artificially contained within high walls on one or in some cases both sides, and not result in faster and deeper water during flooding and greater risk of serious adverse effects on site and	Tanya Plant	EIS submission p32			This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement.

ANNEXURE C

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	downstream as well as erosion.					
44	In light of the likely climate change impacts of more severe events eg storms and flooding as well as droughts, any changes to landform must not risk exacerbating flood impacts. It is too simplistic for the EIS to say that volume released from dams (including contaminated dams) on the mine site is insignificant compared to the flood volumes. The contaminants are of concern and even the more so as it is likely that the water will be released from the mine site after the bulk of the floodwaters have passed, making it more likely that the mine's contaminants won't be particularly diluted and could damage land and ecosystems.	Tanya Plant	EIS Submission p32, 33 (TP)			The flood issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement. The impacts on water quality have been addressed in the section entitled "Water Management System Assessment" on page 3 of my statement.
45	The proposed rail loop seems to risk restricting flow and increasing flood impacts (Figure 2-3). Although the 2 alternatives listed might be less preferred than this one, this does not actually justify this proposed rail loop.	Tanya Plant	EIS submission p33 (TP)			This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.
46	Need to keep a bigger separation from Lagoon Creek. P5-85 only indicates 150m from the pits to the creek and only 50m actual buffer to the creek. This is of concern regarding the impact on the creek	Tanya Plant	EIS submission p35 (TP)			This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.

ANNEXURE C

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	but also in regards to the impact during flooding.					
47	The project is contrary to SPP 1/03 Guideline: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide. There are concerns among the community that the changes to the topography have significantly exacerbated the risk of dangerous and damaging fires in this region and increased the difficulty of fighting such fires. The mine's removal of the rural fire brigade truck that was based in Acland has increased the response time for fires in this area. The proposed location of 200,000t MHF adds further concern regarding avoiding and managing dangerous fires in this area. The proposed project seems also seems contrary to avoiding problems with flooding.	Tanya Plant	EIS submission p96 (TP)			SPP 1/03 Guideline was repealed on 1 September 2003. This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement. I note that the proposed mining areas are outside the flood extent. It is outside my area of expertise to comment on the impact of managing fires.
48	Construction of the proposed railway crossing of Lagoon Creek will result in an increase in flood levels immediately upstream of the railway crossing of up to 1.2 metres.	Paul and Angela Mason	Paragraph 26 (Mason)	Aileen Harrison	Page 5 of Appendix (AH)	This issue has been addressed in the section entitled "Flood Impacts" on page 6 of my statement.

ANNEXURE C

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
49	It is concerning that the requirements for design and construction of levee banks doesn't seem to allow for at least 1 in 100 year floods.			Tanya Plant; Sid Plant	EA submission paragraph 214 (TP); EA submission paragraph 224 (SP)	This issue has been addressed in the section entitled "Flood Impact Assessment" on page 5 of my statement.
50	NAC self monitoring of flood water released from mine pits.			Noel and Fay Wieck	Para 9 NFW EA objection	This issue has been addressed in the section entitled "Monitoring requirements" on page 6 of my statement.
51	The operator will be permitted to release mine affected water from storages and recently released 26MI to Lagoon Creek during the 2011 floods.			John Standley; Christopher and Naomi Cleary	Page 1 (Standley EA Objection); EA Submission para 33 (Cleary); EA Objection Attachment page 4 (Cleary)	This issue has been addressed in the section entitled "Surface Water Environmental Values" on page 3 and "Water Management System Assessment" on page 4 and "Historical water quality impacts of the existing mine on page 8 of my statement.

Annexure D – Joint Expert Report
dated 25 January 2016

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane
NUMBER: EPA495-15
MRA496-15
MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

JOINT EXPERT REPORT – SURFACE WATER AND WATER QUALITY

1. Expert reasons

1.1 Names and qualifications

- (a) This joint expert report was prepared by Greg Roads and Dr John Standley.
- (b) Greg Roads (BE (Civil) Hons MIEAust) is a Registered Professional Engineer of Queensland and a Principal Engineer with WRM Water & Environment Pty Ltd. He has more than 25 years' experience in water resources engineering having specialised in mine site water management and floodplain management for much of his career.
- (c) John Standley, B.Sc. (Hons), PhD (Chemistry) University of Birmingham, UK, Postgraduate Diploma in Tropical Agronomy (University of Queensland), has 34 years' experience as agricultural chemist with the Queensland Department of Primary Industries/Natural Resources and Mines at South Johnstone Research Station, Biloela Research Station and the Queensland Wheat Research Institute/Leslie Research Centre. This involved laboratory and field work for which he was awarded a Medal of the Order of Australia in 2009. From 2009 onwards he has been involved with the practical work and reporting for water quality monitoring programmes with the Condamine Balonne Water Committee, Condamine Catchment Management Association and Condamine Alliance. He is a continuing member of Soil Science Australia.

1.2 Dates of meetings of experts

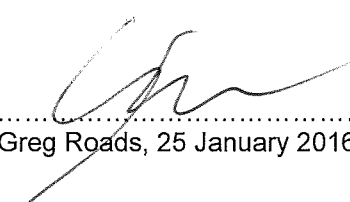
- (a) The experts met on 13 January 2016 and 25 January 2016 at WRM offices at 135 Wickham Tce Spring Hill, Qld.

2. **Matters of agreement**

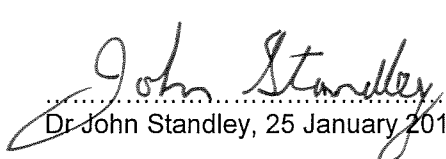
- 2.1 At the time of the first meeting of the two experts, Dr Standley had not had an opportunity to review the Environmental Impact Assessment for the revised project (New EIS) and the Additional Information to the Environmental Impact Statement (AEIS). Since that meeting, Dr Standley has undertaken a detailed examination of the information provided in the New EIS and the AEIS and is now of the view that the list of issues and inadequacies detailed in his letter to the court of 4 December 2015 do not warrant a challenge in the Land Court. Dr Standley's specific issues listed have been addressed in the New EIS and the AEIS.
- 2.2 Further comments on the issues are provided in attachment 1 to this report.

3. **Expert's statement**

I confirm that I understand I have a duty to assist the Court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty.



.....
Greg Roads, 25 January 2016



.....
Dr John Standley, 25 January 2016

1. Attachment 1

3.1 (ISSUE 1) Details of the present flows of surface water across the mine and surrounding areas and how these have already changed since mining operations began in 2002, especially during times of floods such as 2011.

- (a) The estimates of historical surface water flows in Lagoon Creek have been provided in Section 5.4 of the New EIS. The experts agree that the impact of the existing operation on surface flows is limited to Lagoon Creek as there is little to no mine disturbance in the neighbouring catchments of Doctor Creek and Spring Creek. The historical surface water flow estimates in Lagoon Creek have been provided at the downstream MLA boundary and at the Oakey Creek confluence using runoff data provided by the Qld Government. These are presented in Figure 5.2 of the New EIS as ranked plots of derived historical daily flows. Mr Roads advised that New Acland Coal (NAC) monitor water levels in Lagoon Creek both upstream and downstream of the existing mine. However, the derivation of flows from the recorded water levels at these locations is unreliable because of the flat and shallow channel characteristics and has therefore not been provided in the New EIS. Dr Standley concurs with this assessment.
- (b) The experts agree that the question of how the flows of surface water may or may not have changed since 2002 has not been addressed specifically. Mr Roads is of the view that the impacts of the existing site are approved under its existing environmental authority approval and therefore any impacts of the existing operation to surface flows are not required to be provided in the New EIS.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

3.2 (ISSUE 2) Details of how the surface water flows may change in later years if Stage 3 of the Project proceeds

- (a) An assessment of the impact of the Stage 3 Project on surface flows has been provided in Section 5.4 of the New EIS. The assessment is based on the conservative assumption of the project capturing a maximum of up to 5% of the total catchment area of Lagoon Creek and 0.5% of the Oakey Creek catchment to Fairview. The assessment uses the derived runoff data for the catchment provided by the Queensland Government. Further information on the reduction in catchment area is provided in Section 5.2.9.1 of the AEIS, which shows the average reduction in catchment area would vary from 1.8% to 4.3% and average 3% over the life of the project as runoff from rehabilitated areas are directed back to Lagoon Creek. The analysis is conservative because it does not include controlled releases from the mine water management system or releases from sediment dams.
- (b) Whereas Issue 1 refers to changes from 2002 to 2015, Issue 2 refers to the future if Stage 3 of the Project proceeds.

[REDACTED]

[REDACTED]

[REDACTED]

- (f) On the basis of the evidence detailed above the experts agree that the assessment indicates that the impact of the Stage 3 Project on surface flows is not significant.

- (g) However, the modelling assumes that the only areas affecting the catchment flows are those of Manning Vale West Pit, Manning Vale East Pit and Willeroo Pit, designated by the green areas in the New EIS Figure 5-5. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] Mr Roads is of the view that suitable erosion and sediment control measures can be implemented during the construction phase to minimise the impact on Lagoon Creek flows and water quality.

3.3 (ISSUE 3) Details of the water quality monitoring across both the present mine site and surrounding areas, including water analyses

- (a) The water quality monitoring data for the surrounding areas is summarised in Section 5.6 of the New EIS with the raw data provided in Appendix G.3 of the New EIS. Revised water quality analysis is provided in Section 5.2.4.37 and Section 5.2.4.44 of the AEIS. Summary water quality data for the environment and sediment dams is provided in Section 5.2.4.23 of the AEIS.
- (b) The experts agree that monitoring water quality in the area owned by NAC and beyond is limited by the ephemeral nature of flows. Even in Oakey Creek it is dry for 50% of days (New EIS page 5.31). [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] Mr Roads advised that the data in Table 5-6 of the New EIS includes the single point data collected in January 2008 and March 2013. He also advised that the SCU1 monitoring point is on Spring Creek on Muldu-Plainview Road and forms part of the monitoring required for the existing operation.
- (c) Results from the single monitoring event between 23 and 24 January 2008, using the TROLL 9500 Professional XP multi-parameter water quality probe and logger, are detailed in New EIS Appendix G.3.1 and appear to be an exercise in testing this equipment. For logger AE3 pH values appear to be anomalously low and the EC's above 8,000 $\mu\text{S}/\text{cm}$ erroneously high. There is no further reference in New EIS Section 5.6 to the use of this equipment.

- (d) The only detailed chemical analyses of water samples are documented for March 2013 in New EIS Table 5-7. Aluminium, boron, iron and lead in particular are missing from the list of metals. However, the experts note that the Draft Environmental Authority, pages 15-16, specifies these four and other metals for future monitoring.
- (e) More comprehensive monitoring sites will include Spring Creek (LCU2, which was previously SCU1, and SCD1) and the downstream boundary (DS1) as listed in Table C5 of the Draft Environmental Authority (page 17).

3.4 **(ISSUE 4) Specific information about water quality monitoring to date within the pits, including water analyses**

- (a) Mr Roads advised that pit water quality is not monitored by NAC as it is not required under their current or previous Environmental Authorities. Summary water quality data for the environment and sediment dams is provided in Section 5.2.4.23 of the AEIS. The environment dam water has, historically, been a mix of mine affected water and sediment affected water.
- (b) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] Mr Roads advised that water in the pit is an impediment to mining and is pumped from the pits as soon as it enters, thereby offering little opportunity to enter the groundwater unless the out of pit storages are full. This would only occur during extended wet periods. Water in the in-pit tailing cells is often decanted back to the coal handling preparation plant for reuse and not released from site. The question of whether water from the pits and in pit tailings cells may have seeped deeper into bores and aquifers is one to be addressed to groundwater experts.
- (c) During these extended wet periods when water may remain in the pit, an indication of water quality in the pits can be gleaned from groundwater studies of the Walloon Coal Measures Aquifer (see New EIS Section 6.2.12). "The EC within the Walloon Coal Measures ranges from around 500 $\mu\text{S}/\text{cm}$ to 11,000 $\mu\text{S}/\text{cm}$ " and "TDS results range from around 300 mg/L to 7,000 mg/L" (refer to New EIS Figures 6-15 and 6-16). More data is presented from groundwater wells for the revised Project site. In New EIS Table 6-13 the range of EC values is 2,130 to 10,340 $\mu\text{S}/\text{cm}$ and TDS ranged from 1,280 to 6,610 mg/L. Thus the groundwater can be classified as brackish and the

chemical analyses show that sodium and chloride ions predominate (New EIS Figure 6-20).

- (d) A second clue to the water quality of pit water is the nature of the spoil. This is predominantly non-acid forming - refer to Sections 4.7.7 and 4.7.6 of the New EIS.
- (e) A third clue to the water quality of pit water may be inferred from the water quality in the environment dams into which water from the pits can be discharged (see New EIS Section 5.13.1). Table 5.2-H in Section 5.2.4.23 of the AEIS lists typical water quality readings for existing sedimentation and environment dams. In particular the EC range is 250 to 8,200 $\mu\text{S}/\text{cm}$, the pH range is 7.6 to 10.1 and the suspended solids range 1 to 4,800 mg/L.
- (f) Further water quality monitoring is recommended in the on page 41 of the AEIS.
- (g) Dr Standley notes that the mine-affected water release limit for total suspended solids is 100 mg/L (Table C2, page 11 of the Draft Environmental Authority). Also the mine-affected water release limits for electrical conductivity range from 700 $\mu\text{S}/\text{cm}$ to 3,500 $\mu\text{S}/\text{cm}$ depending on the flow (Table C3, page 13 of the Draft Environmental Authority) and the Trigger Level for receiving waters is 700 $\mu\text{S}/\text{cm}$ (Table C4, page 15 of the Draft Environmental Authority). The higher EC and suspended solids in Table 5.2-H are concerns.
- (h) These clues suggest that the mine would not be expected to have an impact on the water quality of the surrounding groundwater.

3.5 (ISSUE 5) Details of how the proposed railway line extension for the transport of coal will affect surface water flows and ponding, especially during storm events

- (a) Detailed analysis of the flood impacts of the proposed rail is provided in Section 5.11 of the New EIS. The experts agree that the impacts of the proposed rail on flooding are generally not predicted to be significant.
- (b) The flood modelling in New EIS Section 5.10 was modified to allow for the features of the rail spur and its embankment in particular, in the line of flow of Lagoon Creek. Critical to water flows will be sufficient 60m wide grid cell openings in the embankment of the spur and table drain on the northern side of the railway corridor.
- (c) There will be an impact of the railway crossing at Lagoon Creek, with flood levels predicted to increase immediately upstream of the railway crossing by 0.3 m for the 1 in 10 AEP event (Figure 5.20) and up to 1.2m for the 1 in 1000 AEP event (Figure 5.28). Downstream of the crossing a minor decrease

in flood levels of 0.2m is predicted for the 1 in 10 AEP event but a minor increase in flow velocity. Adequate scour protection is vital. New EIS Figure 5.19 shows no significant new impacts on flooding in Jondaryan. Figures 5.20 to 5.30 present modelled flood events.

- (d) New EIS Section 5.9 describes the modelling of existing catchment flood hydrology and Section 5.10 existing flood characteristics. Verification using actual on site records and maybe aerial photographs of the flooded area during the January 2011 flood event would give more confidence in the model but "there was insufficient data" for this. The flood event in February 2013 provided another opportunity for on-site verification but this did not happen.
- (e) The New EIS Report, on page 5.49, states that "There is no increase in the extent of inundation of surface levels on any properties not owned by NAC".
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED] Mr Roads is of the view that the proponent has sufficiently described and assessed the flooding impacts of the proposal on neighbours and the environment.

3.6 (ISSUE 6) Evidence of the fate of contaminated water from the mine site, as it may have seeped into the ground from surface flows or deeper into bores and aquifers

- (a) Mr Roads and Dr Standley are not qualified to discuss whether surface flows on the minesite would seep into the groundwater. However the available water quality data collected from the environment dams on the minesite (presented in Section 5.2.4.23 of the AEIS) is similar to the water quality of the Walloon coal measures and tertiary basalt aquifers given in Section 6.2.12 in the New EIS. The question of whether water from the mine site may have seeped deeper into bores and aquifers is one to be addressed to groundwater experts.
- (b) The experts agree that evidence of the fate of contaminated water from the existing minesite to surface waters is shown in the water quality data presented in Section 5.6.2 of the New EIS.
- (c) An examination of the EC figures in Lagoon Creek from the Environmental Authority Monitoring in New EIS Table 5-6 (recorded between 2008 and 2013) shows lower ECs at LCU1 above the mining operation and generally higher ECs at LCD1 and LCD2 below the mining operation. A similar pattern is found from an examination of the detailed analyses reported in the New

EIS Appendix G.3.1. The lowest recorded and highest recorded EC values at each station are given in Table 1 below. [REDACTED]

[REDACTED] Mr Roads advised that the higher downstream EC values are due to the releases of water to Lagoon Creek by the proponent that have been made in accordance with their Environmental Authority. The Environmental Authority release conditions (Tables C2 and C3) have been developed to protect the environmental values of the receiving waters.

Table 1 - Ranges of ECs from the Lagoon Creek monitoring sites, between December 2009 and May 2012 (see New EIS Appendix G.3.1)

Site	Lowest EC (µS/cm) and date	Highest EC (µS/cm) and date
LCU1	97 (02/05/2012)	590 (08/12/2010)
SCU1	85 (03/03/2010)	900 (24/01/2011)
LCD1	176 (10/01/2011)	1640 (10/02/2011)
LCD2	136 (10/01/2011)	1700 (01/03/2011), 11,12 and 13/03/2011)

3.7 (ISSUE 7) Records of flows in Doctor Creek, Oakey Creek and Lagoon Creek, how these may already have changed since 2002 and how they may change further if the Project proceeds.

- (a) The experts agree that this issue has been mostly addressed in Section 3.1 and Section 3.2 above. However, more specific details about Doctor Creek, Lagoon Creek, Oakey (and Myall) Creeks are presented below.
- (b) Doctor Creek is outside the mining lease area and should not be impacted by mining operations. It is an ephemeral creek with no flow records detailed. There is reference in the AEIS Section 5.3.27.1 on page 262 to the Willerloo Pit which is expected to disturb 50 ha and intercept a portion of runoff from Greenwood Hill (approx. 50 ha), an area which is less than 2% of the Doctor Creek Catchment.
- (c) Regarding the influence of mining operations since 2002, the actual mined area to date is only 4% of the catchment area of Lagoon Creek so it has minimal impact on surface flows. The future mining area of Manning Vale East, Manning Vale West and Willerloo pits, will be mined incrementally, as detailed in Figure 2.2 "Expected project life of mine schedule for the New Acland Stage 3 Project" in Attachment No.1, referred to in the DEHP Report for the Land Court dated 19/10/2015.
- (d) More specific information about the area affected by Stage 3 of the Project is given in AEIS 5.2.9.1 on pages 74 and 75. The spells analysis assumes that the catchment area is reduced by 10 km², corresponding to 5% of the

catchment. However, AEIS Table 5.2-P has a range of reductions in catchment area of 4.3% to 1.8% for various years between 2019 and 2029, with an average of 3.0%. The surface water runs into both Oakey Creek and Myall Creek.

- (e) In the Groundwater section of the New EIS (page 6-62) the impact of the revised mining activities is predicted to generate a maximum predicted loss of around 0.35 ML/d for Oakey Creek (and 0.2 ML/d for Myall Creek). In New EIS Figure 6-31 the loss of stream flow caused by mining for Oakey Creek is calculated to be 20 ML/year in 2014, rising to about 120 ML/year by 2029. Mr Roads and Dr Standley cannot comment on the accuracy of these estimates because they are not groundwater experts. However, the average annual flow for Myall Creek at the Spring Creek confluence (assuming a runoff coefficient 4%) is about 14,000 ML/yr. The loss of flow equates to about 0.5%, which is not significant.

**Annexure E – Supplementary Statement of Evidence
dated 20 February 2017**

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

**SUPPLEMENTARY STATEMENT OF EVIDENCE TO THE LAND COURT BY GREGORY
KENNETH ROADS**

1. Expert's details and qualifications

1.1 Name

(a) My name is Gregory Kenneth Roads.

1.2 Insert address

(a) My business address is Level 9, 135 Wickham Terrace Spring Hill
Queensland.

1.3 Qualifications

(a) I hold the following qualifications:

(i) Bachelor of Engineering (Civil) (Honours) from the University of
Technology, Sydney

(ii) Registered Professional Engineer of Queensland (#6413)

(b) Annexure A to this statement is my curriculum vitae.

2. Instructions

2.1 I have been instructed by Clayton Utz on behalf of New Acland Coal Pty Ltd (**NAC**) to
prepare a statement of evidence to the Land Court in relation to the final advice from the

Independent Expert Scientific Committee (IESC) on NAC's New Acland Mine Stage 3 Project (**the Project**) in relation to my area of expertise in surface water.

2.2 A copy of my letter of instructions from Clayton Utz dated 14 February 2017 is Annexure B to this statement.

2.3 In summary, my instructions are to:

- (a) review the relevant additional documents;
- (b) if necessary, prepare a supplementary statement of evidence to the Land Court with my opinion on the following:
 - (i) whether the additional documents change or affect, in any way, evidence given by me in this Land Court matter, including my original statement of evidence dated 19 February 2016.
 - (ii) if so, how my evidence is changed or affected; and
 - (iii) where surface water quality concerns are raised by the IESC, whether these concerns have been addressed in:
 - A. The draft amended Environmental Authority dated 28 August 2015; or
 - B. The conditions provided for in the decision of the Minister for the Environment and Energy under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

3. **Relevant additional documents**

3.1 In producing this statement, I have relied on the following additional documents:

- (a) the 2016 IESC Final Advice;
- (b) the decision of Minister for the Environment and Energy under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth);
- (c) the statement of reasons of the Minister for the Environment and Energy for the decision referred to above;
- (d) the letter from the Chair of the IESC to Department of the Environment and Energy dated 21 December 2016;
- (e) the BMT WBM, 2016a, Receiving Environment Monitoring Program (REMP);

- (f) the BMT WBM, 2016b, REMP – Pre-release survey 2015, and
- (g) the draft Environmental Authority (draft EA) for the Project dated 28 August 2015.

3.2 I have also relied on my statement of evidence to the Land Court dated 19 February 2016 in relation to the surface water objections lodged in opposition to the Project and my joint expert report with Dr Standley dated 25 January 2016.

4. **Background**

4.1 In 2014, NAC prepared the New Environmental Impact Assessment (new EIS) for the Project, which included an assessment of the impacts on surface water resources (Chapter 5). The new EIS identified that the Project could potentially impact on the environmental values of the receiving waters of Lagoon Creek and Spring Creek with respect to water quality, geomorphology and flooding. On site water management strategies were outlined in the new EIS to mitigate the potential impacts and a water quality monitoring program was outlined to demonstrate the adequacy of the management strategies.

4.2 In April 2014, the IESC provided initial advice to the Commonwealth on the new EIS. In response, NAC prepared the additional information to the new EIS (AEIS) to address their concerns as well as other objections.

4.3 In December 2015, the IESC provided further advice in relation to information provided in the AEIS as well as the Coordinator General's evaluation report on the EIS and associated recommendations for the draft EA. With respect to surface water, the IESC advised that the identification of surface water quality objectives in the receiving waters of Lagoon Creek and Spring Creek remained unresolved from their advice of April 2014. Water quality objectives are required to manage the proposed releases of water from the Project to the receiving waters.

4.4 The process to determine site specific water quality objectives is to first identify the environmental values (EV) of the receiving waters that are to be protected, be it aquatic ecosystem protection, drinking water, irrigation water etc. The EV's are determined through a process of biological and ecological technical studies (amongst others) as well as by community consultation.

4.5 The Queensland Government has not completed the process of defining the EV's for this locality and therefore site specific water quality objectives to protect these EV's have not been developed. In these instances, the ANZECC and ARMCANZ (2000) guidelines are used to set interim water quality objectives particularly for aquatic ecosystem protection.

- 4.6 In March 2016, NAC responded to the IESC addressing their concerns and in particular provided the REMP outlining the additional water quality monitoring to be undertaken to assist in defining site specific water quality objectives. The REMP monitoring was over and above the compliance monitoring required under the draft EA, which is also used to define site specific water quality objectives.
- 4.7 The IESC's final advice dated 14 December 2016 stated that "most matters raised in the IESC's advice of 10 December 2015 have been addressed or a process to address them is provided within the additional information provided by the proponent." Further to this they state "Matters that remain outstanding could be addressed through the collection of additional data before and during operations."
- 4.8 The outstanding matters raised by the IESC relevant to surface water relate to continued water quality monitoring of Lagoon Creek and Spring Creek and the derivation of site specific water quality triggers and thresholds when data becomes available. They note however that setting interim threshold levels defined using ANZECC water quality guidelines are appropriate while baseline data is being collected.
- 4.9 On 21 December 2016, the Chair of the IESC wrote to the Department of Environment and Energy advising that the IESC considered that the draft conditions of the EPBC approval fully addressed the matters raised in the 2016 IESC final advice.
- 4.10 In response to the 2016 IESC final advice and the letter from the IESC Chair dated 21 December 2016, the Minister for the Environment and Energy approved the Project subject to conditions.
- 4.11 The EPBC surface water conditions largely reflect the surface water conditions in the draft EA issued by the Queensland Government dated 28 August 2015.
- 4.12 It would appear that the IESC assessment was based on the REMP and the current EA for the existing mine and not the draft EA for the Stage 3 Project. The current EA does not include the level and extent of compliance monitoring proposed in the draft EA.
- 4.13 Section 4.e of the IESC Final Advice (page 5) states "The Receiving Environment Monitoring Program (REMP) (BMT WBM, 2016a) refers to "receiving water contaminant trigger levels" within the 14 July 2015 draft Environmental Authority (EA). However, the triggers are not provided in the draft EA or attached to the REMP."
- 4.14 The 14 July 2015 document (attached to the REMP) is the current EA for the existing approved site, which does not have receiving water contaminant trigger level conditions. The draft EA of 28 August 2015 for the Project includes the receiving water contaminant trigger level conditions that were presented in the REMP.

5. Opinion and findings

- 5.1 My statement to the court dated 19 February 2016 states that the water conditions in the Draft EA have been designed to protect the environmental values of the receiving waterways for all surface water users including aquatic ecosystem protection and human/agricultural users. The proposed water management system has been designed to achieve these Draft EA conditions and therefore will protect the environmental values of the receiving waters.
- 5.2 The additional documents do not change in any way the evidence given by me in this Land Court in relation to this matter, including in my statement of evidence dated 19 February 2016 or my joint expert report with Dr Standley dated 25 January 2016.
- 5.3 Annexure C identifies how IESC comments on surface water have been addressed in the conditions of the EPBC Approval and the draft EA and its associated REMP.

6. Expert's statement

6.1 I confirm that:

- (a) the factual matters stated in this statement are, as far as I know, true;
- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains reference to all matters I consider significant;
- (e) I understand I have a duty to assist the court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the Land Court Rules 2000, as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in these proceedings.



Greg Roads 20 February 2017

7. **References**

ANZECC & ARMCANZ, (2000) 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy', Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000.

ANNEXURE E

Annexure A - Curriculum vitae

Greg Roads



Curriculum Vitae

Greg Roads

BE (Civil) MIEAust RPEQ (6413)

DIRECTOR / PRINCIPAL ENGINEER

Professional history

2004 to present

Director

WRM Water & Environment

1997 to 2004

Senior Engineer

Water Studies

1993 to 1997

River Engineer/Floodplain Engineer

NSW Dept of Land and Water Conservation

1988 to 1993

Cadet River Engineer

NSW Dept of Land and Water Conservation

Fields of expertise

- Expert evidence
- Hydrological modelling
- 2D and 1D hydraulic modelling
- Extreme flood estimation
- Floodplain management
- River engineering and fluvial geomorphology
- Water allocation and resource planning
- Mine site water management
- Water balance and yield studies
- Water quality management.

Education

- Bachelor of Engineering (Civil) (First Class Honours), University of Technology, Sydney, 1993.

Professional affiliations

- Member, Engineers Australia
- Registered Professional Engineer, Queensland, Australia
- Member Australian Water Association
- Member Stormwater Industry Association.

Regions

- Australia
- Canada
- Solomon Islands
- Philippines
- Indonesia
- Thailand.

26 years of experience

Profile

Greg is a founding director of WRM and has 26 years experience in the water industry. He offers clients expertise in environmental planning, water allocation, the operation of irrigation areas and dams, and management of riverine corridors and floodplains.

Greg spent the first decade of his career in largely 'hands-on' roles developing his technical skills, particularly in hydraulic and hydrological modelling and project management. For the past 16 years, he has provided expert advice on water resource management to clients in local and state government and the mining, development, insurance and agricultural sectors. He has worked on major dam and flood studies across Queensland, and appeared as an expert witness in numerous court cases and before government inquiries.

Greg combines technical expertise with strong stakeholder liaison and communication skills. He was highly commended by his then employer for his work with the community on the Tumut and Upper Murray River Works Program. He has also lectured in water resource management, extreme flood estimation, hydraulic modelling and river engineering at the Queensland University of Technology.

Career highlights

- Drayton South Project EIS, NSW
- Moranbah South Project EA Surface Water Assessment, Qld
- German Creek Aquila Longwall mine subsidence impact assessment, Qld
- Eagle Downs Project Optimisation studies, Qld
- Middlemount Coal Mine Stage 1 and Stage 2 EIS, water management plan and stream diversion studies, Qld
- Minyango Project EA Surface water assessments, Qld
- Isaac Plains Coal Water Management Plans, Qld
- Isaac Plains South stream diversion and water management optimisation study, Qld.
- North Goonyella Water Management Plans, Qld.
- Coppabella Mine Water Management Plans, Qld.
- Expert Advice to the Commission of Inquiry into the Operation of Wivenhoe Dam, Qld

Experience

Mine site water management studies

Narrabri Mine Modification 5 Surface Water Assessment Narrabri, New South Wales (2015)

Prepared a surface water impact assessment of proposed modifications to the long wall mine. The impact on the water balance was assessed using a Goldsim water and salt balance of the Narrabri Mine water management system, including dirty, saline and mine affected water management dams, and micro-filtration and reverse osmosis water treatment plants. The impact of the proposed modification on the approved mine subsidence and existing surface drainage features was also investigated. [Whitehaven Coal Pty Ltd](#)

Bengalla Modification Surface Water Assessment Queensland (2015)

Surface-water impact assessment of the proposed modifications to the approved operations at Bengalla Mine using a minesite water balance model. [Anglo American Metallurgical Coal Pty Ltd](#)

Balranald Mineral Sands Project Surface Water Management Report Balranald, New South Wales (2015)

Prepared a surface water impact assessment report as part of an EIS for a proposed mineral sands mining operation in south-western NSW. Water balance modelling and flood modelling was undertaken to assess the potential impacts and develop management strategies for the project. [Iluka Resources](#)

Meteor Downs Project Surface Water Assessment Queensland (2013)

Prepared a surface water management strategy for the proposed mine and assessed its impacts as part of an EIS. Developed a water management plan, an erosion and sediment control plan and receiving environment monitoring plan for the approved project. [U&D Mining Industry \(Australia\) Pty Ltd](#)

Moranbah South Project Surface Water Assessment Queensland (2013)

Developed a water balance model and assessed as part of an EIS for the proposed Moranbah South Project. [Anglo American Metallurgical Coal Pty Ltd](#)

Ulan Coal Mine Independent Surface Water Audit New South Wales (2013)

Prepared an independent audit of the surface water aspects of the mine to assess compliance with the project approvals and EIS commitments. [Hansen Bailey](#)

Minyango Project Surface Water Assessment Queensland (2013)

Developed a water balance model and assessed surface-water impacts as part of an EIS for the proposed Minyango Project. [Blackwater Coal Pty Ltd](#)

Drayton South Project Surface Water Assessment New South Wales (2012-2015)

Prepared surface water management strategies for three different mine plans for the proposed Drayton South Project and assessed the surface-water impacts as part of three separate EIS's. [Anglo American Metallurgical Coal Pty Ltd](#)

Isaac Plains Mine Water Management Plan Review Queensland (2010-2015)

Reviewed the water management system at the Isaac Plains Coal Mine and provided advice on measures required to meet their water-quality release criteria. [Isaac Plains Coal](#)

North Goonyella Mine Water Management Review Queensland (2010 and 2011)

Reviewed the water management system at the North Goonyella Mine site and provided advice on measures required to meet their water-quality release criteria. [Peabody Energy Australia](#)

Middlemount Coal Mine Stage 2 Surface Water Assessment Queensland (2011)

Assessed surface-water impacts of the Stage 2 Middlemount Coal Mine. Prepared flood and stream diversion studies of Roper Creek and a mine site water management plan. [Macarthur Coal Pty Ltd](#)

Eagle Downs Mine Site Water Balance Queensland (2010)

Developed a daily mine site water balance model of the proposed Eagle Downs Mine to size a dirty-water storage. [Bowen Basin Joint Venture](#)

Carrington Pit Extension Surface Water Assessment New South Wales (2010)

Assessed surface-water impacts for the Carrington West Wing Extension at HVO North as part of an environmental assessment. Undertook flood and geomorphic studies of the Hunter River and prepared a water management plan. [Coal & Allied Operation Pty Ltd](#)

Coppabella Mine Water Management Plan Queensland (2009/2013)

Developed a surface-water management plan for the Coppabella Coal Mine. Modified mine site water management plan to satisfy the Fitzroy Basin Water Conditions for Coal Mines. Developed mine site water balance model to design the various water management storages and release rules to meet the new requirements. [Isaac Plains Coal](#)

Flood studies

Condamine River Flood Study Queensland (2014)

Developed an URBS hydrologic model of the Condamine River to Chinchilla. The model was calibrated to seven stream gauges for four historical floods. A TUFLOW 2D hydraulic model of the Condamine River was developed to estimate design flood levels for large and rare floods. [CS Energy](#)

Tomahawk and North Creek Flood Study Queensland (2014)

Determined the flood risk along Tomahawk and North Creek (and tributaries) across the proposed Project China Stone Mine in the Gallilee Basin using the RAFTS and TUFLOW models. [Macmines Austasia Pty Ltd](#)

German Creek Flood Study Queensland (2014)

Determined the flood risk along German Creek and Cattle Creek across the German Creek mining complex using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Amagula and Emerald River Flood Study Northern Territory (2014)

Determined the flood risk for a proposed expansion to the Manganese Mine on Groote Eyelandt in the Gulf of Carpentaria using the RAFTS and TUFLOW models. [BHP Billiton Manganese Australia Pty Ltd](#)

Bogan River at Nyngan Flood Study New South Wales (2014)

Determined the flood risk for the areas outside the town levee from an annual series flood frequency analysis of recorded flows and a TUFLOW hydraulic model of the Bogan River at Nyngan. [Bogan Shire Council](#)

Ooralea Development Area Flood Study Queensland (2014)

Developed a RAFTS rainfall runoff model and a TUFLOW hydraulic model of Bakers One catchment through the proposed Ooralea Development Area, near Mackay to determine development constraints. [Mackay Regional Council](#)

Isaac River Cherwell Creek Flood Study Queensland (2013)

Determined the flood risk along the Isaac River, Cherwell Creek, Grosvenor Creek (and tributaries across the proposed Moranbah South Project area, near Moranbah using the RAFTS and TUFLOW models. [Anglo American Metallurgical Coal](#)

Pioneer River Flood Study Queensland (2011)

Developed an URBS rainfall runoff model and a TUFLOW hydraulic model of the Pioneer River to determine design flood levels for the Mackay Region. [Mackay Regional Council](#)

Hunter River Flood Study New South Wales (2010)

Developed a TUFLOW hydraulic model of the Hunter River to determine the impact of proposed flood protection levees for the Carrington West Wing Extension. [Coal & Allied Operations Pty Ltd](#)

Isaac River Flood Study Queensland (2009)

Developed an XP-RAFTS rainfall runoff model and a TUFLOW hydraulic model of the Isaac River and Cherwell Creek at the proposed Isaac Plains South mine to determine the impact of mine infrastructure and flood protection levees on flood levels and creek erosion potential. [Isaac Plains Coal](#)

Namoi River Flood Study New South Wales (2009)

Developed a TUFLOW hydraulic model of the Namoi River to assess the impact of a proposed rail crossing for the Boggabri Coal Mine. [Boggabri Coal](#)

Todd River Flood Mapping Study, Alice Farms Area Northern Territory (2006)

Developed and calibrated an URBS hydrological model and TUFLOW 2D hydraulic model of the Todd River downstream of Alice Springs. [NT Department of Planning and Infrastructure](#)

Somerset Dam Break Flood Risk Study Queensland (2004)

Estimated design discharges for events ranging from the 50-year ARI to the probable maximum flood at the dam. Developed breach hydrographs for 2 concrete dam-failure mechanisms and several gate-failure scenarios. Assessed the impact of Somerset Dam failure on the safety of Wivenhoe Dam located immediately downstream. [SEQ Water](#)

Wivenhoe Dam Break Flood Risk Study Queensland (2003-2005)

Estimated Wivenhoe Dam breach hydrographs for several auxiliary spillway designs. The breach hydrographs were routed through a Mike 11 model of the Brisbane River downstream of the dam to Moreton Bay to determine flood extents and flood wave travel times. [SEQ Water](#)

Brisbane River Flood Study, Wivenhoe Dam Queensland (2003-2004)

Estimated design flood discharges at Wivenhoe Dam using the WT42D rainfall runoff routing models for floods up to the probable maximum flood to design an auxiliary spillway. Investigated the impact of GTSM-R temporal patterns on design flows. Developed a MIKE 11 model of the Brisbane River to estimate design flood levels from Wivenhoe Dam to Moreton Bay for floods up to the probable maximum flood. [SEQ Water](#)

Tallow Creek Flood Study New South Wales (2002)

Estimated peak discharges and flood levels along Tallow Creek, near Byron Bay for events ranging from the two-year to the probable maximum flood. A RAFTS rainfall runoff model of the catchment and a TUFLOW fully 2D hydraulic model of the creek were developed. [Byron Shire Council](#)

Floodplain management studies

Project Stone Coal Project Flood Risk Management Study Queensland (2014)

Developed a series of diversion drains and flood levees to protect the open cut mining areas on the Project Stone Coal mine in the Gallilee Basin. A RAFTS rainfall runoff model and a TUFLOW hydraulic model were developed to assess the flood risk management strategies. [Macmines Austasia Pty Ltd](#)

Mackay Ring Road Planning Study Queensland (2013)

Provided hydrological and hydraulic modelling advice to the study team, led by AECOM, on the proposal to construct a ring road around Mackay that would cross 10 watercourses. Developed concept designs of the waterway crossings for costing various options. Undertook hydraulic modelling of the various designs to assess flood impacts. [Department of Transport and Main Roads](#)

Ooralea Development Area Trunk Infrastructure Study Queensland (2013/2015)

Developed concept designs of future trunk drainage infrastructure for the proposed Ooralea Development Area near Mackay. A RAFTS rainfall runoff model and a TUFLOW hydraulic model were developed to assess the concept designs. [Mackay Regional Council](#)

McCreadys Creek South Catchment Trunk Infrastructure Study Queensland (2011)

Developed a RAFTS rainfall runoff model and a TUFLOW hydraulic model of McCreadys Creek to determine design flood levels and develop concept designs of future trunk drainage infrastructure. [Mackay Regional Council](#)

Mount Crosby Weir Dam Break Investigation Queensland (2007)

Undertook 3 sunny-day failure impact assessments of Mount Crosby Weir, the main water supply storage for Brisbane and Ipswich. [Brisbane Water](#)

Tallow Creek Flood Mitigation Study New South Wales (2008)

Developed a flood mitigation strategy for Tallow Creek at Suffolk Park and Byron Hills. Developed concept designs of stormwater drains and detention basins to mitigate existing flood problems. Assessed the concept designs using the XP-RAFTS and TUFLOW models. [Tain Investments and Byron Shire Council](#)

Terrors Creek Flood Mitigation Project, Dayboro Queensland (2007)

Assessed flood management options for the town of Dayboro using the RAFTS hydrologic rainfall-runoff-routing model and the MIKE FLOOD 2D hydraulic model. Used model results in a flood-damage model established to undertake an economic evaluation of 13 flood management options. Assessed social, environmental and cost/benefit analysis of the various management options. [Pine Rivers Shire Council](#)

Wivenhoe Dam Gate Operation Procedures Queensland (2004)

Developed modifications to floodgate operating procedures for Wivenhoe Dam to incorporate a new auxiliary spillway. The procedures were used to mitigate flooding and flood damage through Brisbane and Ipswich. Used flood routing and MIKE 11 modelling of downstream areas to develop optimum operating procedures to minimise flood damage and improve dam safety. [Seqwater](#)

Brisbane River Flood Damage Study Queensland (2006)

Estimated flood levels and flood extents along the Brisbane River and Lockyer Creek in Esk Shire to estimate potential flood damage in the Brisbane Valley from Brisbane River flooding, as part of a study to assess the operation rules for the Wivenhoe Dam floodgates. The results of the study were used to determine whether the rules could be modified to reduce flood damage in the valley. [Brisbane and Ipswich City and Esk Shire Councils](#)

Moora Floodplain Management Study Western Australia (2000)

Developed a comprehensive floodplain management plan for Moora township in response to the March, May and August 1999 floods. Flood-damage costs were estimated for a range of design floods using the FLDAMAGE model. Flood levels throughout the town were estimated using the MIKE 11 hydraulic model. Determined the impact on flood levels and flood damage costs of several management options, such as two detention basins, levees and creek widening. A range of non-structural flood mitigation options were developed to reduce future flood damage costs. Public consultation was undertaken to address community concerns. [WA Water and Rivers Commission](#)

Expert witness/ Expert Review

Austcorp's Coral Cove Residential Development Ministerial Call in Queensland (2014)

Prepared an independent review of the stormwater impacts of Austcorps proposed master planned, residential community at Coral Cove, Bundaberg to assist the Deputy Premier in deciding the application. [Qld Department of State Development, Infrastructure and Planning](#)

Holcim's Innes Park South Quarry Project Ministerial Call in Queensland (2014)

Prepared an independent review of the stormwater impacts of Holcim's proposed Innes Park South Quarry near Bundaberg to assist the Deputy Premier in deciding the application. [Qld Department of State Development, Infrastructure and Planning](#)

Endocoal Ltd Vs Glencore Coal Pty Ltd Queensland (2014)

Prepared and presented evidence to the Qld Land Court on a dispute over potential water quality impacts of a mining lease and environmental authority granted for the Meteor Downs South Project near Rolleston. Assisted in the preparation and negotiations of a make good agreement with the objector. [U&D Mining Ltd](#)

Commission of Inquiry into the operation of Wivenhoe Dam Queensland (2011 and 2012)

Prepared an independent review and provided expert evidence at the Commission of Inquiry into the operation of Wivenhoe Dam during the January 2011 flood of Brisbane and Ipswich. [Seqwater and the Commission of Inquiry](#)

Bottlebrush Crescent Development Suffolk Park V Byron Shire Council New South Wales (2010)

Prepared expert evidence including a flood study and stormwater management report to determine the impact on flood levels of the proposed development in Suffolk Park. [Tain Investments](#)

Salt Pan Creek Erosion and Flooding Advice Queensland (2005)

Provided advice at a pre-court meeting on the appropriate set-back distance and erosion protection measures for a proposed development on Salt Pan Creek in Oxenford following council's objection to a development application. [Gold Coast City Council /King and Company Solicitors.](#)

Chelmer Bowls Club Re-development Stormwater Management Queensland (2005)

Prepared a flood study report to determine the impact on flood levels of filling associated with the proposed Chelmer Bowls Club. The findings of the report were presented at the Queensland Planning and Environment Court. [Deacons Lawyers](#)

January 1998 Flooding at Lot 3 Katherine Terrace, Katherine Northern Territory (2003)

A commercial property owner was appealing against a decision by CGU Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment together with a detailed hydraulic model of the area to determine whether the property was inundated by stormwater prior to Katherine River flood water. The findings were presented at the Northern Territory Supreme Court. [Hunt & Hunt Lawyers /CGU Insurance](#)

Sandy Creek Flood Study at 280 Indooroopilly Road, Indooroopilly Queensland (2002)

Prepared a flood study of Sandy Creek at Indooroopilly Road to assess the impact of the proposed development at 280 Indooroopilly Road on creek flood levels. The findings of the study were presented in the Queensland Planning and Environment Court. [Taiwan Investment Management](#)

August 1998 Flooding at Three properties in Wollongong New South Wales (2001)

Completed project on behalf of two residential owners and one commercial property owner who were appealing against a decision by QBE Insurance to reject their claim for damage following the 1998 Wollongong storm event. Developed site-specific flood assessments to determine whether their properties were inundated by stormwater prior to flooding from a local creek. The matter was resolved out of court. [Curwood and Partners](#)

January 1998 Flooding at 16 Tindal St, Katherine Northern Territory (2001)

The owner of 16 Tindal St was appealing against a decision by CGU Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment and a detailed hydraulic model to determine whether the property was inundated by stormwater prior to Katherine River flood water. The findings were presented at the Ballarat Magistrates Court. [Tress Cocks Maddox Lawyers](#)

January 1998 Flooding at Katherine Terrace, Katherine Northern Territory (2001)

A commercial property owner was appealing against a decision by HIH Insurance to reject their claim for damage following the 1998 Katherine River flood. Developed a site-specific flood assessment and a detailed hydraulic model to determine whether the property was inundated by stormwater prior to Katherine River floodwater. The findings were presented in the Northern Territory Supreme Court. [Lawson Downs Lawyers](#)

Anchorage Farms Licence Application Appeal, St George Queensland (2001)

Anchorage Farms was appealing against a decision by the Queensland Department of Natural Resources and Mines to reject an application to amalgamate two waterworks licences on the Lower Balonne River. Developed on-farm water balance models of existing and amalgamated licence conditions to assess the impact of abstractions on downstream flows, which were presented in the Queensland Planning and Environment Court. [Fox and Thomas](#)

Corish Farms Licence Application Appeal, Talwood Queensland (2001)

The Queensland Department of Natural Resources and Mines imposed significant pumping restrictions on Corish Farms for moving its water-harvesting pump site on the lower Weir River further upstream. Developed an IQQM water balance model of the Lower Weir River to assess the impact on other water harvesters of moving the water-harvesting pump site. The model was used to assist Corish Farm's appeal against the restrictions. The matter was settled out of court. [Fox and Thomas](#)

Nelsons Creek Water Licence Application Appeal New South Wales (2000)

Objections were received to the licensing of a pump on Nelsons Creek for Timbarra Mine. A daily rainfall runoff Sacramento model and a daily behavioural model (IQQM) were developed and calibrated for Nelsons Creek at the pump site to assess the impacts of the pumping regime on downstream flows. The findings of the study were defended in a Land and Environment Court hearing on the matter. [Phillips Fox Lawyers](#)

Flooding Impacts of a Levee On the Lachlan River, Forbes New South Wales (1997-1998)

Several objections were received following the licence application of a levee across the Buyuma Runner near the Lachlan River upstream of Forbes. Developed a hydraulic model of the Lachlan River and adjacent flood runners to assess the impact of the levee on upstream flood levels. The findings were presented in a Land Board Hearing in Forbes and a subsequent appeal in the Land and Environment Court. [Department of Land and Water Conservation, NSW](#)

Publications

Conference papers and technical presentations

- Roads, G. (2007) 'Flood Hydrology – Crystal Ball Gazing or Science' Keynote presentation made at the AICLA and ANZIIF Claims Convention, Sydney 2007.
- Maher, B., Roads, G. (2004) 'Wivenhoe Dam Upgrade – Adopted Strategy and Downstream Impacts' Paper accepted for presentation at the 8th National Conference on Hydraulics in Water Engineering, Gold Coast, Australia, July 2004
- Ahmed-Zeki, A., Roads, G. (2003) 'Option Investigation and Design Approach – On the Wivenhoe Dam Spillway Augmentation' Paper published at the 43rd Annual Australian National Committee on Large Dams (ANCOLD) Conference, Hobart, Australia, October 2003.
- Chandler, K, Gill, D, Macnish, S., Maher, B., Roads, G. (2003) 'Coping with the Probable Maximum Flood – An Alliance Project Delivery for Wivenhoe Dam' Paper accepted for presentation at the 43rd Annual Australian National Committee on Large Dams (ANCOLD) Conference, Hobart, Australia, October 2003.

Annexure B - Letter of instructions from Clayton Utz

Confidential**Email**

14 February 2017

Greg Roads
 WRM Water & Environment Pty Ltd
 Level 9, 135 Wickham Terrace
 SPRING HILL QLD 4000

groads@wormwater.com.au

Dear Greg

New Acland Coal Mine Stage 3 Project**1. Introduction**

- 1.1 We refer to the ongoing Land Court matter involving the New Acland Mine Stage 3 Project (**Project**).
- 1.2 On 14 December 2016, the Independent Expert Scientific Committee (**IESC**) published their final advice regarding the Project (**2016 IESC Final Advice**).
- 1.3 Orders were made on 2 February 2017, which allow the parties leave to reopen their cases and lead evidence with respect to the 2016 IESC Final Advice. The orders were made in accordance with the draft orders which are **enclosed** (see **Annexure A**).
- 1.4 Further orders were made that, by 4:00pm on 20 February 2017, the Applicant (NAC), must file and serve any supplementary statements of evidence of their relevant expert witnesses, responding to the documents identified in paragraph 2 of the draft orders and the 2016 IESC Final Advice (collectively, the **Additional Documents**), in accordance with rules 24E and 24F of the *Land Court Rules 2000* (Qld).
- 1.5 Copies of the Additional Documents relevant to these instructions have already been provided to you, namely:
 - (a) the 2016 IESC Final Advice;
 - (b) the decision of Minister for the Environment and Energy under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth);
 - (c) the statement of reasons of Minister for the Environment and Energy for the decision referred to above;
 - (d) the letter from Chair of the IESC to Department of the Environment and Energy dated 21 December 2016;
 - (e) the BMT WBM, 2016a, Receiving Environment Monitoring Program document; and
 - (f) the BMT WBM, 2016b, Receiving Environment Monitoring Program document.
- 1.6 Please let us know if you require copies of any other Additional Documents and we can make them available to you on Sitepoint.

Greg Roads, WRM Water & Environment Pty Ltd

14 February 2017

2. Instructions

2.1 You are instructed to:

- (a) review the relevant Additional Documents;
- (b) if necessary, prepare a supplementary statement of evidence to the Land Court with your opinion on the following:
 - (i) whether the Additional Documents change or affect, in any way, evidence given by you in this Land Court matter, including your original statement of evidence dated 19 February 2016;
 - (ii) if so, how your evidence is changed or affected; and
 - (iii) where surface water quality concerns are raised by the IESC, whether these concerns have been addressed in:
 - A. the draft amended Environmental Authority dated 28 August 2015; or
 - B. the conditions provided for in the decision of Minister for the Environment and Energy under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

2.2 Your supplementary statement must be limited to addressing issues to the extent they fall within your field of expertise.

2.3 You may also be required to appear in person as an expert witness at the hearing, which has been set down for 3 days commencing 3 April 2017 and a further 2 days in the week commencing 10 April 2017.

2.4 Please see section 4 below regarding your duties as an expert witness.

2.5 Pursuant to the order of the Land Court, your supplementary statement of evidence must be filed in the Land Court by 4pm on **20 February 2017**.

3. Format of supplementary statement

3.1 Any supplementary statement that you prepare should include the following:

- (a) a copy of these instructions;
- (b) details of your relevant qualifications, experience and expertise (preferably as an annexure to the supplementary statement);
- (c) all material facts, whether written or oral, on which the statement is based;
- (d) references to any literature or other material on which you have relied to prepare the statement;
- (e) details of any assumptions you have relied on for the purposes of the statement;

Greg Roads, WRM Water & Environment Pty Ltd

14 February 2017

- (f) details of any additional facts or documents which would assist you in reaching a more reliable conclusion on any aspect about which you have been instructed to prepare the statement;
- (g) in respect of any inspection, examination or experiment conducted, initiated or relied on to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was undertaken by you or under your supervision;
 - (iii) the names and qualifications of any other person involved; and
 - (iv) the result;
- (h) if there is a range of opinions or values on matters dealt with in the statement, a summary of the range of opinions or values and the reasons why you have adopted a particular opinion or value in respect of that matter; and
- (i) a summary of the conclusions that you have reached.

3.2 You should also confirm at the end of your supplementary statement each of the following:

- (a) the factual matters stated in the statement are, as far as you are aware, true;
- (b) that you have made all enquiries that you consider are appropriate for the purpose of providing the opinions that you have expressed;
- (c) the opinions stated in the supplementary statement are genuinely held by you;
- (d) the statement contains references to all matters you consider significant in reaching the conclusions that you have expressed;
- (e) that you understand your duty to the court and have complied with that duty;
- (f) that you have read and understand the rules contained in Part 5 of the Land Court Rules 2000 (Qld) (**Land Court Rules**), a copy of which is **enclosed** (see **Annexure B**), as far as they apply to you; and
- (g) that you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the matter.

4. Your responsibilities as an expert witness

4.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.

4.2 Again, we draw your attention to Part 5 of the Land Court Rules, which set out the duties of expert witnesses. Specifically, under rule 24C of the Land Court Rules, you will be acting in these matters as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.

Greg Roads, WRM Water & Environment Pty Ltd

14 February 2017

4.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely



Mark Geritz, Partner
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Karen Trainor, Partner
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ktrainor@claytonutz.com

ANNEXURE E
IN THE LAND COURT
OF QUEENSLAND

EPA495-15, MRA496-15
& MRA497-15

BETWEEN

New Acland Coal Pty Ltd

Applicant

AND

Frank Ashman & Ors

Objectors

AND

Chief Executive, Department of Environment and Heritage Protection

Statutory Party

Before Member PA Smith

BRISBANE

The Second day of February 2017

The Court **ORDERED** that:

1. The parties have leave to reopen their cases to lead evidence with respect to the IESC advice entitled "Advice to decision maker on coal mining project (IESC 2016-081: New Acland Coal Mine Stage 3 (EPBC 2007/3423) - Expansion" dated 14 December 2016 (**2016 IESC Advice**).
2. By 4.00pm on Friday, 3 February 2017, the Applicant provide the following documents to the Court, the Level 2 Objectors and the Statutory Party:
 - a. SLR, 2016a. *NAC03 Fault Hydrogeological Investigation Program, October 2016 Status Report*. Report for New Hope Group: 620.11303-L02-v1.0.docx. 24 October 2016;
 - b. SLR, 2016b. *NAC03 GMIMP [Groundwater Monitoring and Impact Management Plan], October 2016 Status Report*. Report for New Hope Group: 620.11303-L03-v1.0.docx. 24 October 2016;
 - c. SLR, 2016c. *NAC03 Landholder Make Good, October 2016 Status Report*. Report for New Hope Group: 620.11303-L01-v2.0.docx. 24 October 2016;
 - d. SLR, 2016d. *New Acland Stage 3 Project Groundwater Model Update. Phase 1 Completion Report (Numerical Model Scoping Report)*. Report for New Hope Group: 620.11499-L01-v2.0docx. 24 October 2016;
 - e. New Acland Stage 3 Project Fault Hydrogeological Investigation Program Drilling & Testing Report 9 January 2017;
 - f. Decision of Minister for the Environment and Energy under sections 130(1) and 133 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth);

ANNEXURE E

- g. Statement of reasons of Minister for the Environment and Energy for the decision referred to in Order 2f;
- h. Letter from Chair of the IESC to Department of the Environment and Energy dated 21 December 2016;
- i. BMT WBM, 2016a. Receiving Environment Monitoring Program for New Acland Mine. Report prepared for New Hope Group: R.B21788.002.00.New_Acland_REMP_Design_Document.docx. February 2016; and
- j. BMT WBM, 2016b. New Acland Mine – Receiving Environment Monitoring Program - Pre-Release Survey 2015. Report for New Hope Group: R.B21788.001.00.prereleaseREMP 2015.docx. February 2016,

(collectively with the 2016 IESC Advice being the **Additional Documents**).

- 3. By 4.00pm on Monday, 20 February 2017, the Applicant must file and serve any supplementary statements of evidence of their relevant expert witnesses, responding to the Additional Documents, in accordance with rules 24E and 24F of the Land Court Rules 2000 (Qld).
- 4. By 4.00pm on Friday, 10 March 2017, OCAA must file and serve any supplementary statements of evidence of their relevant expert witnesses, responding to the Additional Documents including any reply to the statements of evidence referred to in Order 3, in accordance with rules 24E and 24F of the Land Court Rules 2000 (Qld).
- 5. By 4.00pm on Friday, 10 March 2017, the Level 2 Objectors must file and serve any further statements of evidence of witnesses required to respond to the Additional Documents.
- 6. By 4.00pm on Monday, 20 March 2017, the Applicant must file and serve any statements of evidence of their relevant expert witnesses, limited to matters in reply to the statements of evidence referred to in Orders 4 and 0, in accordance with rules 24E and 24F of the Land Court Rules 2000 (Qld) and any further statements of evidence of lay witnesses required to reply to the statements of evidence referred to in Orders 4 and 0.
- 7. The matter be set down for hearing for 3 days commencing on 3 April 2017, and a further 2 days to be fixed in the week commencing 10 April 2017.
- 8. By 4.00pm on the date that is 7 days after the conclusion of the hearing referred to in Order 7, the Applicant must file and serve any submissions in relation to the evidence referred to in the preceding Orders.
- 9. By 4.00pm on the date that is 7 days after the date referred to in Order 0, the Level 2 Objectors and the Statutory Party must file and serve any submissions in relation to the evidence referred to in the preceding Orders including any reply to the submissions of the Applicant referred to in Order 0.
- 10. By 4.00pm on the date that is 7 days after the date referred to in Order 0, the Applicant must file and serve any reply to the submissions referred to in Order 0.
- 11. The parties have liberty to apply on two days' notice.

By the Court

Registrar

DRAFT



Land Court Act 2000

Land Court Rules 2000

Current as at 13 December 2013

Land Court Rules 2000
Part 5 Evidence

[r 21]

proceeding until the court is satisfied the parties have complied with the orders or directions.

- (3) The parties must comply with the orders or directions before the proceeding is heard, unless the court considers it appropriate, because of the circumstances of the case, to hear the proceeding without the orders or directions being complied with.

21 Power to correct mistakes

- (1) This rule applies if—
- (a) there is a clerical mistake in an order or certificate of the court or in a record of an order or certificate of the court; and
 - (b) the mistake resulted from an accidental slip or omission.
- (2) At any time, the court, on application by a party or on its own initiative, may correct the mistake.

Part 5 Evidence

Division 1 Preliminary

22 Definitions for pt 5

In this part—

expert means a person who would, if called as a witness in a proceeding, be qualified to give opinion evidence as an expert witness in relation to an issue in dispute in the proceeding.

joint report, for a proceeding, means a report—

- (a) stating the joint opinion of experts in relation to an issue in dispute in the proceeding; and

- (b) identifying the matters about which the experts agree or disagree and the reasons for any disagreement.

meeting of experts—

1 A *meeting of experts* is a meeting at which experts in each area of expertise relevant to a proceeding meet, in the absence of the parties—

- (a) to discuss and attempt to reach agreement about the experts' evidence in relation to an issue in dispute in the proceeding as it relates to the experts' area of expertise; and
- (b) to prepare a joint report.

2 The term includes —

- (a) a resumed meeting of experts or further meeting of experts; and
- (b) a meeting attended by the experts in either, or a combination, of the following ways—
 - (i) personally;
 - (ii) a way that allows contemporaneous communication between the experts, including by telephone, video link or email.

party, for a proceeding, means a party to the proceeding or the party's lawyer or agent.

statement of evidence, of an expert, see rule 24E.

Division 2 Meetings of experts

23 Application of div 2

Unless the court otherwise orders, this division applies in relation to a meeting of experts ordered or directed by the court at any time in a proceeding.

24 Party must ensure expert ready to take part in meeting of experts

Before a meeting of experts, a party to a proceeding must do all things reasonably necessary or expedient to ensure an expert chosen by the party is ready to take part fully, properly and promptly in the meeting, including by giving the expert—

- (a) reasonable prior notice that the court has ordered or directed a meeting of experts; and
- (b) notice of the contents of any order or direction about the meeting, including the time by which the meeting must be held; and
- (c) reasonable notice of the issue in dispute in the proceeding to the extent it is relevant to the expert's expertise; and
- (d) enough information and opportunity for the expert to adequately investigate the facts in relation to the issue in dispute in the proceeding; and
- (e) written notice that the expert has a duty to assist the court and the duty overrides any obligation the expert may have to the party or any person who is liable for the expert's fee or expenses.

24A Experts attending meeting must prepare joint report

- (1) The experts attending a meeting of experts must, without further reference to or instruction from the parties, prepare a joint report in relation to the meeting.
- (2) However, the experts attending the meeting may, at any time before the joint report is completed, ask all parties to respond to an inquiry the experts make jointly of all parties.
- (3) Despite subrule (1), any of the experts may participate in a mediation involving the parties.
- (4) The joint report must—
 - (a) confirm that each expert understands the expert's duty to the court and has complied with the duty; and

- (b) be given to the parties.
- (5) The applicant or appellant must deliver to the registry, personally or by facsimile or email, a copy of the joint report received under subrule (4) at least 21 days before the date set for the hearing.

24B Admissions made at meeting of experts

- (1) Subrule (2) does not apply to a joint report prepared in relation to a meeting of experts.
- (2) Evidence of anything done or said, or an admission made, at a meeting of experts is admissible at the hearing of the proceeding or at the hearing of another proceeding in the court or in another civil proceeding only if all parties to the proceeding agree.
- (3) In this rule—
civil proceeding does not include a civil proceeding founded on fraud alleged to be connected with, or to have happened during, the meeting.

Division 3 Evidence given by experts**24C Duty of expert**

- (1) A witness giving evidence in a proceeding as an expert has a duty to assist the court.
- (2) The duty overrides any obligation the witness may have to any party to the proceeding or to any person who is liable for the expert's fee or expenses.

24D Giving or accepting instructions to adopt or reject a particular opinion prohibited

A person must not give, and an expert must not accept, instructions to adopt or reject a particular opinion in relation to an issue in dispute in a proceeding.

Land Court Rules 2000
Part 5 Evidence

[r 24E]

24E Expert must prepare statement of evidence

- (1) An expert must prepare a written statement of the expert's evidence (a *statement of evidence*) for the hearing of a proceeding.
- (2) If the expert has taken part in a meeting of experts—
 - (a) a joint report prepared in relation to the meeting is taken to be the expert's statement of evidence in the proceeding; and
 - (b) a further statement of evidence in relation to any issue of disagreement recorded in the joint report is to be prepared by the expert.
- (3) However, the further statement of evidence must not, without the court's leave—
 - (a) contradict, depart from or qualify an opinion in relation to an issue the subject of agreement in the joint report; or
 - (b) raise a new matter not already mentioned in the joint report.

24F Requirements for statement of evidence other than joint report

- (1) An expert's statement of evidence, other than a joint report, must be addressed to the court and signed by the expert.
- (2) The statement of evidence must include the following information, to the extent the information is not already contained in a joint report prepared for the proceeding—
 - (a) the expert's qualifications;
 - (b) all material facts, whether written or oral, on which the statement is based;
 - (c) references to any literature or other material relied on by the expert to prepare the statement;

-
- (d) for any inspection, examination or experiment conducted, initiated or relied on by the expert to prepare the statement—
 - (i) a description of what was done; and
 - (ii) whether the inspection, examination or experiment was done by the expert or under the expert's supervision; and
 - (iii) the name and qualifications of any other person involved; and
 - (iv) the result;
 - (e) if there is a range of opinion on matters dealt with in the statement, a summary of the range of opinion and the reasons why the expert adopted a particular opinion;
 - (f) a summary of the conclusions reached by the expert;
 - (g) a statement about whether access to any readily ascertainable additional facts would assist the expert in reaching a more reliable conclusion.
- (3) The expert must confirm, at the end of the statement of evidence—
- (a) the factual matters included in the statement are, as far as the expert knows, true; and
 - (b) the expert has made all enquiries considered appropriate; and
 - (c) the opinions included in the statement are genuinely held by the expert; and
 - (d) the statement contains reference to all matters the expert considers significant; and
 - (e) the expert understands the expert's duty to the court and has complied with the duty; and
 - (f) the expert has read and understood the rules contained in this part, as far as they apply to the expert; and

- (g) the expert has not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

24G Serving statement of evidence other than joint report

- (1) This rule applies to a statement of evidence other than a joint report.
- (2) A party to a proceeding intending to call evidence by an expert in the proceeding must deliver to the registry, personally or by facsimile or email, and serve on each other party to the proceeding, a copy of the expert's statement of evidence.
- (3) A party must comply with subrule (2) at least 21 days before the date set for the hearing or, if the court directs a different time, within the time directed by the court.

24H Matters contained in statement of evidence not to be repeated

During examination in chief, an expert must not, without the court's leave, repeat or expand on matters contained in the expert's statement of evidence or introduce new material.

24I Evidence from only 1 expert may be called

Other than with the court's leave, a party to a proceeding, at any hearing of the proceeding, may call evidence from only 1 expert for each area of expertise dealt with in the hearing.

Division 4 Non-expert statements of evidence

24J Statement of evidence of witness other than expert

- (1) This rule applies to a party who intends to do either or both of the following—
 - (a) give evidence in a proceeding;

- (b) call another person, other than an expert, to give evidence in a proceeding.
- (2) Before giving the evidence or calling the other person, the party must deliver to the registry, personally or by facsimile or email, and serve on each other party, a written statement containing—
 - (a) the name, address and occupation of the party or other person; and
 - (b) the evidence of the party or other person for the hearing.
- (3) The party must comply with subrule (2) at least 21 days before the date set for the hearing or, if the court directs a different time, within the time directed by the court.
- (4) During examination in chief, the party or other person must not, without the court's leave, repeat or expand on matters contained in the party's or person's statement delivered under subrule (2) or introduce new material.

Division 5 General

24K Way evidence given

- (1) Unless the court orders that a witness's evidence in a proceeding be given by affidavit or in another way, the evidence may only be given orally.
- (2) Giving evidence orally may include merely swearing to the accuracy of a statement of evidence submitted to the court.
- (3) If the court orders that evidence be given by affidavit, the court may impose conditions on the order.

24L Calling witnesses

A party to a proceeding must not, without the court's leave, call an expert or another person to give evidence in the proceeding unless the party has complied with the rules contained in this part.

Annexure C - IESC Advice 14 December 2016: Surface water

This table identifies how IESC comments on surface water have been addressed in the conditions of the EPBC Approval and the draft Environmental Authority for the Stage 3 Project and its associated REMP.

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
2.b	Appropriate surface water quality monitoring, including continuous monitoring of flow and physio-chemical parameters, to provide a representative dataset of the existing conditions in surface water systems, particularly Lagoon Creek and Spring Creek against which to detect potential impacts during and after mining.	11. ix	The approval holder is required to address all the surface water management measures outlined in the IESC advice.	Draft EA and REMP	The draft EA and the REMP outline the water quality monitoring program to provide a representative dataset of baseline conditions.
		11.i and 11.ii	The approval holder must identify the location of all discharge points and include monitoring locations downstream of each discharge point and environmental dams; and must identify the locations of all sampling points and review these for adequacy to ensure these are representative of upstream, downstream, control and reference sites.	Draft EA Table C3 Table C5 and Figure 2	Figure 2 in the draft EA shows locations of all discharge points (Environment Dams) and monitoring locations. The discharge points are described in Table C3 and the monitoring points are described in Table C5. These locations together with the REMP monitoring locations (see Figure 4.1 and Table 4-1 of the REMP) are appropriate to represent baseline conditions and impacts during and after mining.
		11.viii	The approval holder must include additional flow gauges on Spring Creek, including automatic samplers to collect water samples during first flush and high flow events.	Draft EA C5	The EA holder must ensure stream flow gauging station/s are installed, operated and maintained to determine and record stream flows in Lagoon and Spring Creek upstream of the discharge sites.
2.c	Derivation of site-specific surface water quality triggers and thresholds based on data gathered during at least the first 2 years of the project, where possible this should be established through event-based monitoring.	11.v	The condition requires the use of ANZECC water quality guidelines for aquatic ecosystem protection, pending development of more site specific water quality objectives based on monitoring in the first 2 years of the project and particularly states The approval holder must: <i>" use the Australian and New Zealand Environment and Conservation Council (ANZECC) water quality guidelines for 95 per cent species protection in slightly to moderately disturbed systems until such time as site-specific water quality objectives can be derived based on data gathered during at least the first two years of the project."</i>	Draft EA C14 and note to Table C4	Event based monitoring assessed against specified trigger levels for water quality is required under condition C14 and Table C4 sets the trigger levels that are based on ANZECC water quality guidelines. Note 2 to Table C4 anticipates that the trigger levels can be reviewed once the results of 2 years monitoring data is available, or if sufficient data is available to adequately demonstrate negligible environmental risk, and it may be determined that a reduced monitoring frequency is appropriate or that certain quality characteristics can be removed from Table C4.

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
4.b	Lagoon Creek and Spring Creek are noted to be in a highly altered state as a result of historical land use. Surface water flow in Lagoon Creek for the majority of the time is restricted to a series of disconnected pools in the form of artificially constructed farm dams (REMP, Section 3.1, p. 7). Historical and current sampling locations appear to occur mainly within these pools. Given the ephemeral and disconnected nature of Lagoon Creek, water quality has the potential to change temporally and spatially within pools, and along the length of Lagoon Creek in general. As such water quality monitoring should be increased to better reflect current conditions and provide a baseline against which potential impacts associated with the proposed project can be assessed.	11.iv	This condition requires increased frequency of sampling and expansion of the range of analytes (e.g. metals, nutrients, ionic composition and polycyclic aromatic hydrocarbons) to be sampled at each sampling event.	Draft EA C14 and Table C4	Condition C14 requires event based monitoring of the analytes given in Table C4 consistent with the IESC recommendations. The event based monitoring is in addition to the pre and post wet season monitoring frequency given in the REMP.
4.c	A range of environmental values (EVs) has been identified for Lagoon Creek, which include aquatic ecosystems, irrigation, stock watering, farm water supply/ use etc (REMP, Section 3.3, p. 19). Appropriate aquatic ecosystem protection water quality guidelines should be adopted that protect the range of environmental values identified for Lagoon Creek and to minimise impacts to downstream water quality.	11.v	This condition requires the use of ANZECC water quality guidelines for aquatic ecosystem protection, pending development of more site specific water quality objectives based on monitoring in the first 2 years of the project and particularly states The approval holder must: " <i>use the Australian and New Zealand Environment and Conservation Council (ANZECC) water quality guidelines for 95 per cent species protection in slightly to moderately disturbed systems until such time as site-specific water quality objectives can be derived based on data gathered during at least the first two years of the project.</i> "	Draft EA C14 and Table C4	Condition C14 requires monitoring of water quality both at background sites and downstream monitoring locations during release events for the relevant water quality analytes identified by the IESC. These constituents are measured against trigger levels specified in Table C4. The trigger levels in Table C4 are based on ANZECC water quality guidelines for 95% species protection in slightly to moderately disturbed systems where guideline values have been provided or using typical instrument limit of reporting for the ultratrace levels of metals. The trigger levels proposed in Table C4 are appropriate to minimise impacts to downstream water quality. The water quality trigger levels can be reviewed once the results of 2 years of monitoring data is available.

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
4.d (i)	The proponent has committed to monthly monitoring of basic water quality parameters (EC, pH, total suspended solids and sulfate) within proposed sedimentation and environment dams. However monitoring and sampling of Lagoon Creek and Spring Creek is only proposed twice a year – pre-release and post-wet season. The timing of these events is unclear and the frequency is not sufficient to determine flow-related trends. To determine current conditions within these systems, the IESC considers the frequency of sampling for an expanded range of analytes (e.g. metals, nutrients, ionic composition and polycyclic aromatic hydrocarbons) be increased for at least the first two years of the project, and where possible, event-based monitoring immediately after the first flushing flow to detect any pulsed concentrations of analytes that may have accumulated during the previous flow. This will establish a statistically robust data set from which site-specific water quality objectives (or guidelines) can be derived.	11. iv	This condition requires increased frequency of sampling and expansion of the range of analytes (e.g. metals, nutrients, ionic composition and polycyclic aromatic hydrocarbons) to be sampled at each sampling event.	Draft EA C14 and Table C4	Condition C14 requires event based monitoring of the range of analytes given in Table C4 consistent with the IESC recommendations. The event based monitoring is in addition to the pre and post wet season monitoring frequency given in the REMP.
4.d (ii)	During the initial period where monitoring to determine site-specific water quality thresholds is still ongoing, ANZECC water quality guidelines for 95 per cent species protection in slightly to moderately disturbed systems could be used.	11.v	This condition requires the use of ANZECC water quality guidelines for aquatic ecosystem protection, pending development of more site specific water quality objectives based on monitoring in the first 2 years of the project.	Draft EA C14 and Table C4	The trigger levels in Table C4 are based on ANZECC water quality guidelines, for 95% species protection in slightly to moderately disturbed systems where guideline values have been provided or using typical instrument limit of reporting for the ultratrace levels of metals. The trigger levels proposed in Table C4 are appropriate to minimise impacts to downstream water quality. The water quality trigger levels can be reviewed once the results of 2 years of monitoring data is available.
4.e	The Receiving Environment Monitoring Program (REMP) (BMT WBM, 2016a) refers to “receiving water contaminant trigger levels” within the 14 July 2015 draft Environmental Authority (EA). However, the triggers are not provided in the draft EA or attached to the REMP. Therefore the IESC is unable to comment on these trigger values. Further, water quality guidelines noted in Table 3-3	11 ix.	The approval holder is required to address all the surface water management measures outlined in the IESC advice. This would include corrections to the water quality criteria in the REMP as identified by the IESC.	Draft EA Table C4	The REMP refers to trigger values identified in the draft EA for the Project dated 28 August 2015, not the current EA for the site dated 14 July 2015 that is attached to the REMP at Appendix A. Table C4 sets out the range of trigger values for event based monitoring.

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
	and Table 3-7 of the REMP should be checked and verified. In particular: Inconsistencies were noted in Table 3-7 for: cadmium (ANZECC guideline reported as 0.3 µg/L, should be 0.2 µg/L); cobalt (EA trigger reported as 90 µg/L, Jeebropilly EA reported as 1.4 µg/L); lead (EA trigger reported as 4 µg/L, Jeebropilly EA reported as 3.4 µg/L); and mercury (should be 0.06 µg/L not 0.6 (high reliability) because ANZECC recommends using 99% protection as GV due to bioaccumulation potential). Table 3-7 is also missing a number of ANZECC guidelines. While some are low reliability guidelines, they should still be incorporated in the absence of site-specific water quality objectives. These include: cobalt – 1.4 µg/L (low reliability); molybdenum – 34 µg/L (low reliability); silver – 0.05 µg/L (high reliability); uranium – 0.5 µg/L (low reliability); and vanadium 6 µg/L (low reliability). Detection limits for silver, uranium and vanadium are currently above the guidelines and therefore are not suitable for determining exceedances. The units in Table 3-3 of the REMP are expressed in µg/L, they should be expressed in mg/L.	10	The approval holder must submit a REMP to the Minister for approval prior to mining activities commencing. The approval holder must implement the approved REMP.	REMP	The errors in the REMP identified by the IESC are currently being rectified and will be provided to the Minister for approval as part of condition 10 of the EPBC approval.
4.f	The location and flow data associated with the two installed surface water flow gauges are not provided. While GPS coordinates are provided for the two gauges (BMT WBM, 2016a, p. 28), the gauges should be plotted on a map in relation to current and proposed discharge points and sampling points. Available flow data since installation should also be provided. The REMP states this as a requirement (BMT WBM, 2016a, p. 37). Flow gauges are important in identifying conditions when discharges can occur.	10.	The approval holder must submit a REMP to the Minister for approval prior to mining activities commencing. The approval holder must implement the approved REMP.	Draft EA Figure 2	The locations of the stream gauges will be included on a plan in a revised REMP as well as in Figure 2 of the draft EA.
		11 ix	The approval holder is required to address all the surface water management measures outlined in the IESC advice.	Draft EA C17	Water level monitoring data is required to be collected pursuant to C17 (Annual water monitoring reporting)

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
9.a	Given the proponent proposes to locate environment dams, with associated overflow release points within the catchment of Spring Creek, installation of additional flow gauges on Spring Creek should be considered. This may include consideration of the installation of automatic samplers to collect water quality samples during first flush and high flow events.	11.viii	The approval holder must include additional flow gauges on Spring Creek, including automatic samplers to collect water samples during first flush and high flow events.	Draft EA C5, C14 and Table C4	The EA holder must ensure stream flow gauging station/s are installed, operated and maintained to determine and record stream flows in Lagoon and Spring Creek upstream of the discharge sites Condition C14 requires event based monitoring of both upstream (background) and downstream of release points.
9.b	The proponent should clarify the difference between release points from the proposed and existing environmental dams and the licenced discharge points.	11. ix	The approval holder is required to address all the surface water management measures outlined in the IESC advice.	Draft EA Table C3	The locations of the authorised release points at the environmental dams are specified in Table C3. Releases are only made from environmental dams.
9.c	Water quality sampling points should be established downstream of proposed discharge points and at each of the current and proposed environment dam release points located in the catchments of Spring Creek (ED1) and the tributary of Lagoon Creek (ED2, ED4 and ED5).	11.i and 11.ii	The approval holder must identify the locations of all sampling points and include monitoring locations downstream of each discharge point and environmental dams.	Draft EA Table C5 Figure 2	Table C5 (receiving water upstream background sites and downstream monitoring points) identifies the proposed downstream compliance sampling locations. The locations are shown in Figure 2.
9.d	Figures within the proponent's REMP should show the locations of all proposed sampling locations, including historic sites which will continue to be monitored for the length of the proposed project.	11.ii	The approval holder must identify the locations of all sampling points.	REMP	Figure 4-1 (page 25) of the REMP shows the proposed monitoring locations. The REMP will be updated to show the compliance monitoring locations given in Figure 2 of the draft EA.
		10	The approval holder must submit a REMP to the Minister for approval prior to mining activities commencing. The approval holder must implement the approved REMP.		
9.e	The proponent should review the adequacy of surface water sampling locations to ensure locations are representative of upstream, downstream, control and reference sites. For example, there are currently no monitoring locations identified on the northern tributary of Lagoon Creek.	11.ii	The approval holder must identify the locations of all sampling points and review these for adequacy to ensure these are representative of upstream, downstream, control and reference sites.	Draft EA Table C5	Table C5 (receiving water upstream background sites and downstream monitoring points) shows the locations of all proposed compliance monitoring locations. These include Lagoon Creek upstream and downstream of the proposed release points on the northern tributary (Monitoring point DS1).
9.f	In addition to the identified physico-chemical variables measured during each sampling event, field observations such as nature of flow (i.e. low, medium, high) and weather conditions should also be recorded.	11.iii	The approval holder must include field observations such as weather and flow conditions during each sampling event.	REMP Draft EA C5	Section 4.3 of the REMP details the method of collecting flow data during sampling events. The EA holder must ensure stream flow gauging station/s are installed, operated and maintained to determine and record stream flows in Lagoon and Spring Creek upstream of the discharge sites.

ANNEXURE E

2016 IESC advice		EPBC approval relevant conditions (granted 18.01.2017)		Draft EA relevant conditions (dated 28.08.2015) and REMP (dated 5.02.2016)	
9.g	Details should be provided on what action will be taken if guideline values are exceeded (e.g. follow-up sampling and implementation of subsequent mitigation measures).	11.vi	The approval holder must include measures to report and verify any exceedance of triggers to the Department.	Draft EA C15, C24, C25,	If an exceedance of the trigger levels in table C4 is identified, the holder of the environmental authority must compare the result against background monitoring data and where it is greater than background, report to the administering authority within 24 hours and complete a report investigating whether environmental harm was caused, including actions taken to prevent further harm.
		11.vii	The approval holder must include mitigation and management measures to be implemented in the event a threshold is exceeded.	C12 and C13	Exceedance of any release limit in table c2 must be notified within 24 hours and a report submitted within 28 days as to the reasons for the release, all results and identification of any environmental harm.
Att. A (e)	Further water quality sampling needed to establish current conditions within Lagoon Creek and Spring Creek. Frequent sampling also needed to inform water quality within sedimentation dams and environmental dams. Sampling locations also should be reviewed.	See paragraphs 9e and 4d above		See paragraphs 9e and 4d above	

**Annexure F – Second Supplementary Statement of Evidence
dated 20 March 2017**

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

**SUPPLEMENTARY STATEMENT OF EVIDENCE TO THE LAND COURT BY GREGORY
KENNETH ROADS**

1. Expert's details and qualifications

1.1 Name

My name is Gregory Kenneth Roads.

1.2 Insert address

My business address is Level 9, 135 Wickham Terrace Spring Hill Queensland.

1.3 Qualifications

(a) I hold the following qualifications:

(i) Bachelor of Engineering (Civil) (Honours) from the University of
Technology, Sydney

(ii) Registered Professional Engineer of Queensland (#6413)

(b) My curriculum vitae has been provided with my previous statements to the
court regarding this matter.

2. Instructions

2.1 I have been instructed by Clayton Utz on behalf of New Acland Coal Pty Ltd (**NAC**) to
reply to the supplementary statement of evidence to the Land Court by John Standley
dated 8 March 2017 and filed on 10 March 2017 in accordance with order 5 of the
orders made on 2 February 2017 (the **Orders**). My original letter of instruction from

Clayton Utz is contained at Annexure B of my original supplementary statement of evidence dated 20 February 2017.

3. **Relevant documents**

3.1 In producing this statement, I have relied on the following additional documents:

- (a) the 2016 IESC Final Advice;
- (b) the decision of the Minister for the Environment and Energy under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Approval**);
- (c) the statement of reasons of the Minister for the Environment and Energy for the decision referred to above;
- (d) the letter from the Chair of the IESC to Department of the Environment and Energy dated 21 December 2016;
- (e) the BMT WBM, 2016a, Receiving Environment Monitoring Program (**REMP**);
- (f) the BMT WBM, 2016b, REMF – Pre-release survey 2015;
- (g) the draft Environmental Authority (**Draft EA**) for the Project dated 28 August 2015;
- (h) my statement of evidence to the Land Court dated 19 February 2016 in relation to the surface water objections lodged in opposition to the Project;
- (i) my joint expert report (**JER**) with Dr Standley dated 25 January 2016; and
- (j) my supplementary statement of evidence to the Land Court dated 20 February 2017 responding to the 2016 IESC Final Advice.

4. **Reply**

4.1 Dr Standley has stated that the Additional Documents (as defined in the Orders) do not change the findings in the JER dated 25 January 2016. In the JER, Dr Standley agreed that the list of issues and inadequacies in relation to surface water and water quality detailed in his letter to the Court of 4 December 2015 did not warrant a challenge in the Land Court and "have been addressed in the new EIS and the AEIS".

■ [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
- 4.5 The monitoring recommended by the IESC is for compliance purposes to set agreed water quality targets/objectives for the mine to achieve when a release is made and for background monitoring to define the site specific water quality targets/objectives. In advance of this further monitoring and the consequential setting of water quality targets/objectives, and in order to protect the local environmental values, the ANZECC (2000) water quality guidelines are to be used as the water quality targets. It is standard practice and appropriate to use the ANZECC guidelines in this instance. The IESC recommendations, the EPBC approval conditions and the Draft EA all support this view.
- 4.6 In my opinion, the ANZECC (2000) guidelines are conservative in this instance given that the ecological and physical status of the Lagoon Creek has been classed as 'poor' to 'very poor' in all key parameters surveyed in the State of the Rivers report for the Upper Condamine River catchment (Philips and Moller, 1995), due to the existing landuse in the catchment. These findings were confirmed during ecological monitoring undertaken as part of the new EIS for the project (Chapter 8).
- 4.7 [REDACTED]
[REDACTED]
[REDACTED] I note that NAC collected data for all of the water quality constituents that were required to be monitored for the Stage 1 and 2 approvals and the data was presented in the EIS for the Project. NAC are not required to monitor any additional parameters under their current Environmental Authority for the mine.
- 4.8 The water quality parameters that were monitored as part of Stage 1 and 2 are the key parameters of concern with respect to coal mining in Queensland. The additional parameters recommended for monitoring by the IESC are not usually synonymous with coal mining and indeed the geochemical testing undertaken for NAC, and presented in the EIS, suggested that the metalloid parameters will not be an issue at this site. Monitoring undertaken to date would appear to support this.
- 4.9 In other valleys across Queensland, the State government has defined the environmental values and water quality objectives of the waterways. These have not yet been prepared for the Condamine River valley, in which the Project resides.

ANNEXURE F

4.10 NAC have commenced the monitoring of these additional parameters through the REMP in anticipation that the Project will be approved. However, there is currently no requirement to monitor these parameters.

4.11 [REDACTED]
[REDACTED]
[REDACTED] The IESC's recommendations were included as conditions to the EPBC approval as given in the letter from the IESC Chair to Department of the Environment and Energy dated 21 December 2016. To see how these recommendations have been incorporated in the conditions, please refer to the table at Annexure C of my supplementary statement dated 20 February 2017. This table identifies how all of the IESC comments on surface water have been addressed in the conditions of the EPBC Approval or the Draft EA for the New Acland Coal Stage 3 Project and its associated REMP.

5. **Expert's statement**

5.1 I confirm that:

- (a) the factual matters stated in this statement are, as far as I know, true;
- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains reference to all matters I consider significant;
- (e) I understand I have a duty to assist the court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the Land Court Rules 2000, as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in these proceedings.



Greg Roads 20 March 2017

6. **References**

ANZECC (2000) 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy', Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand 2000.

ANNEXURE F

Phillips and Moller (1995) 'Upper Condamine River and major tributaries : an ecological and physical assessment of the condition of streams in the upper Condamine River catchment' Ngaire Phillips and Glen Moller Dept. of Primary Industries, Water Resources, 1995

IN THE LAND COURT
OF QUEENSLAND

MRA026-21

MRA027-21

EPA028-21

BETWEEN

New Acland Coal Pty Ltd

Applicant

AND

Oakey Coal Action Alliance Inc & Ors

Respondents

STATEMENT OF EVIDENCE TO THE LAND COURT BY DR ANDREW DANIEL

DATE OF REPORT: 01 OCTOBER 2021

1. **Expert's details and qualifications**

1.1 My name is Andrew Daniel.

1.2 My business address is 12 Ambool Street, Lota, Qld 4179.

1.3 I hold the following qualifications:

- (a) PhD Environmental Engineering (Griffith University, 2000)
- (b) Bachelor of Science, Honours IIA (Biological Sciences) (University of Exeter, 1990)
- (c) **Annexure A** to this statement is my curriculum vitae.

2. **Statement of Evidence for Original Proceedings**

2.1 I was previously engaged by the Applicant as an expert witness in the initial Land Court proceedings for this matter, which commenced in 2015 and concluded in 2017 (**Original Proceedings**).

2.2 I am aware that as a result of a series of subsequent challenges to the decision in

the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).

- 2.3 I am engaged by the Applicant to act as an expert witness in the Rehearing in respect of Ecology and more specifically Flora. I have annexed my letter of instructions dated 15 September 2021 (**Annexure B**).
- 2.4 **Annexure C** to this statement is my statement of evidence that was given in the Original Proceedings dated 9 June 2016, recorded as Exhibit [1004] in the Original Proceedings (**Original Statement of Evidence**). Parts of the Original Statement of Evidence have been redacted where they refer to the evidence of a lay witness in the original proceedings who I am advised by Clayton Utz is not being called to give evidence about ecology matters in the Rehearing.
- 2.5 I have been provided with and reviewed the Applicant's draft Environmental Authority (EA)¹ (15 February 2021) and Statutory Party EA² (10 March 2021) and NAC Stage 3 Project - Coordinator-General's Change Report No. 3 - Amendment to stated conditions B3 and H40 (September 2020) and information provided in Schedule of updated information regarding flora and fauna prepared by CU (06 July 2021) (**Annexure D**).
- 2.6 After reviewing this information, I have reviewed my Original Statement of Evidence and would like to make the following updates to reflect matters that have occurred since the Original Proceedings.
- 2.7 I have revisited the site in 2020 (10 – 12 May and 22 – 24 June 2021) to assess current ecological conditions. During my site assessment I noted that
- (a) The ecological condition of the local landscape has not changed appreciably since the Original Proceedings.
 - (b) The revegetation plantings undertaken by NAC along Lagoon Creek have successfully established and are growing well.
- 2.8 In my Original Statement of Evidence and field assessments I concentrated on the MLAs. During my investigations for this Rehearing I have also looked at areas of potential disturbance within the ML north of the Acland – Silverleigh Road (Willeroo Pit on ML 50216).
- 2.9 I have also identified from the Clayton Utz Letter dated 27 May 2021³ and associated shapefiles some minor changes for ancillary infrastructure. It is my assessment that the matters in paragraph 3.0 in the Clayton Utz Letter do not affect any vegetation communities identified as significant under State or federal regulation – Matters of National Environmental Significance (MNES) or Matters of

¹ Court doc. No. F.0003

² Court doc. No. F.0020

³ Letter to Ms Annabel Elliot (27 May 2021), L\340203082.1 filed within affidavit of Karen Trainor sworn 28 May 2021, document ID is F.0063.

State Environmental Significance (MSES).

- 2.10 Impacts to the identified disturbance area have been adequately surveyed and will be offset according to the Schedule I of the Applicant Draft EA and the Statutory Party EA conditions.

3. **Original Conditions Requiring Updated Plans and Assessments**

- 3.1 The Coordinator General's Evaluation Report (Dec 2014) contained conditions that required:
- (a) the development of an Environmental Offsets Strategy⁴ which is Condition 13 of the CG's report to adequately offset the identified impacts to protected vegetation; and
 - (b) pre-clearance surveys to quantify the impacts to protected flora (and fauna) (Condition 14); and
 - (c) these conditions are reflected and/or complemented in Statutory Party EA, I3 - I14).
- 3.2 In addition, Condition 15 of the CG's report (Statutory Party EA condition I2) required the development and implementation of a Lagoon Creek Conservation Zone Management Plan. The Plan's requirements reflect those contained within the Conservation Zone Management Plan, New Acland Coal Mine, Stage 3 Project January 2014. I have reviewed the progress made in implementing this plan within paragraph 6.4 below.
- 3.3 I have provided the Coordinator General's Change Report Conditions 13 – 15 as **Annexure E** for ease of reference. These conditions remain the same as those presented within the CG's evaluation report, except for updated clearing limits that have been changed to reflect the results of subsequent surveys to quantify offset requirements and identify protected plants within the disturbance footprint.
- ### 4. **Additional Information and Approvals Since the Original Proceedings**
- 4.1 The implementation of CG's Imposed Conditions 13 – 15 have led to further on-ground ecological assessment and the production of several reports. Updates to information pertaining to flora and vegetation communities since the Original Proceedings (2015 -2017) are presented in **Annexure D**. These changes can be summarised as:
- (a) Protected Plant Clearing Permit Approvals – Provides approval under the *Nature Conservation Act, 1992* to disturbed threatened flora
 - (b) Low Risk Species Management Program for New Acland Coal Mine Stage 3 (approved and valid until 14 January 2023) – Provides approval

⁴ Environmental Offset Strategy, New Acland Coal Mine Stage 3 Project, December 2019.

under the *Nature Conservation Act, 1992* for tampering with tampering with animal breeding places.

- (c) Environmental offsets delivery package (see detail below) – Quantifies impacts and offsets to MSES and prescribes how offsets will be achieved as required by the Statutory Party EA.
- (d) The CG's Change Report which has changed the disturbance limits to reflect the further on-ground surveys and offset package. The change report is reflected in:
 - (i) Applicant Draft Environmental Authority (15 February 2021) – Inter alia, contains disturbance limits for protected flora and vegetation communities.
 - (ii) Draft Statutory Party Environmental Authority (10 March 2021) – Inter alia, contains disturbance limits for protected flora and vegetation communities⁵.

Vegetation and Threatened Flora Offsets

(CG Change Report Condition 13; Statutory Party EA Condition I3 – I6 & I11 - I12)

- 4.2 In line with Condition 13, the applicant has developed an Environmental offsets delivery package⁶ which includes:
- (a) Environmental Offset Strategy, New Acland Coal Mine Stage 3 Project (December 2019)⁷ (Superseded by Offset Delivery Plan);
 - (b) Commonwealth EPBC Act Offset Management Plan, New Acland Stage 3 (dated 7 November 2019)⁸, relevantly contains approval to impacts on and offsets for both Belson's Panic (*Homopholis belsonii*) and commitments to offset Austral Cornflower (*Rhaponticum australe*); and
 - (c) Offset Delivery Plan New Acland Coal Mine Stage 3 Operations (dated 4 March 2020)⁹.
- 4.3 The offsets delivery package quantifies impacts to MSES and MNES and calculates areas required to offset the resultant significance residual impacts and prescribes how offsets will be achieved.

⁵ For the purpose of this report the biodiversity conditions for both EAs are the same.

⁶ Originally referred to as a Biodiversity offset strategy in my Original Statement of Evidence 2016, Para 5.14

⁷ Approved 10 January 2020

⁸ New Acland Stage 3, Commonwealth EPBC Act Offset Management Plan 07 November 2019

⁹ Approved 16 November 2020

Threatened Flora Species Clearing Permits

(CG Change Report Condition 14; Statutory Party EA Condition I7, 8, & I10 – I12)

- 4.4 From 2016 the applicant progressed implementation of a Biodiversity Offset Strategy and a Threatened Species Translocation Plan (Original Statement of Evidence 2016, Para 5.14) to appropriately identify and offset impacts to extant populations of Threatened¹⁰ flora species required in the imposed conditions. Since this time the pre-clearance surveys for threatened flora species, conducted as part of the Environmental Offset Strategy have been used to obtain clearing permits.
- 4.5 Seasonally appropriate pre-clearance surveys of the disturbance footprint have identified the quantum of impacts to flora species listed as threatened under the *Nature Conservation Act (1992)*.
- 4.6 These pre-clearance surveys have led to the approval Protected Plant Clearing Permits for:
- (a) The Acland – Sabine Road (WA0016268);
 - (b) Infrastructure Area (WA0017924); and
 - (c) Mining Areas (WA0019596).
- 4.7 These clearing permits provide an approval under the *Nature Conservation Act, 1992* to disturb the threatened flora identified.

Lagoon Creek Conservation Zone Management Plan

(CZMP) (GC Condition 15; Statutory Party EA Condition I2 & I15)

- 4.8 The Conservation Zone Management Plan (Appendix J.6 of the EIS) was written in January 2014). The plan identified areas of remnant (VMA 1999), regrowth and open grazing land that required a combination of natural and assisted regeneration and replanting to develop a naturally vegetated buffer 50 metres either side of the high bank of Lagoon Creek.
- 4.9 The management plan is to provide protection for Lagoon Creek including a revegetated 50 metre buffer from the high bank, including a flood protection levee.
- 4.10 I have reviewed the actions taken by the Application to revegetate the Lagoon Creek Corridor in paragraph 6.4 below.

5. Review of Ecological Assessments Conducted Since the Original Proceedings

- 5.1 I have reviewed the adequacy of the subsequent Offset Delivery Plan (21 April 2020), Environmental Offset Strategy (December 2019) and the Commonwealth

EPBC Act Offset Management Plan (07 November 2019) against the State's Environmental Offsets Policy (Version 1.7) and in particular the appropriateness of the offset areas identified within the following figures:

- (a) Commonwealth EPBC Act Offset Management Plan (November 2019)- Impact Area and Offset Areas (no page number provided within report); and
 - (b) Environmental Offset Strategy (December 2019) – Proposed Regional Ecosystem and Secondary Koala Offsets (Attachment D, no page number provided within report).
- 5.2 The CG's Change report¹¹ presents the same maximum authorised impacts to MSES as that referenced in of the NAC Stage 3 Environmental Offset Strategy (Dec 2019) and Table I1 of the Statutory Party EA.
- 5.3 The marked-up changes in Table I1 of the Statutory Party EA reflect:
- (a) The updated mapping provided in my Original Statement of Evidence;
 - (b) An increase of 14.93 ha of proposed regulated regional ecosystem clearing. This increase is mainly associated with the removal of 10.26 ha of RE 11.9.10, 1.87 ha of 11.9.7 and 2.51 ha of 11.9.5 (total 14.64 ha). to allow for ancillary infrastructure associated with mining; and
 - (c) the Environmental Offsets Strategy and preclearance surveys which are recognised within the Coordinator General's Change Report.
- 5.4 Surveys for listed plant species undertaken to satisfy Condition 14 documented the presence of 0.7ha of Austral cornflower *Rhaponticum australe*¹² and 70.8 ha of Belson's Panic *Homopholis belsonii*¹³. Offsets for these species have been co-located and are provided for within the Commonwealth EPBC Act Offset Management Plan as required under both State and federal offset policies¹⁴, reflected in both the Coordinator General's Evaluation Report (Dec 2014) and Commonwealth Approval¹⁵.

¹⁰ *Nature Conservation Act, 1992*

¹¹ Coordinator General's Change report Schedule H, Table H4 page 13. Table 1.2 p 17

¹² Vulnerable under the *Nature Conservation Act, 1992* and *Vulnerable Environment Protection and Biodiversity Conservation Act 1999*

¹³ Endangered under the *Nature Conservation Act, 1992* and *Vulnerable Environment Protection and Biodiversity Conservation Act 1999*

¹⁴ Queensland Environmental Offsets Policy (Version 1.4) (July 2017) and Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, October 2012.

¹⁵ Commonwealth Minister for Environment and Energy 18 January 2017 (EPBC 2007/3423)

6. **Field Assessment of Impact and Offset Areas**

- 6.1 During my field assessments conducted on 10 – 12 May and 22 – 24 June 2021 I conducted a rapid assessment of the offset areas identified within the Environmental Offset Strategy (December 2019) and the Commonwealth EPBC Act Offset Management Plan (07 November 2019). I found that these areas are assigned to the correct pre-clear regional ecosystem and likely, with appropriate management, to fulfill the offset requirements in accordance with the State's Environmental Offsets Policy (Version 1.7).
- 6.2 I have reviewed the on-ground survey effort for threatened species and find that they are appropriate and reflect the requirements within the Flora Survey Guidelines - Protected Plants¹⁶. During the environmental offset strategy threatened flora species surveys, a threatened flora species - *Picris barbarorum* (*Nature Conservation Act 1992*; Vulnerable) was located adjacent to the disturbance footprint. There were no individuals found within the disturbance footprint during the surveys and I did not encounter any individuals during my rapid assessment. This species is the only new threatened species that occurs on a contemporary WildNet database search within 30km of the MLA (**Annexure F**).
- 6.3 I assessed the offset areas provided for *Homopholis belsonii* to be suitable habitat for this species.
- 6.4 I assessed the Lagoon Creek corridor rehabilitation and found that plantings of locally native canopy trees have been successfully established on both banks of Lagoon Creek. Appropriately managed these plantings will produce a woodland/open forest canopy of native trees that will contribute to the establishment of native plant communities to enhance the ecological values of the Creek's riparian vegetation.

7. **IESC Groundwater Dependent Ecosystems**

- 7.1 In table 6A of my Original Statement of Evidence¹⁷ I responded to the IESC Advice¹⁸ on the possible impact of groundwater drawdown on local groundwater dependent ecosystems (GDEs).
- 7.2 During the original review I did not identify any obligate GDEs. In so far as native vegetation communities do occur where groundwater could theoretically be accessed, these communities were found to be community types that do not rely on access to groundwater for survival.
- 7.3 I have reviewed the updated groundwater modelling contained within the

¹⁶ Flora Survey Guidelines - Protected Plants. Nature Conservation Act 1992 NCS/2016/2534, Version 2.01 Last reviewed: 22 August 2020. Prepared by: Wildlife and Threatened Species Operations, Department of Environment and Science

¹⁷ dated 9 June 2016, recorded as Exhibit [1004],

amended application for an Associated Water License (SLR, 2018)¹⁹ and more specifically whether the updated model drawdown of groundwater has increased likelihood that native vegetation communities would be impacted by groundwater drawdown.

7.4 Given that the results of the 2018 updated groundwater model indicate less drawdown of groundwater than the previous AEIS model, I am satisfied that it is unlikely there will be any impacts to groundwater dependant ecosystems resulting from the proposed Stage 3 mine extension.

7.5 In the unlikely event that any native vegetation communities within the Mine's groundwater drawdown zone are groundwater dependent I note that the CG's conditions require:

(c) The groundwater management and monitoring program must be developed to ensure that the plan meets the following objectives:

(iv) to ensure all potential groundwater impacts from mine dewatering and mine water and waste storage facilities (artificial recharge) are identified, mitigated and monitored.

7.6 Furthermore, Condition D9 of the Statutory Party EA requires:

"in addition to the requirements of Imposed Condition 10 of the CG's report, a plan must be developed and certified by an appropriately qualified person to meet the following objectives:

(a) "identification of groundwater drawdown level thresholds for monitoring the impacts to Groundwater Dependiant Ecosystems.

8. Conclusions

8.1 I still hold the opinion that, *MLA 50232 and MLA 700002 are characterised by scattered small patches of Remnant vegetation in a matrix dominated by agriculture. The proportion of Remnant vegetation within the MLA that will be directly disturbed by the current application is low.*²⁰

8.2 I am satisfied that the area north of the Acland – Silverleigh Rd is comprised of previously cleared land that supports very young, scattered regrowth and contains no areas of MSES vegetation and does not contain any protected plants.

8.3 I still hold the opinion that, *the occurrence of threatened flora species has been identified ... Any impacts to these populations will be offset through the environmental offset strategy prepared in accordance with the CG's imposed*

¹⁸ IESC 2015-073: New Acland Coal Mine Stage 3 (EPBC 2007/3423) – Expansion: Advice to decision maker on coal mining project, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development.

¹⁹ Associated Water License, Amended Application Report, New Acland Coal Mine Stage 3 Project (24 December 2018) (SLR, 2018)

²⁰ Original Statement of Evidence page 18 para 6.1 (a)

conditions, leading to no net loss of threatened species²¹.

- 8.4 Since my Original Statement of Evidence, the proponent has undertaken the appropriate level of protected plant surveys and identified additional areas of MSES vegetation that will be affected by the broader disturbance area, as required by Coordinator General's Evaluation Report.
- 8.5 Since my Original Statement of Evidence, the proponent has developed an offsets package that identifies offset areas that are both appropriate in size and condition to adequately offset the identified areas of impact as required by the Coordinator General's Evaluation Report.
- 8.6 Since my Original Statement of Evidence, the proponent has successfully started revegetation of the Lagoon Creek corridor as required by the Coordinator General's Evaluation Report.
- 8.7 In the unlikely event that groundwater drawdown, resulting from the proposed Stage 3 mine extension, negatively impacts on native vegetation communities, the Statutory Party EA and Coordinator General's Evaluation Report contain conditions to identify, mitigate and monitor impacts Groundwater Dependent Ecosystems.
- 8.8 Conditions contained within the Statutory Party EA limit the area of disturbance of flora and vegetation communities that are MSES and provide that any significant residual impacts are appropriately offset.
- 8.9 The Statutory Party EA conditions also appropriately provide that any additional impacts to protected plants or MSES species and communities are notified and additional offsets to significant residual impacts provided according to the EOS for the Project.
- 8.10 The Statutory Party EA conditions are adequate to protect significant flora and vegetation communities within the disturbance footprint.
- 8.11 Other than the updates listed at paragraphs 3.0 – 8.11, the opinions and findings expressed in my Original Statement continue to be held by me.

²¹ Original Statement of Evidence page 18 para 6.1 (b)

Expert's Statement

8.12 I confirm that:

- (a) the factual matters stated in this statement are, as far as I am aware, true;
- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains references to all matters I consider significant;
- (e) I understand I have a duty to the court and have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the *Land Court Rules 2000* (Qld), as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.



.....
Dr Andrew John Daniel

[01 October 2021]

Annexure A

ANDREW DANIEL – MANAGING DIRECTOR & PRINCIPAL ECOLOGIST

Andrew has over 20 years' experience in ecological research and management with environmental consultancies and State and local government agencies. After completing his doctoral studies into nutrient cycling within paperbark swamps, Andrew trained as a botanist at the Queensland Herbarium, where he undertook numerous botanical assessments, mapping and monitoring projects for the Wildlife Ecology Section.

Since 2004, Andrew has primarily undertaken specialist consultancy work for local and state governments and private organisations associated with ecological investigations, ecological management planning and offsetting of impacts. This work encompasses all aspects of natural environment management from constraints analysis, through impact assessment and approvals stages to construction, implementation and monitoring. Andrew has extensive experience throughout Queensland with experience in WA, NT and NSW. Andrew has also authored or co-authored several scientific papers and appeared as an expert witness in the Queensland P&E Court on several matters.

EXPERTISE

Botanical surveys and vegetation mapping, preclearance surveys, habitat mapping and assessment, ecological assessment reporting, due diligence investigations, BioCondition assessment, vegetation rehabilitation, threatened species surveys management and monitoring plans, ecological offset development, and wildlife management. Andrew has acted as an expert witness on numerous Queensland P&E and Land Court cases, is a Certified Environmental Practitioner and a member of the Ecological Society of Australia, and Environmental Institute of Australia and New Zealand and Queensland Environmental Law Association.

QUALIFICATIONS

- PhD Environmental Engineering (Griffith University, 2000)
- Bachelor of Science, Honours IIA (Biological Sciences) (University of Exeter, 1990)

RELEVANT WORK HISTORY

2011 – present	Principal Ecologist, Terrestria Pty Ltd
2010 – 2011	Principal Ecologist, Ecological Landscape Management Pty Ltd
2008 – 2010	Principal Ecologist, Biodiversity Assessment and Management Pty Ltd
2005 – 2008	Senior Ecologist, Chenoweth EPLA Pty Ltd
2004 – 2005	Senior Ecologist, AustralAsian Resource Consultants (AARC)
2002 – 2003	Research Scientist, Department of Natural Resources (Alan Fletcher Research Station)
2000 – 2002	Senior Technician, Queensland Herbarium (Queensland Government)

COURT EXPERIENCE

2021	Planning and Environment Court Appeal No. 39 of 2021. Sutgold Pty Ltd v Redland City Council. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2021	Planning and Environment Court Appeal No. 40 of 2021. Sutgold Pty Ltd v Redland City Council. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2020	Planning and Environment Court Appeal No. 1499 of 2020. Matt Doolan Town Planner v Moreton Bay Regional Council. Engaged on behalf of Moreton Bay Regional Council to provide expert advice on ecological matters.
2020	Planning and Environment Court Appeal No. 2839 of 2020. Paige v Redland City Council and Clay Gully. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2020	Planning and Environment Court Appeal No. 1612 of 2020. Sutgold v Redland City Council and Clay Gully. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2020	Planning and Environment Court Appeal No. 566 of 2020. Clay Gully Pty Ltd v Redland City Council. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2019	Planning and Environment Court Appeal No. 4350 of 2019. Andrew Micallef v Moreton Bay Regional Council and NBN CO Limited. Engaged on behalf of MBRC to provide expert advice on ecology at Dwane Road, Delaneys Creek.
2019	Planning and Environment Court Appeal No. 771 of 2019. Laurence Lancini v Sunshine Coast Regional Council. Engaged on behalf of SCRC to provide expert advice on ecology. For operational works appeal at Dixon Avenue, Maleny.
2019	Planning and Environment Court Appeal No. 4300 of 2019. PPV Victoria Point Land Pty Ltd v Redland City Council. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2019	Planning and Environment Court Appeal No. 3829 of 2019. Sutgold Pty Ltd v Redland City Council and Paige Pty Ltd. Engaged on behalf of Redland City Council to provide expert advice on ecological matters.
2018	Planning and Environment Court Appeal No. 152 of 2018. Kenilworth Camping Pty Ltd v Sunshine Coast Regional Council. Engaged on behalf of SCRC to provide expert advice on ecology. For conditions appeal at Paulger Road, Kenilworth.
2018	Planning and Environment Court Appeal No. 1446 of 2018. Vella's Plant Hire Pty Ltd v Mackay Regional Council and Arthur Noonan and Alan Hayes. Engaged on behalf of Arthur Noonan to provide expert advice on vegetation clearing at Glendaragh Road, Glenella.
2018	Planning and Environment Court Appeal No. 1638 of 2018. Moreton Bay Regional Council v Trask Land Development Corporation No. 2 Pty Ltd. Engaged on behalf of MBRC to provide expert advice on vegetation clearing at New Settlement Road.
2018	Planning and Environment Court Appeal No. 93 of 2018. Moreton Bay Regional Council v Trask Land Development Corporation No. 2 Pty Ltd. Engaged on behalf of MBRC to provide expert advice on RoL Ecological Conditions at New Settlement Road.
2018	Planning and Environment Court Appeal No. 1639 of 2018. Moreton Bay Regional Council v Traspunt No. 14 Pty Ltd. Engaged on behalf of MBRC to provide expert advice of vegetation clearing at Burbury Road.
2018	Planning and Environment Court Appeal No. 627 of 2018. Moreton Bay Regional Council v Trask Development Corporation No. 15 Pty Ltd. Engaged on behalf of MBRC to provide expert advice of

	vegetation and ecological values for Trask development applications within the Morayfield South Growth Area.
2018	Planning and Environment Court Appeal No. 391 of 2018. David Trask And Traspunt No.4 v Moreton Bay Regional Council. Engaged on behalf of MBRC to provide expert advice on ecology. For an MCU at Greene Street, Rothwell.
2018	Planning and Environment Court Appeal No. 393 of 2018. David Trask And Traspunt No.4 v Moreton Bay Regional Council. Engaged on behalf of MBRC to provide expert advice on ecology. For an MCU at Cowper Court, Rothwell.
2018	Planning and Environment Court Appeal No. 1941 of 2018. David Trask And Traspunt No.4 v Moreton Bay Regional Council. Engaged on behalf of MBRC to provide expert advice on ecology. For an ROL at Greene Street, Rothwell.
2018	Planning and Environment Court Appeal No. 1940 of 2018. David Trask And Traspunt No.4 v Moreton Bay Regional Council. Engaged on behalf of MBRC to provide expert advice on ecology. For an ROL at Cowper Court, Rothwell.
2018	Planning and Environment Court Appeal No. 2036 of 2018. Ian Devlin for Lavina Pty Ltd v Brisbane City Council and Wolter Consulting Group. Engaged on behalf of Wolter Consulting Group to provide expert advice on ecology. For an MCU at Mt Petrie Road, Mackenzie.
2018	Planning and Environment Court Appeal No. 2257 of 2018. Shadforth Industries Pty Ltd v Sunshine Coast Regional Council. Engaged on behalf of SCRC to provide expert advice on ecology. For an quarry at Hapgood Road and Forestry Road, Landsborough.
2017	Planning and Environment Court Appeal No. 1953 of 2017. RET &SAM Pty Ltd as trustee for the MC Goldrick 7& Twine Property Investor Trust v BCC. Engaged on behalf of RET & Sam to provide expert advice on ecology. For an MCU at Chandos Street, Wynnum.
2012	Planning and Environment Court Appeal No. 3002 of 2018. David Trask And Traspunt No.4 v Moreton Bay Regional Council. Engaged on behalf of MBRC to provide expert advice on ecology. For a conditions appeal at Greene Street and Cowper Court, Rothwell.
2018	Planning and Environment Court Appeal No. 1350 of 2018. Moreton Bay Regional Council v Traspunt No. 13 Pty Ltd. Engaged on behalf of MBRC to provide expert advice of vegetation clearing.at Youngs Crossing Road.
2015	Planning and Environment Court Appeal No. 113 of 2015. Scott Alexander Harris v Minister for the Department of Natural Resources and Mines and Energy. Engaged on behalf of DNRME to provide expert advice of wetland vegetation clearing.at Strathmore Station.
2016	Supreme Court Appeal SC 932/16, Foxleigh Land Pty Ltd v Kevin Kenny & Ors. Engaged on behalf of Foxleigh Land Pty Ltd to provide expert advice to the Court on impacts to biodiversity offset areas.
2015 – 2016	Land Court Appeal EPA495-15, MRA496-15, MRA497-15. New Acland Coal Pty Ltd ACN 081 022 380 V Frank Ashman & Ors. and Chief Executive, Department of Environment and Heritage Protection Engaged on behalf of New Acland Coal Pty Ltd to provide expert advice to the Court on botanical and ecological issues relating to New Acland Coal Mine Stage 3 Expansion project.
2014 – 2016	Land Court Appeal AQL021-14 Philip Usher Constructions V Brisbane City Council; 3063 Ipswich Rd Darra. Engaged on behalf of Philip Usher Constructions to provide expert advice to the Court on botanical and ecological issues relating to the matter potential developable area.

2014 – 2015	P&E Appeal 1648 of 2014, Northbrook Corporation Pty Ltd V Noosa Shire Council and Other's: Engaged on behalf of Northbrook Corporation Pty Ltd to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a preliminary approval for an MCU to vary the effect of the Maroochy Plan 2000 and the Noosa Plan planning schemes for the mixed use community title development Noosa on Weyba.
2014	Land Court Appeal LVA051 – 14 (616-632 West Mont Cotton Road, Sheldon), Karreman Resources Pty Ltd v Valuer-General. Engaged on behalf of Department of Resources and Mines to provide expert advice to the Court on ecological issues relating to the Valuer General's Descision on Objection – Lot 100 on SP234173.
2014	R v Baden-Clay (SC467/2013). Investigations into foresnic botany evidence presented. Undertaken for Peter Sheilds Lawyers.
2010 – 2013	P&E Appeal 2763 of 2009, Rainbow Shores Pty Ltd v Gympie regional Council and ORS. Engaged on behalf of the Queensland Department of Environment and Resource Management to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a development permit for a master planned community at Rainbow Shores, Queensland.
2013	P&E Appeal No 2900 of 2012 Onyx Alliance Pty Ltd v Brisbane City Council and DEHP. Engaged on behalf of Onyx Pty Ltd to provide expert ecological advice on issues relating to the matter or a waste recycling centre to be located at 65 Telford Street, Virginia, Qld.
2009 – 2010	P&E Appeal 953 of 2008, Sailmist Pty Ltd V Sunshine Coast Regional Council. Engaged by Sunshine Coast Regional Council to provide expert advice to the Court on botanical issues relating to the matter of an application for a development permit for a master planned rural residential community at Eudlo Flats Road, Diddillibah, Queensland.
2009 – 2010	P&E Appeal 3566 of 2009, Casagrande Investments Pty Ltd V Redland City Council & ORS. Engaged on behalf of Casagrande Investments to provide expert advice to the Court on botanical issues relating to the matter of an application for a development permit for a material change of use for multiple dwelling with respect to land situated at 537-547 Redland Bay Road, Victoria Point, Queensland.
2010	P&E Appeal 3612 of 2009 Surfing world Sunshine Coast Pty Ltd V Sunshine Coast Regional Council and Orrs. Engaged on behalf of the Queensland Department of Environment and Resource Management to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a development permit for a shopping centre.
2010	P&E Appeal 132 of 2010 – Galtee Developments Pty Ltd V Sunshine Coast Regional Council. Engaged by Sunshine Coast Regional Council (Solicitors Wakefield Sykes). Provision of expert advice to the court on botanical issues relating to the matter of an application for a Development Permit for a reconfiguration of a lot for land at 556-578 Diddillibah Road, Diddillibah, Maroochy Shire, Queensland.

SELECTED PROJECT EXPERIENCE

- Large scale Regional Ecosystem mapping for multiple Gas Tenements in southern Queensland. Prepared for Santos GLNG
- Development and certification of Santos GLNG pre-clearance ecological and wetland survey methodology. Prepared for Santos GLNG.
- Regional ecosystem, BioCondition and plant Identification training for Arrow energy field ecologists at Moranbah and Chinchilla offices

- Advice on negotiated changes to EA conditions for the Fairview Dawson River release. Design and implementation of baseline for receiving environment monitoring program for frogs and birds. Prepared for Santos
- Developed rehabilitation program for the Santos Gladstone Liquid Natural Gas (GLNG), Gas Transmission Pipeline (GTP) project to address State and federal EA conditions. Included the development of rehabilitation targets for all land use types along the GTP Right of Way. Our field team also provided the field survey of reference and disturbance bio-condition sites along entire RoW. Prepared for ERM
- Principal Ecologist/Botanist for the terrestrial ecology and impact assessment for the gas fields component of the Ironbark Project EIS. Prepared for BAAM on behalf of Australia Pacific LNG.
- Weed assessment and management plans for RO plants and associated gas infrastructure. Included assessment and mapping of weed plant distributions on Origin's tenements in the southern Brigalow belt. Prepared for Laing O'Rourke Construction Australia
- Preparation of baseline flora assessment for the EIS for Solar Dawn Project, Kogan, Queensland. Prepared for ERM Pty Ltd.
- Pre-clearing assessment of gas wells, linear and static infrastructure. Confirmation and assessment of RE mapping, vegetation structure, floristics listed species, habitat and landscape features watercourses and wetlands across southern Queensland. Prepared on behalf of QGC
- Principal Ecologist/Botanist for the terrestrial ecology and impact assessment for the gas fields component of the APLNG Project EIS. Prepared for Worley Parson Pty Ltd.
- Desktop Review of potential rehabilitation strategies for Oakey Creek Mine. Prepared for Austecology Pty Ltd.
- Flora and Vegetation community technical chapter for the Hillalong mine EIS. Prepared for CDM Smith Pty Ltd.
- Flora and Vegetation assessment for the Carmichael Coal water pipeline. Prepared for CDM Smith Pty Ltd.
- Flora assessment and vegetation mapping for the Carmichael Coal thermal power station DA. Prepared for CDM Smith Pty Ltd.
- PMAV of the Drake Mine area, Collinsville, Queensland. Prepared for GHD.
- Baseline flora EIS assessment for the Central Queensland Inland Rail Project. Prepared for AECOM
- Baseline flora assessment and technical chapters for Springsure Creek Mine EIS and Haul Road EIS. Prepared for CDM Smith on behalf of Bandana Energy
- Weed survey and management plans for all of BMA's holdings in Queensland. Prepared for BMA
- Flora baseline EIS assessment and technical chapter for the extension to Eastern Creek Mine. Included field assessment for Ecological Equivalence Offsetting. Prepared for KBR on behalf of Xstrata
- Flora baseline EIS assessment and technical chapter for the proposed Lake Elphinstone Mine. Prepared for Rio Tinto
- Flora Assessment and Report, Mt Oxide MLA EIS. Prepared for AARC Pty Ltd
- Establishment of vegetation rehabilitation targets for the North Goonyella Mine, Completed for AustralAsian Resource Consultants on behalf of Peabody Pty Ltd.
- Establishment of vegetation rehabilitation targets for the Broadmeadow, North Wallanbah, Burton and Plumtree pits, Completed for AustralAsian Resource Consultants on behalf of Peabody Pty Ltd.

- EIS baseline flora and fauna survey, Tregoora Project. Republic Gold Pty Ltd.
- EIS Baseline flora and fauna survey, Northcote Project. Republic Gold Pty Ltd.
- EIS Baseline flora and fauna survey, Broadlea North Project. McCollum Environmental Pty Ltd.
- EIS Baseline flora and fauna survey, Annandale Project. McCollum Environmental Pty Ltd.
- EIS Baseline flora and fauna survey, Wilkie Creek Coal Mine Extension. Peabody Energy Australia Coal Ltd.
- EIS Baseline flora and fauna survey, Mackenzie South Project. Jellinbah Resources Pty Ltd. Baseline flora and fauna survey, Mt Roseby Project. Universal Resources Ltd.
- EIS Baseline flora and fauna survey, Lady Annie, Mount Kelly and Mount Kelly West Project. Copper Co. Pty Ltd.

Other Projects

- Development and implementation of a rehabilitation plan for a sandstone quarry on Seventeen Mile Road, Helidon. Prepared for Zambelli Environmental Pty Ltd
- New Generation Rolling Stock Maintenance Centre Wulkuraka, SE Queensland – Ecological Assessment and koala offset liability assessment: Prepared for Laing O'Rourke Pty Ltd
- Ecological Assessment report for a RaL for 37 Paten Road, The Gap. Prepared for DTS group
- Ecological Assessment report for a multi-unit MCU/DA for 216 Beckett Road, Bridgeman Downs. Prepared for DTS group
- Ecological Assessment report for a MCU/DA for 180 Viking Drive, Wacol. Prepared for DTS group
- Identification of Koala tree offset liability for the Mt Crosby Eastbank WTP - Sludge Disposal Area Expansion; Prepared for SEQ Water
- Witty Road Koala Offset Habitat Management Plan, Vegetation Management Plan and Rehabilitation Plan for 27 lot sub-division, Moggill, Queensland. Prepared for Paul Johnson.
- Wellington Rise Tree Survey. Terrestria was commissioned by Thomas & Coffey to assess the ecological values of a property located in Willowbank in the context of a proposed development on the subject site. Prepared for Thomas & Coffey
- Regional ecosystem, BioCondition and plant Identification training for environmental management staff at the Tarong Power station and Meandu Mine.
- Property Map of Assessable Vegetation Lot 13 RP893181. Mackay, Parklands Blue Metal Quarries. Prepared for Covey and Associates.
- Morayfield quarry ecological assessment. Baseline ecological assessment and State agency negotiation for material change of use application for a non-compliant hard rock quarry in SEQ under the sustainable planning act. Prepared for RW & G Johnston
- Ecological Assessment for St Joseph's Nudgee College rowing facility Brighton, Queensland. Prepared for FRC Environmental.

- Douglas Street Ecological assessment. Baseline ecological assessment and tree retention plan for material change of use application under the sustainable planning act. Prepared for Property Wealth 4 U.
- Bunyip Street baseline ecological assessment and tree retention plan for material change of use application under the sustainable planning act. Prepared for O'Conner Family Trust
- Braemar Rd covenant condition assessment. Assessment and reporting on ecological condition of a covenant area on a new subdivision. Prepared for Nu Vue Buderim Pty Ltd
- Bowen Park. Tree retention plan and tree health assessment for a Brisbane City Council park. Prepared for Place Design
- Albany Creek Road. Vegetation assessment and significant tree plot and evaluation for material change of use application under the sustainable planning act. Prepared for Place Design
- Horton Golf Course, baseline ecological assessment for material change of use application under the sustainable planning act. Prepared for Place Design
- Ecological Assessment of the Horeton Golf club for DA MCU application. Prepared for Place Design
- Vegetation assessment and mapping of the Cascade Valley Project Area, Rockhampton, Queensland. Prepared for Place Design.
- Trackstar Richlands. Vegetation community mapping, koala tree number estimates and weed survey for the Richlands – Springfield Rail alignment. Prepared for Place Design
- Matfield Road. Vegetation community assessment and mapping, weed assessment and threatened tree location mapping for a sub-division at Matfield Road. Moggill. Prepared for Place Design.
- Desktop Ecological Assessment: Shoalwater Bay Military Training Area. Prepared for ERM
- Colton Coal. Vegetation community mapping and ground water dependant ecosystem assessment in response to DEHP information request for the Colton Coal Mine study area. Prepared for Colton Coal
- City Links. Vegetation community mapping, condition assessment and rehabilitation plan for the City Links waste refuge site on the Gold Coast. Prepared for Veolia Environmental Services
- Biodiversity assessment, Eprapah Creek. Prepared for Redland Shire Council.
- South Coolom Road upgrade, ecological assessment and alignment advice. MWH Global Pty Ltd.
- Regional ecosystem assessment, NRW code response and PVMP, Dixon Road low level reservoir. Prepared for MWH Global Pty Ltd.
- Rare and threatened species survey, Camcos Rail Corridor EIS. Prepared for ARUP Consulting.
- Nautilus Stage Three, Walter Hay Drive, ecological assessment and alignment advice. MWH Global Pty Ltd.
- Jack Hills Mine Area, significant plant survey, Jack Hills, Western Australia. Ecologia Pty Ltd
- Francis Street, Tivoli, regional ecosystem assessment and NRW code response. Groundwork Plus Pty Ltd
- Flora and fauna habitat assessment, vegetation mapping and core biodiversity network development, Fitzgibbon Urban Development Area. Prepared for the Urban Land Development Authority.
- Flora and Fauna Assessment Paradise South and Paradise North MLA. Prepared for legend International Pty Ltd

- Fitzgibbon Urban Development Area, flora and fauna habitat assessment, vegetation mapping and core biodiversity network development. Urban Land Development Authority
- Ecological assessment and alignment advice, South Coolom Road upgrade. Prepared for MWH Global Pty Ltd.
- Dixon Road low level reservoir, regional ecosystem assessment, NRW code response and PVMP. MWH Global Pty Ltd
- Camcos Rail Corridor, rare and threatened species survey. ARUP Consulting Eprapah Creek biodiversity assessment. Redland Shire Council
- Waterway Downs, Coomera, environmental constraints and opportunities analysis. Thomson Projects Pty Ltd. 2009
Ecological assessment and alignment advice, Nautilus Stage Three, Walter Hay Drive. Prepared for MWH Global Pty Ltd.
- Redland Shire biodiversity inventory and regrowth analysis. Redland Shire Council. Redland Shire Environmental Inventory Stage 5. Redland Shire Council.
- Regional ecosystem assessment and NRW code response, Francis Street Tivoli. Prepared for Groundwork Plus Pty Ltd.
- LORDS Lutheran School, Pimpama, Queensland Environmental assessment and approvals. Lutheran Church of Australia.
- Beaudesert Shire Council Habitat mapping and review of Planning instruments for the Whole of Shire Planning Program. Beaudesert Shire Council.
- Scientific expert on advisory panel, Water Extraction from North Stradbroke Island Project.
- 1:10,000 mapping, classification and conservation prioritization of the wetlands of Richmond Valley Local Government Authority area. Richmond Valley Council.
- Flora assessment and vegetation mapping of the Eastern Pipeline Connector – North Stradbroke Island borefield, Pipeline and Draw down area. Southern Regional Water Pipeline Alliance (Ministerial Environmental Impact Statement).
- Expert Advisory Panel – Potential affects on ecological values of North Stradbroke Island from water table draw down. Southern Regional Water Pipeline Alliance.
- Ecological assessment of proposed sub-division at Mount Petrie, Brisbane. Carried out for compensation claim, court case. Powerlink Pty Ltd.
- Ecological Assessment and environmental approvals for Petrie Quarry extension. Boral Resources Pty Ltd.
- Ecological assessment and environmental approvals for Ormeau Quarry extension. Boral Resources Pty Ltd.
- Ecological assessment and environmental approvals for Dundowran Quarry extension. Boral Resources Pty Ltd.
- Vegetation assessment and preparation of EPBC referrals for Stuart North and Condor Box cuts. Completed for AustralAsian Resource Consultants on behalf of Queensland Energy Resources Ltd.
- Upper Coomera Shopping Centre Appeal, Ecological Assessment Report. Hopgood Ganim Lawyers.
- Open Space Management Plan for proposed residential development at Kookaburra Drive, Worongary. Westera Partners Pty Ltd.

- Flora and fauna for proposed residential sub-development, Stanborough Road, Gumdale. Fahreed Merchant.
- Flora and fauna assessment of proposed residential development at Sunrise Road, Eumundi, Queensland. Andrew Fogg and Associates.
- Flora and fauna assessment of proposed residential development at Browns Plains Road. PMM Pty Ltd.
- Flora and fauna assessment of proposed residential development at Kookaburra Drive, Worongary. Westera Partners Pty Ltd.
- Ecological assessment, vegetation mapping and environmental approvals of Oceanview sub-development, Mt Louisa, Townsville. Reana developments.
- Ecological assessment, Vegetation Mapping and constraints analysis of Oak Valley, Townsville. Reana developments.
- Agnes Waters power line rare and threatened flora assessment. Ergon Energy. Cooloolah Foreshore Management Plan. Cooloolah Shire Council.
- Quarterly grazing trial assessment for the Goodicum Crater pastures. Completed for AustralAsian Resource Consultants on behalf of Monto Minerals Pty Ltd.
- Wetland mapping and significant flora species survey of the northern Condamine River catchment. For the World Wildlife Fund.
- Vegetation survey and mapping of wetlands, North Stradbroke Island mining leases. Project included survey and mapping of 18 Mile Swamp. For Consolidated Rutile Limited.
- Vegetation Community mapping and significant flora species survey of the 18 Mile Swamp, North Stradbroke Island. For Consolidated Rutile Limited.
- Vegetation Community mapping and significant flora species survey of the Enterprise Mine site, North Stradbroke Island, EIS for extension to operations. For Consolidated Rutile Limited.
- Vegetation Community mapping and significant flora species survey of the Ibis Mine site, North Stradbroke Island EIS for extension to operations. For Consolidated Rutile Limited.
- Survey of aquatic plants in creeks and rivers. For Brisbane City Council.
- Rehabilitation monitoring, North Stradbroke Island mining leases: establishment of permanent monitoring sites as benchmarks in rehabilitated areas and mapping of pre-mining vegetation communities. For Consolidated Rutile Limited (now Sibelco Australia).

PUBLICATIONS

- G.T. Hastwell, A.J. Daniel. G Vivian-Smith (2008). Predicting invasive species: do subtropical native and invasive aquatic plants differ in their growth response to macronutrients? Diversity and Distributions 14(2): 243-251.
- A.J Daniel and M. Greenway (1995). Nutrient dynamics in two urban melaleuca wetlands. In: Wetlands for Water Quality Control Conference Papers, James Cook University, Townsville, 25-29 September 1995.
- M. Greenway and A.J. Daniel (1995). Melaleuca wetlands for water storage and nutrient removal. In Proceedings of the Conference on Downstream Effects of Land Use, April 1995, Rockhampton.
- A.J. Daniel, D. Small and P.G. Saffigna (1994). Comparison of microbial biomass levels on irrigated dairy farms as influenced by biodynamic and conventional farming systems. In Proceedings of International Symposium on Environmental Agriculture, Towards 2000, Gold Coast, Queensland, 5-8 June 1994.

Annexure B

Confidential**Email**

15 September 2021

Andrew Daniel
 Terrestria Pty Ltd
 PO Box 328, Wynnum QLD 179
 adaniel@terrestria.com.au

Dear Andrew

MRA026-21, MRA027-21, EPA028-21 - New Acland Coal Pty Ltd v OCAA Inc. & Ors

1. Introduction

- 1.1 We act for New Acland Coal Pty Ltd (**NAC**) in the above Land Court proceedings involving objections to NAC's mining lease applications (**MLA**) under the *Mineral Resources Act 1989* (**MRA**) and environmental authority (**EA**) amendment application under the *Environmental Protection Act 1994* (**EPA**) for the New Acland Coal Mine Stage 3 Project.
- 1.2 You were previously engaged by NAC as an expert witness in the initial Land Court proceedings, which concluded in 2017 (**Original Proceedings**). As you are aware, as a result of a series of subsequent challenges to the decision in the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).
- 1.3 The parties are:
 - (a) Applicant - NAC;
 - (b) Objector- Oakey Coal Action Alliance (OCAA); and
 - (c) Statutory Party - the Chief Executive of the Department of Environment and Science.
- 1.4 All other objectors to the MLA and EA applications have elected to be non-active parties in this hearing. Notwithstanding the other objectors are non-active parties, the Court must consider their objections.
- 1.5 OCAA has not nominated a flora expert in the Rehearing and you will not be required to participate in a joint expert process.

2. Draft Approval Documents

- 2.1 NAC and the Statutory Party have both filed draft EAs for the Land Court to consider in the event that it does recommend approval of the Project.
 - (a) On 15 February 2021 the Applicant filed a letter attaching a draft EA for stage 3. The Applicant's draft EA (Exhibit No. F.0003) represents NAC's current position on the conditions that ought to be included in any EA that may be issued for the Project, if the Project is approved. Proposed conditions relating to flora commence at p 46 of the document.
 - (b) On 10 March 2021 the Statutory Party filed a draft EA for stage 3 (Exhibit No. F.0020) which identified further changes to the Draft EA proposed by the Statutory Party. Proposed conditions relating to flora commence at p 53 of the document.
 - (c) Condition A2 of both of the draft EA's states:

In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview - Mine Area).

- 2.2 Figure 1 is found at page 71 of the Applicant's draft EA and p 79 of the Statutory Party's draft EA.
3. **Background**
- 3.1 The objection hearing concerns a proposed expansion for stage 3 of an existing mine.
- 3.2 In 2007, the Applicant first proposed the Project and the Coordinator-General declared the Project to be a significant project (later renamed as a "coordinated project") under the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).
- 3.3 In May 2007, MLA 50232 was applied for. Figure 1 (referred to above) shows the extent of MLA 50232 which is the subject of the current MLA.
- 3.4 In January 2014 NAC submitted the environmental impact statement (**EIS**) for the Stage 3 Project and in July 2014 an Additional Information to the EIS (**AEIS**). In December 2014, the Information Clarification to the AEIS was submitted. The Coordinator-General's Report on the EIS was release in December 2014.
- 3.5 In 2015 the application for the rail spur (MLA 700002) under the MRA and the environmental authority (**EA**) amendment were lodged. The draft EA was issued on 28 August 2015 and the MLs and EAs referred to the Land Court on 14 October 2015.
- 3.6 There were multiple objections to the MLA and the EA, some of which raised flora issues.
- 3.7 The recommendation decision of the Land Court in the Original Proceeding has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.8 In June 2017 NAC applied for judicial review of the Original Decision. Bowskill J decided that Member Smith's decision in respect of the Original Decision was set aside, with the matter being remitted to President Kingham of the Land Court to make a recommendation (**2018 Remitted Decision**).
- 3.9 The Land Court's recommendation in the 2018 Remitted Decision, was conditional on the Coordinator-General (**CG**) lowering the noise limits. NAC applied to the CG for the noise limits to be lowered on 3 December 2018. The CG approved that change on 12 February 2019. The Department of Environment and Science (**DES**) issued the Stage 3 EA on 12 March 2019. That EA was conditional on the granting of the MLs, which never occurred. As set out below, that the March 2019 EA was subsequently set aside.
- 3.10 The recommendation decision of the Land Court in the 2018 Remitted Decision has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.11 On 8 May 2019, NAC also applied to the CG to amend Stated Conditions B3 and H40, regarding the location of air quality monitoring points and the required environmental offsets. These updates were due to more recent surveys to land, the CG approved Environmental Offsets Strategy and the Air Emissions Management Plan. The change was approved in September 2020.
- 3.12 On 24 May 2019, NAC applied for a third change to the CG's conditions to Imposed Condition 4 (**IC4**). IC4 required the train load out facility to be built before the commencement of Stage 3 mining, so that it was the sole distribution point for the Stage 3 Project. In September 2020 the CG approved the change to IC4 which now requires the train load-out facility to be built within 2 years of the commencement of mining of Stage 3.

- 3.13 In 2019 the Court of Appeal declared that the Original Proceeding was affected by apprehended bias but allowed the EA to stand.¹
- 3.14 In October 2020, DES issued an amended EA, adopting the approved changes to the CG conditions.
- 3.15 In February 2021 the High Court determined that New Acland Coal's objections hearing should be remitted to the Land Court as the decision in the Original Proceedings and the 2018 Remitted Decision, which relied on findings of the decision in the Original Proceedings, were affected by apprehended bias. The High Court also set aside the Stage 3 EA.
- 3.16 The matter has therefore been remitted to the Land Court again for a recommendation, which will then be followed by a decision on the EA and the MLs.
- 3.17 In February 2021, the High Court determined that the First Remitted Hearing recommendation decision be set aside and the Stage 3 Project's objections hearing should be re-heard by the Land Court. The High Court also set aside the EA issued by the Statutory Party on 12 March 2019. Hence the March 2019 and October 2020 EAs have no effect.
- 3.18 The matter has therefore been remitted to the Land Court again for a new recommendation.
- 3.19 By letter dated 27 May 2021, NAC provided further information to the Statutory Party in relation to the activities that it says will be regulated by the proposed EA and attached a Project Overview figure.
- 3.20 The only mining (extraction) which is to be assessed for the proposed amended EA is as follows:
- (a) on ML50216, mining (extraction) which is related to and would not occur in the absence of ML50232, being:
 - (i) that part of Willeroo in ML50216 shown as "new mining area"; and
 - (ii) a strip of contiguous land generally 15-40m wide, with a maximum width of 100m in a limited area for the connection of existing mining on ML50216 into Manning Vale East, which is identified as "Extent of mining progression across shared boundary" in the Project Overview figure; and
 - (b) on ML50232 are those areas marked as 'Manning Vale West', 'Manning Vale East' and that part of 'Willeroo' all shown as "new mining area".

Instructions

- 3.21 You are engaged by NAC to act as an expert witness in the Rehearing in respect of Flora.
- 3.22 In your role as expert witness, you are instructed to prepare a statement of evidence to the Land Court in relation to matters relevant to your field of expertise that are raised in the MLA and EA amendment objections and that considers:
- (a) your statements of evidence filed in the Original Hearing;
 - (b) the material you have been briefed with;
 - (c) those objections raised in the MLA and EA amendment objections hearing which relate to flora; and

¹ Oakey Coal Action Alliance Inc v New Acland Coal Pty Ltd & Ors [2019] QCA 23.

- (d) the conditions in the Applicant's Draft EA and Statutory Party EA relevant to your area of expertise.

3.23 You may also be required to appear in person as an expert witness in the Rehearing.

3.24 You have been provided with access to an e-brief containing information relevant to your engagement. As additional information that is relevant to your engagement becomes available before and during the Rehearing, we will update your e-brief accordingly.

4. **Your statement of evidence**

4.1 Your statement of evidence must be addressed to the Land Court and signed by you, and must include the following information:

- (a) your qualifications;
- (b) all material facts, whether written or oral, on which the statement is based;
- (c) references to any literature or other material relied on by you to prepare the statement;
- (d) for any inspection, examination or experiment conducted, initiated or relied on by you to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was done by you or under your supervision;
 - (iii) the name and qualifications of any other person involved; and
 - (iv) the result;
- (e) if there is a range of opinion on matters dealt with in the statement, a summary of the range of opinion and the reasons why you adopted a particular opinion;
- (f) a summary of the conclusions reached by you; and
- (g) a statement about whether access to any readily ascertainable additional facts would assist you in reaching a more reliable conclusion.

4.2 You should also confirm at the end of your statement of evidence, each of the following:

- (a) the factual matters stated in the statement are, as far as you are aware, true;
- (b) you have made all enquiries that you consider are appropriate;
- (c) the opinions stated in the statement are genuinely held by you;
- (d) the statement contains references to all matters you consider significant;
- (e) you understand your duty to the court and have complied with that duty;

- (f) you have read and understand the rules contained in Part 5 of the *Land Court Rules 2000* (Qld)² (**Rules**), as far as they apply to you; and
- (g) you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

5. **Your responsibilities as an expert witness**

- 5.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 5.2 We draw your attention to Part 5 of the Rules, which sets out the duties of expert witnesses. Specifically, under rule 24C of the Rules you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 5.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

6. **Timeframes**

- 6.1 Your statement of evidence is due to be filed on Friday, 24 September 2021.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely



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Our ref 12408/17428/80196876

² A copy of Part 5 of the Rules is contained in your e-brief (**Part 1 Document G1**) and is also attached. Also in your e-brief and attached is a copy of Land Court Practice Direction 6 of 2020 "Expert evidence in the Land Court" (**Part 1 Document G2**).

Annexure C

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

STATEMENT OF EVIDENCE TO THE LAND COURT BY DR ANDREW JOHN DANIEL

1. Expert's details and qualifications

1.1 Name

(a) My name is Andrew John Daniel.

1.2 Insert address

(a) My business address is 4/135 Bay Terrace, Wynnum 4178.

1.3 Qualifications

(a) I hold the following qualifications:

(i) Bsc(Hons) Biological Sciences University of Exeter

(ii) PhD, Ecology, Griffith University

(b) Annexure A to this statement is my curriculum vitae.

2. **Instructions**

- 2.1 I have been instructed by Clayton Utz on behalf of New Acland Coal Pty Ltd (**NAC**) to prepare a statement of evidence to the Land Court in relation to the objections lodged in opposition to NAC's New Acland Coal Mine Stage 3 Expansion project (**the Project**).
- 2.2 A copy of my letter of instructions from Clayton Utz dated 22 January 2016 is Annexure B to this statement.
- 2.3 In summary, my instructions are to prepare a statement of evidence to the Land Court addressing:
- (a) the propositions identified in paragraphs 20 - 26 of Part 2 of the Applicant's Notice of Additional Issues, a copy of which is Annexure C to this statement; and
 - (b) certain matters relevant to my field of expertise that have been raised in lay witness statements filed by objectors in these proceedings (Annexure D);
 - (c) Opinion and findings on terrestrial flora matters raised in MLA and EA objections are cross referenced with my 'Opinion and Findings' in Section 5 of this report (Annexure E).

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3. Facts and assumptions

3.1 In producing this statement, I have relied on the following facts and assumptions:

- (a) This report has been prepared to assist the Land Court for the purpose of providing expert assessment and advice to the Court on the flora, vegetation and ecological values of proposed New Acland Coal Stage 3 expansion within Mine Lease Application (MLA) 50232 and MLA 700002 (**Figure 1**).
- (b) MLAs 50232 and 700002 the subject of the application are a 3,668ha parcel 65ha ha of land located immediately south of the current New Acland Coal Mine (**Figure 1**).
- (c) The following methodologies were employed for the report.
 - I have conducted a review of the documents provided by Clayton Utz within the expert's brief, and other relevant information to reach my conclusions.
 - The assessment of potential impacts on the site's flora and vegetation communities is based on the proposed implementation of the Stage 3 mine void areas provided from the shape file "ECOLOGY_SKM_DisturbanceFootprintArea_AMG56" produced by SKM (Figure 2). The area of proposed disturbance is approximately 1,592 ha.
 - Aerial photographs of the site reviewed were 1987, 1991 and 2015 (**Figure 3, 4 and 2**).
 - Information gained from this phase of the study was used to identify the likely type, age-structure and condition of extant vegetation communities and their connectivity to the surrounding landscape.
 - I conducted field investigations on:
 - September 7-9, 2015 - Site familiarisation and identification of major vegetation community types and distribution;
 - October 12-16, 2015, Vegetation community assessment and targeted threatened flora species searches;
 - November 16-19, 2015 - Vegetation community assessment and targeted threatened flora species searches.
- (d) Field investigations included the assessment of dominant flora within communities and general species composition. Estimates of height and cover of ecological dominant layers and sub-strata were also estimated in order to classify vegetation community types (Neldner et al., 2012). Results from this study are presented as an updated regional ecosystem map provided in **Figure 5**.
- (e) Information reviewed, together with the field investigations, have been used to reach conclusions about the potential impacts of the proposed development on the extant flora, vegetation communities.

- (f) MLA 50232 and MLA 700002 are located on the eastern margin of the Southern Brigalow Belt within Bioregion 11.
- (g) The land use in the locality is dominated by agriculture (**Figure 2**).
- (h) Extant native vegetation communities within MLA 50232 are characterised by small poorly linked patches of disturbed vegetation scattered across the MLAs (**Figure 2**).
- (i) The matrix in which these fragmented communities occur is dominated by land cleared and maintained for agricultural purposes.
- (j) Surface geological mapping was adapted from "Updated groundwater model technical report Appendix F, Additional Environmental Impact Statement (AEIS) and Queensland detailed surface geology 2015 downloaded from the Department of Natural Resources.
- (k) The landscape is characterised by low rolling hills and limited creek flats. The higher areas especially within the north-west are dominated by soils derived from Tertiary basalt flows overlying clays derived from Permian sandstones. Vegetation communities on the black basaltic clays are characterised by tall mountain coolibah *Eucalyptus orgadophila* woodlands with minor occurrences of grasslands. The brown Permian sandy clays that dominate the low rolling hills of the central and southern areas support tall poplar box *Eucalyptus populnea* woodlands and brigalow *Acacia harpophylla* open forests. Restricted areas associated with Lagoon Creek are dominated by tertiary alluvial clays that support relicts of tall poplar box woodlands and brigalow open forests with some highly disturbed areas of grassland.

4. **Structure of statement**

4.1 In accordance with my instructions summarised in paragraph 2.3 above, my evidence comprises the following two parts:

- (a) Part A addresses the propositions identified in paragraphs 20 - 26 of Part 2 of the Applicant's Notice of Additional Issues; ~~and~~
- (b) Part B addresses certain matters relevant my field of expertise that have been raised in lay witness statements filed by objectors in these proceedings and matters raised in MLA and EA objections; ~~and~~
- (c) [REDACTED]
[REDACTED]
[REDACTED]

5. Opinion and findings

Part A - Opinion and findings on relevant propositions identified in Part 2 of Applicant's Notice of Additional Issues

The occurrence of threatened flora species has been identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions, leading to no net loss of threatened species (Applicant's Notice of Additional Issues; Part 2, Paragraph 20).

- 5.1 Threatened species referred to in this report are those species listed as Endangered or Vulnerable under the *Nature Conservation (Wildlife) Regulation (2006)* or the *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act).
- 5.2 Lobed blue-grass *Bothriochloa biloba* was delisted from the EPBC Act on 15 December 2013 and is listed as Least Concern under the *Nature Conservation Act (1992)* (NC Act) and is therefore not considered under threat. Impacts to this species are not required to be offset under Qld State laws.
- 5.3 Finger panic grass *Digitaria porrecta* was delisted from the EPBC Act on 14 December 2013 and is listed as Near Threatened under the NC Act. Impacts to this species are not required to be offset under Qld State laws.
- 5.4 The Bottle trees within the locality (*Brachychiton* spp.) are not a Threatened flora species and are common in the landscape. The proposed Stage 3 extension will have no significant long-term impact on the proliferation of this species within the locality.
- 5.5 Field assessments undertaken for the EIS and AEIS have been an appropriate response to requirements for undertaking an EIS in Queensland. NAC have undertaken threatened species surveys in:
- (a) August 2005
 - (b) February 2007
 - (c) February 2011
 - (d) June 2013
 - (e) August 2013
- 5.6 In addition to the surveys undertaken above, I have undertaken further studies in October and November 2015 that have identified the presence of one other threatened species hawkweed *Picris evae* (Vulnerable NC Act, 1992) within vicinity of MLA 700002 and confirmed the presence of Austral cornflower *Rhaponticum australe* (Vulnerable, NC Act 1992) within the Manning Vale West Pit area as stated by Glenn Beutel (Lay Witness Statement page 2).
- 5.7 The new population of Austral cornflower *Rhaponticum australe* was located within MLA 50232 whilst hawkweed *Picris evae* was located within the vicinity of MLA 700002. The locations are shown in **Figure 7**.

- 5.8 Whether or not these species will be impacted and the amount of these impacts will be known with the advent of the final engineering designs and preclearance surveys required under Condition 14 of the CG's report.
- 5.9 The species discussed within the Oakey Coal Action Alliance (OCAA) *Evaluation of EIS Terrestrial Ecology report* (OCAA, 2014) have been found within 30km of MLAs. The habitat preferences for these species along with their distributions are provided in **Table 1**. With the exception of *Sophora fraseri* all these species have potential to occur within the MLAs. All these species are also ground layer species that are seasonally very hard to detect. It is possible that these species may be present within the MLAs but have not been detected during base-line surveys for the EIS and AEIS.
- 5.10 It is possible that some threatened species populations have not been detected during the EIS process. Examination of the Threatened species possibly present within the MLAs and their known habitats and distributions, suggests that the MLAs do not represent habitat critical to the survival of these species within the local landscape.
- 5.11 Potential impacts to Threatened species not currently identified through the EIS process are protected through Appendix 1 Condition 14 (e) (p166) of the Coordinator General's report where it states "Should additional Matters of State Environmental Significance (MSES) species be located that were not previously identified during field surveys, the development of management plans and/or additional offsets may be required to address any significant residual impacts for matters of state environmental significance in accordance with the EOS (Environmental Offsets Strategy) for the project".
- 5.12 Targeted surveys for Threatened flora species that do or may occur are required at the appropriate time of year by appropriately qualified field botanists under Condition 14 of the Coordinator General's (CG's) report. These surveys are an appropriate approach to identify the presence and distribution of Threatened species that occur within the disturbance footprint.
- 5.13 Condition 13 of the CG's Report requires all threatened species found to occur within the disturbance footprint are offset according to the *Queensland Environmental Offset Policy (2014)*.
- 5.14 In response to the identified values NAC have drafted a:
- (a) Biodiversity Offsets Strategy (BOS); and
 - (b) Threatened Species Translocation Plan (TSTP).
- 5.15 The BOS and TSTP will require updating where preclearance surveys identify that previously unidentified Threatened species and new populations of previously identified Threatened species will be impacted. For example, if the detailed engineering drawings identify that Austral cornflower *Rhaponticum australe* and hawkweed *Picris evae* communities are to be impacted.

- 5.16 With regard to the long-term impacts of proposed activities on the survival of Threatened species within southern Queensland it is noted that both *Rhaponticum australe* and *Picris evae* are wide-spread within southern Queensland (**Figures 8 and 9**). The MLAs do not represent habitat critical to the survival of either species.
- 5.17 Similarly, Belson's panic *Homopholis belsonii* is also widespread within southern Queensland (**Figure 10**). The MLAs do not represent habitat critical to the survival of this species.
- 5.18 Whilst the offsetting of impacts to Finger panic grass *Digitaria porrecta* and other Threatened species that may possibly occur, but have not been found to date, is not required under the current conditions, disturbance to potential habitat for these species will be adequately offset through areas secured for the offset of other ecological values including mapped grasslands and Of Concern (Vegetation Management Act, 1999) Poplar box woodlands.
- 5.19 Requirements for pre-clearance surveys under Condition 14 of the CG's Report are adequate to identify the presence of Threatened species within the area of impact. Where impacts cannot reasonably be avoided Condition 13 of the CG's report is sufficient to ensure any threatened species identified within the impact area are appropriately offset. This process is an adequate response to ensure no long-term negative impacts on populations of listed Threatened flora species within the local landscape.
- 5.20 The proposed mitigation measures to offset impacts to Threatened species, include:
- (a) Biodiversity Offset Strategy (Appendix M; AEIS, 2014);
 - (b) Threatened Species Translocation Plan (Appendix L; AEIS 2014); and
 - (c) Conservation Zone Management Plan (Appendix J; EIS 2014).
- 5.21 The implementation of the proposed plans and strategies discussed above is entirely consistent with current best practise within the mining industry and will result in adequate offsetting of identified impacts to Threatened flora species.
- 5.22 Requirements for monitoring, maintenance and corrective actions within these plans and strategies are designed to ensure that populations and habitats of translocated and offset Threatened flora species are maintained into the future.

Table 1: Habitat preferences and likelihood of occurrence for additional threatened species identified in OC&AA Evaluation of EIS Terrestrial Ecology report.

Species	Habitat Preferences	Likelihood of Occurrence within MLAs	EIS and AEIS
<i>Dichanthium queenslandicum</i> King blue-grass	This species occurs on black cracking clay in tussock grasslands mainly in association with other species of blue grasses (<i>Dichanthium</i> spp. and <i>Bothriochloa</i> spp.) but also with other grasses restricted to this soil type (Simon, 1982; Fletcher, 2001). It is mostly confined to natural bluegrass grasslands of central and southern Queensland, including the Endangered EPBC ecological communities: Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin, and Natural Grasslands on Basalt and Fine-textured Alluvial Plains of northern New South Wales and southern Queensland. King blue-grass is endemic to central and southern Queensland where it occurs in three disjunct populations: 1) Hughenden district (one record); 2) from Nebo to Monto and west to Clermont and Rolleston; and 3) Dalby district, Darling Downs	Possible occurrence within grassland and open eucalypt communities with native grass ground layer subject to low grazing intensity. Particularly RE 11.8.11 within Manning Vale West Pit.	Discussed on Page 7 – 60 Table 7 -13 of EIS
<i>Thesium australe</i> Toadflax	Occurs in grassland or grassy woodland. Often found in damp sites in association with Kangaroo Grass (<i>Themeda australis</i>). Occurs in TEC: “Natural grasslands on basalt and fine - textured alluvial plains of northern New South Wales and southern Queensland (DoE 2013a). The austral toadflax occurs in New South Wales, the Australian Capital Territory, Queensland and Victoria. Its current distribution is sporadic but widespread occurring between the Bunya Mountains in south-east Queensland to north-east Victoria and as far inland as the southern, central and northern tablelands in New South Wales and the Toowoomba region.	Possible occurrence within grassland and open eucalypt communities with native grass ground layer subject to low grazing intensity. Particularly RE 11.8.11 within Manning Vale West Pit.	Discussed on Page 7 – 62 Table 7 -13 of EIS
<i>Solanum papaverifolium</i> (no common name)	Occurs on heavy clay soil in grassland or open eucalypt woodland (Bean 2004). Distributed from Jimbour and Warwick in Qld to Inverell to Quirindi and Singleton and west to Narrabri and Moree. (Bean 2004).	Possible occurrence within grassland and open eucalypt communities with native grass ground layer subject to low grazing intensity. Particularly RE 11.8.11 within Manning Vale West Pit.	Does not occur on WildNet search for 5km radius. Does occur on WildNet search for 30 km
<i>Solanum stenopterum</i> (no common name)	Inhabits grassland or woodlands of belah and poplar box (<i>Eucalyptus populnea</i>) on black, brown or red clay loam soils. It also grows on loamy ridges, along roadsides and in paddocks. (Bean 2004). Distributed from Gayndah to Moonie and west to Glenmorgan and Yuleba also Ashford in NSW. (Bean 2004).	Possible presence across MLAs where grazing pressure is low and ground layers are least disturbed e.g. Road Reserves	Does not occur on WildNet search for 5km radius. Does occur on WildNet search for 30 km
<i>Sophora fraseri</i>	It grows in moist habitats, often in hilly	Not likely to occur	Does not occur

Species	Habitat Preferences	Likelihood of Occurrence within MLAs	EIS and AEIS
Brush Sophora	terrain at altitudes from 60–660 m on shallow soils along rainforest margins in eucalypt forests or in large canopy gaps in closed forest communities (Queensland CRA/RFA Steering Committee, 1998).	within impact areas of MLAs.	on WildNet search for 5km radius. Does occur on WildNet search for 30 km
<i>Picris evae</i> hawkweed	Occurs in Eucalyptus open woodland with a grassy understorey composed of <i>Dichanthium</i> spp. Upper stratum species include <i>Eucalyptus melliodora</i>, <i>E. crebra</i>, <i>E. populnea</i>, <i>E. albens</i>, <i>Angophora subvelutina</i>, <i>Allocasuarina torulosa</i>, and <i>Casuarina cunninghamiana</i> (Holzapfel, 1994). Collections have been made along roadsides and in cultivated areas, such as paddocks, on black, dark grey or red-brown soils, reddish clay-loam or medium clay soils (DECC, 2005). Hawkweed occurs north of the Inverell area in NSW. Darling Downs and Moreton pastoral districts in south-east Queensland Border Rivers–Gwydir, Northern Rivers (NSW), South West Queensland, Border Rivers Maranoa–Balonne, and Condamine (Queensland) Natural Resource Management Regions.	Known to occur within road reserve along existing haul road.	Discussed on Page 7 – 61 Table 7 -13 of EIS and page 7 - 82

The type, extent and condition of threatened vegetation communities were identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions and the Draft EA conditions. It is not expected that there will be any additional significant impacts not subject to management conditions in place under the CG's imposed conditions and the Draft EA conditions (Applicant's Notice of Additional Issues; Part 2, Paragraph 21).

- 5.23 During the EIS process, field assessments of vegetation communities occurred in:
- (a) August 2005;
 - (b) February 2007;
 - (c) November 2008; and
 - (d) February 2011.
- 5.24 On-ground investigations identified the native vegetation community distribution and subsequently the extant TEC and MSES across the MLAs as required under the Terms of Reference for the EIS and AEIS.
- 5.25 Additional survey work undertaken in late 2015 refined the type, extent and condition of extant threatened vegetation communities across the MLAs. These data, together with refined surface geology mapping (**Figure 6**) have been used to produce a spatially explicit high resolution map of the distribution of regional ecosystems across the MLA (**Figure 5**).
- 5.26 This high resolution regional ecosystem map can be used to accurately assess the impacts to flora communities deemed threatened under State and federal law.

Threatened ecological communities

- 5.27 ~~The accurate high resolution map of the regional ecosystems within MLAs shows that the proposed project will result in the clearing of 28.5 ha of threatened ecological communities listed under the EPBC Act and 120 ha of regional ecosystems listed as MSES under State legislation. The remaining 6ha difference arises from the inclusion of some vegetation patches that are marginally Remnant in structure but that have been included under the precautionary principal.~~

The accurate high resolution map (see Figure 5) of the regional ecosystems within the MLAs shows that the proposed project will result in a total clearing of 89.45 ha. This includes 61 ha of threatened ecological communities listed under the EPBC Act, which are also regional ecosystems listed as MSES under State legislation (REs 11.3.1, 11.9.5, 11.8.11) as well as 28.45 ha (REs 11.3.2, 11.9.10, 11.9.13, 11.9.7) of Of Concern REs that are not considered to be TEC.

- 5.28 ~~The increase from 84 ha of potentially impacted MSES in CG's report to the 120 ha mapped in Figure 5 is largely due to the inclusion of a previously unmapped area RE 11.8.11, a grassland[†] located within the Manning Vale West pit area. This grassland is~~

[†] At the state level remnant grasslands are defined as "an area of vegetation that:
 • has not been cultivated for 15 years; and

~~approximately 30.6 ha and is considered Of Concern under the Vegetation Management Act (1999) (VM Act).~~

The EIS stated that 82.6 ha of MSES would be impacted by the proposed mine extension (Table 7-18 page 7 -78 EIS, 2009). My mapping has identified that RE 11.8.11, a grassland located within the Manning Vale West pit area, is an area of 30.6 ha of TEC, which will be impacted. My mapping also shows 43 ha of RE 11.3.21 which is non-remnant grassland within the Willeroo Pit area that should not be included. Addition of small patches of remnant Endangered and Of Concern vegetation around the Willeroo Pit area account for the remaining 18.85 ha that in total make up the estimated 89.45 ha of MSES that will be impacted.

- 5.29 There appears to be some confusion regarding the remnant status of the grasslands, in particular those areas mapped as RE 11.3.21 (Glenn Beutel's lay witness statement page 6).
- 5.30 I note here that within SKM (2011) the report states that grasslands mapped as RE11.3.21 within the Wileroo Pit are not Remnant (VM Act). I have investigated these grasslands after early summer rains (November and December 2015) and found that they do not appear to meet requirements for native cover and species compositions according to Neldner et al., (2012) and would therefore be non-remnant.
- 5.31 In my opinion approximately 43 ha of grasslands immediately south of Lagoon Creek within the Wileroo Pit area have been disturbed in the past (**Figure 4**) and in their current condition do not qualify as Remnant under the VM Act (Neldner et al., 2012). Furthermore, the Queensland Herbarium preclear mapping includes these areas as RE 11.3.17, a forest community. Dense acacia regrowth within some of these grasslands combined with development of wooded communities along the fence lines to these grasslands indicate that some of these areas were indeed originally wooded vegetation communities and therefore do not qualify Remnant as grasslands under the VM Act.
- 5.32 The offsetting of these grasslands has already been included within the grassland offset area and remain a commitment under the current Biodiversity Offset Strategy (June 2014) through which 247 ha of RE 11.3.21 and 11.8.11 will be protected and restored.

Remnant vegetation

- 5.33 ~~There will be an initial impact on 204ha of Remnant vegetation (VM Act, 1999). This represents 5.7% of MLA 50232. The 120ha of threatened communities that will be disturbed represent 3% of MLA 50232 by area and 7% of the disturbance area. Most of this vegetation is fragmented isolated and in relatively poor condition. The wooded communities are subject to grazing and the grasslands are vulnerable to overstocking with cattle or from cropping.~~

~~▲ contains native species normally found in the regional ecosystem; and
▲ is not dominated by non-native perennial species".~~

There will be an impact by clearing 228ha of Remnant vegetation, which includes the 89.45 ha of regional ecosystems referred to in paragraph 5.27. The balance of 138.55 ha is Of Least Concern vegetation (VM Act, 1999). Based on MLA 50232's area size of 3,668 ha, this represents 6.2% of MLA 50232. The 61 ha of threatened ecological communities that will be disturbed represent 1.7% of MLA 50232 by area and 4.1% of the disturbance area (based on a disturbance footprint on MLA 50232 of 1,466 ha). Most of this vegetation is fragmented, isolated and in relatively poor condition. The wooded communities are subject to grazing and the grasslands are vulnerable to overstocking with cattle or from cropping.

- 5.34 Areas of MSES that will be impacted by the current proposal are relatively small, isolated and generally in poor condition. Many of these patches have been cleared previously and have now regrown to reach remnant status under the VM Act (1999) with few large relict trees present. Impacts to native vegetation communities will be appropriately offset through the required development and implementation of an Environmental Offset Strategy (EOS) according to requirements within the CG's Report Condition 13.
- 5.35 NAC has developed a Biodiversity Offsets Strategy (Revised Biodiversity Offsets Strategy, Appendix M AEIS 2014) that addresses the offset requirements for the current proposal. Once updated this Strategy will be an adequate response to ensure that there are no long-term negative impacts on threatened vegetation communities within the local landscape.
- 5.36 The offset strategy is the appropriate mechanism by which impacts to threatened communities (VM Act) will be balanced through securing and remediating currently degraded areas.
- 5.37 Updating and implementing of New Acland Coal's Revised Biodiversity Offsets Strategy (Appendix M, AEIS 2014) in line with Condition 13 will ensure that there will be no residual impacts to native vegetation communities within the local landscape in the long-term.

The upgrade of the local electricity grid with new powerlines is located outside the MLAs, other than the connection from the rail loop, and will be subject to a separate approvals. In any event, the design and upgrade to the electricity grid can be managed to ensure retention of most of the verge vegetation and requires clearing of only a small amount of native vegetation. (Applicant's Notice of Additional Issues; Part 2, Paragraph 22).

- 5.38 On-ground surveys of the proposed powerline corridor have been conducted to better inform the final design to minimise impacts on native vegetation communities and Threatened flora species. Preclearance surveys will be conducted and further matters of conservation significance will be identified and offset according to requirements under a separate development application currently being developed under the *Sustainable Planning Act (2009)* (SPA, 2009).

5.39 The upgrade of the local electricity grid with new powerlines is located outside the MLAs other than connection from the rail loop and will be subject to a separate development application under SPA (2009).

5.40 The design and upgrade to the electricity grid can be managed to ensure retention of most verge vegetation and requires clearing of only a small amount of native vegetation.

The implementation of the Pest and Weed Management Plan will avoid significant impacts from listed weed species. (Applicant's Notice of Additional Issues; Part 2, Paragraph 23).

5.41 Site investigations by AD in October and November 2015 of the MLAs and surrounds has revealed that infestation levels of listed weed species within the MLAs are similar to similar land types within the surrounding landscape.

5.42 Under the *Land Protection (Pest and Stock Route Management) Act (2002)* (LP Act, 2002), NAC is required to keep listed weed species under control. Class 2 flora species known to occur on the site include:

- (a) Mother of millions *Bryophyllum delagoense*
- (b) African boxthorn *Lycium ferocissimum*
- (c) Velvet tree pear *Opuntia tomentosa*
- (d) Prickly pear *Opuntia stricta*

5.43 Condition 9. (k) Impacted land (CG's Report) states "The proponent is required to ensure the equivalent land areas are improved from the time of securement to enhance the productivity of the land uses (for example: soil erosion, pest and weeds, management, use)".

5.44 The proponent has committed to implement a Pest and Weed Management Plan (commitment 212) (Appendix D AEIS) (CG's report page 42; Pest plants and animals). The plan presents an integrated approach to managing declared pest plant infestations and includes the use of controlled burns, manual removal and herbicide application to reduce weed infestations.

5.45 The CG's Condition 15 (Lagoon Creek Conservation Zone Management Plan) requires:

- (a) (c) The proponent must develop and implement a Lagoon Creek Conservation Zone Management Plan (CZMP) that aims to achieve:
 - (i) (ii) a program of weed management to assist natural regeneration of native species and protect remnant areas from impacts of weed invasion; (target < 20% weed cover).

5.46 The control of weed species is a statutory condition of every mining lease:

- 5.47 “The holder,of a mining tenement must take reasonable steps to ensure no reproductive material of a declared plant is moved onto, within or from the land to which the tenement applies”.
- 5.48 The implementation of the Pest and Weed Management Plan is sufficient to meet the proponent’s obligations to control listed weed species.
- Given:*
(a) much of the native vegetation that will be removed by the proposed mine extension occurs on areas previously cleared for agriculture; and
(b) vegetation communities that are MSES will be offset on land that similarly has been previously cleared for agriculture,
rehabilitation is considered to be an adequate response to the loss of any native vegetation communities. (Applicant’s Notice of Additional Issues; Part 2, Paragraph 24).
- 5.49 NAC have developed a Final Land Use and Rehabilitation Plan (FLURP) that will guide the rehabilitation of disturbed land to Class 3 and Class 4 land as required by Condition 7 (CG’s Report).
- 5.50 There are no requirements to rehabilitate disturbed land to natural habitats. The offsetting of impacts to native vegetation communities that are MSES is realized through the BOS as required through Condition 13 (CG’s Report).
- 5.51 Areas proposed as offsets are required to be protected by legally binding mechanism that ensures protection and management of offset areas along with evidence that values impacted can be offset (CG’s Report Condition 13 (a) iii (B)).
- 5.52 Much of the native vegetation that will be removed by the proposed mine extension occurs on areas previously cleared for agriculture. These communities whilst Remnant according the VM Act are not “old growth” lacking values associated with communities that have not been cleared since European settlement. The lack of old growth values decreases the time in which offsets will replace lost ecological values.
- 5.53 Vegetation communities that are MSES will be offset on land within the vicinity that similarly has been previously cleared for agriculture or disturbed by thinning and grazing. Regrowth communities provide a sound basis for fostering offsets that will mature to provide ecological values similar to those offset.
- 5.54 NAC own sufficient land within the immediate vicinity on which offset areas can be established. These lands contain areas of regrowth vegetation that if appropriately managed will provide similar values to those that will be lost by the implementation of the Stage 3 extension.
- 5.55 Offset areas strategically located to increase physical connectivity within the landscape will increase the ecological functioning of the local landscape. The current focus of providing offsets within a corridor centred around Lagoon Creek will increase the

ecological benefits of the offsets provided as they will provide a corridor with associated available surface waters.

The Draft EA conditions are adequate to protect significant flora and vegetation communities within the footprint of the Revised Expansion Project. (Applicant's Notice of Additional Issues; Part 2, Paragraph 25).

- 5.56 Condition I2 is sufficient to provide for the protection and rehabilitation of Lagoon Creek and Bottle Tree Hill conservation zones.
- 5.57 The EA conditions properly provide for preclearance surveys for MSES and offsetting of identified impacts. These conditions are a standard, acceptable and appropriate response to need to identify and offset impacts to floristic matters considered to be of significance to the State.
- 5.58 For clarification it would be beneficial to add direct reference to MSES that are communities to Conditions I11 and I12. Inserting the phrase 'and communities' immediately after the word 'species' in the first line of both I11 and I12 in my opinion would make the conditions more explicit.
- 5.59 Note that in I8 (b) Matters of state environmental significance (MNES) is an incorrect acronym it should read Matters of State Environmental Significance (MSES).
- 5.60 The Draft environmental authority EPML00335713 conditions are adequate to protect significant flora and vegetation communities within MLA 50232 and MLA 700002.

In relation to paragraph 1(e)(v) of the OCAA List of Issues based on vegetation community composition it is unlikely that any of the relevant communities mapped are groundwater dependant. Regardless of whether or not drawdown will impact mapped vegetation communities, it is unlikely to impact vegetation that is otherwise mapped as MSES. (Applicant's Notice of Additional Issues; Part 2, Paragraph 26).

- 5.61 Terrestrial vegetation generally accesses soil water less than 5m in depth (Eamus et al., 2015). Using a conservative approach, vegetation communities are thought unlikely to be groundwater dependent where groundwater is greater than 10m below the surface.
- 5.62 AD has mapped, using aerial photograph interpretation, all vegetation and attributed Regional Ecosystems to all vegetation polygons that occur over groundwater predicted to be less than 10m below the surface according to data provided by SLR consulting (**Figure 11**).
- 5.63 None of the vegetation communities mapped as regional ecosystems by this analysis and contained within the mapped drawdown zone are community types known to be obligatory GDEs. That is, the species characteristic of the ecologically dominant layers within these communities are not phreatophytic and similar communities are known to occur where groundwater is not accessible.

- 5.64 None of the communities within the mapped drawdown zone appear to be dependent on the surface expression of groundwater. That is, no naturally occurring wetland communities maintained by groundwater discharge were detected.
- 5.65 Most of the mapped vegetation communities associated with shallow groundwater occur on alluvium (**Figure 11**). Vegetation in the north-west and south-east of the drawdown zone appear to be associated with Myall and Oakey Creek alluvial aquifers and are unlikely to be affected by the proposed mining activities (AEIS Appendix F section 3.1)
- 5.66 Some vegetation communities mapped as MSES located within the vicinity of Lagoon Creek may have access to groundwater for some part of the year (**Figure 11**). Appendix F of the AEIS Figure 6-20 shows the maximum extent of predicted effects on the alluvial aquifer. It appears that mining activities may affect groundwater levels under some small patches of MSES vegetation communities within this locality.
- 5.67 The exercise of mapping potential GDEs is a risk based approach using current modelled data on depth to groundwater. Additional monitoring bores are planned for this area and will help establish whether indeed these vegetation patches are likely to be groundwater dependent.
- 5.68 Potential impacts to the patch of Endangered RE 11.3.17 (**Figure 11**) located within the predicted alluvial drawdown zone on the edge of MLA 50232 can be detected and addressed through current management plan arrangements. This patch is located within the area protected under the Conservation Zone Management Plan (CZMP) (Appendix J-6 EIS 2014) as required under Condition 15 of the CG's Report. Any impacts to this community can be detected through prescribed monitoring within the CZMP and any impact mitigated.
- 5.69 The areas of Of Concern RE 11.3.2 (**Figure 11**) are located on the margin of the predicted drawdown zone. This community is dominated by a tall woodland canopy with a grassy understorey. The flora species of the ground layer are unlikely to be groundwater dependent limiting possible impacts to the canopy trees. The poplar box *Eucalyptus populnea* that dominate the canopy of these patches is known to naturally dominate vegetation communities that have no access to groundwater and are unlikely to be significantly impacted by groundwater drawdown.
- 5.70 The area of Endangered RE 11.3.17 to the south-east of the project area is located within the predicted drawdown zone. Again the canopy and sub-canopy trees that dominate this community include polar box *Eucalyptus populnea*, Brigalow *Acacia harpophylla* and belah *Casuarina cristata*. All of these species are known to form healthy communities without access to groundwater and are unlikely to be significantly impacted by groundwater drawdown.

5.71 See table at Annexure D and E to this statement.

6. **Summary of opinion and findings**

6.1 The following summarises my opinion and findings:

- (a) MLA 50232 and MLA 700002 are characterised by scattered small patches of Remnant vegetation in a matrix dominated by agriculture. The proportion of Remnant vegetation within the MLA that will be directly disturbed by the current application is low.
- (b) The occurrence of threatened flora species has been identified and will be further assessed through pre-clearance surveys. Any impacts to these populations will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions, leading to no net loss of threatened species.
- (c) The type, extent and condition of threatened vegetation communities have been mapped at a large scale across the MLAs and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions and the Draft EA conditions. It is not expected that there will be any additional significant impacts not subject to management conditions in place under the CG's imposed conditions and the Draft EA conditions.
- (d) The upgrade of the local electricity grid with new powerlines is located outside the MLAs, other than the connection from the rail loop, and will be subject to a separate approval. In any event, the design and upgrade to the electricity grid can be managed to ensure retention of most of the verge vegetation and requires clearing of only a small amount of native vegetation.
- (e) The implementation of the Pest and Weed Management Plan will avoid significant impacts from listed weed species.
- (f) There are sufficient areas of regrowth on land under the control of NAC to provide suitable offsets that will provide equivalent ecological values in a timely manner in a configuration that enhances their contribution to the local ecology. Given much of the MSES native vegetation that will be removed by the proposed mine extension consists of small isolated fragments that occur in the most part on areas previously cleared for agriculture, rehabilitation of regrowth within the locality is considered to be an adequate response to the loss of any native vegetation communities.
- (g) The Draft EA conditions are adequate to protect significant flora and vegetation communities within the footprint of the Revised Expansion Project.

- (h) Using a conservative risk based approach some patches of MSES vegetation have been identified as possibly having access to groundwater within the alluvial aquifer. A small number of these patches are situated over groundwater that is predicted to be affected by mining. Those patches that may experience groundwater drawdown are communities known to naturally occur in areas where there is no access to groundwater and are therefore thought unlikely to be significantly affected by mining activities.

Part C - Opinion and findings on matters raised [REDACTED] with regards to the second IESC advice dated 10 December 2015

7. Response to Annexure C (OCA.0069 Exhibit 824) - [REDACTED] – Analysis of whether IESC advice has been addressed by NAC

Issue raised in IESC Advice 10 December 2015	[REDACTED]	AD Response
89. Key potential impacts The IESC's advice of April 2014 identified significant uncertainty in the proponent's groundwater model predictions. While the proponent's groundwater model has been improved, uncertainties remain in the hydrogeological conceptualisation and subsequent revised groundwater impact predictions including the magnitude of drawdown and the lateral extent of potential impacts. Based on the revised assessment documentation, key potential impacts resulting from the proposed project are to groundwater resources, groundwater and surface water users and groundwater dependent ecosystems (GDEs), including the EPBC Act-listed endangered ecological community Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant).		
93. Identification of GDEs, including EPBC Act-listed endangered ecological communities, has not occurred within the predicted lateral extent of groundwater drawdown, including outside of the proposed project area. Mapping of depth to groundwater and consideration of seasonal groundwater requirements of GDEs have not been provided.	[REDACTED]	A conservative approach to mapping potential GDEs was undertaken in order to offset the lack of seasonal groundwater data. Vegetation communities considered to potentially access groundwater included all vegetation where groundwater was modelled to be within 10m of the surface. This is considered a conservative approach as vegetation is unlikely to be able to access groundwater at depths greater than 5m in most landscapes and not greater than 2m within the current mapped drawdown area.

Issue raised in IESC Advice 10 December 2015		AD Response
94. Response 1. No. A number of key matters raised in the IESC's advice of April 2014 remain unresolved, including evidence for the existence and justification of hydraulic properties of faults; representation of model domain boundaries, final voids and groundwater users in the groundwater model; identification of surface water quality objectives; and appropriate identification of GDEs. The unresolved matters, particularly regarding the chosen hydrogeological conceptualisation (specifically the representation of faults) and model calibration approach, which may be contributing to bias and over-prediction of groundwater heads, result in continued uncertainty in the proponent's groundwater model and hence impact assessment.		Issues regarding the modelling of groundwater levels is outside my area of expertise. Potential GDEs have been identified within the area of predicted drawdown. A conservative approach to mapping potential GDEs was undertaken in attempt to counter groundwater model uncertainties. No vegetation considered likely to be highly dependent upon groundwater was identified. Condition 10 of the CG's report requires that the groundwater model be validated and a monitoring program implemented. Should any changes to the predicted drawdown area occur due to updated modelling then Condition 10(c)(vii) that all potential impacts of groundwater drawdown are identified, mitigated and monitored.
102. <i>Groundwater dependent ecosystems</i> 9. Consistent with the IESC's April 2014 advice, GDEs need to be clearly identified within the zone of predicted groundwater impact. While the proponent utilised the Wetlandinfo tool, a systematic approach to identifying vegetation GDEs is still needed and should include:		
103. a. using the hydrogeological conceptualisation to identify areas of shallow groundwater,		The depth to groundwater area surveyed for potential GDEs included, basalt, alluvium and sandstone geologies. In order to offset groundwater model uncertainties, the potential impact area included all areas where

Issue raised in IESC Advice 10 December 2015		AD Response
		groundwater was modelled to occur within less than 10m of the surface. This is considered a conservative approach as vegetation is unlikely to be able to access groundwater at depths greater than 5m in most landscapes and not greater than 2m within the current mapped drawdown area.
104. b. maps that show depth to groundwater (ideally seasonal) contours in the basalt and alluvial aquifers, overlaid with vegetation and wetland mapping to aid identification of potential GDEs,		The depth to groundwater map includes the basalt and sandstone geologies. Seasonal variation was taken into account by investigating all areas where groundwater is predicted to occur within 10 m of the surface. This is considered a conservative approach as vegetation is thought unlikely to be able to access groundwater at depths greater than 5m in most landscapes and not greater than 2m within the current mapped drawdown area.
105. c. application of this approach to the full extent of predicted drawdown impacts associated with the proposed project including outside of the project area, and		Our approach to identifying potential GDEs was applied to the entire area of predicted drawdown as presented in Appendix F IESC Report; Groundwater Modelling Technical Addendum, New Acland Coal, New Acland revised Stage 3 Project AEIS, 13 August 2014
106. d. application of techniques from, for example, the Australian GDE Toolbox (Richardson et al., 2011) and Eamus et al. (2015), to confirm groundwater use by vegetation and groundwater discharge to surface water		The methods suggested in Eamus et al ., (2105) are not appropriate in this instance. They would be appropriate if important groundwater dependent ecosystems known to be reliant on groundwater for their survival were present within the area of predicted drawdown.

Issue raised in IESC Advice 10 December 2015		AD Response
bodies.	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Using a conservative approach that has identified all vegetation with even a remote chance of accessing groundwater, I have not been able to find any vegetation communities known to be dependent on groundwater. The communities identified are known to naturally occur without access to groundwater and therefore it is likely that groundwater is not essential for their survival.
107. 10. Identification of remnant patches of the EPBC Act-listed endangered ecological community Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant), a known vegetation GDE, is needed. Identification of, and assessment of potential impacts to, this endangered ecological community needs to occur within the predicted zone of groundwater drawdown, including outside the project area.	[REDACTED]	All areas of brigalow have been identified across the potential drawdown area. There is no evidence to suggest that the area of Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant), within the modelled drawdown area (limited to one 9ha patch of RE 11.9.5) is an obligate GDE. Indeed, soil profile analysis conducted for Brigalow soils within the MLA suggest that rooting depths much below 1m are unlikely and that increases in salinity and sodicity at these depths preclude root development. I cannot find any published references relating Brigalow vegetation communities with groundwater dependence. Indeed, neither the listing or conservation advice for Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) mentions any groundwater dependence and certainly does

Issue raised in IESC Advice 10 December 2015		AD Response
		not list it as a threat. In contrast, it is established that Brigalow is highly drought tolerant (Butler 2008). The location of the project area close to the easterly extent of Brigalow's distribution in an area with comparatively high summer and winter rainfall compared to more westerly limits of its distribution would suggest that Brigalow communities within this locality would not need to rely on groundwater even if they could access it. It is therefore not simply a matter of establishing fluctuations in groundwater associated with Brigalow communities.
121. <i>Groundwater dependent ecosystems</i> 20. Vegetation mapping and identification has largely only occurred within the project area. Identification of impacts to vegetation GDEs (including EPBC Act-listed endangered ecological communities containing Brigalow) caused by groundwater drawdown within the full extent of the proposed project's resultant impact (including outside of the mining lease area) is needed to support the existing proposed offset and monitoring conditions.		No GDEs that are reliant on groundwater have been identified. If as a result of the CG's condition 10 the model is updated and identifies a GDE, condition 10(c)(vii) provides that it will be accommodated. Stands of Brigalow have a readily identifiable photo-pattern and colouration. Patches large enough to qualify as the TEC (0.5ha) are detectable on large scale quality colour aerial photography. A desktop survey for these patches has been conducted for the project drawdown area.

7. **Definitions**

In this statement, unless otherwise defined, capitalised terms have the meanings given to them in the Affidavit of Bruce Douglas Denney dated 10 December 2015, and:

AD means Dr Andrew Daniel

AEIS means Additional Environmental Impact Statement

CG means Coordinator General

CZMP means Conservation Zone Management Plan

DA means Development application

EIS means Environmental Impact Statement

EOS means Environmental Offsets Strategy

EPBC means Environment Protection and Biodiversity Conservation Act 1999

FLURP means Final Land Use and Rehabilitation Plan

GDE means Groundwater Dependant Ecosystem

LP Act means Land Protection (Pest and Stock Route Management) Act 2002

MLA means Mine lease application

NAC means New Acland Coal Pty Ltd

NCA means Nature Conservation Act, 1992

RE means Regional Ecosystem

SKM means Sinclair Knight Mertz

SPA (2009) means Sustainable Planning Act 2009

TSTP means Threatened Species Translocation Plan

VMA means Vegetation Management Act, 1999

8. **Expert's statement**

8.1 I confirm that:

- (a) the factual matters stated in this statement are, as far as I know, true;
- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains reference to all matters I consider significant;
- (e) I understand I have a duty to assist the court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the Land Court Rules 2000, as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in these proceedings.

Dr Andrew John Daniel



.....
~~07 February 2016~~ 9 June 2016

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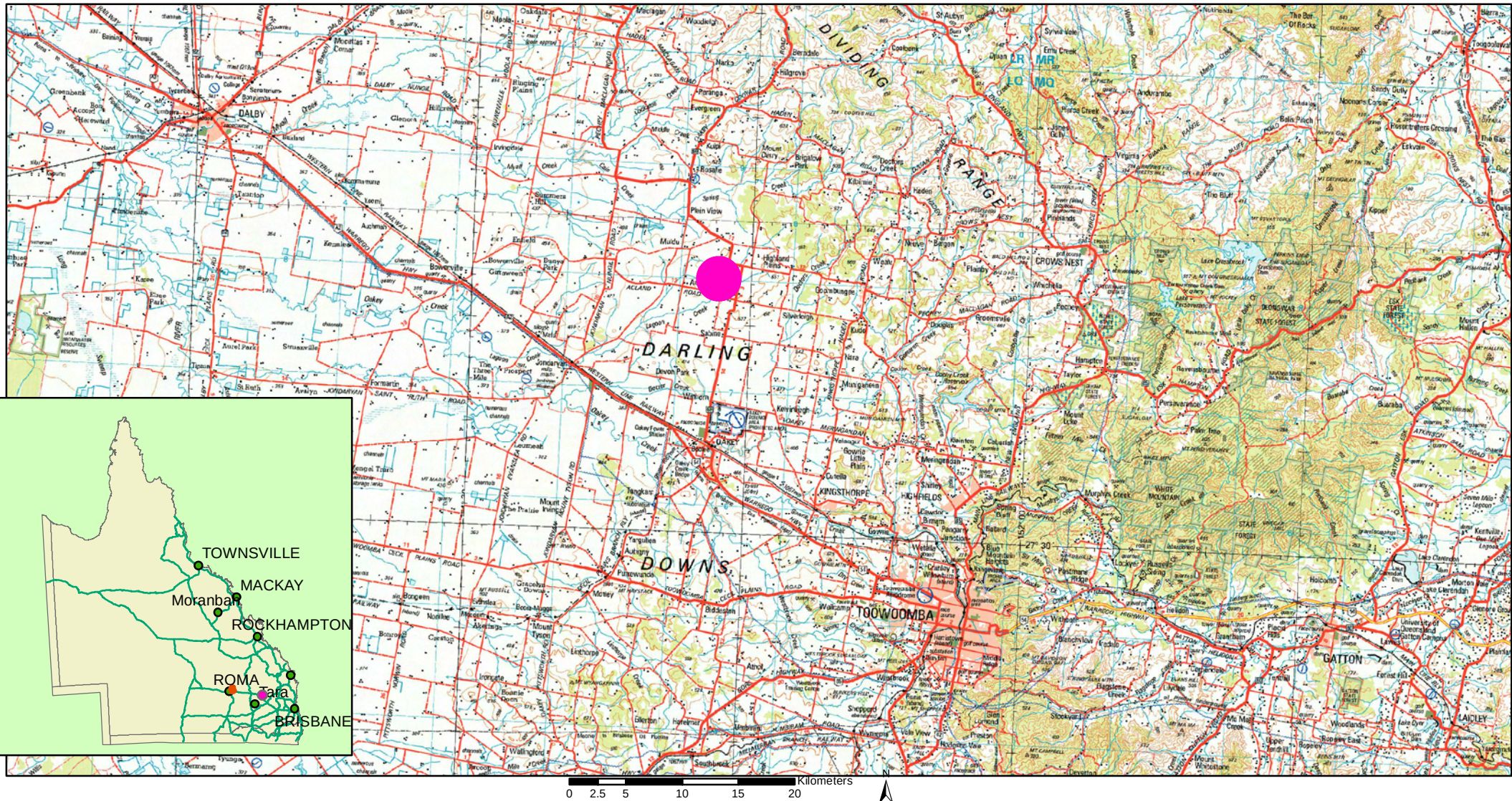
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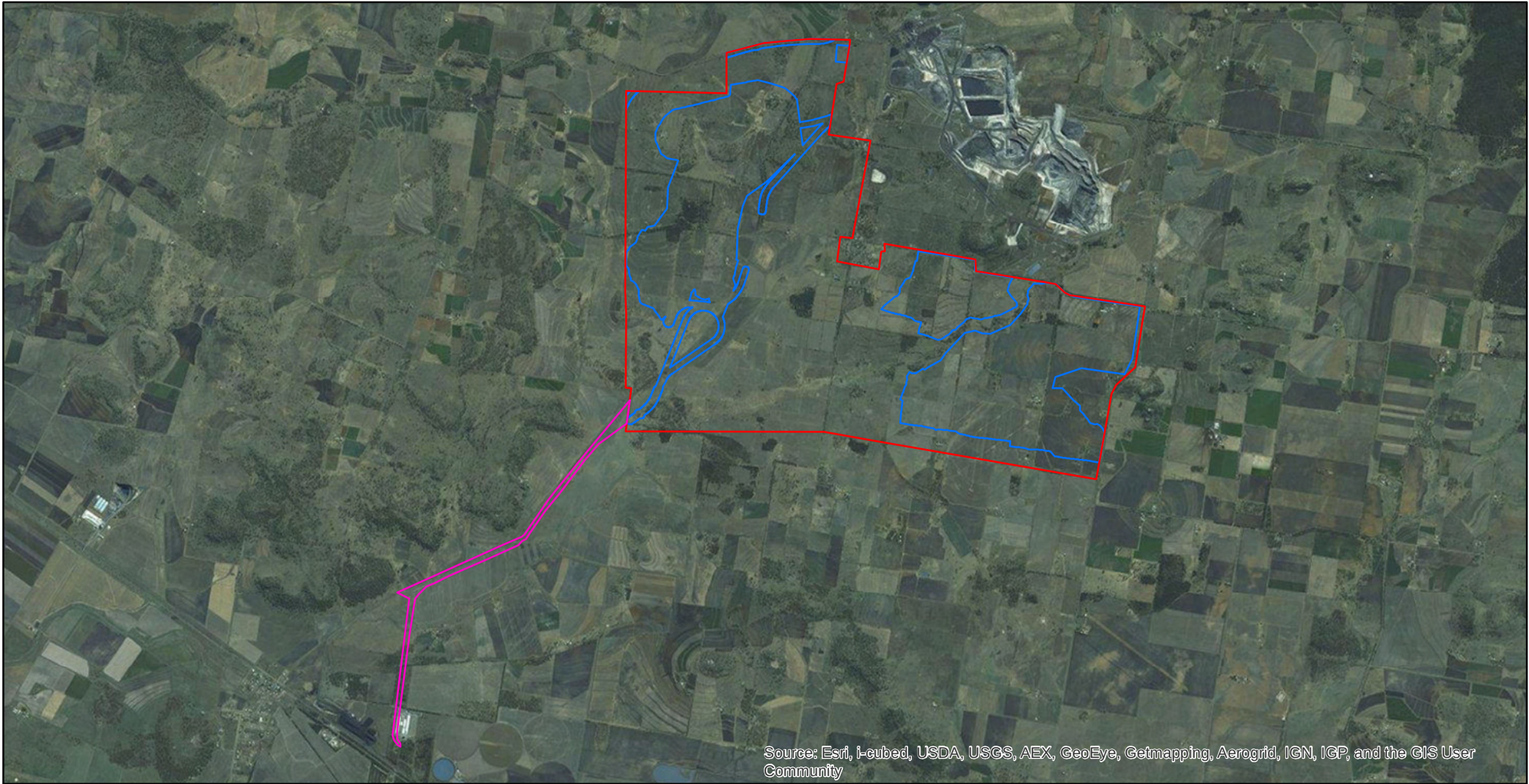
MLAs 50232 and 700002

FIGURE 1: Location of MLA 50232 and MLA 700002

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- MLA 700002
- MLA 50232
- disturbance footprint within MLA only

Figure 2: MLA 50232 and MLA 700002 showing disturbance footprint

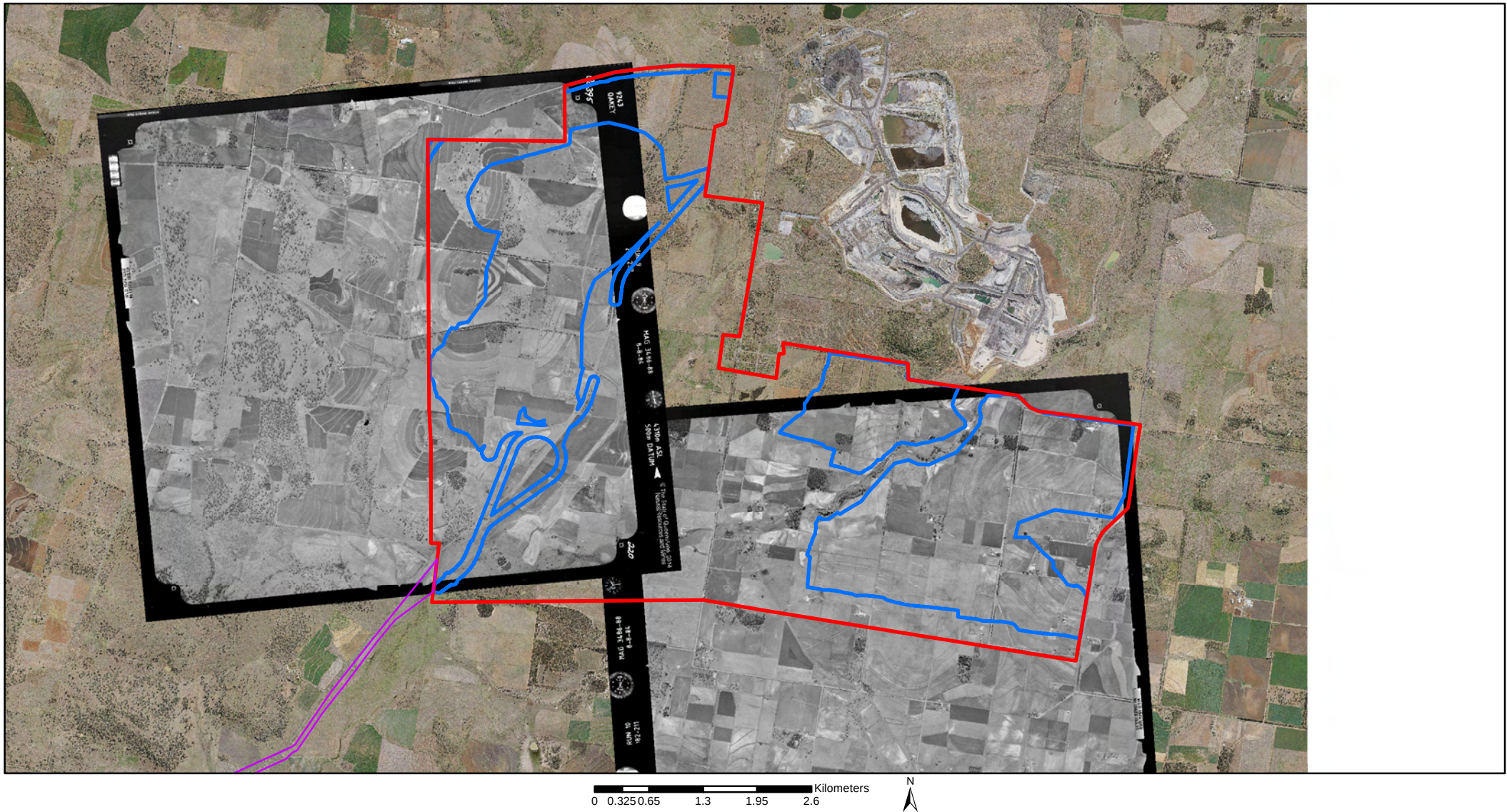
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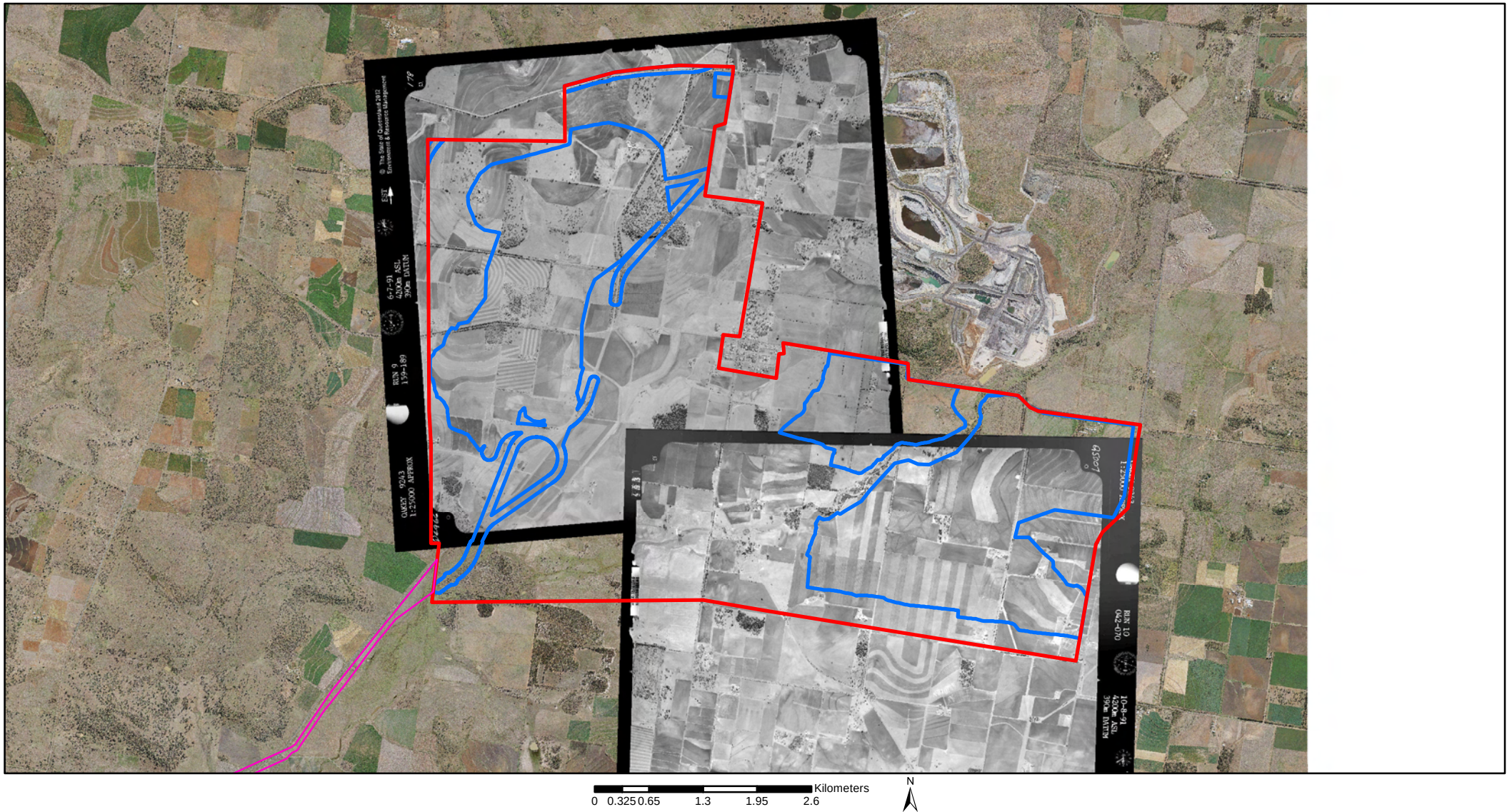
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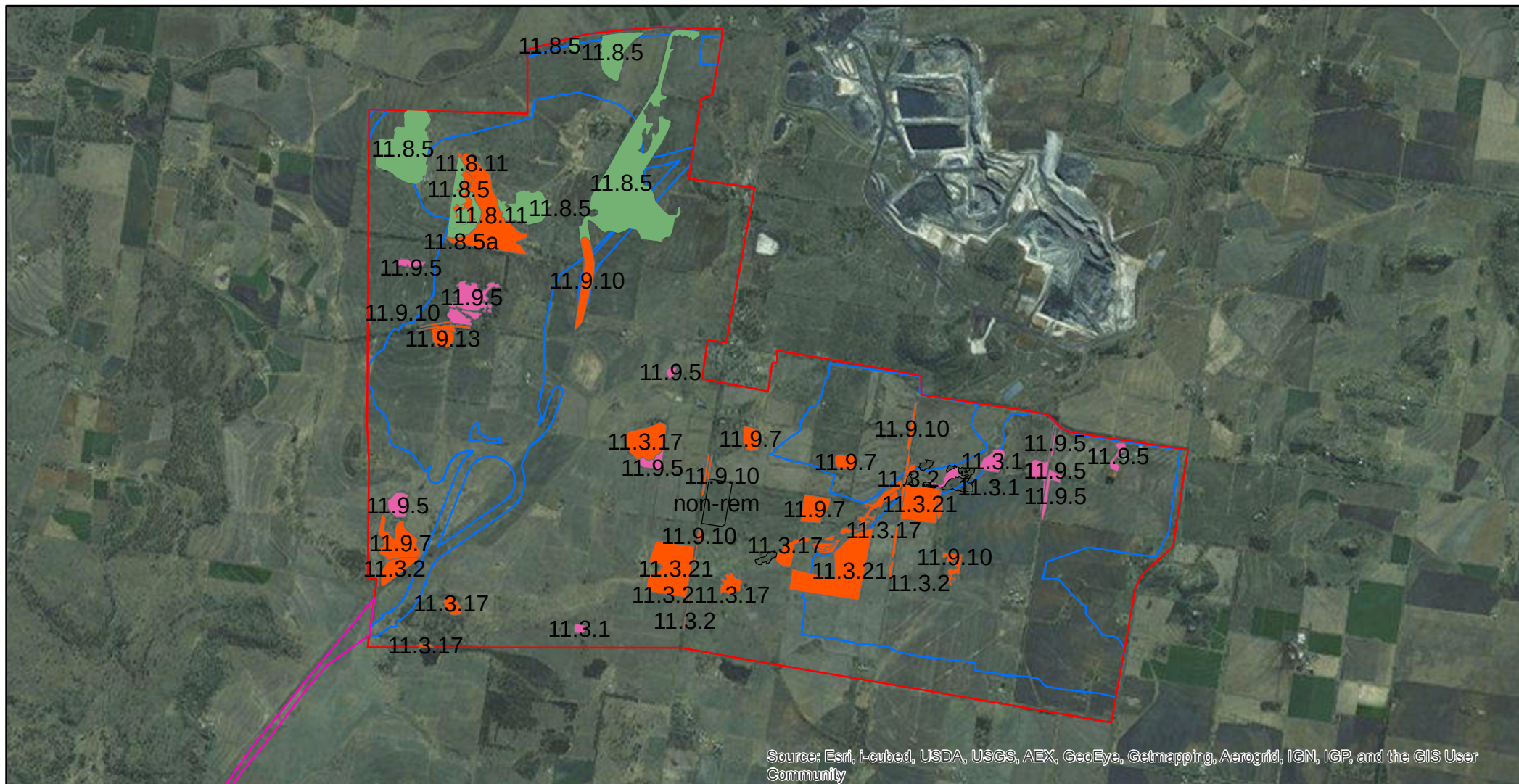
- MLA 700002
- MLA 50232_boundary
- disturbance footprint within MLA only

Figure 4: 1991 aerial photographs of disturbance areas

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Aerial imagery courtesy of Bing Maps.

Legend

Terrestria RE

☐ MLA 50232

 E

 OC

LC

☐ Non-rem

 disturbance footprint

MLA 700002

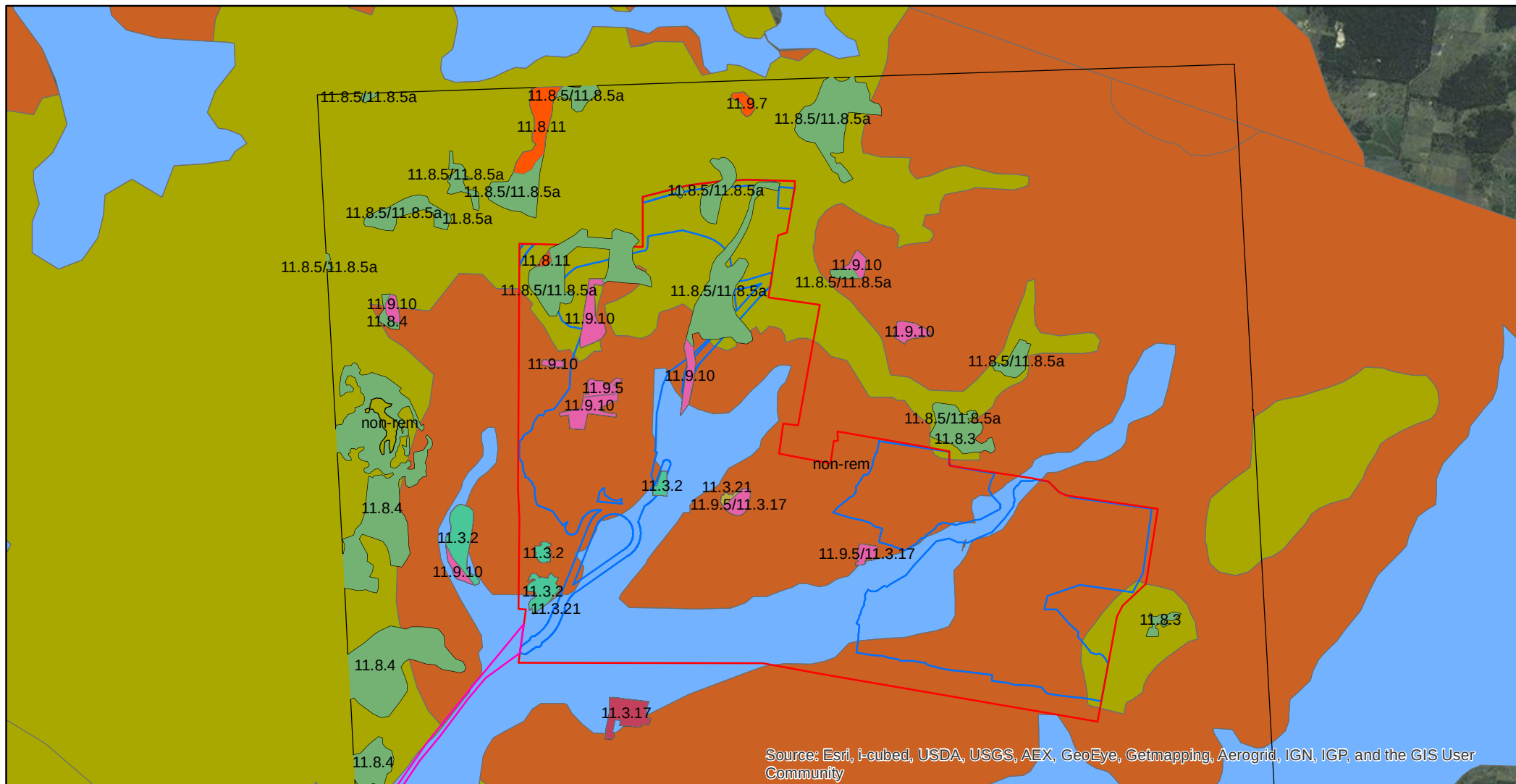
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Figure 5: Field Validated Regional Ecosystem Mapping of MLA 50232 December 2015

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Legend

MLA 50232

MLA 700002

GDE derived surface geology

Alluvium

Basalt

Permian sandstone

Endangered

Of Concern

Least Concern

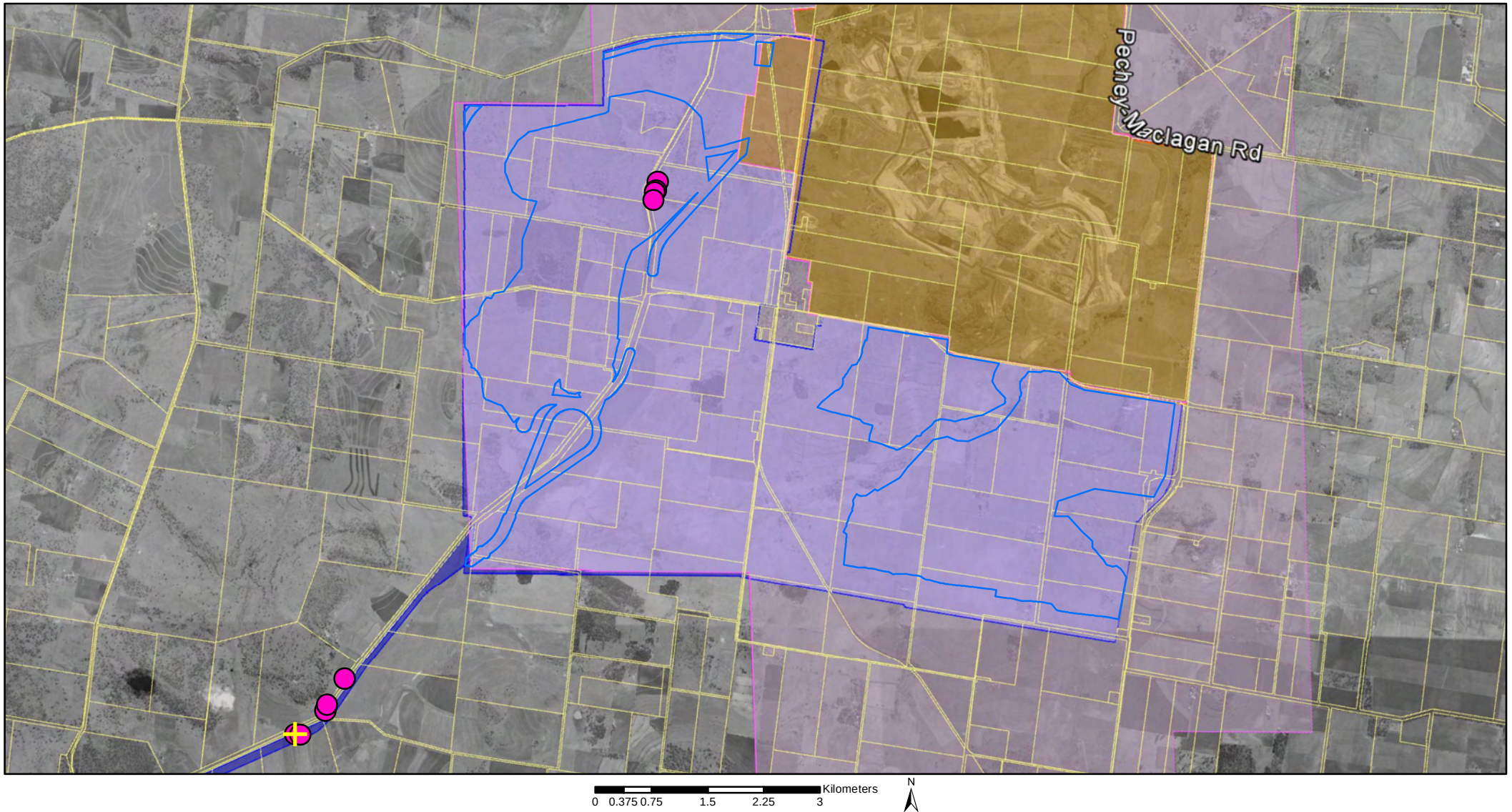
FIGURE 6: Current certified RE mapping over derived surface geology

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ECOLOGICAL MANAGEMENT



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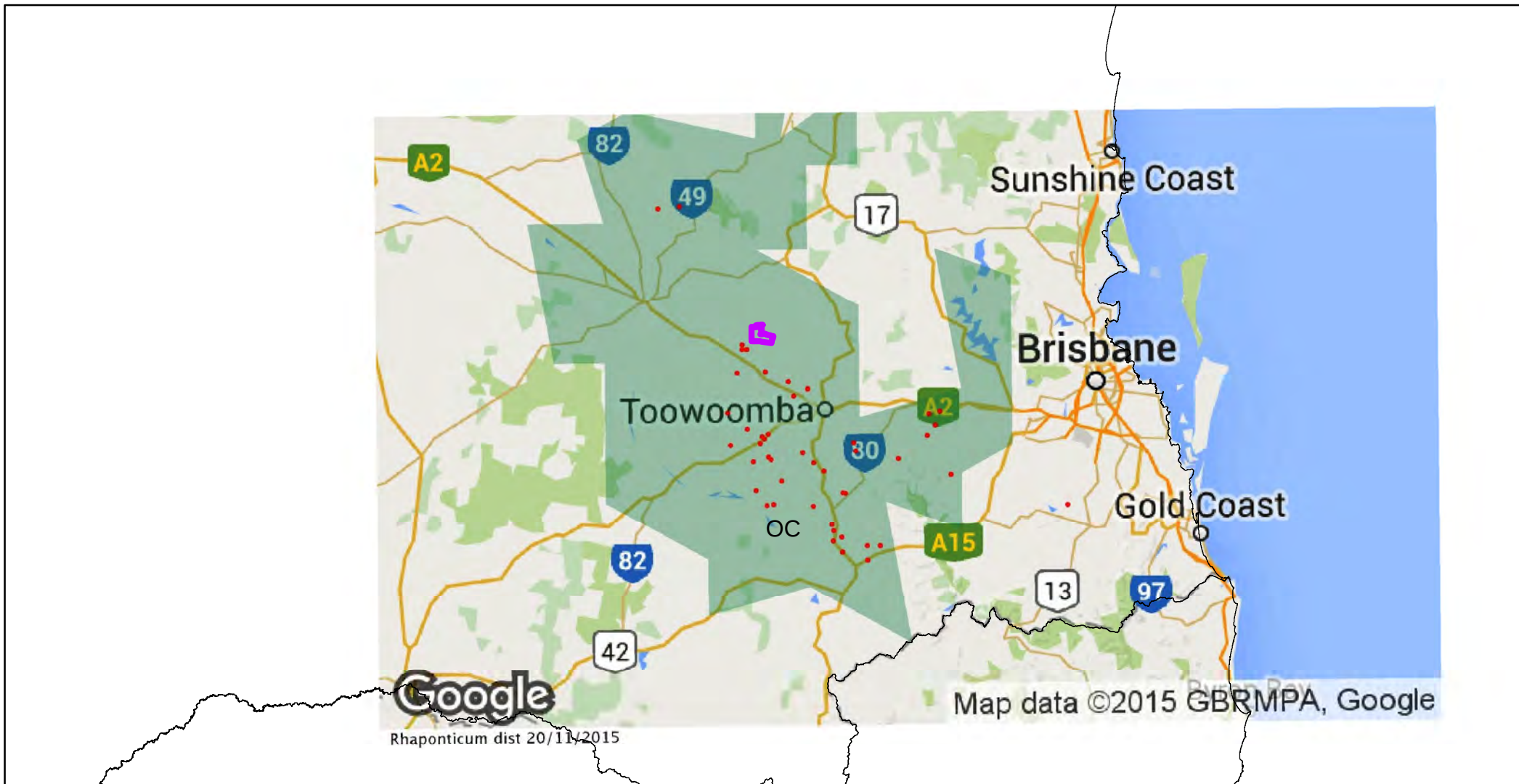
- + Picris evae
- Rhaponticum australe
- MLA 50232
- ML 700002

Fig 7: Locations of Rhaponticum australe and Picris evae

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0 12.5 25 50 75 100 Kilometers



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Aerial imagery courtesy of Bing Maps.

Legend

- Specimen locations
- Modelled distribution

FIGURE 8: Specimen records Rhaponticum australe (source: Atlas of Living Australia)

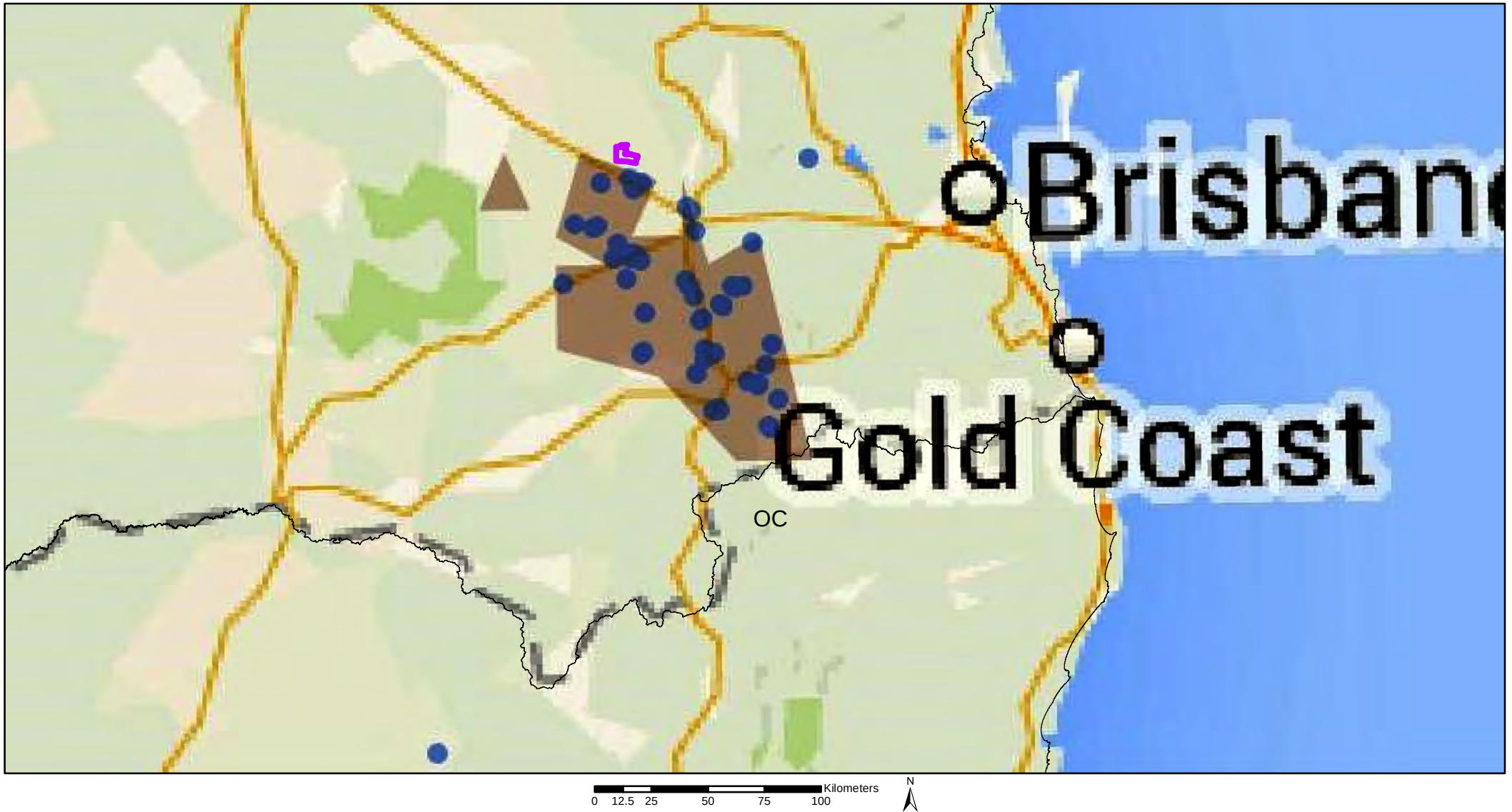
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Aerial imagery courtesy of Bing Maps.

Legend

● Specimen locations

■ Modelled distribution

**FIGURE 9: Specimen records
Picris evae**
(source: Atlas of Living Australia)

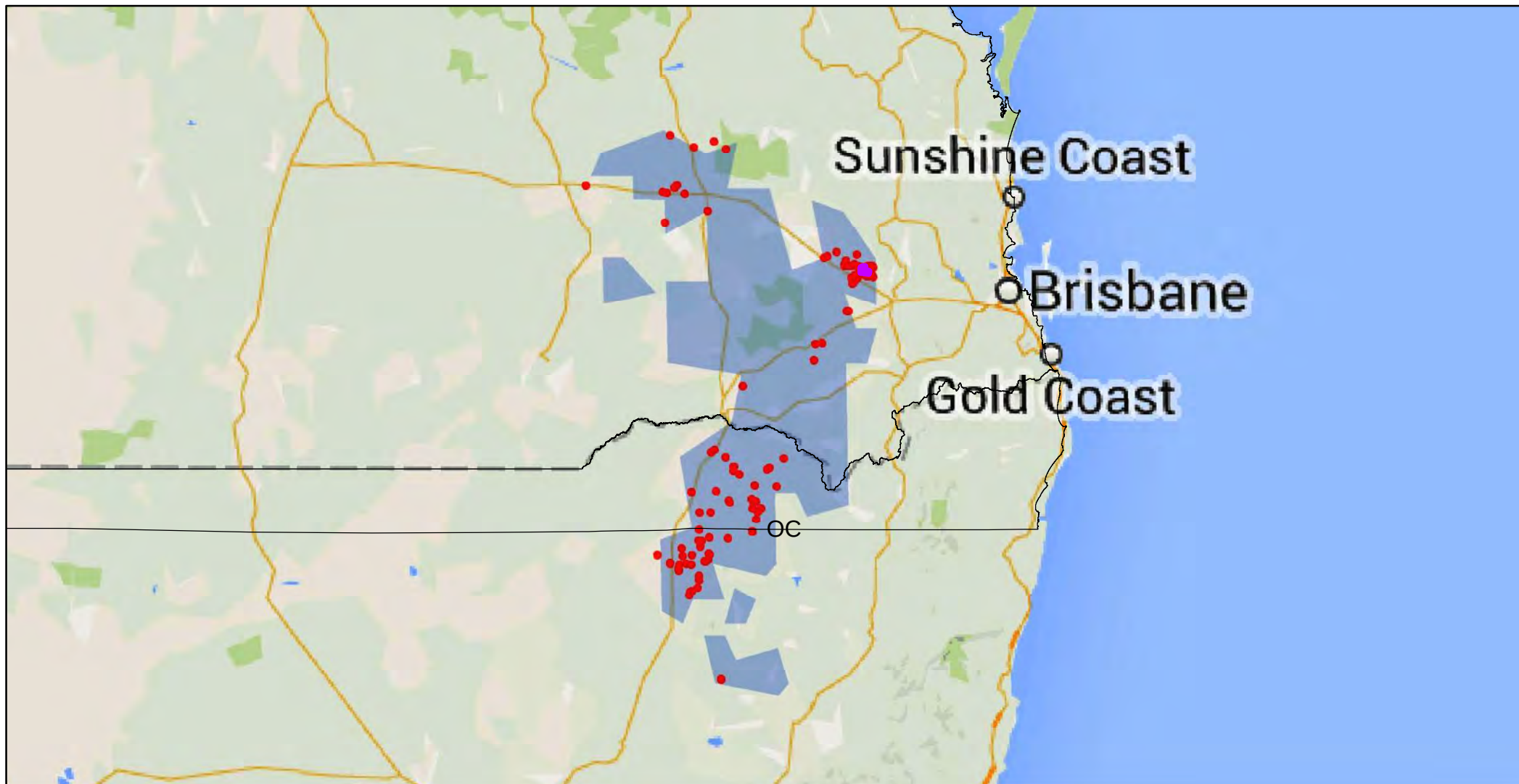
NAC V FRANK ASHMAN &
CHIEF EXECUTIVE, DEPARTMENT
OF ENVIRONMENT AND HERITAGE

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Job No. 0084

terrestris
ECOLOGICAL MANAGEMENT

65



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Aerial imagery courtesy of Bing Maps.

Legend

- Specimen locations
- Modelled distribution

FIGURE 10: Specimen records *Homopholis belsonii* (source: Atlas of Living Australia)

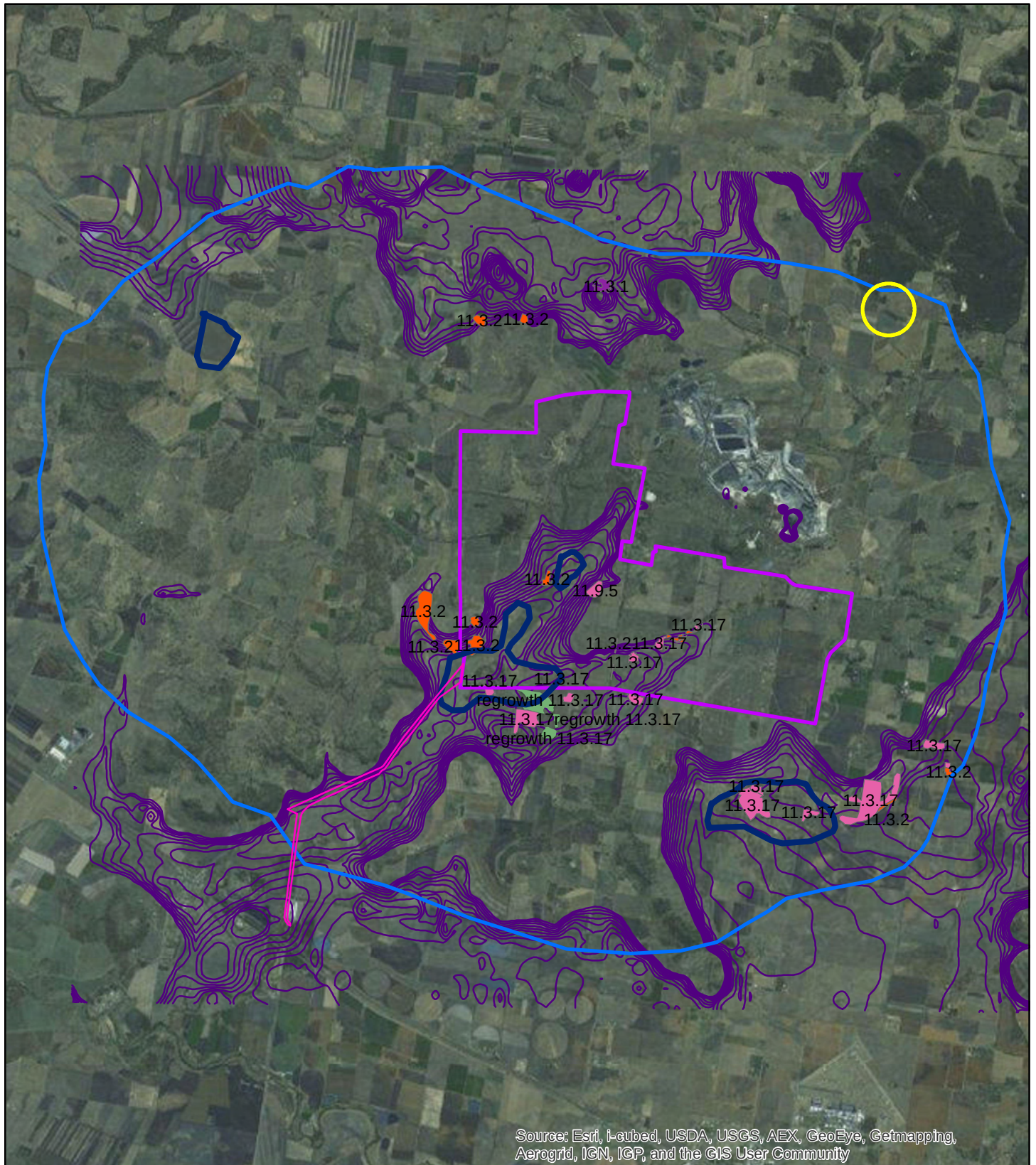
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terrestris
ECOLOGICAL MANAGEMENT

66



0 0.5 1 2 3 4 Kilometers



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Aerial imagery courtesy of Bing Maps.

LEGEND

- Predicted alluvial drawdown 2030
- GDE investigation area
- Depth to Water contours_10m

Potential GDE Veg less 10m

- 11.3.1
- 11.3.17
- 11.3.2
- 11.9.5
- regrowth 11.3.17

FIGURE 11

Potential GDEs within drawdown zone

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Curriculum Vitæ



ANDREW DANIEL

Andrew has over 20 years' experience in ecological assessment and management with environmental consultancies and State and local government agencies. Trained as a botanist by the Queensland Herbarium, Andrew now has well over 10 years of consultancy experience specialising in EIS assessments, vegetation mapping, EIA, flora and fauna management, and rehabilitation. Andrew has managed and completed a broad range of projects including assessment within the mining, extractive, industrial and residential sectors. He has extensive experience in remote regions of Australia including baseline ecological assessments for mines in the Northwest Highlands, Gulf Plains, Einasleigh Uplands, Mulga Lands, and Northern and Southern Brigalow Belts of Queensland. Andrew has also authored or co-authored several scientific papers and appeared as an expert witness in the Queensland P&E and Land Courts on several matters.

TITLE

Principal Ecologist

EXPERTISE

Ecological surveys and vegetation mapping, ecological assessment reporting, condition assessment, baseline flora surveys, vegetation rehabilitation, threatened species surveys, expert witness for the Queensland P&E Court.

QUALIFICATIONS

- PhD Environmental Engineering (Griffith University, 2000)
- Bachelor of Science, Honours IIA (Biological Sciences) (University of Exeter, 1990)

RELEVANT WORK HISTORY

2011 – present	Principal Ecologist, Terrestria Pty Ltd
2010 – 2011	Principal Botanist, Ecological Landscape Management Pty Ltd
2008 – 2010	Principal Botanist, Biodiversity Assessment and Management Pty Ltd
2005 – 2008	Senior Ecologist, Chenoweth EPLA Pty Ltd
2004 – 2005	Senior Ecologist, AustralAsian Resource Consultants (AARC)
2002 – 2003	Research Scientist, Department of Natural Resources (Alan Fletcher Research Station)
2000 – 2002	Senior Technician, Queensland Herbarium (Queensland Government)

COURT EXPERIENCE

2014 – Present	Land Court Appeal AQL021-14 Philip Usher Constructions V Brisbane City Council; 3063 Ipswich Rd Darra. Engaged on behalf of Philip Usher Constructions to provide expert advice to the Court on botanical and ecological issues relating to the matter potential developable area.
2014 – Present	P&E Appeal 1648 of 2014, Northbrook Corporation Pty Ltd V Noosa Shire Council and Other's: Engaged on behalf of Northbrook Corporation Pty Ltd to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a preliminary approval for an MCU to vary the effect of the Maroochy Plan 2000 and the Noosa Plan planning schemes for the mixed use community title development Noosa on Weyba.
2014	Land Court Appeal LVA051 – 14 (616-632 West Mont Cotton Road, Sheldon), Karreman Resources Pty Ltd v Valuer-General. Engaged on behalf of Department of Resources and Mines to provide expert advice to the Court on ecological issues relating to the Valuer General's Descision on Objection – Lot 100 on SP234173.
2014	R v Baden-Clay (467 of 2013). Investigations into foresnic botany evidence presented. Undertaken for Peter Shields Lawyers.
2010 – 2013	P&E Appeal 2763 of 2009, Rainbow Shores Pty Ltd v Gympie regional Council and ORS. Engaged on behalf of the Queensland Department of Environment and Resource Management to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a development permit for a master planned community at Rainbow Shores, Queensland.
2013	P&E Appeal No 2900 of 2012 Onyx Alliance Pty Ltd v Brisbane City Council and DEHP. Engaged on behalf of Onyx Pty Ltd to provide expert ecological advice on issues relating to the matter or a waste recycling centre to be located at 65 Telford Street, Virginia, Qld.
2009 – 2010	P&E Appeal 953 of 2008, Sailmist Pty Ltd V Sunshine Coast Regional Council. Engaged by Sunshine Coast Regional Council to provide expert advice to the Court on botanical issues relating to the matter of an application for a development permit for a master planned rural residential community at Eudlo Flats Road, Diddillibah, Queensland.
2009 – 2010	P&E Appeal 3566 of 2009, Casagrande Investments Pty Ltd V Redland City Council & ORS. Engaged on behalf of Casagrande Investments to provide expert advice to the Court on botanical issues relating to the matter of an application for a development permit for a material change of use for multiple dwelling with respect to land situated at 537-547 Redland Bay Road, Victoria Point, Queensland.
2010	P&E Appeal 3612 of 2009 Surfing world Sunshine Coast Pty Ltd V Sunshine Coast Regional Council and Orrs. Engaged on behalf of the Queensland Department of Environment and Resource Management to provide expert advice to the Court on botanical and ecological issues relating to the matter of an application for a development permit for a shopping centre.
2010	P&E Appeal 132 of 2010 – Galtee Developments Pty Ltd V Sunshine Coast Regional Council. Engaged by Sunshine Coast Regional Council (Solicitors Wakefield Sykes). Provision of expert advice to the court on botanical issues relating to the matter of an application for a Development Permit for a reconfiguration of a lot for land at 556-578 Diddillibah Road, Diddillibah, Maroochy Shire, Queensland.

SELECTED PROJECT EXPERIENCE

2015	Large scale Regional Ecosystem mapping for multiple Gas Tenements in southern Queensland. Prepared for Santos GLNG
2015	Desktop Review of potential rehabilitation strategies for Oakey Creek Mine. Prepared for Austecology Pty Ltd.
2015	Flora and Vegetation community technical chapter for the Hillalong mine EIS. Prepared for CDM Smith Pty Ltd.
2015	Flora and Vegetation assessment for the Carmichael Coal water pipeline. Prepared for CDM Smith Pty Ltd.
2014(in progress)	Development and implementation of a rehabilitation plan for a sandstone quarry on Seventeen Mile Road, Helidon. Prepared for Zambelli Environmental Pty Ltd
2014	New Generation Rolling Stock Maintenance Centre Wulkuraka, SE Queensland – Ecological Assessment and koala offset liability assessment: Prepared for Laing O'Rourke Pty Ltd
2014	Flora assessment and vegetation mapping for the Carmichael Coal thermal power station DA. Prepared for CDM Smith Pty Ltd.
2014	Ecological Assessment report for a RaL for 37 Paten Road, The Gap. Prepared for DTS group
2014	Ecological Assessment report for a multi-unit MCU/DA for 216 Beckett Road, Bridgeman Downs. Prepared for DTS group
2014	Ecological Assessment report for a MCU/DA for 180 Viking Drive, Wacol. Prepared for DTS group
2014	Development and certification of Santos GLNG pre-clearance ecological and wetland survey methodology. Prepared for Santos GLNG.
2014	Identification of Koala tree offset liability for the Mt Crosby Eastbank WTP - Sludge Disposal Area Expansion; Prepared for SEQ Water
2013	Witty Road Koala Offset Habitat Management Plan, Vegetation Management Plan and Rehabilitation Plan for 27 lot sub-division, Moggill, Queensland. Prepared for Paul Johnson.
2013	Wellington Rise Tree Survey. Terrestria was commissioned by Thomas & Coffey to assess the ecological values of a property located in Willowbank in the context of a proposed development on the subject site. Prepared for Thomas & Coffey
2013	Regional ecosystem, BioCondition and plant Identification training for Arrow energy field ecologists at Moranbah and Chinchilla offices, and
2013	Regional ecosystem, BioCondition and plant Identification training for environmental management staff at the Tarong Power station and Meandu Mine.
2013	Property Map of Assessable Vegetation Lot 13 RP893181. Mackay, Parklands Blue Metal Quarries. Prepared for Covey and Associates.
2013	PMAV of the Drake Mine area, Collinsville, Queensland. Prepared for GHD.

2013	Morayfield quarry ecological assessment. Baseline ecological assessment and State agency negotiation for material change of use application for a non-compliant hard rock quarry in SEQ under the sustainable planning act. Prepared for RW & G Johnston
2013	Ecological Assessment for St Joseph's Nudgee College rowing facility Brighton, Queensland. Prepared for FRC Environmental.
2013	Douglas Street Ecological assessment. Baseline ecological assessment and tree retention plan for material change of use application under the sustainable planning act. Prepared for Property Wealth 4 U.
2013	CQIRP Flora technical chapter and mapping. Prepared for AECOM
2013	Bunyip Street baseline ecological assessment and tree retention plan for material change of use application under the sustainable planning act. Prepared for O'Conner Family Trust
2013	Braemar Rd covenant condition assessment. Assessment and reporting on ecological condition of a covenant area on a new subdivision. Prepared for Nu Vue Buderim Pty Ltd
2013	Bowen Park. Tree retention plan and tree health assessment for a Brisbane City Council park. Prepared for Place Design
2013	Baseline flora assessment and technical chapters for Springsure Creek Mine EIS and Haul Road EIS. Prepared for CDM Smith on behalf of Bandana Energy
2013	Albany Creek Road. Vegetation assessment and significant tree plot and evaluation for material change of use application under the sustainable planning act. Prepared for Place Design
2013	Advice on negotiated changes to EA conditions for the Fairview Dawson River release. Design and implementation of baseline for receiving environment monitoring program for frogs and birds. Prepared for Santos
2012	Weed assessment and management plans for RO plants and associated gas infrastructure. Included assessment and mapping of weed plant distributions on Origin's tenements in the southern Brigalow belt. Prepared for Laing O'Rourke Construction Australia
2012	Horton Golf Course, baseline ecological assessment for material change of use application under the sustainable planning act. Prepared for Place Design
2012	Ecological Assessment of the Horeton Golf club for DA MCU application. Prepared for Place Design
2012	Developed rehabilitation program for the Santos Gladstone Liquid Natural Gas (GLNG), Gas Transmission Pipeline (GTP) project to address State and federal EA conditions. Included the development of rehabilitation targets for all land use types along the GTP Right of Way. Our field team also provided the field survey of reference and disturbance bio-condition sites along entire RoW. Prepared for ERM
2012	Baseline flora EIS assessment for the Central Queensland Inland Rail Project. Prepared for AECOM
2011	Weed survey and management plans for all of BMA's holdings in Queensland. Prepared for BMA
2011	Vegetation assessment and mapping of the Cascade Valley Project Area, Rockhampton, Queensland. Prepared for Place Design.

2011	Trackstar Richlands. Vegetation community mapping, koala tree number estimates and weed survey for the Richlands – Springfield Rail alignment. Prepared for Place Design
2011	Principal Ecologist/Botanist for the terrestrial ecology and impact assessment for the gas fields component of the Ironbark Project EIS. Prepared for BAAM on behalf of Australia Pacific LNG.
2011	Preparation of baseline flora assessment for the EIS for Solar Dawn Project, Kogan, Queensland. Prepared for ERM Pty Ltd.
2011	Pre-clearing assessment of gas wells, linear and static infrastructure. Confirmation and assessment of RE mapping, vegetation structure, floristics listed species, habitat and landscape features watercourses and wetlands across southern Queensland. Prepared on behalf of QGC
2011	Matfield Road. Vegetation community assessment and mapping, weed assessment and threatened tree location mapping for a sub-division at Matfield Road. Moggill. Prepared for Place Design.
2011	Flora baseline EIS assessment and technical chapter for the extension to Eastern Creek Mine. Included field assessment for Ecological Equivalence Offsetting. Prepared for KBR on behalf of Xstrata
2011	Flora baseline EIS assessment and technical chapter for the proposed Lake Elphinstone Mine. Prepared for Rio Tinto
2011	Desktop Ecological Assessment: Shoalwater Bay Military Training Area. Prepared for ERM
2011	Colton Coal. Vegetation community mapping and ground water dependant ecosystem assessment in response to DEHP information request for the Colton Coal Mine study area. Prepared for Colton Coal
2011	City Links. Vegetation community mapping, condition assessment and rehabilitation plan for the City Links waste refuge site on the Gold Coast. Prepared for Veolia Environmental Services
2010	Biodiversity assessment, Eprapah Creek. Prepared for Redland Shire Council.
2009	South Coolom Road upgrade, ecological assessment and alignment advice. MWH Global Pty Ltd.
2009	Regional ecosystem assessment, NRW code response and PVMP, Dixon Road low level reservoir. Prepared for MWH Global Pty Ltd.
2009	Rare and threatened species survey, Camcos Rail Corridor EIS. Prepared for ARUP Consulting.
2009	Principal Ecologist/Botanist for the terrestrial ecology and impact assessment for the gas fields component of the APLNG Project EIS. Prepared for Worley Parson Pty Ltd.
2009	Nautilus Stage Three, Walter Hay Drive, ecological assessment and alignment advice. MWH Global Pty Ltd.
2009	Jack Hills Mine Area, significant plant survey, Jack Hills, Western Australia. Ecologia Pty Ltd
2009	Francis Street, Tivoli, regional ecosystem assessment and NRW code response. Groundwork Plus Pty Ltd
2009	Flora Assessment and Report, Mt Oxide MLA EIS. Prepared for AARC Pty Ltd
2009	Flora and fauna habitat assessment, vegetation mapping and core biodiversity network development, Fitzgibbon Urban Development Area. Prepared for the Urban Land Development Authority.
2009	Flora and Fauna Assessment Paradise South and Paradise North MLA. Prepared for legend International Pty Ltd

2009	Fitzgibbon Urban Development Area, flora and fauna habitat assessment, vegetation mapping and core biodiversity network development. Urban Land Development Authority
2009	Ecological assessment and alignment advice, South Coolom Road upgrade. Prepared for MWH Global Pty Ltd.
2009	Dixon Road low level reservoir, regional ecosystem assessment, NRW code response and PVMP. MWH Global Pty Ltd
2009	Camcos Rail Corridor, rare and threatened species survey. ARUP Consulting Eprapah Creek biodiversity assessment. Redland Shire Council
2008	Waterway Downs, Coomera, environmental constraints and opportunities analysis. Thomson Projects Pty Ltd. 2009 Ecological assessment and alignment advice, Nautilus Stage Three, Walter Hay Drive. Prepared for MWH Global Pty Ltd.
2008	Redland Shire biodiversity inventory and regrowth analysis. Redland Shire Council. Redland Shire Environmental Inventory Stage 5. Redland Shire Council.
2007	Regional ecosystem assessment and NRW code response, Francis Street Tivoli. Prepared for Groundwork Plus Pty Ltd.
2007	LORDS Lutheran School, Pimpama, Queensland Environmental assessment and approvals. Lutheran Church of Australia.
2007	Beaunesert Shire Council Habitat mapping and review of Planning instruments for the Whole of Shire Planning Program. Beaunesert Shire Council.
2007	1:10,000 mapping, classification and conservation prioritization of the wetlands of Richmond Valley Local Government Authority area. Richmond Valley Council.
2006	Flora assessment and vegetation mapping of the Eastern Pipeline Connector – North Stradbroke Island borefield, Pipeline and Draw down area. Southern Regional Water Pipeline Alliance (Ministerial Environmental Impact Statement).
2006	Expert Advisory Panel – Potential affects on ecological values of North Stradbroke Island from water table draw down. Southern Regional Water Pipeline Alliance.
2006	Ecological assessment of proposed sub-division at Mount Petrie, Brisbane. Carried out for compensation claim, court case. Powerlink Pty Ltd.
2006	Ecological Assessment and environmental approvals for Petrie Quarry extension. Boral Resources Pty Ltd.
2006	Ecological assessment and environmental approvals for Ormeau Quarry extension. Boral Resources Pty Ltd.
2006	Ecological assessment and environmental approvals for Dundowran Quarry extension. Boral Resources Pty Ltd.
2005	Vegetation assessment and preparation of EPBC referrals for Stuart North and Condor Box cuts. Completed for AustralAsian Resource Consultants on behalf of Queensland Energy Resources Ltd.
2005	Upper Coomera Shopping Centre Appeal, Ecological Assessment Report. Hopgood Ganim Lawyers.

2005	Open Space Management Plan for proposed residential development at Kookaburra Drive, Worongary. Westera Partners Pty Ltd.
2005	Flora and fauna for proposed residential sub-development, Stanborough Road, Gumdale. Fahreed Merchant.
2005	Flora and fauna assessment of proposed residential development at Sunrise Road, Eumundi, Queensland. Andrew Fogg and Associates.
2005	Flora and fauna assessment of proposed residential development at Browns Plains Road. PMM Pty Ltd.
2005	Flora and fauna assessment of proposed residential development at Kookaburra Drive, Worongary. Westera Partners Pty Ltd.
2005	Establishment of vegetation rehabilitation targets for the North Goonyella Mine, Completed for AustralAsian Resource Consultants on behalf of Peabody Pty Ltd.
2005	Establishment of vegetation rehabilitation targets for the Broadmeadow, North Wallanbah, Burton and Plumtree pits, Completed for AustralAsian Resource Consultants on behalf of Peabody Pty Ltd.
2005	EIS baseline flora and fauna survey, Tregoora Project. Republic Gold Pty Ltd.
2005	EIS Baseline flora and fauna survey, Northcote Project. Republic Gold Pty Ltd.
2005	EIS Baseline flora and fauna survey, Broadlea North Project. McCollum Environmental Pty Ltd.
2005	EIS Baseline flora and fauna survey, Annandale Project. McCollum Environmental Pty Ltd.
2005	Ecological assessment, vegetation mapping and environmental approvals of Oceanview sub-development, Mt Louisa, Townsville. Reana developments.
2005	Ecological assessment, Vegetation Mapping and constraints analysis of Oak Valley, Townsville. Reana developments.
2005	Agnes Waters power line rare and threatened flora assessment. Ergon Energy. Cooloolah Foreshore Management Plan. Cooloolah Shire Council.
2004	Quarterly grazing trial assessment for the Goodicum Crater pastures. Completed for AustralAsian Resource Consultants on behalf of Monto Minerals Pty Ltd.
2004	EIS Baseline flora and fauna survey, Wilkie Creek Coal Mine Extension. Peabody Energy Australia Coal Ltd.
2004	EIS Baseline flora and fauna survey, Mackenzie South Project. Jellinbah Resources Pty Ltd. Baseline flora and fauna survey, Mt Roseby Project. Universal Resources Ltd.
2004	EIS Baseline flora and fauna survey, Lady Annie, Mount Kelly and Mount Kelly West Project. Copper Co. Pty Ltd.
2002	Wetland mapping and significant flora species survey of the northern Condamine River catchment. For the World Wildlife Fund.
2002	Vegetation survey and mapping of wetlands, North Stradbroke Island mining leases. Project included survey and mapping of 18 Mile Swamp. For Consolidated Rutile Limited.
2002	Vegetation Community mapping and significant flora species survey of the 18 Mile Swamp, North Stradbroke Island. For Consolidated Rutile Limited.

2001	Vegetation Community mapping and significant flora species survey of the Enterprise Mine site, North Stradbroke Island, EIS for extension to operations. For Consolidated Rutile Limited.
2000	Vegetation Community mapping and significant flora species survey of the Ibis Mine site, North Stradbroke Island EIS for extension to operations. For Consolidated Rutile Limited.
2000	Survey of aquatic plants in creeks and rivers. For Brisbane City Council.
1999	Rehabilitation monitoring, North Stradbroke Island mining leases: establishment of permanent monitoring sites as benchmarks in rehabilitated areas and mapping of pre-mining vegetation communities. For Consolidated Rutile Limited (now Sibelco Australia).

PUBLICATIONS

- G.T. Hastwell, A.J. Daniel. G Vivian-Smith (2008). Predicting invasive species: do subtropical native and invasive aquatic plants differ in their growth response to macronutrients? *Diversity and Distributions* **14**(2): 243-251.
- A.J Daniel and M. Greenway (1995). Nutrient dynamics in two urban melaleuca wetlands. In: *Wetlands for Water Quality Control Conference Papers*, James Cook University, Townsville, 25-29 September 1995.
- M. Greenway and A.J. Daniel (1995). Melaleuca wetlands for water storage and nutrient removal. In *Proceedings of the Conference on Downstream Effects of Land Use*, April 1995, Rockhampton.
- A.J. Daniel, D. Small and P.G. Saffigna (1994). Comparison of microbial biomass levels on irrigated dairy farms as influenced by biodynamic and conventional farming systems. In *Proceedings of International Symposium on Environmental Agriculture, Towards 2000*, Gold Coast, Queensland, 5-8 June 1994.

Confidential

Email

22 January 2016

Dr Andrew Daniel
Terrestria Pty Ltd
PO Box 328
WYNNUM QLD 4179

adaniel@terrestria.com.au

Dear Andrew

New Acland Coal Mine Stage 3 Project

1. Introduction

- 1.1 We refer to our letter of engagement dated 1 October 2015. Capitalised terms in this letter have the same meaning as provided in the engagement letter, unless otherwise defined.
- 1.2 As you are aware, on behalf of NAC, we have filed and served a notice of NAC's additional issues (**List of Issues**) that NAC's various experts propose to either:
- (a) seek agreement on at joint expert meetings where there is an expert proposed by the objectors relating to that issue (**Part 1**); or
 - (b) address in individual statements of evidence where there is no expert proposed by the objectors relating to that issue (**Part 2**).
- 1.3 A copy of the List of Issues is **enclosed**.

2. Instructions

- 2.1 You are instructed to prepare a statement of evidence to the Land Court in relation to the objections lodged in opposition to the Project (the **Objections**). Specifically, your statement of evidence will be required to address:
- (a) the propositions identified in Part 2 of the List of Issues at paragraphs 20 - 26; and
 - (b) certain matters relevant to your field of expertise that have been raised in the lay witness statements, which we will send to you separately.
- 2.2 Your report must be limited to addressing issues to the extent they fall within your field of expertise.
- 2.3 You may also be required to appear in person as an expert witness in the Land Court proceedings.
- 2.4 Please see section 4 below regarding your duties as an expert witness.
- 2.5 Pursuant to the order of the Land Court, your statement of evidence must be filed in the Land Court by 4pm on **12 February 2016**.

3. **Format of report**

3.1 Any statement that you prepare should include the following:

- (a) a copy of these instructions;
- (b) details of your relevant qualifications, experience and expertise (preferably as an annexure to the report);
- (c) all material facts, whether written or oral, on which the statement is based;
- (d) references to any literature or other material on which you have relied to prepare the statement;
- (e) details of any assumptions you have relied on for the purposes of the statement;
- (f) details of any additional facts or documents which would assist you in reaching a more reliable conclusion on any aspect about which you have been instructed to prepare the statement;
- (g) in respect of any inspection, examination or experiment conducted, initiated or relied on to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was undertaken by you or under your supervision;
 - (iii) the names and qualifications of any other person involved; and
 - (iv) the result;
- (h) if there is a range of opinions or values on matters dealt with in the statement, a summary of the range of opinions or values and the reasons why you have adopted a particular opinion or value in respect of that matter; and
- (i) a summary of the conclusions that you have reached.

3.2 You should also confirm at the end of your report each of the following:

- (a) the factual matters stated in the statement are, as far as you are aware, true;
- (b) that you have made all enquiries that you consider are appropriate for the purpose of providing the opinions that you have expressed;
- (c) the opinions stated in the report are genuinely held by you;
- (d) the statement contains references to all matters you consider significant in reaching the conclusions that you have expressed;
- (e) that you understand your duty to the court and have complied with that duty;

- (f) that you have read and understand the rules contained in Part 5 of the Land Court Rules 2000 (Qld) (**Land Court Rules**), a copy of which is **enclosed**, as far as they apply to you; and
- (g) that you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

4. **Your responsibilities as an expert witness**

- 4.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 4.2 Again, we draw your attention to Part 5 of the Land Court Rules, which set out the duties of expert witnesses. Specifically, under rule 24C of the Land Court Rules, you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 4.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely

Mark Geritz, Partner
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Karen Trainor, Partner
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ktrainor@claytonutz.com

Our ref 12408/17428/80145086

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

APPLICANT'S NOTICE OF ADDITIONAL ISSUES

PART 1: Additional issues that the Applicant's notified experts propose to seek agreement on at the joint expert meeting, where there is an expert proposed by the objectors relating to that issue

AGRICULTURAL ECONOMICS

OCAA LIST OF ISSUES

1. In relation to paragraph 24(a) of the OCAA List of Issues, if groundwater impacts occur and they are mitigated by the groundwater mitigation measures to be implemented for the Revised Expansion Project there will be no impacts on regional economic issues or agricultural production.
2. In relation to paragraph 24(c) of the OCAA List of Issues, the reduced output during the life of mine and post mining due to disturbance to SCL is not significant from a regional perspective and will be further ameliorated with increased productivity and increased intensity of operations of other cropping land in the region, as has occurred over the last 40 years.

APPLICANT'S NOTICE OF ADDITIONAL ISSUES
Filed on behalf of Applicant

Clayton Utz, Lawyers
Level 28, Riparian Plaza, 71 Eagle Street
Brisbane Qld 4000
GPO Box 55 Brisbane Qld 4001
Telephone: (07) 3292 7000
Facsimile: (07) 3221 9669

AIR QUALITY, DUST

OCAA LIST OF ISSUES

3. In relation to paragraphs 14(a) to 14(e), 14(g), 15 and 19 of the OCAA List of Issues:
 - (a) the methodology adopted for the air quality assessment is in accordance with industry accepted techniques and is appropriate;
 - (b) whilst in some instances alternative assumptions and factors might have been adopted to configure the meteorological model and the dispersion model, ultimately the same conclusion would be reached, that is the adoption of an Air Quality Management Plan with Adaptive Management will ensure that the Environment Protection (Air) Policy objectives will not be exceeded by the Revised Expansion Project;
 - (c) the horizontal resolution of the model is sufficient and is consistent with regulatory recommendations. The terrain is adequately addressed in both the meteorological model and the dispersion model. Terrain and land-use changes associated with mining are addressed through pit retention factors; and
 - (d) particulate emissions from the combustion of diesel in vehicles were included in the New EIS air quality assessment.
4. In relation to paragraphs 14(f) and 19 of the OCAA List of Issues, blasting at the Revised Expansion Project can be conducted and managed so that the Revised Expansion Project does not cause air quality objectives to be exceeded and does not adversely affect air quality or human health.
5. In relation to paragraph 14(g) of the OCAA List of Issues:
 - (a) the emission sources and meteorological conditions with potential to affect air quality at sensitive receptors is available in the dispersion modelling that was conducted; and
 - (b) in any event, is not critical to determining the suitability of the assessment in the New EIS.
6. In relation to paragraphs 14, 15, 16, 17(a) to 17(c), 18(a), 18(b) and 19 of the OCAA List of Issues, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health and amenity.
7. In relation to paragraphs 15 and 18 of the OCAA List of Issues, additional monitoring and reporting to that required by the CG's imposed conditions and the Draft EA conditions is not required.

8. In relation to paragraph 15(f) of the OCAA List of Issues:
- (a) the objector has misconstrued the Draft EA conditions referred to in paragraph 15(f)(i) of the OCAA List of Issues;
 - (b) the conditions of the Draft EA for the Revised Expansion Project are adequate and appropriate to manage air emissions;
 - (c) the compliance monitoring regime required in the Draft EA conditions is adequate to inform the operators of ongoing air quality impacts such that the mine operators can manage activities to not cause elevated levels of TSP, PM₁₀ and PM_{2.5}; and
 - (d) the PM₁₀ and PM_{2.5} objectives have been formulated such that if a mining activity achieves compliance with the objective for PM₁₀, compliance with the PM_{2.5} objective will also be achieved. Consequently, parallel monitoring requirements for PM₁₀ and PM_{2.5} are not necessary.

ECONOMICS

OCAA LIST OF ISSUES

9. The input/output modelling done in the New EIS:
- (a) was appropriately applied to measure the economic impact of the Revised Expansion Project and was appropriately undertaken for the purposes of the New EIS; and
 - (b) was not designed to measure whether the Revised Expansion Project will demonstrate a net economic benefit or whether the mine is economically viable.

FLOODING, SURFACE WATER QUALITY

OCAA LIST OF ISSUES

10. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(a)(ii) and 2(b)(ii) of the OCAA List of Issues, extensive baseline surface water monitoring data is available for the key parameters and given in the NEW EIS. The use of end of pipe release limits, receiving water flow criteria and trigger investigation levels in the Draft EA is appropriate to protect the environmental values of the receiving waters.
11. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(ii) and 2(d) of the OCAA List of Issues any potential for impacts on water quality due to waste rock leachate can be managed.

12. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(i) of the OCAA List of Issues, the drainage system will not be inadequate and will be designed to meet or exceed any relevant guideline criteria.

DR JOHN STANDLEY'S LIST OF ISSUES

13. Relevant details regarding surface flows and surface flow impacts of the existing operation and the Revised Expansion Project are contained in the New EIS.
14. Relevant details regarding surface water quality, including analyses, are contained in the New EIS.
15. The water management system and the Draft EA conditions are designed to protect the environmental values of surface waters. Monitoring water quality in pit is not required.
16. The flood assessment for the proposed rail line is given in Section 5.11 of the New EIS. The impact of a one in ten year AEP event, which is likely to occur over the life of the rail line is generally less than 0.2 m and at most 0.35 m.
17. There is no evidence of contaminated water seeping into the groundwater from surface waters. Water is released from the mine to surface waters in accordance with the EA conditions and these conditions are designed to protect the environmental values of surface waters, which would in turn protect the environmental values of groundwater if seepage occurred.

GROUNDWATER CONCEPTUALISATION

OCAA LIST OF ISSUES

18. In relation to paragraph 1 of the OCAA List of Issues:
- (a) the groundwater impacts for the Revised Expansion Project were assessed at a regional scale, and were based on an appropriate conceptualisation of the hydrogeology of the area;
 - (b) there is sufficient data for the various aquifers to provide a suitable basis for assessing aquifer properties; and
 - (c) predicted impacts on the basalt aquifer are conservative as they do not take into consideration likely compartmentalisation through discrete fracturing that forms the aquifer.
19. In relation to paragraphs 1(c), 2(a), 2(b)(i) and 3 of the OCAA List of Issues, there is sufficient long term water level and groundwater quality data to provide a baseline for the

Revised Expansion Project and the Draft EA conditions and CG's imposed conditions are adequate to detect and assess any other impacts on groundwater.

20. In relation to paragraphs 2(c)(ii) and 2(d) of the OCAA List of Issues, there is minimal waste-rock-acid generating potential and there are mitigation measures proposed to minimise impact on the groundwater receiving environment.
21. In relation to paragraph 4 of the OCAA List of Issues:
 - (a) the impact and risks to groundwater from the Revised Expansion Project were defined, and were assessed to be manageable;
 - (b) the CG's conditions and Draft EA conditions provide for ongoing review and assessment and are adequate; and
 - (c) the potential impacts on groundwater and on water users will be addressed and managed through compliance with conditions 10, 11 and 12 of the CG's imposed conditions and Schedule D of the Draft EA and implementation of a Bore Baseline Assessment Program and Make Good Agreements.

GROUNDWATER MODELLING

OCAA LIST OF ISSUES

22. In relation to paragraphs 5 and 6 of the OCAA List of Issues:
 - (a) the predictive numerical model is 'fit for purpose' to undertake assessment of potential impacts resulting from the Revised Expansion Project; and
 - (b) there are no modelling deficiencies that detract from its fitness for purpose.

NOISE, VIBRATION

OCAA LIST OF ISSUES

23. In relation to paragraphs 7 and 9 of the OCAA List of Issues:
 - (a) assessment of health and wellbeing impacts of noise is not reliant on an assessment of "background plus" noise levels;
 - (b) it is not appropriate for the Revised Expansion Project to comply with the Planning for Noise Control Guideline as it is not relevant to mining projects; nor is AS 1055 appropriate as it states "[This Standard] excludes the setting of environmental noise criteria.";

- (c) the noise and vibration criteria nominated in the Draft EA noise conditions adequately deal with impacts on human health and wellbeing for neighbouring residences;
 - (d) compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing; and
 - (e) corrections for tonality and impulsivity should be taken into account when assessing compliance with the Draft EA noise conditions.
24. In relation to paragraph 8 of the OCAA List of Issues:
- (a) the noise modelling undertaken for the Revised Expansion Project was adequate to appropriately determine the extent of the impacts and compliance with the Draft EA noise conditions can occur with mitigation and management measures in place;
 - (b) utilisations of mobile fleet justify the 2 dB noise reduction and also provide margin for the need to apply tonality or impulsivity (or both) penalty corrections (should such corrections be appropriate); and
 - (c) by limiting the Leq noise levels to the values stated in the Draft EA noise conditions, compliance with recognised sleep disturbance criteria for maximum noise levels (ie WHO, Environment Protection (Noise) Policy, L1 Acoustic Quality Objectives) will be achieved.
25. In relation to paragraphs 10 and 11 of the OCAA List of Issues, the TARP (including “live dashboard”) is an effective approach to manage noise impacts from the Revised Expansion Project due to its “live” assessment of noise levels in combination with real-time management interventions as required.
26. In relation to paragraph 10 of the OCAA List of Issues, the noise mitigation options (eg silencing of mobile plant, broad-band reversing alarms), which are detailed and modelled in the New EIS and are appropriate.
27. In relation to paragraph 11 of the OCAA List of Issues:
- (a) technical capabilities of commercially available directional noise loggers are satisfactory; and
 - (b) the noise monitoring system of the TARP and the proposed Noise and Vibration Management Plan will be adequate to monitor and manage noise from the Revised Expansion Project.
28. In relation to paragraph 12 of the OCAA List of Issues:
- (a) the operation of the rail loadout facility is expected to meet the Draft EA noise limits (as the EIS modelling has accounted for mobile plant at the rail loadout facility as well as

train movements along the spur itself) and therefore will not substantially impact on the surrounding sensitive receptors;

- (b) aside from a typographical error (in the last paragraph of Section 5.2.1 of the CG's Report) the recommended noise limits of the CG's Report are contained in the Draft EA; and
- (c) low frequency noise is not a phenomenon associated with train noise from a rail loadout facility.

HEALTH

TANYA PLANT LIST OF ISSUES

29. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:

- (a) the Revised Expansion Project will not cause unacceptable adverse health effects associated with:
 - (i) fine particulates PM₁₀ and PM_{2.5};
 - (ii) blast fumes;
 - (iii) diesel fumes;
 - (iv) water quality; and
 - (v) noise;
- (b) the proposed transport of coal from the proposed mine will not cause unacceptable adverse health effects associated with:
 - (i) particle pollution; and
 - (ii) diesel combustion.

MENTAL HEALTH

TANYA PLANT LIST OF ISSUES

30. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:
- (a) there is no reliable evidence that there will likely be any increase in mental health illness as a consequence of the Revised Expansion Project;
 - (b) solastalgia is not a recognised psychiatric condition;
 - (c) mental illness is a multi-faceted condition and highly unlikely to be caused by a single specific factor such as the development or expansion of a mine;
 - (d) complaints of stress, anxiety or unhappiness do not fulfil the Diagnostic and Statistical Manual of Mental Disorders DSM-V criteria for a mental illness.

PART 2: Additional issues that the notified experts of the applicant will address, where there is no expert proposed by the objectors relating to that issue

ECONOMICS

1. CGE modelling calculates the direct and indirect impact over time on the regional, Queensland and Australian economies of the construction and operation of a project and is the most comprehensive assessment that can be made of a project on an economy.
2. A CGE analysis, unlike an input/output analysis:
 - (a) does take account of the fact that there are limited productive resources in the economy;
 - (b) does not ignore the opportunity costs associated with using resources from one project rather than another;
 - (c) does not assume fixed prices; and
 - (d) does include substitution between goods in consumption and inputs to the production of goods and services, as relative prices change.
3. A CGE analysis comprehensively accounts for the indirect impact on other industries.
4. A CGE analysis takes into account the impact on the economy of the project relative to a scenario where the mine does not go ahead.
5. CGE modelling undertaken for the Revised Expansion Project shows that the impact on the State and local economies will be positive.
6. A CBA estimates the net social benefits for the community as a whole that result from a project.
7. A CBA for the Revised Expansion Project shows that the benefits of the project will greatly exceed its costs.
8. This CBA analysis for the Revised Expansion Project takes account of the mine's costs including environmental and social costs.
9. Even when adopting assumptions that make the benefits unrealistically small and the costs unrealistically large, the CBA for the Revised Expansion Project shows that the benefits greatly exceed its costs.
10. Even on a very unrealistic assumption that all agricultural land upon which there is drawdown of one metre or more will be rendered immediately worthless for agricultural

production, the CBA analysis for the revised Expansion Project shows the benefits of the Revised Expansion Project far outweighs its costs.

11. The CGE and CBA modelling shows that the value of the coal mined over the mine's life far exceeds the value of agriculture in the district into the indefinite (indeed, infinite) future.
12. The environmental effects of burning thermal coal are properly considered in CBAs of coal fired power plants, not coal mines.

TERRESTRIAL FAUNA

13. There have been database reviews and sufficient survey effort, utilising appropriate methodology, conducted to understand fauna habitats and species.
14. There are no conservation significant fauna present or likely to be present in the area of the Revised Expansion Project that have not been considered or for which there is no appropriate management response in the approval conditions (the CG's imposed conditions and Draft EA).
15. The site provides habitats for a range of common wildlife. The Revised Expansion Project will not result in the loss of any common species or reduce their long term security in the local landscape.
16. Taking into consideration the current and prospective uses of the area of the Revised Expansion Project, the proposed mining operation and associated habitat restoration will provide commensurate and strategically placed fauna movement options with increased management, such as to provide improved habitat connectivity and safe movement options.
17. Appropriate management responses can and will be adopted to mitigate potential impacts on fauna and fauna habitats.
18. Appropriate management of pest species for the Revised Expansion Project will be provided through an integrated Pest Management Plan.
19. The Revised Expansion Project will not result in the loss of any fauna species in the local landscape due to traffic.

TERRESTRIAL FLORA

20. The occurrence of threatened flora species have been identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions, leading to no net loss of threatened species.

21. The type, extent and condition of threatened vegetation communities were identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions and the Draft EA conditions. It is not expected that there will be any additional significant impacts not subject to management conditions in place under the CG's imposed conditions and the Draft EA conditions.
22. The upgrade of the local electricity grid with new powerlines is located outside the MLAs, other than the connection from the rail loop, and will be subject to a separate approvals. In any event, the design and upgrade to the electricity grid can be managed to ensure retention of most of the verge vegetation and requires clearing of only a small amount of native vegetation.
23. The implementation of the Pest and Weed Management Plan will avoid significant impacts from listed weed species.
24. Given:
 - (a) much of the native vegetation that will be removed by the proposed mine extension occurs on areas previously cleared for agriculture; and
 - (b) vegetation communities that are MSES will be offset on land that similarly has been previously cleared for agriculture,rehabilitation is considered to be an adequate response to the loss of any native vegetation communities.
25. The Draft EA conditions are adequate to protect significant flora and vegetation communities within the footprint of the Revised Expansion Project.
26. In relation to paragraph 1(e)(v) of the OCAA List of Issues based on vegetation community composition it is unlikely that any of the relevant communities mapped are groundwater dependant. Regardless of whether or not drawdown will impact mapped vegetation communities, it is unlikely to impact vegetation that is otherwise mapped as MSES.

COAL MARKETS AND CLIMATE CHANGE

27. In absolute terms, during the life of the Revised Expansion Project, demand for thermal coal is forecast to grow, particularly in India and South East Asia.
28. Thermal coal is a vital component of the global energy mix during the life of the Revised Expansion Project.
29. Uncertainties over domestic and international energy policies have been taken into account in forecasts undertaken by reputable agencies such as the International Energy Agency.

30. There are many good reasons as to why the Revised Expansion Project is economically viable.
31. The incremental tonnes that will be produced because of the Revised Expansion Project are negligible additions from the perspective of global volumes. Should the Revised Expansion Project not produce and supply its customers the additional volume, the coal will be supplied from another source. The consequence of this is that CO₂ emissions will not vary materially. Furthermore, as the New Acland Mine produces high-energy thermal coal, which compares favourably to lower quality coals from Indonesia and domestic Chinese and India coals, if the Revised Expansion Project does not proceed global CO₂ emissions may increase depending upon the country involved and the quality of the coal.

VISUAL AMENITY AND LIGHTING

32. Lighting for the Revised Expansion Project can be managed to avoid unacceptable impacts.
33. There will be no unacceptable visual or character impacts on the receiving environment, including those from lighting that cannot be adequately managed using standard measures.

GROUNDWATER

34. The Applicant's current mining impacts to groundwater have been restricted to immediately adjacent to the active mining area, with minimal impact observed on the surrounding groundwater environment.
35. The predicted water usage is within the New Acland Mine's allocation under existing authorisations to take water.

FLOODING, SURFACE WATER QUALITY

36. The water balance modelling for the Revised Expansion Project water management system is sufficient to demonstrate the operation of the water management system and the indicative sizes of the water management infrastructure. The Draft EA release limits have been developed to limit the extent of the impact of the mine regardless of the water balance assessment.
37. The New EIS demonstrates that the levee banks and rail line will impact on flood levels but the impacts are acceptable. The impact of the levee banks are all located on the mine lease and the impact of the rail line is mostly confined to land owned by the Applicant.

38. The flood modelling of the New EIS has fully considered the catchment upstream of the mine. The models were prepared in accordance with best practice commensurate with a concept level assessment. Additional modelling will be undertaken during the detailed design phase to minimise any impacts identified in this study.
39. The adopted monitoring program covers both end of pipe water quality investigation limits and receiving water triggers. The monitoring program is both practical and reasonable given the low potential risk of impacts on surface water quality of the Revised Expansion Project
40. The issues that caused the elevated historical releases have been identified and rectified on site. The Draft EA also requires separation of mine affected and sediment affected water, which will further reduce the potential for elevated releases.
41. The assessment of impacts of the Revised Expansion Project on surface water and water quality is appropriate.

NOISE AND VIBRATION

TANYA PLANT LIST OF ISSUES

31. In relation to the issues raised by Tanya Plant notified on 27 November 2015 and 15 December 2015, compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing. The proposed Draft EA conditions are adequate to protect human health.

OTHER

42. The noise and vibration criteria nominated in the Draft EA noise conditions in conjunction with the Noise and Vibration Management Plan will adequately manage the impacts on wildlife from the Revised Expansion Project.
43. The blasting criteria documented in the Draft EA are appropriate to protect the amenity of residents and their homes from the Revised Expansion Project.
44. The extraction of basalt already occurs on the mining lease and will not result in additional (measurable) noise.
45. The Revised Expansion Project does not rely on untypical and unproven measures to manage noise.
46. With regard to the suggestion by one objector that mine noise was measured at 40.1 dB LAeq at a property 8 kilometres from the existing New Acland Mine, it is not possible for mine noise to be dominant at this distance.

47. It is not appropriate to set environmental authority conditions for certification of noise levels from items of plant or prescribing specific noise management measures.
48. Inaudibility is both an unreasonable and unfeasible condition.

LAND USE, SOILS

49. The offset areas identified for priority agricultural land use and the rehabilitation proposed and required by the CG's imposed conditions and the Draft EA will be more than sufficient to compensate for any loss of cropping land disturbed by the Revised Expansion Project.
50. The Revised Expansion Project will not reduce productivity or alienate areas outside of the mined areas from cropping use.
51. There will be no indirect impacts (such as through land fragmentation, flooding or adverse impacts on water supplies) on the cropping capacity of non-disturbed areas arising from the Revised Expansion Project that cannot be mitigated.
52. Apart from the lands of SCL status that will be in the depressed landform all other lands of SCL status will be rehabilitated to SCL compliant conditions as required by the CG's imposed conditions.
53. Adequate offset arrangements are in place to mitigate the impact on land within the depressed landform that cannot be returned to SCL compliant status.
54. Good Quality Agricultural Land designation is irrelevant as the State Planning Policy SPP1/92 lapsed in Dec 2012.
55. The impact of the Revised Expansion Project on the extent of regional cropping soils is insignificant.
56. The conclusions reached in relation to the Revised Expansion Project areas with respect to the quality of land and subsequent rehabilitation are valid for the land located inside ML50216 that will be impacted for the Revised Expansion Project.

COMMUNITY, SOCIAL

57. The Applicant has made significant efforts to engage with landholders and other community members. The stakeholder engagement program for the Revised Expansion Project is equal to or better than industry best practice.

58. The Revised Expansion Project was revised to address community concerns and avoid direct impacts on Acland and the Applicant has committed to the Acland Management Plan, which will conserve existing values.
59. Tom Doherty Park will be retained by the State and will not be directly impacted by the Revised Expansion Project.
60. The Revised Expansion Project is likely to have a positive effect on a number of Acland sites that have cultural heritage values through the Acland Management Plan.
61. Whilst some people will see the Revised Expansion Project as a detraction from sense of place, others value the New Acland Mine as an important part of the area's social and economic fabric.
62. A population decline was already being experienced in Acland before the Applicant began property acquisitions.
63. The Applicant has made significant contributions to supporting community cohesion through its community investment fund, sponsorships and donations.
64. Community members hold differences of opinion about the Revised Expansion Project and divisions are likely to continue whether the Revised Expansion Project is approved or not.
65. Failure of the Revised Expansion Project to proceed is likely to have negative impacts on community cohesion through loss of mining families from the area.
66. The New EIS including the SIA and SIMP was reviewed by Government agencies and approved in December 2014 after a lengthy process of consideration. The additional information and clarifications provided as part of the AEIS addressed the substantive issues raised by submitters in relation to the SIA and SIMP.
67. The Applicant consulted with Traditional Owners about their values relating to the Revised Expansion Project area, employment opportunities and cultural awareness and is involved in a range of activities with the Western Wakka Wakka people (eg social investment, engagement and CHMP implementation). The outcomes of this consultation are represented in the CHMP developed for the Revised Expansion Project.
68. The Revised Expansion Project would provide significant benefits for employees, families, community organisations and regional economic outcomes, as documented in the New EIS. The Revised Expansion Project offers security of employment and additional employment at a time when mining industry employment opportunities are very limited.
69. The numbers of registered businesses (including agricultural businesses) in Oakey and Toowoomba have remained stable during the past three years. The Revised Expansion Project also offers benefits for businesses in Oakey and the Toowoomba region. There is no evidence that the Revised Expansion Project would cause negative impacts on businesses.

70. Both families and the local community are likely to experience negative social impacts if the Revised Expansion Project does not proceed.
71. There is evidence of strong community support for the Revised Expansion Project to proceed.
72. An independent mental health study is beyond the usual scope for an SIA.
73. The New EIS adequately addresses the impact of the Revised Expansion Project on the amenity experienced by people who live in the affected area.
74. The social impacts of the Revised Expansion Project will be managed effectively by the SIMP and the CG's imposed conditions.

AIR QUALITY AND GREENHOUSE EMISSIONS

TANYA PLANT LIST OF ISSUES

75. In relation to the issues raised by Tanya Plant as notified on 27 November 2015 and 15 December 2015, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health.

OTHER

76. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect flora and fauna.
77. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect agriculture.
78. Air quality associated with the existing mine has been consistently shown to be within the objectives of the Environment Protection (Air) Policy and the existing Environmental Authority.
79. The appropriate air quality assessment criteria are the air quality objectives that are specified in the Environment Protection (Air) Policy. The New EIS assessed impacts against these objectives and demonstrated that compliance could be achieved.
80. The measures under the proposed Air Quality Management Plan for the materials handling facility and associated infrastructure are appropriate to minimise dust emissions from that infrastructure.

81. A number of studies in Queensland and New South Wales, including studies conducted on the South West System have demonstrated that coal dust emissions from coal carrying trains and empty coal trains do not cause exceedances of air quality objectives for PM₁₀ and PM_{2.5}. A dispersion modelling study of coal dust from trains therefore provides no practical benefit to demonstrating the appropriateness of the Revised Expansion Project.
82. Coal dust emissions from trains can be adequately and reliably managed through the use of the measures proposed in the New EIS. The Revised Expansion Project will implement strategies consistent with the South West System Coal Dust Management Plan which has been adopted by Aurizon to manage the impact of coal dust emissions from trains.
83. The Revised Expansion Project is not responsible for nor in control of the emissions from diesel locomotives, which are owned and operated by Aurizon. Notwithstanding this, a number of studies in Queensland and New South Wales, including studies conducted on the South West System, have demonstrated that particulate levels in the vicinity of coal rail networks with diesel locomotives do not exceed of air quality objectives for PM₁₀ and PM_{2.5}.
84. Scope 1 and 2 emissions have been calculated in accordance with relevant regulatory requirements at the time of the New EIS. Greenhouse gas emission estimates included the key greenhouse gases: carbon dioxide, methane and nitrous oxide.
85. Scope 3 emissions from the Revised Expansion Project are likely to be 198,485 kt CO₂-e for the Revised Expansion Project life. This equates to an annual average Scope 3 emission rate of 15,268 kt CO₂-e, which is a very small percentage of Australia's emission reduction target for 2020. The Revised Expansion Project's Scope 3 emissions are almost entirely generated offshore and therefore fall under the control, and emissions target, of another jurisdiction.

AGRICULTURAL ECONOMICS

86. The Revised Expansion Project will not cause significant displacement or loss of agricultural enterprises.
87. The Revised Expansion Project will not cause significant loss of business or jobs for lost agricultural enterprises.
88. The Revised Expansion Project is not inconsistent with the expansion of rural tourism.
89. Draw-down of groundwater levels will not adversely affect regional economics due to the resulting impacts on agriculture.
90. The Revised Expansion Project will not significantly restrict the use of land for alternative uses.

91. The claim that agriculture brings \$155 billion to the Australian economy and creates 1.6 million jobs is incorrect.

LIVESTOCK, REHABILITATION

92. The impact of the Revised Expansion Project on cropping land will not reduce grazing land to marginal, low intensity grazing.
93. The Revised Expansion Project will not adversely affect the health of livestock.
94. The performance of livestock and pasture on rehabilitated soils is currently comparable to livestock and pasture on unmined soils.

TRAFFIC, TRANSPORT, ROADS

95. The closure and/or diversion of public roads, whilst being acknowledged as having an impact, has been considered in the context of the small number of road users impacted by the closure and/or diversion and such impacts are small and are manageable.
96. There are no significant matters of road safety that are not capable of being addressed and if necessary improved by the road upgrading conditions imposed upon the Revised Expansion Project by the CG's imposed conditions.
97. Additional road usage created by the expansion will be appropriately managed by a Road Impact Assessment and a Road Use Impact Management Plan.
98. The impacts of additional traffic at the materials handling facility were appropriately considered in the EIS process and such impacts are satisfactorily addressed in the CG's imposed conditions.
99. Any perceived or real errors or inadequacies in the New EIS or AEIS raised by objectors regarding roads, traffic, bus routes or transport do not undermine the integrity of the EIS process or its findings and the resulting conditions issued by the CG are appropriate.
100. Upgrading of the surrounding road network in the vicinity of the Revised Expansion Project as proposed by the Applicant is appropriate to address the impacts of the Revised Expansion Project.
101. The necessary road closures for blasting will be of a short duration and infrequent, such that impacts on Oakey-Cooyar Road are reasonable and acceptable.

102. The impacts on traffic generated by the Revised Expansion Project have been considered and determined to be reasonable, acceptable and manageable and are satisfactorily addressed in the CG's imposed conditions.

VALUATION

103. There is no evidence of diminution in property values in the Acland area.

Definitions used in this document

In this document, unless otherwise defined, capitalised terms in this document have the meanings given to them in the Affidavit of Bruce Douglas Denney sworn 10 December 2015 and filed with the Court on 11 December 2015, and:

AEP means annual exceedance probability.

CBA means cost benefit analysis.

CGE means Computable General Equilibrium.

Draft EA means the draft EA issued by the Department of Environment and Heritage Protection dated 28 August 2015.

ha means hectare.

MNES means Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*.

MR Regulations means the Mineral Resources Regulation 2013.

MSES means matters of State Environmental Significance.

New Hope Group means the New Hope group of companies.

OCAA List of Issues means the Updated Notice of Issues by Oakey Coal Action Alliance Inc (undated).

SCL means strategic cropping land.

SIA means Social Impact Assessment.

SIMP means Social Impact Management Plan.

Annexure D - Opinion and findings on matters raised in lay witness statements filed by objectors

No.	Objectors' issues to be addressed	Paragraph reference	Response
1.	[REDACTED]		
1.1	[REDACTED] [REDACTED] [REDACTED] [REDACTED]	9	Ecosystems identified as having state significant floristic values are mapped by the proponent's consultant as MSES and under Condition I4 of the Draft EA conditions these ecosystems are required to be offset according to the <i>Queensland Environmental Offsets Policy 2014</i>. This is the current State process developed to offset the impact on ecological communities and is appropriately included as part of the conditions for the implementation of Stage 3. It is a statutory condition of every mining lease to control declared weeds. In response to these requirements the proponent has committed to implement a Pest and Weed Management Plan to control listed weeds on the MLA.
2.	[REDACTED]		
2.1	[REDACTED] [REDACTED] [REDACTED]	67	African boxthorn <i>Lycium ferocissimum</i> is prevalent within the local landscape. This species is listed as a Class 2 pest under the LP act (2002). This species will be controlled through the implementation of the Pest and Weed Management Plan (2014) (Appendix J EIS 2014).
3.	[REDACTED]		
3.1	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	62	Condition 14 of the CG's Report requires that preclearance surveys are undertaken by suitably qualified ecologists at the appropriate time of year. Impacts to threatened flora species including the Austral cornflower (<i>Rhaponticum australe</i>) are to be appropriately offset under Condition 13 of the CG's report and Condition I4 of the Draft EA conditions. This process will lead to no net loss of this species within the local landscape.
3.2	[REDACTED] [REDACTED] [REDACTED]	63	Condition 14 of the CG's Report requires that preclearance surveys are undertaken by suitably qualified ecologists at the appropriate time of year. Impacts to threatened flora species are to be appropriately offset under Condition 13 of the CG's report and Condition I4 of the EA conditions. This process will lead to no net loss of this species within the local landscape.

No.	Objectors' issues to be addressed	Paragraph reference	Response
			Floristic communities that are deemed to be MSES within the impact areas have been identified and impacts to these communities will be offset according to requirements under Condition 13 of the CG's report and Conditions I4 of the Draft EA conditions
3.3	[REDACTED]	65	Whilst dusts emanating from mine sites has been shown to decrease plant growth in extreme conditions due to reduced photosynthesis this reduction has been shown to cease after rain events. There are no obvious and significant negative impacts of coal dust on extant native vegetation from the existing operation at New Acland Coal Mine. I can see no reason why this situation would change if Stage 3 of the mine were to be undertaken. The negative impacts of dust on the survival of native plant species will not lead to the loss of floristic values that are MSES.
3.4	[REDACTED]	66	I have not seen the rehabilitation for earlier stages of the New Hope Mine.
4.	[REDACTED]		
4.1	[REDACTED]	93	Condition 14 of the CG's Report requires that preclearance surveys are undertaken by suitably qualified ecologists at the appropriate time of year. Impacts to threatened flora species are to be appropriately offset under Condition 13 of the CG's report and Condition I4 of the Draft EA conditions. This process will lead to no net loss of this species within the local landscape. Floristic communities that are deemed to be MSES within the impact areas have been identified and impacts to these communities will be offset according to requirements under Condition 13 of the CG's report and Condition I4 of the Draft EA conditions.
5.	[REDACTED]		

No.	Objectors' issues to be addressed	Paragraph reference	Response
5.1	[REDACTED]	112	I am not aware of the practise of using mine truck and machinery tyre as fill under rehabilitated country. Requirements for the rehabilitation of disturbed mines are given in Condition 7 "Rehabilitation of disturbed land".
5.2	[REDACTED]	114	The Bottle trees within the locality (<i>Brachychiton</i> spp.) are not a Threatened flora species and are common in the landscape. The proposed Stage 3 extension will have no significant long-term impact on the proliferation of this species within the locality.
6.	[REDACTED]		
6.1	[REDACTED]	56	Floristic communities that are deemed to be MSES within the impact areas have been identified and impacts to these communities will be offset according to requirements under Condition 13 of the CG's report and Condition I4 of the Draft EA conditions.
7.	[REDACTED]		
7.1	[REDACTED]	73	Floristic communities that are deemed to be MSES within the impact areas have been identified and impacts to these communities will be offset according to requirements under Condition 13 of the CG's report and Condition I4 of the Draft EA conditions.
7.2	[REDACTED]	108	African boxthorn <i>Lycium ferocissimum</i> is prevalent within the local landscape. This species is listed as a Class 2 pest under the LP act (2002). This species will be controlled through the development of the Pest and Weed Management Plan (2014) (Appendix J EIS 2014).
7.3	[REDACTED]	109	Rehabilitation requirements to return disturbed lands to grazing is an entirely consistent appropriate response to the impacts of mining. Any extant communities deemed to be MSES are required to be offset. These offsets will be implemented within the local landscape.
8.	[REDACTED]		

No.	Objectors' issues to be addressed	Paragraph reference	Response
8.1	[REDACTED]	93	Whilst dusts emanating from mine sites has been shown in extreme conditions to decrease plant growth due in to reduced photosynthesis this reduction has been shown to cease after rain events. There are no obvious and significant negative impacts of coal dust on extant native vegetation from the existing operation at New Acland Coal Mine. I can see no reason why this situation would change if Stage 3 of the mine were to be undertaken. The negative impacts of dust on the survival of native plant species will not lead to the loss of floristic values that are MSES.
9.	[REDACTED]		
9.1	[REDACTED]	76	This statement seems to me to take two opposing stand points. The opening statement "To date the only site rehabilitation has been the creation of a grass paddock" seems to lament the lack of native rehabilitation whilst the remainder of the statement seems to show concern about locally native pioneer species invading grazing habitat. The establishment of sustainable grazing land is an appropriate land use for areas that have been disturbed by mining. Ecological values deemed to be of State significance are offset within the locality leading to no net loss of MSES. Several wattle species frequently invade fallow paddocks within the Acland locality and often require various management techniques to keep paddocks 'open' for grazing. The presence of these two wattles within the rehabilitation is an indicator that initial rehabilitation efforts have produced a growth medium that is conducive for native plant growth. The mine approval conditions determine whether these areas are appropriately rehabilitated to grazing land or native habitats.
10.	[REDACTED]		
[REDACTED]	[REDACTED]	Page 2	[REDACTED] [REDACTED] [REDACTED] [REDACTED] The VMA relates to woody vegetation only and more specifically to

No.	Objectors' issues to be addressed	Paragraph reference	Response
	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]		vegetation communities not individual species which are covered under the NC Act (1992). I can confirm that a population of <i>Rhaponticum australe</i> occurs within the NE corner of the Manning Vale West pit [REDACTED]. The AEIS response does not include further survey for the species. The response in the AEIS is limited to explaining that the populations previously located on the Jondaryan-Muldu Road were unlikely to be impacted by the construction of the rail spur. Final detailed engineering designs will determine whether there will be impacts on this species. If it is determined that there will be an impact to this species, it should be referred to the federal DoE and the impacts offset according to requirements set out in the GC's report Condition 13 and Condition 14 of the Draft EA conditions. It is possible that more populations of this species occur within the MDL-MLA however I surveyed most of the likely areas within the disturbance footprint at a time when the species was in flower and therefore prominent. The chances of other non-recorded populations existing within the MLA are relatively low. Survey for other populations of this species within the disturbance footprint by appropriately qualified ecologist is required under Condition 14 of the CG's report. This process will be adequate to detect populations if they exist.
10.2	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Pages 6 - 7	Chapter 7 EIS 2014, Page 7-68, the statement does suggest that the area of bluegrass (not necessarily RE 11.3.21) are non-remnant. <i>The location of the bluegrass communities across the revised Project area coincides with areas mapped in the preclearing vegetation mapping as brigalow and poplar box communities. Some areas that were mapped as bluegrass communities now have woody vegetation regrowth occurring throughout the community. The woody regrowth includes Acacia falcata, Acacia salicina, Acacia harpophylla, Eremophila mitchellii and Eucalyptus populnea.</i> <i>..... In its current state, this vegetation is non-remnant vegetation.</i> <i>These areas lack the diversity of herb and forb species, with Dichanthium sericeum being the dominant species, to the exclusion of other grasses, herbs and forbs.</i> As an independent expert I have looked at the mapped RE 11.3.21 and have concluded that they are most likely to be non-remnant according to Neldner et al., (2012) (Queensland

No.	Objectors' issues to be addressed	Paragraph reference	Response
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		
	[REDACTED]		

Annexure E - Opinion and findings on terrestrial flora matters raised in MLA and EA objections

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
10.3	There will be significant adverse environmental impacts caused by those operations. Endangered species will be adversely affected. Flora such as several grass species will be obliterated.	John Cook, Patricia Cook	Page 2 (JC; PC)	John Standley; Patricia Cook	Page 2 (Standley EA submission) and Page 2 (Standley EA objection); EA Objection grounds (PC)	Please see the following paragraphs from my statement: Threatened flora species (5.1 - 5.22)
10.4	The proponent has already rendered the verge vegetation on the southern side of the eastern entrance to Acland. This verge is neighbouring to a "SOIL CONSERVATION ZONE" to the south. If the electricity grid is moved to the Sabine Road the same will happen there.	Glenn Beutel	Page 4 (GB)	Glenn Beutel	EA Submission Attachment A page 4/17 (GB)	Please see the following paragraphs from my statement: - Threatened flora species (5.1 - 5.22) - Significant impacts to threatened vegetation communities (5.23 - 5.37)
10.5	Species severely and permanently impacted by the mine will include, but are not limited to three threatened flora species, Belson's Panic (<i>Homopholis belsonii</i>) (Vulnerable), Lobed bluegrass (<i>Bothriochloa bilboa</i>) (Vulnerable)(approx. 40.1 hectares to be destroyed), Finger panic grass (<i>Digitaria porrecta</i>) (endangered). Additionally, an area of 28.7 hectares of Brigalow Woodland will be destroyed. Considering s269(4)(j) of the MRA, the EIS and AEIS do not adequately demonstrate that the mine will not have unacceptable	Paul and Angela Mason	Paragraph 39, 40 (Mason)			Please see the following paragraphs from my statement: - Threatened flora species (5.1 - 5.22) - Significant impacts to threatened vegetation communities (5.23 - 5.37)

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	long term or permanent adverse environmental impacts on biodiversity, including threatened species and ecosystems caused by mining operations and the extent of mining operations at the mine.					
10.6	The proposed upgrade of the Acland Sabine Road and possible relocation of power lines along this corridor / and/or railway reserve is of great concern as this contains Belsonii (not shown on clarification maps) About forty maturing bottle trees were removed from their land in the town site. My EIS submissions point out an occurrence of Austral Cornflower; - (a listed species State and Federal) [Rhaponticum] Australe was not mentioned in the referral to the Commonwealth - why not? However it was mentioned in the Stage 2 EIS with a photo. Since New Hope Group purchased land around Acland, Box thorn, Tree pear, fox, pigs, rabbis and Mother of Million have all got out of control. I have trapped more than 50 feral and abandoned cats and taken them into Toowoomba RSCPA.	Glen Beutel	Page 12 (GB) Page 6 (GB) Page 7 (GB) Page 11 (GB) Page 12 (GB)	Glenn Beutel	EA Submission Attachment A page 6, 7, 11/17, EA Objection Attachment B page 1/2 (GB)	Please see the following paragraphs from my statement: • Threatened flora species (5.1 - 5.22) • Significant impacts to threatened vegetation communities (5.23 - 5.37) • Proposed powerline upgrade impacts on conservation significant flora and vegetation communities (5.38 - 5.40) • Avoidance of significant impacts from listed weed species through NAC's obligations under MR Act and Regulations and the implementation of the Pest and Weed Management Plan (5.41 - 5.48)

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	The maps and data on Flora and Fauna is unreliable.					
10.7	The proposed project will cause damage destruction to local flora and fauna, some of which is protected under various State and commonwealth legislation.	Tanya Plant; Hazel Green; Merilyn Plant; Sid Plant	Paragraph 131 (TP); Paragraph 18, 23 (HG); Paragraph 24, 25; EIS submission, under heading 5 (MP); Paragraph 132 (SP)	Tanya Plant; Nardi Rowe	EA submission paragraph 69 (TP); EA submission paragraph 69 (SP); Page 4, dot point 3 (NR EA Objection)	Please see the following paragraphs from my statement: Threatened flora species (5.1 - 5.22)
10.8	The EIS acknowledges that there are areas of various endangered and "of concern" and "least of concern" regional ecosystems on the site of the proposed project (chapter 7). The proposed site also includes species that are listed as endangered and vulnerable under the EPBC Act. The proposed pits would destroy these areas and ecosystems (see figure 7-7 for example). The proposed project would result in clearing 64.7ha of threatened communities listed under the EPBC Act and 142.9ha of regional ecosystems listed under state legislation (see page 7-78).	Tanya Plant	EIS submission p34, 35 (TP)			Please see the following paragraphs from my statement: Significant impacts to threatened vegetation communities (5.23 - 5.37)

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	This disturbance should not be allowed.					
10.9	Proposed offsets are a very poor and inadequate alternative to avoiding the degradation that the proposed project would cause.	Tanya Plant; Sid Plant	Paragraph 48, EIS submission p36 (TP); Paragraph 49 (SP)	Tanya Plant	EA submission paragraph 70 (TP); EA submission paragraph 70 (SP)	Please see the following paragraphs from my statement: Significant impacts to threatened vegetation communities (5.23 - 5.37)
10.10	The expertise to adequately restore agricultural land following open cut mining does not currently exist. Once the complex community of fungal hyphae and other biota have been destroyed, they are not restored.	Hazel Green	Paragraph 18 (HG)			Please see the following paragraphs from my statement: Rehabilitation as an adequate response to the loss of any native vegetation communities (5.49 - 5.55)
10.11	The Acland area has been rich in biodiversity including plants, marsupials, reptiles, insects and smaller useful biota. The destruction caused by stage 2 would be much worse if stage 3 were to take place. This is an important area for koala habitat and because of many pressures on the koalas I have worked in various organisation to help restore/preserve some habitat. The government has made grants to help with this. It would be extremely irresponsible to allow expansion of the New Acland mine to further undermine koala survival by destruction of habitat, increased traffic and noise. Current federal laws	Hazel Green	Paragraph 23 (HG).	Paul Evans; Carolyn Lunt; John Millane; Nardi Rowe; Frances Scarano	Page 1, dot point 5 (PE EA Submission); Page 1, dot point 5 (CL EA submission); Page 1, dot point 5 (JM EA submission); Page 1, dot point 5 (NR EA submission); Page 1, dot point 5 (FS EA submission)	Please see the following paragraphs from my statement: - Threatened flora species (5.1 - 5.22) - Significant impacts to threatened vegetation communities (5.23 - 5.37)

No.	Specific objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	acknowledge that the koala is vulnerable. (HG) The project will cause negative impacts on threatened species and communities, including the Koala (PE, CL, JM, NR, FS)					
10.12	Removal of bottle trees	Merilyn Plant	Paragraph 59; annexure "Further notes on reasons for objections" under heading "1 - Intimidation and false promises".	Merilyn Plant	Page 8, paragraph 78 (MP EA submission); Annexure "Acland Stage Three Take Four" under heading "1 - Intimidation and false promises"	Please see the following paragraphs from my statement: Threatened flora species (5.1 - 5.22)
10.13	The proposed project seems to have inadequately considered the impact on some species			Tanya Plant; Sid Plant	EA submission paragraph 71 (TP); EA submission paragraph 71 (SP)	Please see the following paragraphs from my statement: Threatened flora species (5.1 - 5.22)
12.3	The proposed upgrade of the Acland Sabine Road and possible relocation of power lines along this corridor / and/or railway reserve is of great concern as this contains Koala habitat (not shown) and <i>Homopholis Belsonii</i> (not shown on clarification maps) and potentially listed fauna species.	Glenn Beutel	Page 12			Please see the following paragraphs from my statement: Threatened flora species (5.1 - 5.22)

Annexure D

Flora and Fauna: Updated information

Date	Document	Extract / comments	Adrian Caneris eBrief Document No.	Andrew Daniel eBrief Document No.
18 January 2017	EPBC Approval issued	Has effect until 31 January 2042	Part 2: Fauna, B. Updated Information, Document No. 28.	Part 2: Flora, B. Updated Information, Document No. 27
Published 2018	Queensland trust for Nature Koala Research Project: 2017 Report	A collaborative research project between Queensland Trust for Nature, The University of Queensland and The New Hope Group investigating the ecology of koalas in the area of the New Acland Coal Mine.	Part 2: Fauna, B. Updated Information, Document No. 9 - as part of the Koala Species Management Plan.	N/A
12 February 2019	Coordinator-General's change report - Amendment to stated conditions (noise)	Proposed changes to stated conditions D1-D3 (concerning noise) give effect to the orders and recommendations handed down by the Land Court on 7 November 2018.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 23.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 23
25 September 2019	Protect Plant Clearing Permit	- Valid until 24 September 2021 - Permit approves the clearing within an area of 2000 ha of the protected plant habitat (Acland-Sabine Road Upgrade). Species include: - Austral cornflower, <i>rhaponticum australe</i> <i>Homopholis belsonii</i> - Finger panic grass, <i>digitaria porrecta</i>	Part 2: Fauna, B. Updated Information, Document No. 23.	Part 2: Flora, B. Updated Information, Document No. 21.

		Picras Evae		
1 November 2019	Protected Plant Clearing Permit	- Valid until 31 October 2021 - Permit approves the clearing within an area of 62 ha of the protected plant habitat (Infrastructure areas). Species include <i>homopholis belsonii</i>.	Part 2: Fauna, B. Updated Information, Document No. 222.	Part 2: Flora, B. Updated Information, Document No. 16 and 20.
2 December 2019	The Offset Management Plan required under the EPBC Approval 2007/3423, was approved		Part 2: Fauna, B. Updated Information, Document No. 20.	Part 2: Flora, B. Updated Information, Document No. 19..
10 December 2019	Protected Plant Permit (Mine Pit areas) under the <i>Nature Conservation Act 1992</i> (Qld).	- Valid until 9 December 2021 - Permit approves the clearing within an area of 1598 ha of the protected plant habitat (mining areas). Species include: - Austral cornflower, <i>rhaponticum australe</i> <i>Homopholis belsonii</i> - Finger panic grass, <i>digitaria porrecta</i>	Part 2: Fauna, B. Updated Information, Document No. 21.	Part 2: Flora, B. Updated Information, Document No. 15.
10 January 2020	Environmental Offset Strategy was approved by the CG under Imposed Condition 13		Part 2: Fauna, B. Updated Information, Document No. 17.	Part 2: Flora, B. Updated Information, Document No. 14.
15 January 2020	DES approved Species Management Program (low risk) under the <i>Nature Conservation Act 1992</i> (Qld).	Concerns tampering with animal breeding places	Part 2: Fauna, B. Updated Information, Document No. 14 and 27.	Part 2: Flora, B. Updated Information, Document No. 11 and 26.
4 March 2020	Offset Delivery Plan		Part 2: Fauna, B. Updated Information, Document No. 12.	Part 2: Flora, B. Updated Information, Document No. 9

21 April 2020	Offset Delivery Plan Supporting Document		Part 2: Fauna, B. Updated Information, Document No. 8.	Part 2: Flora, B. Updated Information, Document No. 6.
24 April 2020	DES accepted the Koala Species Management Plan		Part 2: Fauna, B. Updated Information, Document No. 7.	N/A
19 May 2020	CG approves Koala Species Management Plan		Part 2: Fauna, B. Updated Information, Document No. 6.	N/A
September 2020	Coordinator-General's change report No. 2 - amendment to imposed conditions (train load-out facility)	Amendments to imposed condition 4 of the 2014 CGER, in accordance with section 35C of the SDPWO Act.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 25.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 25.
September 2020	Coordinator-General's change report No. 3 - amendment to stated conditions B3 and H40	Amendments to stated condition B3 of the CGER to update proposed air quality monitoring locations for the stage 3 project and stated condition H40 of the CGER to reflect the results of additional ecological surveys undertaken since the release of the 2014 CGER (and to align the conditions with approved offset management plans and strategies).	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 26.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 26
15 February 2021	NAC Draft EA filed		Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 27.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 27.

10 March 2021	Statutory Party Draft EA filed		Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 28.	Part 1: Common Materials, Part A: Application and Approval Documents, Document No. 28
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Annexure E

**New Acland Coal Mine Stage 3 Project, Coordinator-General's evaluation report on the
environmental impact statement December 2014**

Condition 13. Environmental Offset Strategy (EOS)

- (a) The proponent must prepare a detailed EOS that:
 - (i) details any offset requirements conditioned by the Commonwealth Minister for the Environment in any approval for the project under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
 - (ii) details offsets required to address significant residual impacts on matters of state environmental significance consistent with (a)(i)
 - (iii) includes:
 - A. a detailed description of the land to which the plan relates, the values affected and the extent and likely timing of impact on each value
 - B. evidence that values impacted can be offset
 - C. the offset delivery mechanism(s) comprising one or more of: land-based offsets; direct benefit management plans; offset transfers and/or offset payments.
 - (iv) confirms a legally binding mechanism that ensures protection and management of offset areas will be applied
 - (v) includes an offset proposal for impacts on koala habitat. The offset must be landbased and benefit the local koala population.
- (b) The offsets strategy must be provided to the Coordinator-General for approval within 60 days after an approval decision under the EPBC Act
- (c) The approved offsets strategy must be implemented if the project proceeds

Condition 14. Pre-clearance fauna and flora surveys

- (d) Prior to commencement of any project construction activities, the proponent must conduct pre-clearance ecological surveys of areas to be impacted, consistent with:
 - (i) Queensland state government survey guidelines
 - (ii) Requirements of the Nature Conservation Act 1992
 - (iii) Australian government threatened species guidelines.
- (e) The surveys must be sufficient to identify the extent to which the following will be unavoidably impacted by the project:
 - (i) protected wildlife listed under the Nature Conservation Act 1992
 - (ii) matters of state environmental significance as defined by the State Planning Policy
 - (iii) MNES as listed under the EPBC Act
- (f) The surveys must include areas of potential foraging, roosting or nesting habitat for the painted honeyeater (*Grantiella picta*). If the painted honeyeater is found during

preclearance surveys, then any significant impacts on its habitat may require additional offsets in accordance with the EOS for the project.

- (g) If protected plants are found during pre-clearance surveys, then impacts may require a permit under the Nature Conservation Act 1992 and offsets under the Environmental Offsets Act 2014.
- (h) Should additional MSES species be located that were not previously identified during field surveys, the development of management plans and/or additional offsets may be required to address any significant residual impacts for matters of state environmental significance in accordance with the EOS for the project.
 - (i) Notification of the discovery of additional protected plants or MSES species that will be impacted is to be provided to the administering authority within five business days of the discovery. The proponent is required to propose how the species is to be managed and to seek advice from DEHP on the undertaking.
 - (j) Survey results must be included in an updated EOS for the project

Condition 15 Lagoon Creek Conservation Zone Management Plan (CZMP)

- (k) The proponent is required to implement and maintain the Lagoon Creek Conservation Zone.
- (l) The extent of the Lagoon Creek Conservation Zone is to be as described in Figure 4-1 Rehabilitation Plan, Appendix J6, EIS, January 2014. The CZMP specifically addresses the Lagoon Creek corridor and the remnant and rehabilitation zone on Bottle Tree Hill as shown on Figure 4-1.
- (m) The proponent must develop and implement a Lagoon Creek Conservation Zone Management Plan (CZMP) that aims to achieve:
 - (i) control and management (including fencing) of stock from the area
 - (ii) a program of weed management to assist natural regeneration of native species and protect remnant areas from impacts of weed invasion;
 - (iii) suitable monitoring and maintenance strategies.
- (n) There is to be a revegetated area of at least 50 metres either side of the high bank of Lagoon Creek within the conservation zone. Should instream storage such as a dam or other infrastructure be constructed within the conservation zone, the proponent must ensure no net loss of the required buffer. The holder of the project's EA is authorised to construct and maintain an appropriately engineered haul road crossing of Lagoon Creek as part of the access route for coal haulage. The haul road crossing structure within Lagoon Creek must not significantly impede the ephemeral flow regime or create a barrier for fish movement during periods of flow within the creek.

Annexure F



Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Queensland status: All

Records: All

Date: All

Latitude: -27.318

Longitude: 151.689

Distance: 30

Email: adaniel@terrestria.com.au

Date submitted: Wednesday 22 Sep 2021 13:03:20

Date extracted: Wednesday 22 Sep 2021 13:10:24

The number of records retrieved = 2244

Disclaimer

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Information about your Species lists request is logged for quality assurance, user support and product enhancement purposes only.

The information provided should be appropriately acknowledged as being derived from WildNet database when it is used. As the WildNet Program is still in a process of collating and vetting data, it is possible the information given is not complete. Go to the WildNet database webpage

(<https://www.qld.gov.au/environment/plants-animals/species-information/wildnet>) to find out more about WildNet and where to access other WildNet information products approved for publication. Feedback about WildNet species lists should be emailed to wildlife.online@des.qld.gov.au.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	<i>Rhinella marina</i>	cane toad	Y			30
animals	amphibians	Hylidae	<i>Cyclorana alboguttata</i>	greenstripe frog		C		5
animals	amphibians	Hylidae	<i>Cyclorana brevipes</i>	superb collared frog		C		1
animals	amphibians	Hylidae	<i>Cyclorana verrucosa</i>	rough collared frog		C		4/1
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		36
animals	amphibians	Hylidae	<i>Litoria chloris</i>	orange eyed treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria dentata</i>	bleating treefrog		C		11
animals	amphibians	Hylidae	<i>Litoria fallax</i>	eastern sedgefrog		C		17
animals	amphibians	Hylidae	<i>Litoria gracilentia</i>	graceful treefrog		C		7
animals	amphibians	Hylidae	<i>Litoria latopalmata</i>	broad palmed rocketfrog		C		4
animals	amphibians	Hylidae	<i>Litoria peronii</i>	emerald spotted treefrog		C		9
animals	amphibians	Hylidae	<i>Litoria rubella</i>	ruddy treefrog		C		10
animals	amphibians	Hylidae	<i>Litoria wilcoxii</i>	eastern stony creek frog		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes dumerilii</i>	grey bellied pobblebonk		C		5
animals	amphibians	Limnodynastidae	<i>Limnodynastes fletcheri</i>	barking frog		C		3
animals	amphibians	Limnodynastidae	<i>Limnodynastes peronii</i>	striped marshfrog		C		46
animals	amphibians	Limnodynastidae	<i>Limnodynastes salmini</i>	salmon striped frog		C		9
animals	amphibians	Limnodynastidae	<i>Limnodynastes tasmaniensis</i>	spotted grassfrog		C		37
animals	amphibians	Limnodynastidae	<i>Limnodynastes terraereginae</i>	scarlet sided pobblebonk		C		18/1
animals	amphibians	Limnodynastidae	<i>Neobatrachus sudellae</i>	meeowing frog		C		2
animals	amphibians	Limnodynastidae	<i>Platyplectrum ornatum</i>	ornate burrowing frog		C		7
animals	amphibians	Myobatrachidae	<i>Crinia parinsignifera</i>	beeping froglet		C		1
animals	amphibians	Myobatrachidae	<i>Crinia signifera</i>	clicking froglet		C		10
animals	amphibians	Myobatrachidae	<i>Mixophyes fasciolatus</i>	great barred frog		C		6
animals	amphibians	Myobatrachidae	<i>Pseudophryne major</i>	great brown broodfrog		C		2
animals	amphibians	Myobatrachidae	<i>Pseudophryne raveni</i>	copper backed broodfrog		C		1
animals	amphibians	Myobatrachidae	<i>Uperoleia fusca</i>	dusky gungan		C		2
animals	amphibians	Myobatrachidae	<i>Uperoleia laevigata</i>	eastern gungan		C		1
animals	amphibians	Myobatrachidae	<i>Uperoleia rugosa</i>	chubby gungan		C		3
animals	arachnids	Urodacidae	<i>Urodacus manicatus</i>	black rock scorpion		C		2
animals	birds	Acanthizidae	<i>Acanthiza apicalis</i>	inland thornbill		C		1
animals	birds	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill		C		775
animals	birds	Acanthizidae	<i>Acanthiza lineata</i>	striated thornbill		C		35
animals	birds	Acanthizidae	<i>Acanthiza nana</i>	yellow thornbill		C		372
animals	birds	Acanthizidae	<i>Acanthiza pusilla</i>	brown thornbill		C		530
animals	birds	Acanthizidae	<i>Acanthiza reguloides</i>	buff-rumped thornbill		C		26
animals	birds	Acanthizidae	<i>Acanthiza sp.</i>			C		2
animals	birds	Acanthizidae	<i>Aphelocephala leucopsis</i>	southern whiteface		C		1
animals	birds	Acanthizidae	<i>Gerygone fusca</i>	western gerygone		C		7
animals	birds	Acanthizidae	<i>Gerygone mouki</i>	brown gerygone		C		50
animals	birds	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone		C		544
animals	birds	Acanthizidae	<i>Pyrrholaemus sagittatus</i>	speckled warbler		C		84
animals	birds	Acanthizidae	<i>Sericornis frontalis</i>	white-browed scrubwren		C		519
animals	birds	Acanthizidae	<i>Sericornis magnirostra</i>	large-billed scrubwren		C		25
animals	birds	Acanthizidae	<i>Smicronis brevirostris</i>	weebill		C		269
animals	birds	Accipitridae	<i>Accipiter cirrocephalus</i>	collared sparrowhawk		C		23

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		C		72/1
animals	birds	Accipitridae	<i>Accipiter novaehollandiae</i>	grey goshawk		C		38
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		198
animals	birds	Accipitridae	<i>Aviceda subcristata</i>	Pacific baza		C		42
animals	birds	Accipitridae	<i>Circus approximans</i>	swamp harrier		C		10
animals	birds	Accipitridae	<i>Circus assimilis</i>	spotted harrier		C		53
animals	birds	Accipitridae	<i>Elanus axillaris</i>	black-shouldered kite		C		400
animals	birds	Accipitridae	<i>Elanus scriptus</i>	letter-winged kite		C		6
animals	birds	Accipitridae	<i>Erythrorhynchus radiatus</i>	red goshawk		E	V	2
animals	birds	Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle		C		42
animals	birds	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		C		92
animals	birds	Accipitridae	<i>Hamirostra melanosternon</i>	black-breasted buzzard		C		1
animals	birds	Accipitridae	<i>Hieraaetus morphnoides</i>	little eagle		C		15
animals	birds	Accipitridae	<i>Lophoictinia isura</i>	square-tailed kite		C		20
animals	birds	Accipitridae	<i>Milvus migrans</i>	black kite		C		100
animals	birds	Accipitridae	<i>Pandion cristatus</i>	eastern osprey		SL		2
animals	birds	Acrocephalidae	<i>Acrocephalus australis</i>	Australian reed-warbler		C		82
animals	birds	Aegothelidae	<i>Aegotheles cristatus</i>	Australian owl-nightjar		C		25/1
animals	birds	Alaudidae	<i>Mirafra javanica</i>	Horsfield's bushlark		C		95
animals	birds	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		C		20
animals	birds	Anatidae	<i>Anas castanea</i>	chestnut teal		C		3
animals	birds	Anatidae	<i>Anas gracilis</i>	grey teal		C		198
animals	birds	Anatidae	<i>Anas platyrhynchos</i>	northern mallard	Y			5
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		653
animals	birds	Anatidae	<i>Aythya australis</i>	hardhead		C		115
animals	birds	Anatidae	<i>Biziura lobata</i>	musk duck		C		44
animals	birds	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck		C		540
animals	birds	Anatidae	<i>Cygnus atratus</i>	black swan		C		168
animals	birds	Anatidae	<i>Dendrocygna arcuata</i>	wandering whistling-duck		C		5
animals	birds	Anatidae	<i>Dendrocygna eytoni</i>	plumed whistling-duck		C		73
animals	birds	Anatidae	<i>Malacorhynchus membranaceus</i>	pink-eared duck		C		35
animals	birds	Anatidae	<i>Oxyura australis</i>	blue-billed duck		C		3
animals	birds	Anatidae	<i>Spatula rhynchotis</i>	Australasian shoveler		C		26
animals	birds	Anatidae	<i>Stictonetta naevosa</i>	freckled duck		C		5
animals	birds	Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		C		110
animals	birds	Anseranatidae	<i>Anseranas semipalmata</i>	magpie goose		C		14
animals	birds	Apodidae	<i>Apus pacificus</i>	fork-tailed swift		SL		6
animals	birds	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail		V	V	19
animals	birds	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret		C		106
animals	birds	Ardeidae	<i>Ardea intermedia</i>	intermediate egret		C		37
animals	birds	Ardeidae	<i>Ardea pacifica</i>	white-necked heron		C		80
animals	birds	Ardeidae	<i>Bubulcus ibis</i>	cattle egret		C		89
animals	birds	Ardeidae	<i>Egretta garzetta</i>	little egret		C		29
animals	birds	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		C		381
animals	birds	Ardeidae	<i>Ixobrychus dubius</i>	Australian little bittern		C		3
animals	birds	Ardeidae	<i>Nycticorax caledonicus</i>	nankeen night-heron		C		25

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animals	birds	Artamidae	<i>Artamus cinereus</i>	black-faced woodswallow		C		12
animals	birds	Artamidae	<i>Artamus cyanopterus</i>	dusky woodswallow		C		11
animals	birds	Artamidae	<i>Artamus leucorhynchus</i>	white-breasted woodswallow		C		3
animals	birds	Artamidae	<i>Artamus minor</i>	little woodswallow		C		1
animals	birds	Artamidae	<i>Artamus personatus</i>	masked woodswallow		C		6
animals	birds	Artamidae	<i>Artamus superciliosus</i>	white-browed woodswallow		C		19
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	pied butcherbird		C		1230
animals	birds	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird		C		1081
animals	birds	Artamidae	<i>Gymnorhina tibicen</i>	Australian magpie		C		1889
animals	birds	Artamidae	<i>Strepera graculina</i>	pied currawong		C		1335
animals	birds	Artamidae	<i>Strepera graculina graculina</i>	pied currawong (eastern Australia)		C		8
animals	birds	Burhinidae	<i>Burhinus grallarius</i>	bush stone-curlew		C		9
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		463
animals	birds	Cacatuidae	<i>Cacatua sanguinea</i>	little corella		C		123
animals	birds	Cacatuidae	<i>Cacatua tenuirostris</i>	long-billed corella	Y	C		7
animals	birds	Cacatuidae	<i>Calyptorhynchus banksii</i>	red-tailed black-cockatoo		C		179
animals	birds	Cacatuidae	<i>Calyptorhynchus funereus</i>	yellow-tailed black-cockatoo		C		72
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami</i>	glossy black-cockatoo		V		4
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	glossy black-cockatoo (eastern)		V		18
animals	birds	Cacatuidae	<i>Eolophus roseicapilla</i>	galah		C		1516
animals	birds	Cacatuidae	<i>Lophochroa leadbeateri</i>	Major Mitchell's cockatoo		V		2
animals	birds	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel		C		400
animals	birds	Campephagidae	<i>Coracina lineata</i>	barred cuckoo-shrike		C		19
animals	birds	Campephagidae	<i>Coracina maxima</i>	ground cuckoo-shrike		C		32
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		1130
animals	birds	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		C		19
animals	birds	Campephagidae	<i>Coracina tenuirostris</i>	cidadabird		C		104
animals	birds	Campephagidae	<i>Lalage leucomela</i>	varied triller		C		53
animals	birds	Campephagidae	<i>Lalage tricolor</i>	white-winged triller		C		59
animals	birds	Casuariidae	<i>Dromaius novaehollandiae</i>	emu		C		1
animals	birds	Charadriidae	<i>Charadrius leschenaultii</i>	greater sand plover		V	V	1
animals	birds	Charadriidae	<i>Charadrius ruficapillus</i>	red-capped plover		C		2
animals	birds	Charadriidae	<i>Euseyonis melanops</i>	black-fronted dotterel		C		110
animals	birds	Charadriidae	<i>Erythronyx cinctus</i>	red-kneed dotterel		C		38
animals	birds	Charadriidae	<i>Pluvialis fulva</i>	Pacific golden plover		SL		1
animals	birds	Charadriidae	<i>Vanellus miles</i>	masked lapwing		C		396
animals	birds	Charadriidae	<i>Vanellus miles novaehollandiae</i>	masked lapwing (southern subspecies)		C		455
animals	birds	Charadriidae	<i>Vanellus tricolor</i>	banded lapwing		C		36
animals	birds	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	black-necked stork		C		2
animals	birds	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		C		504
animals	birds	Climacteridae	<i>Climacteris picumnus</i>	brown treecreeper		C		4
animals	birds	Climacteridae	<i>Cormobates leucophaea</i>	white-throated treecreeper		C		46
animals	birds	Climacteridae	<i>Cormobates leucophaea metastasis</i>	white-throated treecreeper (southern)		C		92
animals	birds	Columbidae	<i>Chalcophaps longirostris</i>	Pacific emerald dove		C		25
animals	birds	Columbidae	<i>Columba leucomela</i>	white-headed pigeon		C		76
animals	birds	Columbidae	<i>Columba livia</i>	rock dove	Y			406

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animals	birds	Columbidae	<i>Geopelia cuneata</i>	diamond dove		C		7
animals	birds	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		C		621
animals	birds	Columbidae	<i>Geopelia striata</i>	peaceful dove		C		188
animals	birds	Columbidae	<i>Leucosarcia melanoleuca</i>	wonga pigeon		C		74
animals	birds	Columbidae	<i>Lopholaimus antarcticus</i>	topknot pigeon		C		15
animals	birds	Columbidae	<i>Macropygia amboinensis</i>	brown cuckoo-dove		C		119
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		1519
animals	birds	Columbidae	<i>Phaps chalcoptera</i>	common bronzewing		C		48
animals	birds	Columbidae	<i>Ptilinopus regina</i>	rose-crowned fruit-dove		C		8/1
animals	birds	Columbidae	<i>Ptilinopus superb</i>	superb fruit-dove		C		1
animals	birds	Columbidae	<i>Streptopelia chinensis</i>	spotted dove	Y			773
animals	birds	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		C		331
animals	birds	Corcoracidae	<i>Corcorax melanorhamphos</i>	white-winged chough		C		55
animals	birds	Corcoracidae	<i>Struthidea cinerea</i>	apostlebird		C		168
animals	birds	Corvidae	<i>Corvus bennetti</i>	little crow		C		6
animals	birds	Corvidae	<i>Corvus coronoides</i>	Australian raven		C		36
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		1766
animals	birds	Corvidae	<i>Corvus sp.</i>			C		2
animals	birds	Cuculidae	<i>Cacomantis flabelliformis</i>	fan-tailed cuckoo		C		94
animals	birds	Cuculidae	<i>Cacomantis pallidus</i>	pallid cuckoo		C		24
animals	birds	Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		C		26
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		455
animals	birds	Cuculidae	<i>Chalcites basalis</i>	Horsfield's bronze-cuckoo		C		62
animals	birds	Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo		C		36
animals	birds	Cuculidae	<i>Chalcites minutillus barnardi</i>	Eastern little bronze-cuckoo		C		3
animals	birds	Cuculidae	<i>Chalcites osculans</i>	black-eared cuckoo		C		5
animals	birds	Cuculidae	<i>Chalcites sp.</i>			C		1
animals	birds	Cuculidae	<i>Cuculus optatus</i>	oriental cuckoo		SL		3
animals	birds	Cuculidae	<i>Eudynamys orientalis</i>	eastern koel		C		465
animals	birds	Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo		C		279
animals	birds	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo		C		158
animals	birds	Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin		C		147
animals	birds	Estrildidae	<i>Neochmia modesta</i>	plum-headed finch		C		31
animals	birds	Estrildidae	<i>Neochmia temporalis</i>	red-browed finch		C		247
animals	birds	Estrildidae	<i>Stagonopleura guttata</i>	diamond firetail		C		1
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		640
animals	birds	Estrildidae	<i>Taeniopygia guttata</i>	zebra finch		C		258
animals	birds	Eurostopodidae	<i>Eurostopodus mystacalis</i>	white-throated nightjar		C		8
animals	birds	Falconidae	<i>Falco berigora</i>	brown falcon		C		110
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		657
animals	birds	Falconidae	<i>Falco hypoleucos</i>	grey falcon		V	V	4
animals	birds	Falconidae	<i>Falco longipennis</i>	Australian hobby		C		79
animals	birds	Falconidae	<i>Falco peregrinus</i>	peregrine falcon		C		42
animals	birds	Falconidae	<i>Falco subniger</i>	black falcon		C		36
animals	birds	Glareolidae	<i>Stiltia isabella</i>	Australian pratincole		C		5
animals	birds	Halcyonidae	<i>Dacelo leachii</i>	blue-winged kookaburra		C		1

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animals	birds	Halcyonidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		1115
animals	birds	Halcyonidae	<i>Todiramphus macleayii</i>	forest kingfisher		C		5
animals	birds	Halcyonidae	<i>Todiramphus pyrrhopygius</i>	red-backed kingfisher		C		8
animals	birds	Halcyonidae	<i>Todiramphus sanctus</i>	sacred kingfisher		C		237
animals	birds	Hirundinidae	<i>Cheramoeca leucosterna</i>	white-backed swallow		C		12
animals	birds	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		C		319
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		98
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		27
animals	birds	Jacanidae	<i>Irediparra gallinacea</i>	comb-crested jacana		C		4
animals	birds	Laridae	<i>Chlidonias hybrida</i>	whiskered tern		C		30
animals	birds	Laridae	<i>Chlidonias leucopterus</i>	white-winged black tern		SL		7
animals	birds	Laridae	<i>Chroicocephalus novaehollandiae</i>	silver gull		C		11
animals	birds	Laridae	<i>Gelochelidon nilotica</i>	gull-billed tern		SL		3
animals	birds	Laridae	<i>Hydroprogne caspia</i>	Caspian tern		SL		2
animals	birds	Laridae	<i>Onychoprion fuscatus</i>	sooty tern		C		2/1
animals	birds	Maluridae	<i>Malurus cyaneus</i>	superb fairy-wren		C		1001/1
animals	birds	Maluridae	<i>Malurus lamberti</i>	variegated fairy-wren		C		39
animals	birds	Maluridae	<i>Malurus lamberti sensu lato</i>	variegated fairy-wren		C		220
animals	birds	Maluridae	<i>Malurus leucopterus</i>	white-winged fairy-wren		C		16
animals	birds	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren		C		137
animals	birds	Megaluridae	<i>Cincloramphus cruralis</i>	brown songlark		C		36
animals	birds	Megaluridae	<i>Cincloramphus mathewsi</i>	rufous songlark		C		19
animals	birds	Megaluridae	<i>Megalurus gramineus</i>	little grassbird		C		1
animals	birds	Megaluridae	<i>Megalurus timoriensis</i>	tawny grassbird		C		21
animals	birds	Megapodiidae	<i>Alectura lathami</i>	Australian brush-turkey		C		125/1
animals	birds	Meliphagidae	<i>Acanthagenys rufogularis</i>	spiny-cheeked honeyeater		C		498
animals	birds	Meliphagidae	<i>Acanthorhynchus tenuirostris</i>	eastern spinebill		C		145
animals	birds	Meliphagidae	<i>Anthochaera carunculata</i>	red wattlebird		C		148
animals	birds	Meliphagidae	<i>Anthochaera chrysoptera</i>	little wattlebird		C		2
animals	birds	Meliphagidae	<i>Caligavis chrysops</i>	yellow-faced honeyeater		C		356
animals	birds	Meliphagidae	<i>Entomyzon cyanotis</i>	blue-faced honeyeater		C		240
animals	birds	Meliphagidae	<i>Epthianura albifrons</i>	white-fronted chat		C		1
animals	birds	Meliphagidae	<i>Gavicalis virescens</i>	singing honeyeater		C		5
animals	birds	Meliphagidae	<i>Grantiella picta</i>	painted honeyeater		V	V	80
animals	birds	Meliphagidae	<i>Lichenostomus melanops</i>	yellow-tufted honeyeater		C		2
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		928
animals	birds	Meliphagidae	<i>Manorina flavigula</i>	yellow-throated miner		C		38
animals	birds	Meliphagidae	<i>Manorina melanocephala</i>	noisy miner		C		1446
animals	birds	Meliphagidae	<i>Manorina melanophrys</i>	bell miner		C		15
animals	birds	Meliphagidae	<i>Meliphaga lewinii</i>	Lewin's honeyeater		C		899
animals	birds	Meliphagidae	<i>Melithreptus albogularis</i>	white-throated honeyeater		C		27
animals	birds	Meliphagidae	<i>Melithreptus brevirostris</i>	brown-headed honeyeater		C		7
animals	birds	Meliphagidae	<i>Melithreptus gularis</i>	black-chinned honeyeater		C		1
animals	birds	Meliphagidae	<i>Melithreptus lunatus</i>	white-naped honeyeater		C		86
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		133
animals	birds	Meliphagidae	<i>Nesoptilotis leucotis</i>	white-eared honeyeater		C		2

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animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		165
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		489
animals	birds	Meliphagidae	<i>Plectorhyncha lanceolata</i>	striped honeyeater		C		646
animals	birds	Meliphagidae	<i>Ptilotula fusca</i>	fuscous honeyeater		C		3
animals	birds	Meliphagidae	<i>Ptilotula penicillata</i>	white-plumed honeyeater		C		6
animals	birds	Meliphagidae	<i>Ptilotula plumula</i>	grey-fronted honeyeater		C		1
animals	birds	Meliphagidae	<i>Sugomel niger</i>	black honeyeater		C		2
animals	birds	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater		C		93
animals	birds	Monarchidae	<i>Carterornis leucotis</i>	white-eared monarch		C		9
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		1485
animals	birds	Monarchidae	<i>Monarcha melanopsis</i>	black-faced monarch		SL		88
animals	birds	Monarchidae	<i>Myiagra cyanoleuca</i>	satin flycatcher		SL		11
animals	birds	Monarchidae	<i>Myiagra inquieta</i>	restless flycatcher		C		113
animals	birds	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		C		153
animals	birds	Monarchidae	<i>Symposiachrus trivirgatus</i>	spectacled monarch		SL		46
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		128
animals	birds	Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		587
animals	birds	Neosittidae	<i>Daphoenositta chrysoptera</i>	varied sittella		C		37
animals	birds	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		C		447
animals	birds	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		C		630
animals	birds	Otididae	<i>Ardeotis australis</i>	Australian bustard		C		4
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		275
animals	birds	Pachycephalidae	<i>Colluricincla megarhyncha</i>	little shrike-thrush		C		3
animals	birds	Pachycephalidae	<i>Falcunculus frontatus</i>	crested shrike-tit		C		7
animals	birds	Pachycephalidae	<i>Pachycephala pectoralis</i>	golden whistler		C		169
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		435
animals	birds	Pardalotidae	<i>Pardalotus punctatus</i>	spotted pardalote		C		238
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		880
animals	birds	Passeridae	<i>Passer domesticus</i>	house sparrow	Y			564
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		120
animals	birds	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin		C		242
animals	birds	Petroicidae	<i>Microeca fascinans</i>	jacky winter		C		20
animals	birds	Petroicidae	<i>Petroica boodang</i>	scarlet robin		C		6
animals	birds	Petroicidae	<i>Petroica goodenovii</i>	red-capped robin		C		17
animals	birds	Petroicidae	<i>Petroica rosea</i>	rose robin		C		36
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		248
animals	birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		C		61
animals	birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		C		151
animals	birds	Phalacrocoracidae	<i>Phalacrocorax varius</i>	pied cormorant		C		15
animals	birds	Phasianidae	<i>Coturnix pectoralis</i>	stubble quail		C		37
animals	birds	Phasianidae	<i>Coturnix ypsilophora</i>	brown quail		C		456
animals	birds	Phasianidae	<i>Excalfactoria chinensis</i>	king quail		C		1
animals	birds	Phasianidae	<i>Pavo cristatus</i>	Indian peafowl	Y			1
animals	birds	Pittidae	<i>Pitta versicolor</i>	noisy pitta		C		6
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		457
animals	birds	Podicipedidae	<i>Podiceps cristatus</i>	great crested grebe		C		19

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animals	birds	Podicipedidae	<i>Poliocephalus poliocephalus</i>	hoary-headed grebe		C		18
animals	birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		C		144
animals	birds	Pomatostomidae	<i>Pomatostomus superciliosus</i>	white-browed babbler		C		1
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		242
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis temporalis</i>	grey-crowned babbler (eastern)		C		1
animals	birds	Procellariidae	<i>Bulweria bulwerii</i>	Bulwer's petrel		SL		2/2
animals	birds	Psittacidae	<i>Alisterus scapularis</i>	Australian king-parrot		C		338
animals	birds	Psittacidae	<i>Aprosmictus erythropterus</i>	red-winged parrot		C		65
animals	birds	Psittacidae	<i>Barnardius zonarius</i>	Australian ringneck		C		1
animals	birds	Psittacidae	<i>Barnardius zonarius barnardi</i>	mallee ringneck		C		1
animals	birds	Psittacidae	<i>Glossopsitta concinna</i>	musk lorikeet		C		93
animals	birds	Psittacidae	<i>Lathamus discolor</i>	swift parrot		E	CE	6
animals	birds	Psittacidae	<i>Melopsittacus undulatus</i>	budgerigar		C		22
animals	birds	Psittacidae	<i>Neophema pulchella</i>	turquoise parrot		C		1
animals	birds	Psittacidae	<i>Northiella haematogaster</i>	blue bonnet		C		22
animals	birds	Psittacidae	<i>Northiella haematogaster haematorrhoa</i>	blue bonnet (red-vented)		C		6/1
animals	birds	Psittacidae	<i>Parvipsitta pusilla</i>	little lorikeet		C		122
animals	birds	Psittacidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		1407
animals	birds	Psittacidae	<i>Platycercus adscitus palliceps</i>	pale-headed rosella (southern form)		C		8
animals	birds	Psittacidae	<i>Platycercus elegans</i>	crimson rosella		C		9
animals	birds	Psittacidae	<i>Platycercus eximius</i>	eastern rosella		C		7
animals	birds	Psittacidae	<i>Psephotus haematonotus</i>	red-rumped parrot		C		457
animals	birds	Psittacidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		969
animals	birds	Psittacidae	<i>Trichoglossus moluccanus</i>	rainbow lorikeet		C		923
animals	birds	Psophodidae	<i>Cinclosoma punctatum</i>	spotted quail-thrush		C		1
animals	birds	Psophodidae	<i>Psophodes olivaceus</i>	eastern whipbird		C		447
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus maculatus</i>	spotted bowerbird		C		2
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus violaceus</i>	satin bowerbird		C		152
animals	birds	Ptilonorhynchidae	<i>Sericulus chrysocephalus</i>	regent bowerbird		C		51
animals	birds	Rallidae	<i>Amaurornis moluccana</i>	pale-vented bush-hen		C		2
animals	birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		C		89
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		134
animals	birds	Rallidae	<i>Gallirallus philippensis</i>	buff-banded rail		C		17
animals	birds	Rallidae	<i>Porphyrio melanotus</i>	purple swamphen		C		43
animals	birds	Rallidae	<i>Porzana fluminea</i>	Australian spotted crane		C		1
animals	birds	Rallidae	<i>Porzana pusilla</i>	Baillon's crane		C		2
animals	birds	Rallidae	<i>Porzana tabuensis</i>	spotless crane		C		1
animals	birds	Rallidae	<i>Tribonyx ventralis</i>	black-tailed native-hen		C		1
animals	birds	Recurvirostridae	<i>Cladorhynchus leucocephalus</i>	banded stilt		C		1
animals	birds	Recurvirostridae	<i>Himantopus himantopus</i>	black-winged stilt		C		127
animals	birds	Recurvirostridae	<i>Recurvirostra novaehollandiae</i>	red-necked avocet		C		27
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		520
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		973
animals	birds	Rhipiduridae	<i>Rhipidura rufifrons</i>	rufous fantail		SL		158
animals	birds	Rostratulidae	<i>Rostratula australis</i>	Australian painted snipe		E	E	1
animals	birds	Scolopacidae	<i>Calidris acuminata</i>	sharp-tailed sandpiper		SL		44

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animals	birds	Scolopacidae	<i>Calidris ferruginea</i>	curlew sandpiper		CR	CE	3
animals	birds	Scolopacidae	<i>Calidris melanotos</i>	pectoral sandpiper		SL		1
animals	birds	Scolopacidae	<i>Calidris pugnax</i>	ruff		SL		1
animals	birds	Scolopacidae	<i>Calidris ruficollis</i>	red-necked stint		SL		4
animals	birds	Scolopacidae	<i>Calidris subminuta</i>	long-toed stint		SL		1
animals	birds	Scolopacidae	<i>Gallinago hardwickii</i>	Latham's snipe		SL		24
animals	birds	Scolopacidae	<i>Gallinago sp.</i>			C		1
animals	birds	Scolopacidae	<i>Limosa limosa</i>	black-tailed godwit		SL		2
animals	birds	Scolopacidae	<i>Numenius minutus</i>	little curlew		SL		5
animals	birds	Scolopacidae	<i>Tringa glareola</i>	wood sandpiper		SL		2
animals	birds	Scolopacidae	<i>Tringa nebularia</i>	common greenshank		SL		2
animals	birds	Scolopacidae	<i>Tringa stagnatilis</i>	marsh sandpiper		SL		53
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		362
animals	birds	Strigidae	<i>Ninox connivens</i>	barking owl		C		1
animals	birds	Strigidae	<i>Ninox strenua</i>	powerful owl		V		59
animals	birds	Sturnidae	<i>Acridotheres tristis</i>	common myna	Y			1135
animals	birds	Sturnidae	<i>Sturnus vulgaris</i>	common starling	Y			846
animals	birds	Threskiornithidae	<i>Platalea flavipes</i>	yellow-billed spoonbill		C		56
animals	birds	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		C		56
animals	birds	Threskiornithidae	<i>Plegadis falcinellus</i>	glossy ibis		SL		30
animals	birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		C		284
animals	birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		C		550
animals	birds	Timaliidae	<i>Zosterops lateralis</i>	silveryeye		C		921
animals	birds	Turdidae	<i>Turdus merula</i>	common blackbird	Y	P		26
animals	birds	Turdidae	<i>Zoothera heinei</i>	russet-tailed thrush		C		8
animals	birds	Turnicidae	<i>Turnix maculosus</i>	red-backed button-quail		C		1
animals	birds	Turnicidae	<i>Turnix melanogaster</i>	black-breasted button-quail		V	V	19/2
animals	birds	Turnicidae	<i>Turnix pyrrhotorax</i>	red-chested button-quail		C		6
animals	birds	Turnicidae	<i>Turnix varius</i>	painted button-quail		C		31
animals	birds	Turnicidae	<i>Turnix velox</i>	little button-quail		C		5
animals	birds	Tytonidae	<i>Tyto delicatula</i>	eastern barn owl		C		38
animals	birds	Tytonidae	<i>Tyto longimembris</i>	eastern grass owl		C		1
animals	birds	Tytonidae	<i>Tyto novaehollandiae</i>	masked owl		C		2
animals	birds	Tytonidae	<i>Tyto novaehollandiae novaehollandiae</i>	masked owl (southern subspecies)		C		8
animals	birds	Tytonidae	<i>Tyto tenebricosa tenebricosa</i>	sooty owl		C		11
animals	insects	Aeshnidae	<i>Adversaeschna brevistyla</i>	blue-spotted hawkler				2
animals	insects	Aeshnidae	<i>Anax papuensis</i>	Australian Emperor				39
animals	insects	Aeshnidae	<i>Austrogynacantha heterogena</i>	Australian duskhawker				4
animals	insects	Brachytronidae	<i>Dendroaeschna conspersa</i>	wide-faced darner				1
animals	insects	Coenagrionidae	<i>Austroagrion watsoni</i>	eastern billabongfly				3
animals	insects	Coenagrionidae	<i>Ischnura aurora</i>	aurora bluetail				5
animals	insects	Coenagrionidae	<i>Ischnura heterosticta heterosticta</i>	common bluetail				31
animals	insects	Coenagrionidae	<i>Pseudagrion aureofrons</i>	gold-fronted riverdamselfly				27
animals	insects	Coenagrionidae	<i>Pseudagrion ignifer</i>	flame-headed riverdamselfly				3
animals	insects	Coenagrionidae	<i>Pseudagrion microcephalum</i>	blue riverdamselfly				4
animals	insects	Coenagrionidae	<i>Xanthagrion erythroneurum</i>	red & blue damselfly				29

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animals	insects	Corduliidae	<i>Hemicordulia australiae</i>	Australian emerald				40
animals	insects	Corduliidae	<i>Hemicordulia intermedia</i>	yellow-spotted emerald				1
animals	insects	Corduliidae	<i>Hemicordulia tau</i>	tau emerald				16
animals	insects	Diphebiidae	<i>Diphebia coerulescens</i>	sapphire rockmaster				7
animals	insects	Diphebiidae	<i>Diphebia nymphoides</i>	arrowhead rockmaster				7
animals	insects	Formicidae	<i>Iridomyrmex purpureus</i>					3
animals	insects	Formicidae	<i>Ochetellus glaber</i> group					1
animals	insects	Gomphidae	<i>Austrogomphus amphilitus</i>	pale hunter				1
animals	insects	Gomphidae	<i>Austrogomphus cornutus</i>	unicorn hunter				4
animals	insects	Gomphidae	<i>Austrogomphus ochraceus</i>	jade hunter				4
animals	insects	Gomphidae	<i>Hemigomphus heteroclytus</i>	stout vicetail				7
animals	insects	Hesperiidae	<i>Cephrenes augiades sperthias</i>	orange palm-dart				2
animals	insects	Hesperiidae	<i>Netrocoryne repanda</i>					1
animals	insects	Hesperiidae	<i>Ocybadistes walkeri</i>	green grass-dart				1
animals	insects	Hesperiidae	<i>Suniana sunias reactivita</i>	wide-brand grass-dart				1
animals	insects	Hesperiidae	<i>Telicota colon argea</i>	pale-orange darter				1
animals	insects	Hesperiidae	<i>Toxidia doubledayi</i>	lilac grass-skipper				1
animals	insects	Hesperiidae	<i>Toxidia parvula</i>	banded grass-skipper				1
animals	insects	Isostictidae	<i>Neosticta canescens dorrigensis</i>	southern pinfly				1
animals	insects	Isostictidae	<i>Rhadinosticta simplex</i>	powdered wiretail				1
animals	insects	Lestidae	<i>Austrolestes leda</i>	wandering ringtail				12
animals	insects	Libellulidae	<i>Crocothemis nigrifrons</i>	black-headed skimmer				10
animals	insects	Libellulidae	<i>Diplacodes bipunctata</i>	wandering percher				24
animals	insects	Libellulidae	<i>Diplacodes haematodes</i>	scarlet percher				49
animals	insects	Libellulidae	<i>Orthetrum caledonicum</i>	blue skimmer				72
animals	insects	Libellulidae	<i>Orthetrum villosovittatum</i>	fiery skimmer				35
animals	insects	Libellulidae	<i>Pantala flavescens</i>	wandering glider				18
animals	insects	Libellulidae	<i>Rhyothemis graphiptera</i>	graphic flutterer				6
animals	insects	Libellulidae	<i>Tamea loewii</i>	common glider				5
animals	insects	Libellulidae	<i>Zyxomma elgneri</i>	short-tailed duskdarter				3
animals	insects	Lindenidae	<i>Ictinogomphus australis</i>	Australian tiger				12
animals	insects	Lycaenidae	<i>Acrodipsas illidgei</i>	Illidge's ant-blue		V		1
animals	insects	Lycaenidae	<i>Candalides absimilis</i>	common pencilled-blue				2
animals	insects	Lycaenidae	<i>Candalides xanthospilos</i>	yellow-spotted blue				1
animals	insects	Lycaenidae	<i>Deudorix diovis</i>	bright cornelian				1
animals	insects	Lycaenidae	<i>Erysichton lineatus lineatus</i>	hairy line-blue				1
animals	insects	Lycaenidae	<i>Jalmenus eubulus</i>	pale imperial hairstreak		V		16
animals	insects	Lycaenidae	<i>Jalmenus evagoras</i>	imperial hairstreak				7
animals	insects	Lycaenidae	<i>Lampides boeticus</i>	long-tailed pea-blue				3
animals	insects	Lycaenidae	<i>Leptotes plinius pseudocassius</i>	plumbago blue				13
animals	insects	Lycaenidae	<i>Lucia limbaria</i>	chequered copper				3
animals	insects	Lycaenidae	<i>Neolucia agricola agricola</i>	fringed heath-blue				1
animals	insects	Lycaenidae	<i>Nesolycaena albosericea</i>	satin opal				1
animals	insects	Lycaenidae	<i>Ogyris amaryllis</i>					3
animals	insects	Lycaenidae	<i>Ogyris amaryllis meridionalis</i>	satin azure (inland subspecies)				1
animals	insects	Lycaenidae	<i>Ogyris olane</i>	broad-margined azure				1

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animals	insects	Lycaenidae	<i>Psychonotis caelius taygetus</i>	small green-banded blue				2
animals	insects	Lycaenidae	<i>Theclinessthes miskini</i>					1
animals	insects	Lycaenidae	<i>Theclinessthes onycha</i>					13
animals	insects	Lycaenidae	<i>Theclinessthes onycha onycha</i>	cycad blue (southern subspecies)				8
animals	insects	Lycaenidae	<i>Zizina otis labradus</i>	common grass-blue (Australian subspecies)				45
animals	insects	Lycaenidae	<i>Zizula hylax attenuata</i>	dainty grass-blue				2
animals	insects	Megapodagrionidae	<i>Austroargiolestes icteromelas</i>	common flatwing				27
animals	insects	Megapodagrionidae	<i>Austroargiolestes icteromelas icteromelas</i>	pale-mouth common flatwing				5
animals	insects	Megapodagrionidae	<i>Austroargiolestes icteromelas nigrolabiatus</i>	black-mouth common flatwing				1
animals	insects	Nymphalidae	<i>Acraea andromacha andromacha</i>	glasswing				43
animals	insects	Nymphalidae	<i>Charaxes sempronius sempronius</i>	tailed emperor				16
animals	insects	Nymphalidae	<i>Danaus petilia</i>	lesser wanderer				63
animals	insects	Nymphalidae	<i>Danaus plexippus</i>	monarch	Y			81
animals	insects	Nymphalidae	<i>Euploea corinna</i>	common crow				58
animals	insects	Nymphalidae	<i>Geitoneura acantha</i>	ringed xenica				2
animals	insects	Nymphalidae	<i>Heteronympha merope merope</i>	common brown				7
animals	insects	Nymphalidae	<i>Hypocysta metirius</i>	brown ringlet				1
animals	insects	Nymphalidae	<i>Hypolimnas bolina nerina</i>	varied eggfly				20
animals	insects	Nymphalidae	<i>Junonia villida villida</i>	meadow argus				110
animals	insects	Nymphalidae	<i>Melanitis leda bankia</i>	evening brown				3
animals	insects	Nymphalidae	<i>Phaedyma shepherdii shepherdii</i>	white-banded plane (southern subspecies)				7
animals	insects	Nymphalidae	<i>Tirumala hamata hamata</i>	blue tiger				36
animals	insects	Nymphalidae	<i>Vanessa itea</i>	yellow admiral				18
animals	insects	Nymphalidae	<i>Vanessa kershawi</i>	Australian painted lady				23
animals	insects	Nymphalidae	<i>Ypthima arctous arctous</i>	dusky knight				1
animals	insects	Papilionidae	<i>Cressida cressida cressida</i>	clearwing swallowtail				9
animals	insects	Papilionidae	<i>Graphium choredon</i>	blue triangle				46
animals	insects	Papilionidae	<i>Graphium eurypylus lycaon</i>	pale triangle				1
animals	insects	Papilionidae	<i>Graphium eurypylus lycaonides</i>	pale triangle				1
animals	insects	Papilionidae	<i>Graphium macleayanum macleayanum</i>	Macleay's swordtail				9
animals	insects	Papilionidae	<i>Papilio aegaeus</i>					6
animals	insects	Papilionidae	<i>Papilio aegaeus aegaeus</i>	orchard swallowtail (Australian subspecies)				44
animals	insects	Papilionidae	<i>Papilio anactus</i>	dainty swallowtail				38
animals	insects	Papilionidae	<i>Papilio demoleus sthenelus</i>	chequered swallowtail				16
animals	insects	Papilionidae	<i>Papilio fuscus</i>					3
animals	insects	Papilionidae	<i>Papilio fuscus capaneus</i>	fuscous swallowtail (Australian subspecies)				2
animals	insects	Papilionidae	<i>Protographium leosthenes leosthenes</i>	four-barred swordtail				4
animals	insects	Pieridae	<i>Appias paulina ega</i>	yellow albatross				4
animals	insects	Pieridae	<i>Belenois java teutonia</i>	caper white				60
animals	insects	Pieridae	<i>Catopsilia gorgophone gorgophone</i>	yellow migrant				9
animals	insects	Pieridae	<i>Catopsilia pomona</i>	lemon migrant				21
animals	insects	Pieridae	<i>Catopsilia pyranthe crokera</i>	white migrant				16

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animals	insects	Pieridae	<i>Catopsilia scylla etesia</i>	orange migrant				1
animals	insects	Pieridae	<i>Cepora perimale</i>					2
animals	insects	Pieridae	<i>Cepora perimale scyllara</i>	caper gull (Australian subspecies)				2
animals	insects	Pieridae	<i>Delias aganippe</i>	spotted jezebel				3
animals	insects	Pieridae	<i>Delias argenthona argenthona</i>	scarlet jezebel				27
animals	insects	Pieridae	<i>Delias harpalyce</i>	imperial jezebel				1
animals	insects	Pieridae	<i>Delias nigrina</i>	black jezebel				5
animals	insects	Pieridae	<i>Delias nysa</i>					1
animals	insects	Pieridae	<i>Delias nysa nysa</i>	yellow-spotted jezebel (Australian subspecies)				3
animals	insects	Pieridae	<i>Elodina angulipennis</i>	southern pearl-white				2
animals	insects	Pieridae	<i>Elodina padusa</i>	narrow-winged pearl-white				3
animals	insects	Pieridae	<i>Elodina parthia</i>	striated pearl-white				2
animals	insects	Pieridae	<i>Eurema hecabe</i>	large grass-yellow				12
animals	insects	Pieridae	<i>Eurema herla</i>	pink grass-yellow				1
animals	insects	Pieridae	<i>Eurema smilax</i>	small grass-yellow				14
animals	insects	Pieridae	<i>Pieris rapae</i>	cabbage white	Y			55
animals	insects	Platycnemididae	<i>Nososticta solida</i>	orange threadtail				17
animals	insects	Synlestidae	<i>Synlestes selysi</i>	forest needle				5
animals	insects	Synlestidae	<i>Synlestes weyersii tillyardi</i>	bronze needle				1
animals	insects	Synthemistidae	<i>Choristhemis flavoterminalata</i>	yellow-tipped tigertail				22
animals	insects	Synthemistidae	<i>Eusynthemis nigra xanthosticta</i>	black tigertail				4/1
animals	insects	Synthemistidae	<i>Parasynthemis regina</i>	royal tigertail				1
animals	insects	Telephlebiidae	<i>Austroaeschna pulchra</i>	forest darner				4
animals	insects	Telephlebiidae	<i>Austroaeschna sigma</i>	sigma darner				6
animals	insects	Telephlebiidae	<i>Austroaeschna unicornis</i>	unicorn darner				5
animals	insects	Telephlebiidae	<i>Telephlebia cyclops</i>	northern evening darner				2
animals	malacostracans	Parastacidae	<i>Cherax destructor</i>	common yabbie				15
animals	mammals	Acrobatidae	<i>Acrobates pygmaeus</i>	feathertail glider			C	1
animals	mammals	Canidae	<i>Canis familiaris</i>	dog	Y			2
animals	mammals	Canidae	<i>Canis familiaris (dingo)</i>	dingo				9
animals	mammals	Canidae	<i>Vulpes vulpes</i>	red fox	Y			26
animals	mammals	Dasyuridae	<i>Antechinus flavipes flavipes</i>	yellow-footed antechinus (south-east Queensland)			C	12/1
animals	mammals	Dasyuridae	<i>Antechinus flavipes sensu lato</i>	yellow-footed antechinus			C	1
animals	mammals	Dasyuridae	<i>Dasyurus hallucatus</i>	northern quoll			C E	1
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)			E E	1
animals	mammals	Dasyuridae	<i>Phascogale tapoatafa tapoatafa</i>	brush-tailed phascogale			C	2
animals	mammals	Dasyuridae	<i>Planigale maculata</i>	common planigale			C	8/1
animals	mammals	Dasyuridae	<i>Sminthopsis murina</i>	common dunnart			C	8
animals	mammals	Dasyuridae	<i>Sminthopsis sp.</i>				C	1
animals	mammals	Emballonuridae	<i>Saccolaimus flaviventris</i>	yellow-bellied sheath-tail bat			C	2
animals	mammals	Felidae	<i>Felis catus</i>	cat	Y			13
animals	mammals	Leporidae	<i>Lepus europaeus</i>	European brown hare	Y			113
animals	mammals	Leporidae	<i>Oryctolagus cuniculus</i>	rabbit	Y			21

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo		C		36
animals	mammals	Macropodidae	<i>Notamacropus parryi</i>	whiptail wallaby		C		6
animals	mammals	Macropodidae	<i>Notamacropus rufogriseus</i>	red-necked wallaby		C		51
animals	mammals	Macropodidae	<i>Osphranter robustus</i>	common wallaroo		C		1
animals	mammals	Macropodidae	<i>Petrogale penicillata</i>	brush-tailed rock-wallaby		V	V	2
animals	mammals	Macropodidae	<i>Wallabia bicolor</i>	swamp wallaby		C		15
animals	mammals	Miniopteridae	<i>Miniopterus australis</i>	little bent-wing bat		C		2
animals	mammals	Miniopteridae	<i>Miniopterus schreibersii oceanensis</i>	eastern bent-wing bat		C		15
animals	mammals	Molossidae	<i>Austronomus australis</i>	white-striped freetail bat		C		2
animals	mammals	Molossidae	<i>Mormopterus ridei</i>	eastern free-tailed bat		C		3
animals	mammals	Molossidae	<i>Mormopterus sp.</i>			C		1
animals	mammals	Muridae	<i>Hydromys chrysogaster</i>	water rat		C		3
animals	mammals	Muridae	<i>Melomys cervinipes</i>	fawn-footed melomys		C		2
animals	mammals	Muridae	<i>Mus musculus</i>	house mouse	Y			60
animals	mammals	Muridae	<i>Pseudomys gracilicaudatus</i>	eastern chestnut mouse		C		6
animals	mammals	Muridae	<i>Rattus norvegicus</i>	brown rat	Y			1
animals	mammals	Muridae	<i>Rattus rattus</i>	black rat	Y			30
animals	mammals	Muridae	<i>Rattus tunneyi</i>	pale field-rat		C		14
animals	mammals	Ornithorhynchidae	<i>Ornithorhynchus anatinus</i>	platypus		SL		4
animals	mammals	Peramelidae	<i>Isoodon macrourus</i>	northern brown bandicoot		C		12
animals	mammals	Peramelidae	<i>Perameles nasuta</i>	long-nosed bandicoot		C		11
animals	mammals	Petauridae	<i>Petaurus norfolcensis</i>	squirrel glider		C		7
animals	mammals	Petauridae	<i>Petaurus notatus</i>	Kreff's glider		C		12
animals	mammals	Petauridae	<i>Petaurus sp.</i>			C		1
animals	mammals	Phalangeridae	<i>Trichosurus caninus</i>	short-eared possum		C		6
animals	mammals	Phalangeridae	<i>Trichosurus sp.</i>			C		1
animals	mammals	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum		C		85/1
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		V	V	204
animals	mammals	Potoroidae	<i>Aepyprymnus rufescens</i>	rufous bettong		C		6
animals	mammals	Pseudocheiridae	<i>Petauroides armillatus</i>	central greater glider		V	V	1
animals	mammals	Pseudocheiridae	<i>Pseudocheirus peregrinus</i>	common ringtail possum		C		24
animals	mammals	Pteropodidae	<i>Pteropus alecto</i>	black flying-fox		C		17
animals	mammals	Pteropodidae	<i>Pteropus poliocephalus</i>	grey-headed flying-fox		C	V	25
animals	mammals	Pteropodidae	<i>Pteropus scapulatus</i>	little red flying-fox		C		6
animals	mammals	Pteropodidae	<i>Pteropus sp.</i>			C		2
animals	mammals	Suidae	<i>Sus scrofa</i>	pig	Y			3
animals	mammals	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna		SL		43
animals	mammals	Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's wattled bat		C		6
animals	mammals	Vespertilionidae	<i>Chalinolobus picatus</i>	little pied bat		C		3
animals	mammals	Vespertilionidae	<i>Myotis macropus</i>	large-footed myotis		C		1
animals	mammals	Vespertilionidae	<i>Nyctophilus geoffroyi</i>	lesser long-eared bat		C		1
animals	mammals	Vespertilionidae	<i>Nyctophilus gouldi</i>	Gould's long-eared bat		C		3
animals	mammals	Vespertilionidae	<i>Nyctophilus sp.</i>			C		1
animals	mammals	Vespertilionidae	<i>Scoteanax rueppellii</i>	greater broad-nosed bat		C		1
animals	mammals	Vespertilionidae	<i>Scotorepens greyii</i>	little broad-nosed bat		C		3
animals	mammals	Vespertilionidae	<i>Scotorepens orion</i>	south-eastern broad-nosed bat		C		3

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animals	mammals	Vespertilionidae	<i>Vespadelus vulturnus</i>	little forest bat		C		2
animals	ray-finned fishes	Ambassidae	<i>Ambassis agassizii</i>	Agassiz's glassfish				3/1
animals	ray-finned fishes	Anguillidae	<i>Anguilla reinhardtii</i>	longfin eel				6
animals	ray-finned fishes	Atherinidae	<i>Craterocephalus stercusmuscarum</i>	flyspecked hardyhead				6/1
animals	ray-finned fishes	Clupeidae	<i>Nematalosa erebi</i>	bony bream				5
animals	ray-finned fishes	Cyprinidae	<i>Carassius auratus</i>	goldfish	Y			2
animals	ray-finned fishes	Cyprinidae	<i>Cyprinus carpio</i>	European carp	Y			7
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris galii</i>	firetail gudgeon				5
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris klunzingeri</i>	western carp gudgeon				3
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris sp.</i>					7
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris species 1</i>	Midgley's carp gudgeon				4/1
animals	ray-finned fishes	Eleotridae	<i>Mogurnda adspersa</i>	southern purplespotted gudgeon				9/1
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia fluviatilis</i>	Murray River rainbowfish				12
animals	ray-finned fishes	Percichthyidae	<i>Gadopsis marmoratus</i>	river blackfish				1
animals	ray-finned fishes	Percichthyidae	<i>Maccullochella peelii</i>	Murray cod			V	3
animals	ray-finned fishes	Percichthyidae	<i>Macquaria ambigua</i>	golden perch				7/1
animals	ray-finned fishes	Plotosidae	<i>Tandanus tandanus</i>	freshwater catfish				23
animals	ray-finned fishes	Poeciliidae	<i>Gambusia holbrooki</i>	mosquitofish	Y			29
animals	ray-finned fishes	Retropinnidae	<i>Retropinna semoni</i>	Australian smelt				2
animals	ray-finned fishes	Terapontidae	<i>Bidyanus bidyanus</i>	silver perch			CE	3/1
animals	ray-finned fishes	Terapontidae	<i>Leiopotherapon unicolor</i>	spangled perch				29/1
animals	reptiles	Agamidae	<i>Amphibolurus muricatus</i>	jacky lizard		C		1
animals	reptiles	Agamidae	<i>Diporiphora australis</i>	tommy roundhead		C		1/1
animals	reptiles	Agamidae	<i>Intellagama lesueurii</i>	eastern water dragon		C		42
animals	reptiles	Agamidae	<i>Pogona barbata</i>	bearded dragon		C		49
animals	reptiles	Agamidae	<i>Tympanocryptis condaminensis</i>	Condamine earless dragon		E	E	82/28
animals	reptiles	Boidae	<i>Antaresia maculosa</i>	spotted python		C		3
animals	reptiles	Boidae	<i>Morelia spilota</i>	carpet python		C		23/1
animals	reptiles	Carphodactylidae	<i>Underwoodisaurus milii</i>	thick-tailed gecko		C		9
animals	reptiles	Chelidae	<i>Chelodina expansa</i>	broad-shelled river turtle		C		3
animals	reptiles	Chelidae	<i>Chelodina longicollis</i>	eastern snake-necked turtle		C		18
animals	reptiles	Chelidae	<i>Emydura macquarii macquarii</i>	Murray turtle		C		23
animals	reptiles	Chelidae	<i>Wollumbinia latisternum</i>	saw-shelled turtle		C		3
animals	reptiles	Colubridae	<i>Boiga irregularis</i>	brown tree snake		C		2
animals	reptiles	Colubridae	<i>Dendrelaphis punctulatus</i>	green tree snake		C		12
animals	reptiles	Diplodactylidae	<i>Amalosia jacovae</i>	clouded gecko		C		2
animals	reptiles	Diplodactylidae	<i>Diplodactylus vittatus</i>	wood gecko		C		2/2
animals	reptiles	Diplodactylidae	<i>Nebulifera robusta</i>	robust velvet gecko		C		8
animals	reptiles	Elapidae	<i>Cacophis harriettae</i>	white-crowned snake		C		15
animals	reptiles	Elapidae	<i>Cacophis squamulosus</i>	golden crowned snake		C		21
animals	reptiles	Elapidae	<i>Cryptophis boschmai</i>	Carpentaria whip snake		C		4/1
animals	reptiles	Elapidae	<i>Cryptophis nigrescens</i>	eastern small-eyed snake		C		10
animals	reptiles	Elapidae	<i>Demansia psammophis</i>	yellow-faced whipsnake		C		30/1
animals	reptiles	Elapidae	<i>Furina diadema</i>	red-naped snake		C		9/2
animals	reptiles	Elapidae	<i>Hemiaspis damelii</i>	grey snake		E		1
animals	reptiles	Elapidae	<i>Hemiaspis signata</i>	black-bellied swamp snake		C		3

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animals	reptiles	Elapidae	<i>Hoplocephalus bitorquatus</i>	pale-headed snake		C		9/3
animals	reptiles	Elapidae	<i>Pseudechis guttatus</i>	spotted black snake		C		27/3
animals	reptiles	Elapidae	<i>Pseudechis porphyriacus</i>	red-bellied black snake		C		16/1
animals	reptiles	Elapidae	<i>Pseudonaja textilis</i>	eastern brown snake		C		46/5
animals	reptiles	Elapidae	<i>Suta dwyeri</i>	Dwyer's snake		C		3/1
animals	reptiles	Elapidae	<i>Suta suta</i>	myall snake		C		8
animals	reptiles	Elapidae	<i>Vermicella annulata</i>	bandy-bandy		C		3
animals	reptiles	Gekkonidae	<i>Gehyra dubia</i>	dubious dtella		C		4
animals	reptiles	Gekkonidae	<i>Hemidactylus frenatus</i>	house gecko	Y			26
animals	reptiles	Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's gecko		C		3
animals	reptiles	Pygopodidae	<i>Delma inornata</i>	patternless delma		C		8
animals	reptiles	Pygopodidae	<i>Delma plebeia</i>	common delma		C		5
animals	reptiles	Pygopodidae	<i>Delma tincta</i>	excitable delma		C		10/3
animals	reptiles	Pygopodidae	<i>Delma torquata</i>	collared delma		V	V	34
animals	reptiles	Pygopodidae	<i>Lialis burtonis</i>	Burton's legless lizard		C		21/2
animals	reptiles	Pygopodidae	<i>Pygopus lepidopodus</i>	common scaly-foot		C		1
animals	reptiles	Scincidae	<i>Anomalopus leuckartii</i>	two-clawed worm-skink		C		2
animals	reptiles	Scincidae	<i>Anomalopus mackayi</i>	long-legged worm-skink		E	V	14/1
animals	reptiles	Scincidae	<i>Anomalopus verreauxii</i>	three-clawed worm-skink		C		18
animals	reptiles	Scincidae	<i>Bellatorias frerei</i>	major skink		C		3
animals	reptiles	Scincidae	<i>Calyptotis scutirostrum</i>	scute-snouted calyptotis		C		32
animals	reptiles	Scincidae	<i>Carlia pectoralis</i>	open-litter rainbow skink		C		1
animals	reptiles	Scincidae	<i>Carlia schmeltzii</i>	robust rainbow-skink		C		3
animals	reptiles	Scincidae	<i>Carlia tetradactyla</i>	southern rainbow-skink		C		20/2
animals	reptiles	Scincidae	<i>Carlia vivax</i>	tussock rainbow-skink		C		2
animals	reptiles	Scincidae	<i>Concinnia martini</i>	dark bar-sided skink		C		2
animals	reptiles	Scincidae	<i>Concinnia tenuis</i>	bar-sided skink		C		5
animals	reptiles	Scincidae	<i>Cryptoblepharus pulcher pulcher</i>	elegant snake-eyed skink		C		65
animals	reptiles	Scincidae	<i>Ctenotus spaldingi</i>	straight-browed ctenotus		C		26
animals	reptiles	Scincidae	<i>Cyclodomorphus gerrardii</i>	pink-tongued lizard		C		1
animals	reptiles	Scincidae	<i>Egernia cunninghami</i>	Cunningham's skink		C		17/1
animals	reptiles	Scincidae	<i>Egernia mcphreei</i>	eastern crevice-skink		C		2
animals	reptiles	Scincidae	<i>Egernia striolata</i>	tree skink		C		5
animals	reptiles	Scincidae	<i>Eulamprus quoyii</i>	eastern water skink		C		2
animals	reptiles	Scincidae	<i>Lampropholis delicata</i>	dark-flecked garden sunskink		C		41
animals	reptiles	Scincidae	<i>Lampropholis guichenoti</i>	pale-flecked garden sunskink		C		4
animals	reptiles	Scincidae	<i>Lerista fragilis</i>	eastern mulch slider		C		2
animals	reptiles	Scincidae	<i>Lerista punctatovittata</i>	eastern robust slider		C		1
animals	reptiles	Scincidae	<i>Liopholis modesta</i>	eastern ranges rock-skink		C		4
animals	reptiles	Scincidae	<i>Lygisaurus foliorum</i>	tree-base litter-skink		C		5
animals	reptiles	Scincidae	<i>Menetia greyii</i>	common dwarf skink		C		4
animals	reptiles	Scincidae	<i>Morethia taeniopleura</i>	fire-tailed skink		C		4
animals	reptiles	Scincidae	<i>Saiphos equalis</i>	three-toed skink		C		7
animals	reptiles	Scincidae	<i>Saproscincus challengerii</i>	orange-tailed shadeskink		C		1
animals	reptiles	Scincidae	<i>Saproscincus rosei</i>	Rose's shadeskink		C		6
animals	reptiles	Scincidae	<i>Tiliqua rugosa</i>	shingle-back		C		5

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animals	reptiles	Scincidae	<i>Tiliqua scincoides</i>	eastern blue-tongued lizard		C		51
animals	reptiles	Typhlopidae	<i>Anilius ligatus</i>	robust blind snake		C		3
animals	reptiles	Typhlopidae	<i>Anilius nigrescens</i>	blackish blind snake		C		3
animals	reptiles	Typhlopidae	<i>Anilius proximus</i>	proximus blind snake		C		4/1
animals	reptiles	Typhlopidae	<i>Anilius sp.</i>			C		2
animals	reptiles	Typhlopidae	<i>Anilius wiedii</i>	brown-snouted blind snake		C		4/1
animals	reptiles	Varanidae	<i>Varanus sp.</i>	goanna		C		1
animals	reptiles	Varanidae	<i>Varanus varius</i>	lace monitor		C		22
animals	snails	Camaenidae	<i>Pallidelix bennetti</i>					1
animals	uncertain	Indeterminate	<i>Indeterminate</i>	Unknown or Code Pending				485
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus</i>					2/2
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus arvensis</i>			C		7
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus augustus</i>			C		5
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus bisporus</i>			C		1/1
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus campestris</i>			C		2
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus campestris var. campestris</i>			C		3
fungi	Agaricomycetes	Agaricaceae	<i>Agaricus xanthodermus</i>	yellow staining mushroom		C		2
fungi	Agaricomycetes	Agaricaceae	<i>Calvatia lilacina</i>			C		2
fungi	Agaricomycetes	Agaricaceae	<i>Chlorophyllum hortense</i>			C		1
fungi	Agaricomycetes	Agaricaceae	<i>Chlorophyllum molybdites</i>	green-spored parasol		C		4
fungi	Agaricomycetes	Agaricaceae	<i>Coprinus atramentarius</i>			C		7
fungi	Agaricomycetes	Agaricaceae	<i>Coprinus comatus</i>			C		1
fungi	Agaricomycetes	Agaricaceae	<i>Coprinus truncorum</i>			C		3
fungi	Agaricomycetes	Agaricaceae	<i>Cyathus stercoreus</i>			C		1/1
fungi	Agaricomycetes	Agaricaceae	<i>Disciseda</i>					1/1
fungi	Agaricomycetes	Agaricaceae	<i>Leucocoprinus birnbaumii</i>			C		1/1
fungi	Agaricomycetes	Agaricaceae	<i>Lycoperdon pyriforme</i>			C		1
fungi	Agaricomycetes	Agaricaceae	<i>Macrolepiota</i>					1/1
fungi	Agaricomycetes	Agaricaceae	<i>Macrolepiota dolichaula</i>			C		2
fungi	Agaricomycetes	Agaricaceae	<i>Mycenastrum corium</i>			C		1
fungi	Agaricomycetes	Amanitaceae	<i>Amanita muscaria</i>		Y			1/1
fungi	Agaricomycetes	Amanitaceae	<i>Amanita punctata</i>			C		2
fungi	Agaricomycetes	Amanitaceae	<i>Amanita pyramidifera</i>			C		1
fungi	Agaricomycetes	Amanitaceae	<i>Amanita xanthocephala</i>			C		1
fungi	Agaricomycetes	Auriculariaceae	<i>Auricularia cornea</i>			C		4/1
fungi	Agaricomycetes	Boletaceae	<i>Phylloporus</i>					1/1
fungi	Agaricomycetes	Corticaceae	<i>Corticium</i>			C		2/2
fungi	Agaricomycetes	Cortinariaceae	<i>Cortinarius australiensis</i>			C		1
fungi	Agaricomycetes	Cortinariaceae	<i>Cribbea turbinispora</i>			C		1
fungi	Agaricomycetes	Fomitopsidaceae	<i>Piptoporus australiensis</i>			C		1
fungi	Agaricomycetes	Geastraceae	<i>Geastrum</i>			C		4/4
fungi	Agaricomycetes	Geastraceae	<i>Geastrum pectinatum</i>			C		2/1
fungi	Agaricomycetes	Geastraceae	<i>Geastrum triplex</i>			C		4
fungi	Agaricomycetes	Geastraceae	<i>Myriostoma australianum</i>			C		1/1
fungi	Agaricomycetes	Hymenochaetaceae	<i>Hymenochaete</i>					1/1
fungi	Agaricomycetes	Hymenochaetaceae	<i>Phellinus</i>					2/2

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fungi	Agaricomycetes	Marasmiaceae	<i>Armillaria fumosa</i>			C		1
fungi	Agaricomycetes	Marasmiaceae	<i>Gerronema</i>					2/2
fungi	Agaricomycetes	Marasmiaceae	<i>Marasmius</i>					6/6
fungi	Agaricomycetes	Marasmiaceae	<i>Marasmius bambusiniiformis</i>			C		1/1
fungi	Agaricomycetes	Marasmiaceae	<i>Marasmius elegans</i>			C		1
fungi	Agaricomycetes	Marasmiaceae	<i>Marasmius haematocephalus</i>			C		1/1
fungi	Agaricomycetes	Mycenaceae	<i>Tectella patellaris</i>			C		1/1
fungi	Agaricomycetes	Omphalotaceae	<i>Marasmiellus</i>					1/1
fungi	Agaricomycetes	Omphalotaceae	<i>Omphalotus nidiformis</i>			C		4
fungi	Agaricomycetes	Panaeolaceae	<i>Panaeolina foenisecii</i>			C		2
fungi	Agaricomycetes	Panaeolaceae	<i>Panaeolus</i>					1/1
fungi	Agaricomycetes	Panaeolaceae	<i>Panaeolus antillarum</i>			C		1/1
fungi	Agaricomycetes	Phallaceae	<i>Aseroe rubra</i>			C		4
fungi	Agaricomycetes	Phallaceae	<i>Colus pusillus</i>			C		1
fungi	Agaricomycetes	Phallaceae	<i>Lysurus mokusin</i>			C		1
fungi	Agaricomycetes	Phallaceae	<i>Phallus rubicundus</i>			C		4
fungi	Agaricomycetes	Physalacriaceae	<i>Armillaria luteobubalina</i>			C		1/1
fungi	Agaricomycetes	Pluteaceae	<i>Pluteus</i>					2/2
fungi	Agaricomycetes	Polyporaceae	<i>Laccocephalum hartmannii</i>			C		1
fungi	Agaricomycetes	Polyporaceae	<i>Laetiporus portentosus</i>			C		4
fungi	Agaricomycetes	Polyporaceae	<i>Lenzites</i>					1/1
fungi	Agaricomycetes	Polyporaceae	<i>Panus fasciatus</i>			C		1
fungi	Agaricomycetes	Polyporaceae	<i>Trametes</i>					1/1
fungi	Agaricomycetes	Psathyrellaceae	<i>Coprinellus disseminatus</i>			C		2
fungi	Agaricomycetes	Psathyrellaceae	<i>Psathyrella</i>					1/1
fungi	Agaricomycetes	Russulaceae	<i>Russula</i>			C		1/1
fungi	Agaricomycetes	Russulaceae	<i>Russula erumpens</i>			C		1
fungi	Agaricomycetes	Russulaceae	<i>Russula persanguinea</i>			C		1
fungi	Agaricomycetes	Schizophyllaceae	<i>Schizophyllum commune</i>			C		1
fungi	Agaricomycetes	Sclerodermataceae	<i>Astraeus hygrometricus</i>			C		1/1
fungi	Agaricomycetes	Sclerodermataceae	<i>Pisolithus albus</i>			C		3
fungi	Agaricomycetes	Sclerodermataceae	<i>Pisolithus marmoratus</i>			C		2
fungi	Agaricomycetes	Sclerodermataceae	<i>Scleroderma cepa</i>			C		4
fungi	Agaricomycetes	Sclerodermataceae	<i>Scleroderma polyrhizum</i>			C		5
fungi	Agaricomycetes	Serpulaceae	<i>Serpula lacrymans</i>			C		1/1
fungi	Agaricomycetes	Stereaceae	<i>Stereum ostrea</i>			C		2/1
fungi	Agaricomycetes	Strophariaceae	<i>Psilocybe cubensis</i>			C		1/1
fungi	Pezizomycetes	Pyronemataceae	<i>Scutellinia scutellata</i>			C		1/1
fungi	Tremellomycetes	Tremellaceae	<i>Tremella mesenterica</i>			C		1
fungi	arthoniomycetes	Chrysothricaceae	<i>Chrysothrix candelaris</i>			C		1/1
fungi	arthoniomycetes	Chrysothricaceae	<i>Chrysothrix xanthina</i>			C		1
fungi	arthoniomycetes	Opegraphaceae	<i>Opegrapha multiseptata</i>			C		1/1
fungi	arthoniomycetes	Roccellaceae	<i>Roccella montagnei</i>			C		1/1
fungi	eurotiomycetes	Pyrenulaceae	<i>Anthracotheccium gregale</i>			C		1/1
fungi	eurotiomycetes	Pyrenulaceae	<i>Pyrenula ochraceoflava</i>			C		1/1
fungi	eurotiomycetes	Thermoascaceae	<i>Paecilomyces</i>					1/1

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fungi	eurotiomycetes	Verrucariaceae	<i>Endocarpon aridum</i>			C		1/1
fungi	eurotiomycetes	Verrucariaceae	<i>Placidium lacinulatum</i>			C		1/1
fungi	eurotiomycetes	Verrucariaceae	<i>Placidium squamulosum</i>			C		1/1
fungi	lecanoromycetes	Acarosporaceae	<i>Piccolia conspersa</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Amandinea punctata</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Buellia</i>					4/4
fungi	lecanoromycetes	Caliciaceae	<i>Buellia demutans</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Buellia disciformis</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria</i>					1/1
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria aegialita</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria applanata</i>			C		5/5
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria confluens</i>			C		8/8
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria consimilis</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Dirinaria picta</i>			C		1/1
fungi	lecanoromycetes	Caliciaceae	<i>Pyxine</i>					1/1
fungi	lecanoromycetes	Caliciaceae	<i>Pyxine australiensis</i>			C		3/3
fungi	lecanoromycetes	Caliciaceae	<i>Pyxine petricola</i>			C		2/2
fungi	lecanoromycetes	Caliciaceae	<i>Pyxine subcinerea</i>			C		3/3
fungi	lecanoromycetes	Cladoniaceae	<i>Cladia aggregata</i>			C		1/1
fungi	lecanoromycetes	Cladoniaceae	<i>Cladia muelleri</i>			C		3/2
fungi	lecanoromycetes	Cladoniaceae	<i>Cladia retipora</i>			C		1/1
fungi	lecanoromycetes	Cladoniaceae	<i>Cladonia cervicornis subsp. verticillata</i>			C		1/1
fungi	lecanoromycetes	Cladoniaceae	<i>Cladonia floerkeana</i>			C		1/1
fungi	lecanoromycetes	Collemataceae	<i>Collema</i>					2/2
fungi	lecanoromycetes	Collemataceae	<i>Collema coccophorum</i>			C		1/1
fungi	lecanoromycetes	Graphidaceae	<i>Diploschistes actinostomus</i>			C		1/1
fungi	lecanoromycetes	Graphidaceae	<i>Glyphis cicatricosa</i>			C		1/1
fungi	lecanoromycetes	Graphidaceae	<i>Graphis gonimica</i>			C		2/2
fungi	lecanoromycetes	Graphidaceae	<i>Leucodecton occultum</i>			C		1/1
fungi	lecanoromycetes	Haematommataceae	<i>Haematomma</i>					3/3
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora</i>					4/4
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora caesiorubella</i>			C		1/1
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora flavidofusca</i>			C		2/2
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora helva</i>			C		2/2
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora interjecta</i>			C		1/1
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora oreinoides</i>			C		2/2
fungi	lecanoromycetes	Lecanoraceae	<i>Lecanora pseudistera</i>			C		3/3
fungi	lecanoromycetes	Lecideaceae	<i>Lecidea</i>					4/4
fungi	lecanoromycetes	Letrouitiaceae	<i>Letrouitia coralloidea</i>			C		1/1
fungi	lecanoromycetes	Lobariaceae	<i>Crocodia aurata</i>			C		1/1
fungi	lecanoromycetes	Lobariaceae	<i>Pseudocyphellaria neglecta</i>			C		1/1
fungi	lecanoromycetes	Lobariaceae	<i>Pseudocyphellaria rubrina</i>			C		1/1
fungi	lecanoromycetes	Ochrolechiaceae	<i>Ochrolechia</i>					2/2
fungi	lecanoromycetes	Ochrolechiaceae	<i>Ochrolechia africana</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Austroparmelina</i>					1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Canoparmelia aptata</i>			C		1/1

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fungi	lecanoromycetes	Parmeliaceae	<i>Canoparmelia texana</i>			C		3/3
fungi	lecanoromycetes	Parmeliaceae	<i>Flavoparmelia rutidota</i>			C		8/8
fungi	lecanoromycetes	Parmeliaceae	<i>Notoparmelia erumpens</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmelia</i>					2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema</i>					2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema austrosinense</i>			C		16/16
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema crinitum</i>			C		2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema perlatum</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema praesorediosum</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema reparatum</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema reticulatum</i>			C		3/3
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema saccatilobum</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema subsumptum</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Parmotrema tinctorum</i>			C		6/6
fungi	lecanoromycetes	Parmeliaceae	<i>Punctelia subflava</i>			C		3/3
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea angulata</i>			C		2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea bicolorata</i> var. <i>australiensis</i>			C		2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea bismolliuscula</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea dasaea</i>			C		12/12
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea himantodes</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea inermis</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea molliuscula</i> subsp. <i>queenslandica</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea pectinata</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea roseola</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea rubicunda</i>			C		4/4
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea rubrotincta</i>			C		2/2
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea sanguinea</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea scabrida</i>			C		1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea scabrida</i> subsp. <i>elegans</i>			C		17/17
fungi	lecanoromycetes	Parmeliaceae	<i>Xanthoparmelia immutata</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Xanthoparmelia mougeotina</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Xanthoparmelia pulla</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Xanthoparmelia semiviridis</i>			C		4/4
fungi	lecanoromycetes	Pertusariaceae	<i>Pertusaria</i>					2/2
fungi	lecanoromycetes	Pertusariaceae	<i>Pertusaria leucophaea</i>			C		1/1
fungi	lecanoromycetes	Pertusariaceae	<i>Pertusaria scaberula</i>			C		1/1
fungi	lecanoromycetes	Pertusariaceae	<i>Pertusaria thiospoda</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Heterodermia angustiloba</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Heterodermia obscurata</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Heterodermia speciosa</i>			C		3/3
fungi	lecanoromycetes	Physciaceae	<i>Hyperphyscia pandani</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Physcia crispa</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Physcia jackii</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Physcia rolfii</i>			C		1/1
fungi	lecanoromycetes	Physciaceae	<i>Rinodina</i>					2/2
fungi	lecanoromycetes	Ramalinaceae	<i>Bacidia</i>					1/1

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fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina</i>					2/2
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina celastri</i> subsp. <i>celastri</i>			C		13/13
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina inflata</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina inflata</i> subsp. <i>inflata</i>			C		4/4
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina inflata</i> subsp. <i>perpusilla</i>			C		12/12
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina luciae</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina peruviana</i>			C		3/3
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina subfraxinea</i>			C		3/3
fungi	lecanoromycetes	Teloschistaceae	<i>Caloplaca crenulatella</i>			C		2/2
fungi	lecanoromycetes	Teloschistaceae	<i>Teloschistes sieberianus</i>			C		10/9
fungi	lecanoromycetes	Teloschistaceae	<i>Teloschistes xanthoroides</i>			C		1/1
fungi	lecanoromycetes	Tephromelataceae	<i>Tephromela atra</i>			C		2/2
fungi	lecanoromycetes	Trapeliaceae	<i>Trapelia</i>					2/2
fungi	lichinomycetes	Lichinaceae	<i>Heppia lutosa</i>			C		1/1
fungi	sordariomycetes	Xylariaceae	<i>Xylaria</i>					2/2
fungi	sordariomycetes	Xylariaceae	<i>Xylaria polymorpha</i>			C		1
plants	Charophyceae	Characeae	<i>Nitella cristata</i>			C		1/1
plants	land plants	Acanthaceae	<i>Brunoniella australis</i>	blue trumpet		C		5
plants	land plants	Acanthaceae	<i>Hypoestes floribunda</i>			C		1/1
plants	land plants	Acanthaceae	<i>Hypoestes phyllostachya</i>		Y			2/1
plants	land plants	Acanthaceae	<i>Pseuderanthemum variabile</i>	pastel flower		C		3/1
plants	land plants	Acanthaceae	<i>Rostellularia adscendens</i>			C		4/1
plants	land plants	Acanthaceae	<i>Rostellularia adscendens</i> var. <i>adscendens</i>			C		1/1
plants	land plants	Acanthaceae	<i>Rostellularia obtusa</i>			C		2/2
plants	land plants	Acanthaceae	<i>Ruellia simplex</i>		Y			1/1
plants	land plants	Acanthaceae	<i>Ruellia squarrosa</i>		Y			1/1
plants	land plants	Acanthaceae	<i>Thunbergia alata</i>	black-eyed Susan	Y			7/1
plants	land plants	Adoxaceae	<i>Viburnum odoratissimum</i> var. <i>awabuki</i>	sweet viburnum 'emerald lustre'	Y			1/1
plants	land plants	Agavaceae	<i>Agave americana</i>		Y			2
plants	land plants	Agavaceae	<i>Agave americana</i> var. <i>americana</i>		Y			2/1
plants	land plants	Agavaceae	<i>Agave attenuata</i>		Y			1
plants	land plants	Agavaceae	<i>Agave sisalana</i>	sisal hemp	Y			2
plants	land plants	Agavaceae	<i>Agave vivipara</i>		Y			4/2
plants	land plants	Agavaceae	<i>Furcraea foetida</i>		Y			3
plants	land plants	Agavaceae	<i>Yucca aloifolia</i>		Y			7/7
plants	land plants	Aizoaceae	<i>Mesembryanthemum cordifolium</i>		Y			5/3
plants	land plants	Aizoaceae	<i>Tetragonia tetragonoides</i>	New Zealand spinach		C		6
plants	land plants	Aizoaceae	<i>Trianthema portulacastrum</i>	black pigweed	Y			5
plants	land plants	Aizoaceae	<i>Trianthema triquetra</i>	red spinach		C		1/1
plants	land plants	Aizoaceae	<i>Zaleya galericulata</i> subsp. <i>galericulata</i>			C		5/1
plants	land plants	Alismataceae	<i>Sagittaria platyphylla</i>	sagittaria	Y			1
plants	land plants	Alliaceae	<i>Nothoscordum borbonicum</i>		Y			7/1
plants	land plants	Amaranthaceae	<i>Achyranthes aspera</i>			C		1
plants	land plants	Amaranthaceae	<i>Alternanthera denticulata</i>	lesser joyweed		C		6
plants	land plants	Amaranthaceae	<i>Alternanthera nana</i>	hairy joyweed		C		5/2
plants	land plants	Amaranthaceae	<i>Alternanthera nodiflora</i>	joyweed		C		1/1

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plants	land plants	Amaranthaceae	<i>Alternanthera pungens</i>	khaki weed	Y			6
plants	land plants	Amaranthaceae	<i>Alternanthera sessilis</i>		Y			1/1
plants	land plants	Amaranthaceae	<i>Amaranthus hybridus</i>	redshank	Y			5/2
plants	land plants	Amaranthaceae	<i>Amaranthus macrocarpus</i> var. <i>pallidus</i>				C	2/2
plants	land plants	Amaranthaceae	<i>Amaranthus retroflexus</i>		Y			1/1
plants	land plants	Amaranthaceae	<i>Amaranthus viridis</i>	green amaranth	Y			1
plants	land plants	Amaranthaceae	<i>Deeringia amaranthoides</i>	redberry			C	2/1
plants	land plants	Amaranthaceae	<i>Gomphrena celosioides</i>	gomphrena weed	Y			16/1
plants	land plants	Amaranthaceae	<i>Guilleminea densa</i>	small matweed	Y			4/1
plants	land plants	Amaranthaceae	<i>Nyssanthus diffusa</i>	barbed-wire weed			C	5/3
plants	land plants	Amaranthaceae	<i>Nyssanthus erecta</i>				C	2/2
plants	land plants	Amaranthaceae	<i>Ptilotus psilorhachis</i>				C	1/1
plants	land plants	Amaranthaceae	<i>Ptilotus semilanatus</i>				C	3/3
plants	land plants	Amaryllidaceae	<i>Crinum flaccidum</i>	Murray lily			C	6
plants	land plants	Amaryllidaceae	<i>Proiphys cunninghamii</i>	Moreton Bay lily			C	2
plants	land plants	Anacardiaceae	<i>Euroschinus falcatus</i> var. <i>falcatus</i>				C	1/1
plants	land plants	Anacardiaceae	<i>Rhodosphaera rhodanthema</i>	tulip satinwood			C	1
plants	land plants	Anacardiaceae	<i>Schinus molle</i>		Y			1
plants	land plants	Anacardiaceae	<i>Schinus molle</i> var. <i>areira</i>	pepper tree	Y			3/2
plants	land plants	Aphanopetalaceae	<i>Aphanopetalum resinosum</i>	gumvine			C	1
plants	land plants	Apiaceae	<i>Ammi majus</i>	bishop's weed	Y			2
plants	land plants	Apiaceae	<i>Berula erecta</i>	water parsnip	Y			5/2
plants	land plants	Apiaceae	<i>Centella asiatica</i>				C	1
plants	land plants	Apiaceae	<i>Conium maculatum</i>	poison hemlock	Y			2/2
plants	land plants	Apiaceae	<i>Cyclospermum leptophyllum</i>		Y			17/2
plants	land plants	Apiaceae	<i>Daucus carota</i>	wild carrot	Y			2
plants	land plants	Apiaceae	<i>Daucus glochidiatus</i>	Australian carrot			C	3/3
plants	land plants	Apiaceae	<i>Foeniculum vulgare</i>	fennel	Y			8/3
plants	land plants	Apiaceae	<i>Torilis nodosa</i>	knotted parsley	Y			1/1
plants	land plants	Apocynaceae	<i>Alstonia constricta</i>	bitterbark			C	5/2
plants	land plants	Apocynaceae	<i>Alyxia ruscifolia</i>				C	4/2
plants	land plants	Apocynaceae	<i>Araujia sericifera</i>	white moth vine	Y			17/4
plants	land plants	Apocynaceae	<i>Asclepias curassavica</i>	red-head cottonbush	Y			3/1
plants	land plants	Apocynaceae	<i>Carissa ovata</i>	currantbush			C	3/1
plants	land plants	Apocynaceae	<i>Cynanchum viminale</i>				C	1
plants	land plants	Apocynaceae	<i>Gomphocarpus physocarpus</i>	balloon cottonbush	Y			20/2
plants	land plants	Apocynaceae	<i>Hoya australis</i> subsp. <i>australis</i>				C	1/1
plants	land plants	Apocynaceae	<i>Leichhardtia coronata</i>				V	1/1
plants	land plants	Apocynaceae	<i>Parsonsia eucalyptophylla</i>	gargaloo			C	5/4
plants	land plants	Apocynaceae	<i>Parsonsia lanceolata</i>	northern silkpod			C	2
plants	land plants	Apocynaceae	<i>Parsonsia leichhardtii</i>	black silkpod			C	1/1
plants	land plants	Apocynaceae	<i>Parsonsia straminea</i>	monkey rope			C	1
plants	land plants	Apocynaceae	<i>Secamone elliptica</i>				C	1
plants	land plants	Apocynaceae	<i>Stapelia gigantea</i>		Y			1
plants	land plants	Apocynaceae	<i>Vincetoxicum grandiflorum</i>				C	2/2
plants	land plants	Apocynaceae	<i>Vincetoxicum ovatum</i>				C	4/2

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plants	land plants	Araceae	<i>Gymnostachys anceps</i>	settler's flax		C		1
plants	land plants	Araceae	<i>Lemna aequinoctialis</i>	common duckweed		C		1
plants	land plants	Araceae	<i>Monstera deliciosa</i>		Y			1
plants	land plants	Araceae	<i>Typhonium brownii</i>	black arum lily		C		2
plants	land plants	Araliaceae	<i>Astrotricha longifolia</i>	star hair bush		C		2/2
plants	land plants	Araliaceae	<i>Heptapleurum actinophyllum</i>			C		1
plants	land plants	Araliaceae	<i>Hydrocotyle acutiloba</i>			C		1
plants	land plants	Araliaceae	<i>Hydrocotyle laxiflora</i>	stinking pennywort		C		8/6
plants	land plants	Araliaceae	<i>Hydrocotyle verticillata</i>	shield pennywort		C		1/1
plants	land plants	Araliaceae	<i>Polyscias elegans</i>	celery wood		C		3/1
plants	land plants	Araliaceae	<i>Polyscias murrayi</i>			C		1
plants	land plants	Araucariaceae	<i>Araucaria cunninghamii</i> var. <i>cunninghamii</i>			C		1/1
plants	land plants	Asparagaceae	<i>Asparagus aethiopicus</i> 'Sprengerii'	basket asparagus fern	Y			2
plants	land plants	Asparagaceae	<i>Asparagus africanus</i>	ornamental asparagus	Y			11/4
plants	land plants	Asparagaceae	<i>Asparagus asparagoides</i>	bridal creeper	Y			4/2
plants	land plants	Asparagaceae	<i>Asparagus officinalis</i>	asparagus	Y			1/1
plants	land plants	Asparagaceae	<i>Asparagus plumosus</i>	feathered asparagus fern	Y			1
plants	land plants	Asphodelaceae	<i>Aloe arborescens</i>		Y			1
plants	land plants	Asphodelaceae	<i>Aloe maculata</i>		Y			7/6
plants	land plants	Asphodelaceae	<i>Aloe parvibracteata</i>		Y			1/1
plants	land plants	Asphodelaceae	<i>Aloe vera</i>		Y			2
plants	land plants	Asphodelaceae	<i>Asphodelus fistulosus</i>	asphodel	Y			6/1
plants	land plants	Asphodelaceae	<i>Bulbine</i>					1/1
plants	land plants	Asphodelaceae	<i>Bulbine alata</i>	native leek		C		2/2
plants	land plants	Asphodelaceae	<i>Bulbine bulbosa</i>	golden lily		C		5/2
plants	land plants	Aspleniaceae	<i>Asplenium australasicum</i>			C		3
plants	land plants	Aspleniaceae	<i>Asplenium subglandulosum</i> subsp. <i>subglandulosum</i>			C		1/1
plants	land plants	Asteraceae	<i>Ageratum houstonianum</i>	blue billygoat weed	Y			1
plants	land plants	Asteraceae	<i>Ambrosia artemisiifolia</i>	annual ragweed	Y			1
plants	land plants	Asteraceae	<i>Apowollastonia spilanthisoides</i>			C		5/2
plants	land plants	Asteraceae	<i>Arctotheca calendula</i>	Cape weed	Y			5/2
plants	land plants	Asteraceae	<i>Artemisia verlotiorum</i>		Y			2
plants	land plants	Asteraceae	<i>Asteraceae</i>					1
plants	land plants	Asteraceae	<i>Baccharis halimifolia</i>	groundsel bush	Y			5
plants	land plants	Asteraceae	<i>Bidens bipinnata</i>	bipinnate beggar's ticks	Y			18
plants	land plants	Asteraceae	<i>Bidens pilosa</i>		Y			21/2
plants	land plants	Asteraceae	<i>Brachyscome</i>					2/1
plants	land plants	Asteraceae	<i>Brachyscome chrysoglossa</i>			C		4/4
plants	land plants	Asteraceae	<i>Brachyscome dalbyensis</i>			C		3/3
plants	land plants	Asteraceae	<i>Brachyscome dentata</i>			C		11/4
plants	land plants	Asteraceae	<i>Brachyscome microcarpa</i> subsp. <i>microcarpa</i>			C		1
plants	land plants	Asteraceae	<i>Brachyscome multifida</i>			C		1/1
plants	land plants	Asteraceae	<i>Calotis cuneata</i>			C		7/4
plants	land plants	Asteraceae	<i>Calotis cuneifolia</i>	burr daisy		C		1/1
plants	land plants	Asteraceae	<i>Calotis dentex</i>	white burr daisy		C		2/2
plants	land plants	Asteraceae	<i>Calotis lappulacea</i>	yellow burr daisy		C		17/4

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plants	land plants	Asteraceae	<i>Calotis scabiosifolia</i> var. <i>scabiosifolia</i>			C		1/1
plants	land plants	Asteraceae	<i>Calotis scapigera</i>	tufted burr daisy		C		3/3
plants	land plants	Asteraceae	<i>Calyptocarpus vialis</i>	creeping cinderella weed	Y			1
plants	land plants	Asteraceae	<i>Camptacra barbata</i>			C		2/2
plants	land plants	Asteraceae	<i>Camptacra perditia</i>			C		2/2
plants	land plants	Asteraceae	<i>Carduus pycnocephalus</i>		Y			10/3
plants	land plants	Asteraceae	<i>Carduus thoermeri</i>	nodding thistle	Y			6/5
plants	land plants	Asteraceae	<i>Carthamus lanatus</i>	saffron thistle	Y			4/2
plants	land plants	Asteraceae	<i>Cassinia laevis</i>			C		4
plants	land plants	Asteraceae	<i>Cassinia laevis</i> subsp. <i>rosmarinifolia</i>			C		2/2
plants	land plants	Asteraceae	<i>Cassinia quinquefaria</i>			C		1/1
plants	land plants	Asteraceae	<i>Cassinia straminea</i>			C		1/1
plants	land plants	Asteraceae	<i>Centaurea melitensis</i>	Maltese cockspur	Y			7/4
plants	land plants	Asteraceae	<i>Centaurea solstitialis</i>	St. Barnaby's thistle	Y			2/2
plants	land plants	Asteraceae	<i>Chondrilla juncea</i>	skeleton weed	Y			1/1
plants	land plants	Asteraceae	<i>Chrysocephalum apiculatum</i>	yellow buttons		C		21/2
plants	land plants	Asteraceae	<i>Cichorium intybus</i>	chicory	Y			1
plants	land plants	Asteraceae	<i>Cirsium vulgare</i>	spear thistle	Y			33/2
plants	land plants	Asteraceae	<i>Coreopsis lanceolata</i>		Y			1
plants	land plants	Asteraceae	<i>Crassocephalum crepidioides</i>	thickhead	Y			4/2
plants	land plants	Asteraceae	<i>Cyanthillium cinereum</i>			C		2/1
plants	land plants	Asteraceae	<i>Cymbonotus lawsonianus</i>	bear's ear		C		2/2
plants	land plants	Asteraceae	<i>Dimorphotheca ecklonis</i>		Y			3/1
plants	land plants	Asteraceae	<i>Eclipta platyglossa</i> subsp. <i>platyglossa</i>			C		1/1
plants	land plants	Asteraceae	<i>Eclipta prostrata</i>	white eclipta	Y			2/2
plants	land plants	Asteraceae	<i>Emilia sonchifolia</i> var. <i>javanica</i>		Y			1/1
plants	land plants	Asteraceae	<i>Erigeron bonariensis</i>		Y			30/3
plants	land plants	Asteraceae	<i>Erigeron karvinskianus</i>		Y			2/1
plants	land plants	Asteraceae	<i>Erigeron pusillus</i>		Y			1/1
plants	land plants	Asteraceae	<i>Erigeron sumatrensis</i>		Y			15/2
plants	land plants	Asteraceae	<i>Euchiton involucratus</i>			C		1
plants	land plants	Asteraceae	<i>Euchiton sphaericus</i>			C		10/2
plants	land plants	Asteraceae	<i>Flaveria trinervia</i>		Y			1/1
plants	land plants	Asteraceae	<i>Gamochaeta pensylvanica</i>		Y			3/2
plants	land plants	Asteraceae	<i>Glossocardia bidens</i>	native cobbler's pegs		C		6/4
plants	land plants	Asteraceae	<i>Guizotia abyssinica</i>	niger seed	Y			1/1
plants	land plants	Asteraceae	<i>Helianthus annuus</i>		Y			3
plants	land plants	Asteraceae	<i>Hypochaeris albiflora</i>		Y			4/1
plants	land plants	Asteraceae	<i>Hypochaeris glabra</i>	smooth catsear	Y			5
plants	land plants	Asteraceae	<i>Hypochaeris radicata</i>	catsear	Y			6/1
plants	land plants	Asteraceae	<i>Lactuca serriola</i> forma <i>serriola</i>		Y			22
plants	land plants	Asteraceae	<i>Leiocarpa brevicompta</i>			C		22/4
plants	land plants	Asteraceae	<i>Leiocarpa leptolepis</i>			C		1
plants	land plants	Asteraceae	<i>Leiocarpa panaetioides</i>			C		2/2
plants	land plants	Asteraceae	<i>Leiocarpa websteri</i>			C		8/4
plants	land plants	Asteraceae	<i>Leontodon rhagadioloides</i>		Y			2/2

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plants	land plants	Asteraceae	<i>Mantisalca salmantica</i>		Y			1/1
plants	land plants	Asteraceae	<i>Minuria integerrima</i>	smooth minuria		C		1/1
plants	land plants	Asteraceae	<i>Olearia canescens</i>			C		2/1
plants	land plants	Asteraceae	<i>Olearia canescens subsp. discolor</i>			C		2/2
plants	land plants	Asteraceae	<i>Olearia elliptica</i>			C		2
plants	land plants	Asteraceae	<i>Olearia fulgens</i>			C		7/7
plants	land plants	Asteraceae	<i>Olearia microphylla</i>			C		2/2
plants	land plants	Asteraceae	<i>Ozothamnus cassinioides</i>			C		1/1
plants	land plants	Asteraceae	<i>Ozothamnus diosmifolius</i>	white dogwood		C		1/1
plants	land plants	Asteraceae	<i>Parthenium hysterophorus</i>	parthenium weed	Y			2/2
plants	land plants	Asteraceae	<i>Picris angustifolia</i>			C		1
plants	land plants	Asteraceae	<i>Picris barbarorum</i>			V		1/1
plants	land plants	Asteraceae	<i>Picris evae</i>			V	V	8/2
plants	land plants	Asteraceae	<i>Praxelis clematidea</i>		Y			1/1
plants	land plants	Asteraceae	<i>Pterocaulon redolens</i>			C		1/1
plants	land plants	Asteraceae	<i>Pycnosorus globosus</i>			C		3/3
plants	land plants	Asteraceae	<i>Rhaponticum australe</i>			V	V	24/13
plants	land plants	Asteraceae	<i>Rhaponticum repens</i>		Y			4/4
plants	land plants	Asteraceae	<i>Rhodanthe anthemoides</i>	white paper daisy		C		1/1
plants	land plants	Asteraceae	<i>Schkuhria pinnata</i>		Y			4/1
plants	land plants	Asteraceae	<i>Senecio bathurstianus</i>			C		1/1
plants	land plants	Asteraceae	<i>Senecio bipinnatisectus</i>	Commonwealth weed		C		2
plants	land plants	Asteraceae	<i>Senecio brigalowensis</i>			C		2/2
plants	land plants	Asteraceae	<i>Senecio daltonii</i>	dalton weed		C		5/5
plants	land plants	Asteraceae	<i>Senecio hispidulus</i>			C		2/1
plants	land plants	Asteraceae	<i>Senecio madagascariensis</i>	fireweed	Y			13/6
plants	land plants	Asteraceae	<i>Senecio minimus</i>			C		1
plants	land plants	Asteraceae	<i>Senecio pinnatifolius var. pinnatifolius</i>			C		27/6
plants	land plants	Asteraceae	<i>Senecio pinnatifolius var. serratus</i>			C		2
plants	land plants	Asteraceae	<i>Senecio quadridentatus</i>	cotton fireweed		C		17/2
plants	land plants	Asteraceae	<i>Senecio queenslandicus</i>			C		1/1
plants	land plants	Asteraceae	<i>Senecio scabrellus</i>			C		1/1
plants	land plants	Asteraceae	<i>Senecio tenuiflorus</i>			C		3/3
plants	land plants	Asteraceae	<i>Sigesbeckia orientalis</i>	Indian weed		C		2/2
plants	land plants	Asteraceae	<i>Silybum marianum</i>	variegated thistle	Y			8/1
plants	land plants	Asteraceae	<i>Soliva anthemifolia</i>	dwarf jo jo weed	Y			1/1
plants	land plants	Asteraceae	<i>Soliva sessilis</i>		Y			5
plants	land plants	Asteraceae	<i>Sonchus asper</i>	rough sowthistle	Y			8/2
plants	land plants	Asteraceae	<i>Sonchus oleraceus</i>	common sowthistle	Y			20/2
plants	land plants	Asteraceae	<i>Symphotrichum subulatum</i>		Y			10/2
plants	land plants	Asteraceae	<i>Tagetes minuta</i>	stinking roger	Y			12/2
plants	land plants	Asteraceae	<i>Tanacetum vulgare</i>	tansy	Y			1/1
plants	land plants	Asteraceae	<i>Taraxacum officinale</i>	dandelion	Y			9/2
plants	land plants	Asteraceae	<i>Tragopogon porrifolius</i>	salsify	Y			5/1
plants	land plants	Asteraceae	<i>Tridax procumbens</i>	tridax daisy	Y			3
plants	land plants	Asteraceae	<i>Urospermum picroides</i>		Y			1/1

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plants	land plants	Asteraceae	<i>Verbesina encelioides</i> var. <i>encelioides</i>		Y			1
plants	land plants	Asteraceae	<i>Vittadinia</i>					1
plants	land plants	Asteraceae	<i>Vittadinia constricta</i>			C		2/2
plants	land plants	Asteraceae	<i>Vittadinia cuneata</i> var. <i>hirsuta</i>			C		5/4
plants	land plants	Asteraceae	<i>Vittadinia dissecta</i> var. <i>hirta</i>			C		2/2
plants	land plants	Asteraceae	<i>Vittadinia muelleri</i>			C		1/1
plants	land plants	Asteraceae	<i>Vittadinia pterochaeta</i>	rough fuzzweed		C		10/2
plants	land plants	Asteraceae	<i>Vittadinia pustulata</i>			C		7/4
plants	land plants	Asteraceae	<i>Vittadinia sulcata</i>	native daisy		C		19/4
plants	land plants	Asteraceae	<i>Vittadinia tenuissima</i>	western New Holland daisy		C		1/1
plants	land plants	Asteraceae	<i>Xanthium occidentale</i>		Y			7
plants	land plants	Asteraceae	<i>Xanthium spinosum</i>	Bathurst burr	Y			3/1
plants	land plants	Asteraceae	<i>Xerochrysum bracteatum</i>	golden everlasting daisy		C		2/1
plants	land plants	Asteraceae	<i>Youngia japonica</i>			C		1/1
plants	land plants	Asteraceae	<i>Zinnia peruviana</i>	wild zinnia	Y			20/4
plants	land plants	Aulacomniaceae	<i>Mesochaete undulata</i>			C		1/1
plants	land plants	Basellaceae	<i>Anredera cordifolia</i>	Madeira vine	Y			2
plants	land plants	Bignoniaceae	<i>Dolichandra unguis-cati</i>	cat's claw creeper	Y			4
plants	land plants	Bignoniaceae	<i>Jacaranda mimosifolia</i>	jacaranda	Y			2/1
plants	land plants	Bignoniaceae	<i>Pandorea pandorana</i>	wonga vine		C		8/3
plants	land plants	Bignoniaceae	<i>Tecoma stans</i> var. <i>stans</i>		Y			2
plants	land plants	Bignoniaceae	<i>Tecomaria capensis</i> subsp. <i>capensis</i>		Y			2
plants	land plants	Blechnaceae	<i>Blechnum neohollandicum</i>			C		4/1
plants	land plants	Boraginaceae	<i>Buglossoides arvensis</i>	corn cromwell	Y			5/4
plants	land plants	Boraginaceae	<i>Cynoglossum torvum</i>			C		2/2
plants	land plants	Boraginaceae	<i>Echium plantagineum</i>	Paterson's curse	Y			1/1
plants	land plants	Boraginaceae	<i>Ehretia membranifolia</i>	weeping koda		C		2/1
plants	land plants	Boraginaceae	<i>Hackelia suaveolens</i>			C		4/3
plants	land plants	Boraginaceae	<i>Heliotropium amplexicaule</i>	blue heliotrope	Y			20/1
plants	land plants	Boraginaceae	<i>Heliotropium curassavicum</i>	smooth heliotrope	Y			1/1
plants	land plants	Brassicaceae	<i>Brassica tournefortii</i>	wild turnip	Y			1
plants	land plants	Brassicaceae	<i>Brassica x napus</i>	rape	Y			1/1
plants	land plants	Brassicaceae	<i>Capsella bursa-pastoris</i>	shepherd's purse	Y			6/1
plants	land plants	Brassicaceae	<i>Cardamine flexuosa</i>	wood bittercress	Y			2/2
plants	land plants	Brassicaceae	<i>Hirschfeldia incana</i>	buchan weed	Y			2/1
plants	land plants	Brassicaceae	<i>Lepidium africanum</i>	common peppergrass	Y			7/3
plants	land plants	Brassicaceae	<i>Lepidium bonariense</i>	Argentine peppergrass	Y			8/1
plants	land plants	Brassicaceae	<i>Lepidium didymum</i>		Y			3/2
plants	land plants	Brassicaceae	<i>Lepidium fasciculatum</i>	fascicled peppergrass		C		1/1
plants	land plants	Brassicaceae	<i>Lepidium peregrinum</i>			C	E	2/2
plants	land plants	Brassicaceae	<i>Lepidium sagittulatum</i>			C		1/1
plants	land plants	Brassicaceae	<i>Lepidium virginicum</i>	Virginian peppergrass	Y			1
plants	land plants	Brassicaceae	<i>Raphanus raphanistrum</i>	wild radish	Y			8/3
plants	land plants	Brassicaceae	<i>Rapistrum rugosum</i>		Y			7/3
plants	land plants	Brassicaceae	<i>Rorippa dietriciana</i>			C		1/1
plants	land plants	Brassicaceae	<i>Rorippa nasturtium-aquaticum</i>	watercress	Y			6/1

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plants	land plants	Brassicaceae	<i>Rorippa palustris</i>	marsh cress	Y			1/1
plants	land plants	Brassicaceae	<i>Sinapis arvensis</i>	charlock	Y			1/1
plants	land plants	Brassicaceae	<i>Sisymbrium</i>					1/1
plants	land plants	Brassicaceae	<i>Sisymbrium erysimoides</i>	smooth mustard	Y			1/1
plants	land plants	Brassicaceae	<i>Sisymbrium irio</i>	london rocket	Y			4/3
plants	land plants	Brassicaceae	<i>Sisymbrium officinale</i>	hedge mustard	Y			1/1
plants	land plants	Brassicaceae	<i>Sisymbrium orientale</i>	Indian hedge mustard	Y			2/1
plants	land plants	Brassicaceae	<i>Sisymbrium thellungii</i>	African turnip-weed	Y			2/1
plants	land plants	Bryaceae	<i>Bryum</i>					1/1
plants	land plants	Bryaceae	<i>Plagiobryoides cellularis</i>			C		1/1
plants	land plants	Cactaceae	<i>Cereus uruguayanus</i>		Y			3/1
plants	land plants	Cactaceae	<i>Harrisia martinii</i>		Y			1
plants	land plants	Cactaceae	<i>Hylocereus undatus</i>	night blooming cactus	Y			2/2
plants	land plants	Cactaceae	<i>Opuntia aurantiaca</i>	tiger pear	Y			14/1
plants	land plants	Cactaceae	<i>Opuntia elatior</i>		Y			2/2
plants	land plants	Cactaceae	<i>Opuntia ficus-indica</i>	Indian fig	Y			2
plants	land plants	Cactaceae	<i>Opuntia stricta</i>		Y			28
plants	land plants	Cactaceae	<i>Opuntia tomentosa</i>	velvety tree pear	Y			230
plants	land plants	Caesalpiniaceae	<i>Biancaea decapetala</i>		Y			2/1
plants	land plants	Caesalpiniaceae	<i>Chamaecrista mimosoides</i>	dwarf cassia		C		1/1
plants	land plants	Caesalpiniaceae	<i>Erythrostemon gilliesii</i>		Y			1/1
plants	land plants	Caesalpiniaceae	<i>Gleditsia triacanthos</i>	honey locust	Y			4/1
plants	land plants	Caesalpiniaceae	<i>Senna artemisioides subsp. zygophylla</i>			C		4/4
plants	land plants	Caesalpiniaceae	<i>Senna barclayana</i>			C		13
plants	land plants	Caesalpiniaceae	<i>Senna coronilloides</i>			C		4/4
plants	land plants	Caesalpiniaceae	<i>Senna pendula</i>		Y			1
plants	land plants	Caesalpiniaceae	<i>Senna pendula</i> var. <i>glabrata</i>	Easter cassia	Y			3/2
plants	land plants	Caesalpiniaceae	<i>Senna sophora</i> var. (40Mile Scrub J.R.Clarkson+ 6908)			C		2/2
plants	land plants	Caesalpiniaceae	<i>Senna sophora</i> var. <i>sophora</i>			C		1/1
plants	land plants	Campanulaceae	<i>Isotoma axillaris</i>	australian harebell		C		2/2
plants	land plants	Campanulaceae	<i>Lobelia concolor</i>			C		6/1
plants	land plants	Campanulaceae	<i>Lobelia purpurascens</i>	white root		C		5/2
plants	land plants	Campanulaceae	<i>Wahlenbergia</i>					1
plants	land plants	Campanulaceae	<i>Wahlenbergia capillaris</i>			C		11
plants	land plants	Campanulaceae	<i>Wahlenbergia glabra</i>	native bluebell		C		1/1
plants	land plants	Campanulaceae	<i>Wahlenbergia gracilis</i>	sprawling bluebell		C		4/2
plants	land plants	Campanulaceae	<i>Wahlenbergia queenslandica</i>			C		2/1
plants	land plants	Campanulaceae	<i>Wahlenbergia stricta</i>			C		1
plants	land plants	Cannaceae	<i>Canna indica</i>	Indian shot	Y			2
plants	land plants	Capparaceae	<i>Capparis anomala</i>			C		3/2
plants	land plants	Capparaceae	<i>Capparis arborea</i>	brush caper berry		C		3/1
plants	land plants	Capparaceae	<i>Capparis loranthifolia</i>			C		1
plants	land plants	Capparaceae	<i>Capparis mitchellii</i>			C		6/4
plants	land plants	Capparaceae	<i>Capparis sarmentosa</i>	scrambling caper		C		3/2
plants	land plants	Caprifoliaceae	<i>Lonicera japonica</i>	Japanese honeysuckle	Y			2

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plants	land plants	Caryophyllaceae	<i>Cerastium glomeratum</i>	mouse ear chickweed	Y			1/1
plants	land plants	Caryophyllaceae	<i>Gypsophila australis</i>			C		2/2
plants	land plants	Caryophyllaceae	<i>Gypsophila vaccaria</i>		Y			1/1
plants	land plants	Caryophyllaceae	<i>Paronychia brasiliiana</i>	Brazilian whitlow	Y			1/1
plants	land plants	Caryophyllaceae	<i>Petrorhagia nanteuillii</i>	proliferous pink	Y			4/3
plants	land plants	Caryophyllaceae	<i>Spergularia brevifolia</i>			C		1/1
plants	land plants	Caryophyllaceae	<i>Spergularia levis</i>		Y			1/1
plants	land plants	Caryophyllaceae	<i>Spergularia marina</i>			C		2/2
plants	land plants	Caryophyllaceae	<i>Spergularia media</i>		Y			2/2
plants	land plants	Caryophyllaceae	<i>Stellaria media</i>	chickweed	Y			9/3
plants	land plants	Caryophyllaceae	<i>Stellaria multiflora</i>			C		1/1
plants	land plants	Casuarinaceae	<i>Allocasuarina inophloia</i>			C		2/2
plants	land plants	Casuarinaceae	<i>Allocasuarina luehmannii</i>	bull oak		C		4/4
plants	land plants	Casuarinaceae	<i>Allocasuarina torulosa</i>			C		2/1
plants	land plants	Casuarinaceae	<i>Casuarina cunninghamiana</i>			C		1
plants	land plants	Celastraceae	<i>Celastrus subspicata</i>	large-leaved staffvine		C		6/5
plants	land plants	Celastraceae	<i>Denhamia bilocularis</i>			C		8/6
plants	land plants	Celastraceae	<i>Denhamia celastroides</i>	broad-leaved boxwood		C		1
plants	land plants	Celastraceae	<i>Denhamia cunninghamii</i>			C		1/1
plants	land plants	Celastraceae	<i>Denhamia disperma</i>			C		1
plants	land plants	Celastraceae	<i>Denhamia pittosporoides subsp. pittosporoides</i>			C		1/1
plants	land plants	Celastraceae	<i>Denhamia silvestris</i>			C		1/1
plants	land plants	Celastraceae	<i>Elaeodendron australe var. integrifolium</i>			C		6/5
plants	land plants	Celastraceae	<i>Siphonodon australis</i>	ivorywood		C		3/2
plants	land plants	Chenopodiaceae	<i>Atriplex leptocarpa</i>	slender fruit saltbush		C		2
plants	land plants	Chenopodiaceae	<i>Atriplex muelleri</i>	lagoon saltbush		C		10/3
plants	land plants	Chenopodiaceae	<i>Atriplex semibaccata</i>	creeping saltbush		C		6/2
plants	land plants	Chenopodiaceae	<i>Chenopodium album</i>	fat-hen	Y			9/4
plants	land plants	Chenopodiaceae	<i>Dysphania carinata</i>			C		5/3
plants	land plants	Chenopodiaceae	<i>Dysphania melanocarpa forma melanocarpa</i>			C		1
plants	land plants	Chenopodiaceae	<i>Dysphania pumilio</i>			C		1
plants	land plants	Chenopodiaceae	<i>Einadia hastata</i>			C		8/1
plants	land plants	Chenopodiaceae	<i>Einadia nutans</i>			C		8
plants	land plants	Chenopodiaceae	<i>Einadia nutans subsp. linifolia</i>			C		1/1
plants	land plants	Chenopodiaceae	<i>Einadia nutans subsp. nutans</i>			C		1/1
plants	land plants	Chenopodiaceae	<i>Einadia polygonoides</i>	knotweed goosefoot		C		22/1
plants	land plants	Chenopodiaceae	<i>Einadia trigonos subsp. stellulata</i>			C		2/1
plants	land plants	Chenopodiaceae	<i>Enchylaena tomentosa</i>			C		1
plants	land plants	Chenopodiaceae	<i>Enchylaena tomentosa var. glabra</i>			C		7
plants	land plants	Chenopodiaceae	<i>Enchylaena tomentosa var. tomentosa</i>			C		1/1
plants	land plants	Chenopodiaceae	<i>Maireana</i>					3
plants	land plants	Chenopodiaceae	<i>Maireana decalvans</i>	black cottonbush		C		2/2
plants	land plants	Chenopodiaceae	<i>Maireana microphylla</i>			C		13/2
plants	land plants	Chenopodiaceae	<i>Rhagodia parabolica</i>			C		2/1
plants	land plants	Chenopodiaceae	<i>Salsola australis</i>			C		14
plants	land plants	Chenopodiaceae	<i>Scleroblitum atriplicinum</i>	purple-leaved goosefoot		C		1/1

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plants	land plants	Chenopodiaceae	<i>Sclerolaena</i>					2/1
plants	land plants	Chenopodiaceae	<i>Sclerolaena anisacanthoides</i>	yellow burr		C		2/2
plants	land plants	Chenopodiaceae	<i>Sclerolaena birchii</i>	galvanised burr		C		5
plants	land plants	Chenopodiaceae	<i>Sclerolaena muricata</i>			C		20
plants	land plants	Chenopodiaceae	<i>Sclerolaena muricata</i> var. <i>muricata</i>			C		5/3
plants	land plants	Chenopodiaceae	<i>Sclerolaena muricata</i> var. <i>semiglabra</i>			C		2/2
plants	land plants	Chenopodiaceae	<i>Sclerolaena muricata</i> var. <i>villosa</i>			C		1/1
plants	land plants	Chenopodiaceae	<i>Sclerolaena tetracuspis</i>	brigalow burr		C		1/1
plants	land plants	Clusiaceae	<i>Hypericum gramineum</i>			C		2/1
plants	land plants	Clusiaceae	<i>Hypericum perforatum</i> subsp. <i>veronense</i>		Y			1/1
plants	land plants	Colchicaceae	<i>Iphigenia indica</i>			C		1
plants	land plants	Colchicaceae	<i>Wurmbea biglandulosa</i> subsp. <i>biglandulosa</i>			C		1/1
plants	land plants	Colchicaceae	<i>Wurmbea dioica</i> subsp. <i>dioica</i>			C		2/2
plants	land plants	Commelinaceae	<i>Aneilema acuminatum</i>			C		1
plants	land plants	Commelinaceae	<i>Aneilema biflorum</i>			C		1
plants	land plants	Commelinaceae	<i>Callisia repens</i>		Y			2
plants	land plants	Commelinaceae	<i>Commelina</i>					1
plants	land plants	Commelinaceae	<i>Commelina diffusa</i>	wandering jew		C		5/1
plants	land plants	Commelinaceae	<i>Commelina ensifolia</i>	scurvy grass		C		2
plants	land plants	Commelinaceae	<i>Commelina lanceolata</i>			C		16/1
plants	land plants	Commelinaceae	<i>Murdannia graminea</i>	murdannia		C		1
plants	land plants	Commelinaceae	<i>Tradescantia fluminensis</i>		Y			2/1
plants	land plants	Commelinaceae	<i>Tradescantia zebrina</i>		Y			1
plants	land plants	Convolvulaceae	<i>Calystegia marginata</i>	forest bindweed		C		1
plants	land plants	Convolvulaceae	<i>Convolvulus arvensis</i>		Y			4
plants	land plants	Convolvulaceae	<i>Convolvulus erubescens</i>	Australian bindweed		C		1
plants	land plants	Convolvulaceae	<i>Convolvulus graminetinus</i>			C		29/3
plants	land plants	Convolvulaceae	<i>Cuscuta campestris</i>	dodder	Y			8/2
plants	land plants	Convolvulaceae	<i>Dichondra repens</i>	kidney weed		C		32/2
plants	land plants	Convolvulaceae	<i>Dichondra</i> sp. (Inglewood J.M.Dalby 86/93)			C		2/2
plants	land plants	Convolvulaceae	<i>Evolvulus alsinoides</i> var. <i>decumbens</i>			C		3/1
plants	land plants	Convolvulaceae	<i>Ipomoea alba</i>	moon flower	Y			1
plants	land plants	Convolvulaceae	<i>Ipomoea lonchophylla</i>			C		5/2
plants	land plants	Convolvulaceae	<i>Ipomoea plebeia</i>	bellvine		C		6
plants	land plants	Convolvulaceae	<i>Ipomoea purpurea</i>	common morning glory	Y			6/5
plants	land plants	Convolvulaceae	<i>Polymeria</i>					1
plants	land plants	Convolvulaceae	<i>Polymeria calycina</i>	pink bindweed		C		1/1
plants	land plants	Convolvulaceae	<i>Polymeria pusilla</i>			C		6/3
plants	land plants	Crassulaceae	<i>Bryophyllum daigremontianum</i>		Y			1/1
plants	land plants	Crassulaceae	<i>Bryophyllum delagoense</i>		Y			5/2
plants	land plants	Crassulaceae	<i>Bryophyllum proliferum</i>		Y			1/1
plants	land plants	Crassulaceae	<i>Bryophyllum</i> x <i>houghtonii</i>		Y			4/1
plants	land plants	Crassulaceae	<i>Crassula sieberiana</i>			C		1
plants	land plants	Crassulaceae	<i>Kalanchoe</i>					1
plants	land plants	Cucurbitaceae	<i>Cucumis melo</i>			C		1
plants	land plants	Cucurbitaceae	<i>Cucumis myriocarpus</i> subsp. <i>myriocarpus</i>	prickly pademelon	Y			1

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plants	land plants	Cucurbitaceae	<i>Cucumis picrocarpus</i>			C		5/4
plants	land plants	Cucurbitaceae	<i>Diplocyclos palmatus</i>			C		4
plants	land plants	Cucurbitaceae	<i>Diplocyclos palmatus subsp. palmatus</i>			C		4/1
plants	land plants	Cucurbitaceae	<i>Sicyos australis</i>	star cucumber		C		1
plants	land plants	Cucurbitaceae	<i>Zehneria cunninghamii</i>	slender cucumber		C		1/1
plants	land plants	Cupressaceae	<i>Callitris baileyi</i>	Bailey's cypress		NT		3/3
plants	land plants	Cupressaceae	<i>Callitris glaucophylla</i>	white cypress pine		C		2/2
plants	land plants	Cyatheaceae	<i>Sphaeropteris cooperi</i>			C		4
plants	land plants	Cyperaceae	<i>Abildgaardia ovata</i>			C		1/1
plants	land plants	Cyperaceae	<i>Bolboschoenus fluviatilis</i>			C		1/1
plants	land plants	Cyperaceae	<i>Carex breviculmis</i>			C		1/1
plants	land plants	Cyperaceae	<i>Carex declinata</i>			C		2/2
plants	land plants	Cyperaceae	<i>Carex inversa</i>	knob sedge		C		15/2
plants	land plants	Cyperaceae	<i>Carex polyantha</i>			C		1/1
plants	land plants	Cyperaceae	<i>Cyperus</i>					15
plants	land plants	Cyperaceae	<i>Cyperus aggregatus</i>		Y			1
plants	land plants	Cyperaceae	<i>Cyperus clarus</i>			V		1/1
plants	land plants	Cyperaceae	<i>Cyperus dietrichiae</i> var. <i>dietrichiae</i>			C		1/1
plants	land plants	Cyperaceae	<i>Cyperus eragrostis</i>		Y			7/4
plants	land plants	Cyperaceae	<i>Cyperus esculentus</i>	yellow nutgrass	Y			1
plants	land plants	Cyperaceae	<i>Cyperus exaltatus</i>	tall flatsedge		C		1
plants	land plants	Cyperaceae	<i>Cyperus flavescens</i>		Y			3/3
plants	land plants	Cyperaceae	<i>Cyperus flavidus</i>			C		1/1
plants	land plants	Cyperaceae	<i>Cyperus fulvus</i>			C		2/1
plants	land plants	Cyperaceae	<i>Cyperus gracilis</i>			C		13/2
plants	land plants	Cyperaceae	<i>Cyperus involucratus</i>		Y			3
plants	land plants	Cyperaceae	<i>Cyperus laevis</i>			C		3/3
plants	land plants	Cyperaceae	<i>Cyperus nutans</i> var. <i>eleusinoides</i>	flatsedge		C		1/1
plants	land plants	Cyperaceae	<i>Cyperus rigidellus</i>			C		1
plants	land plants	Cyperaceae	<i>Cyperus rotundus</i>	nutgrass	Y			36/3
plants	land plants	Cyperaceae	<i>Cyperus rotundus</i> var. <i>carinalis</i>			C		3
plants	land plants	Cyperaceae	<i>Cyperus sesquiflorus</i>		Y			2
plants	land plants	Cyperaceae	<i>Cyperus sphaeroideus</i>			C		1/1
plants	land plants	Cyperaceae	<i>Cyperus tetraphyllus</i>			C		3/3
plants	land plants	Cyperaceae	<i>Eleocharis acuta</i>			C		2/2
plants	land plants	Cyperaceae	<i>Eleocharis cylindrostachys</i>			C		1/1
plants	land plants	Cyperaceae	<i>Eleocharis pallens</i>	pale spikerush		C		4/1
plants	land plants	Cyperaceae	<i>Fimbristylis dichotoma</i>	common fringe-rush		C		2/1
plants	land plants	Cyperaceae	<i>Gahnia aspera</i>			C		4/2
plants	land plants	Cyperaceae	<i>Lepidosperma gunnii</i>			C		1/1
plants	land plants	Cyperaceae	<i>Lepidosperma laterale</i>			C		4/3
plants	land plants	Cyperaceae	<i>Scleria mackaviensis</i>			C		1/1
plants	land plants	Davalliaceae	<i>Davallia pyxidata</i>			C		4
plants	land plants	Dennstaedtiaceae	<i>Hypolepis muelleri</i>	swamp bracken		C		1
plants	land plants	Dennstaedtiaceae	<i>Pteridium esculentum</i>	common bracken		C		3
plants	land plants	Dilleniaceae	<i>Hibbertia acicularis</i>			C		1/1

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plants	land plants	Dilleniaceae	<i>Hibbertia linearis</i>			C		2/1
plants	land plants	Dilleniaceae	<i>Hibbertia linearis</i> var. <i>obtusifolia</i>			C		1/1
plants	land plants	Dioscoreaceae	<i>Dioscorea transversa</i>	native yam		C		2/1
plants	land plants	Dryopteridaceae	<i>Parapolystichum acuminatum</i>			C		2
plants	land plants	Ebenaceae	<i>Diospyros geminata</i>	scaly ebony		C		2
plants	land plants	Ebenaceae	<i>Diospyros humilis</i>	small-leaved ebony		C		4/3
plants	land plants	Ebenaceae	<i>Diospyros pentamera</i>	myrtle ebony		C		1/1
plants	land plants	Elaeocarpaceae	<i>Elaeocarpus obovatus</i> subsp. <i>obovatus</i>			C		3/3
plants	land plants	Elatinaceae	<i>Elatine gratioloides</i>	waterwort		C		1/1
plants	land plants	Ericaceae	<i>Lissanthe strigosa</i> subsp. <i>subulata</i>			C		2/2
plants	land plants	Ericaceae	<i>Melichrus urceolatus</i>	honey gorse		C		3/3
plants	land plants	Ericaceae	<i>Monotoca scoparia</i>	prickly broom heath		C		1/1
plants	land plants	Ericaceae	<i>Styphelia biflora</i>			C		1/1
plants	land plants	Ericaceae	<i>Styphelia mutica</i>			C		1/1
plants	land plants	Ericaceae	<i>Styphelia neoanglica</i>			C		1/1
plants	land plants	Ericaceae	<i>Styphelia trichostyla</i>			C		2/2
plants	land plants	Erythroxylaceae	<i>Erythroxylum</i> sp. (Splityard Creek L.Pedley 5360)			C		5/4
plants	land plants	Euphorbiaceae	<i>Acalypha capillipes</i>	small-leaved acalypha		C		2/1
plants	land plants	Euphorbiaceae	<i>Acalypha eremorum</i>	soft acalypha		C		1
plants	land plants	Euphorbiaceae	<i>Adriana tomentosa</i> var. <i>tomentosa</i>			C		2/2
plants	land plants	Euphorbiaceae	<i>Baloghia inophylla</i>	scrub bloodwood		C		1
plants	land plants	Euphorbiaceae	<i>Bertya cunninghamii</i> subsp. <i>rupicola</i>			C		3/3
plants	land plants	Euphorbiaceae	<i>Bertya oleifolia</i>			C		3/3
plants	land plants	Euphorbiaceae	<i>Beyeria viscosa</i>			C		3/3
plants	land plants	Euphorbiaceae	<i>Croton insularis</i>	Queensland cascarilla		C		2/1
plants	land plants	Euphorbiaceae	<i>Croton phebaloides</i>	narrow-leaved croton		C		4/3
plants	land plants	Euphorbiaceae	<i>Euphorbia</i>					10
plants	land plants	Euphorbiaceae	<i>Euphorbia dallachyana</i>			C		3
plants	land plants	Euphorbiaceae	<i>Euphorbia davidii</i>		Y			12
plants	land plants	Euphorbiaceae	<i>Euphorbia drummondii</i>			C		1
plants	land plants	Euphorbiaceae	<i>Euphorbia hirta</i>		Y			12
plants	land plants	Euphorbiaceae	<i>Euphorbia hyssopifolia</i>		Y			4
plants	land plants	Euphorbiaceae	<i>Euphorbia peplus</i>	petty spurge	Y			1
plants	land plants	Euphorbiaceae	<i>Euphorbia prostrata</i>		Y			6/1
plants	land plants	Euphorbiaceae	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>			C		1/1
plants	land plants	Euphorbiaceae	<i>Euphorbiaceae</i>					1/1
plants	land plants	Euphorbiaceae	<i>Excoecaria dallachyana</i>	scrub poison tree		C		4/3
plants	land plants	Euphorbiaceae	<i>Homalanthus populifolius</i>			C		1
plants	land plants	Euphorbiaceae	<i>Mallotus philippensis</i>	red kamala		C		1
plants	land plants	Euphorbiaceae	<i>Manihot grahamii</i>		Y			2/1
plants	land plants	Euphorbiaceae	<i>Ricinus communis</i>	castor oil bush	Y			1
plants	land plants	Eupomatiaceae	<i>Eupomatia laurina</i>	bolwarra		C		1/1
plants	land plants	Fabaceae	<i>Aeschynomene indica</i>	budda pea		C		1/1
plants	land plants	Fabaceae	<i>Aotus subglaucula</i> var. <i>filiformis</i>			C		1/1
plants	land plants	Fabaceae	<i>Crotalaria brevis</i>			C		1/1
plants	land plants	Fabaceae	<i>Crotalaria dissitiflora</i> subsp. <i>dissitiflora</i>			C		1/1

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plants	land plants	Fabaceae	<i>Crotalaria incana</i> subsp. <i>incana</i>		Y			5/2
plants	land plants	Fabaceae	<i>Crotalaria montana</i>			C		1
plants	land plants	Fabaceae	<i>Cullen australasicum</i>			C		2/2
plants	land plants	Fabaceae	<i>Cullen patens</i>	bullamon lucerne		C		2/2
plants	land plants	Fabaceae	<i>Cullen tenax</i>	emu-foot		C		31/4
plants	land plants	Fabaceae	<i>Daviesia filipes</i> subsp. <i>filipes</i>			C		1/1
plants	land plants	Fabaceae	<i>Daviesia genistifolia</i>	broom bitter pea		C		3/3
plants	land plants	Fabaceae	<i>Daviesia ulicifolia</i> subsp. <i>stenophylla</i>			C		1/1
plants	land plants	Fabaceae	<i>Daviesia villifera</i>	prickly daviesia		C		1/1
plants	land plants	Fabaceae	<i>Daviesia wyattiana</i>	long-leaved bitter pea		C		1/1
plants	land plants	Fabaceae	<i>Desmodium brachypodium</i>	large ticktrefoil		C		4/4
plants	land plants	Fabaceae	<i>Desmodium campylocaulon</i>			C		1/1
plants	land plants	Fabaceae	<i>Desmodium gunnii</i>			C		1/1
plants	land plants	Fabaceae	<i>Desmodium rhytidophyllum</i>			C		2
plants	land plants	Fabaceae	<i>Desmodium varians</i>	slender tick trefoil		C		2/1
plants	land plants	Fabaceae	<i>Dillwynia sieberi</i>			C		1/1
plants	land plants	Fabaceae	<i>Dipogon lignosus</i>	purple dolichos	Y			1/1
plants	land plants	Fabaceae	<i>Erythrina numerosa</i>			C		4/2
plants	land plants	Fabaceae	<i>Erythrina vespertilio</i>			C		1
plants	land plants	Fabaceae	<i>Galactia tenuiflora</i> var. <i>lucida</i>			C		2/2
plants	land plants	Fabaceae	<i>Genista monspessulana</i>	Montpellier broom	Y			2/2
plants	land plants	Fabaceae	<i>Glycine</i>					1/1
plants	land plants	Fabaceae	<i>Glycine clandestina</i>			C		10
plants	land plants	Fabaceae	<i>Glycine latifolia</i>			C		5/4
plants	land plants	Fabaceae	<i>Glycine microphylla</i>			C		1/1
plants	land plants	Fabaceae	<i>Glycine</i> sp. (Marburg K.A.Williams 83006)			C		1
plants	land plants	Fabaceae	<i>Glycine stenophita</i>			C		4/2
plants	land plants	Fabaceae	<i>Glycine tabacina</i>	glycine pea		C		16/2
plants	land plants	Fabaceae	<i>Glycine tomentella</i>	woolly glycine		C		18/2
plants	land plants	Fabaceae	<i>Hardenbergia violacea</i>			C		3/1
plants	land plants	Fabaceae	<i>Hovea longipes</i>	brush hovea		C		1
plants	land plants	Fabaceae	<i>Hovea lorata</i>			C		11/11
plants	land plants	Fabaceae	<i>Hovea planifolia</i>			C		2/2
plants	land plants	Fabaceae	<i>Indigofera arrecta</i>		Y			2/2
plants	land plants	Fabaceae	<i>Indigofera australis</i>			C		1
plants	land plants	Fabaceae	<i>Indigofera australis</i> subsp. <i>australis</i>			C		1/1
plants	land plants	Fabaceae	<i>Indigofera hirsuta</i>	hairy indigo		C		6
plants	land plants	Fabaceae	<i>Indigofera linifolia</i>			C		2
plants	land plants	Fabaceae	<i>Indigofera linnaei</i>	Birdsville indigo		C		3/1
plants	land plants	Fabaceae	<i>Jacksonia scoparia</i>			C		1/1
plants	land plants	Fabaceae	<i>Lathyrus latifolius</i>	perennial pea	Y			1/1
plants	land plants	Fabaceae	<i>Lespedeza juncea</i>			C		1
plants	land plants	Fabaceae	<i>Lespedeza juncea</i> subsp. <i>sericea</i>	perennial lespedeza		C		3/2
plants	land plants	Fabaceae	<i>Lotononis bainesii</i>	lotononis	Y			1/1
plants	land plants	Fabaceae	<i>Lotus australis</i>	Australian trefoil		C		1/1
plants	land plants	Fabaceae	<i>Macroptilium atropurpureum</i>	siratro	Y			11/1

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plants	land plants	Fabaceae	<i>Macroptilium lathyroides</i> var. <i>semierectum</i>		Y			2
plants	land plants	Fabaceae	<i>Medicago laciniata</i> var. <i>laciniata</i>		Y			1/1
plants	land plants	Fabaceae	<i>Medicago lupulina</i>	black medic	Y			3/3
plants	land plants	Fabaceae	<i>Medicago minima</i> var. <i>minima</i>		Y			5/3
plants	land plants	Fabaceae	<i>Medicago polymorpha</i>	burr medic	Y			9/4
plants	land plants	Fabaceae	<i>Medicago sativa</i>	lucerne	Y			2
plants	land plants	Fabaceae	<i>Medicago sativa</i> subsp. <i>sativa</i>		Y			23/1
plants	land plants	Fabaceae	<i>Medicago scutellata</i>	snail medic	Y			1
plants	land plants	Fabaceae	<i>Melilotus albus</i>	sweet clover	Y			30/2
plants	land plants	Fabaceae	<i>Melilotus indicus</i>	hexham scent	Y			5/1
plants	land plants	Fabaceae	<i>Pultenaea cuneata</i>			C		2/2
plants	land plants	Fabaceae	<i>Pultenaea flexilis</i>			C		1/1
plants	land plants	Fabaceae	<i>Pultenaea microphylla</i>			C		2/2
plants	land plants	Fabaceae	<i>Pultenaea scabra</i>			C		1/1
plants	land plants	Fabaceae	<i>Rhynchosia</i>					1
plants	land plants	Fabaceae	<i>Rhynchosia minima</i>			C		26
plants	land plants	Fabaceae	<i>Rhynchosia minima</i> var. <i>australis</i>			C		1/1
plants	land plants	Fabaceae	<i>Rhynchosia minima</i> var. <i>minima</i>			C		2/2
plants	land plants	Fabaceae	<i>Sesbania cannabina</i> var. <i>cannabina</i>			C		6
plants	land plants	Fabaceae	<i>Sophora fraseri</i>	brush sophora		V	V	5/3
plants	land plants	Fabaceae	<i>Swainsona brachycarpa</i>			C		3/2
plants	land plants	Fabaceae	<i>Swainsona galegifolia</i>	smooth Darling pea		C		2
plants	land plants	Fabaceae	<i>Swainsona procumbens</i>	broughton pea		C		1/1
plants	land plants	Fabaceae	<i>Swainsona queenslandica</i>			C		11/3
plants	land plants	Fabaceae	<i>Swainsona reticulata</i>			C		1/1
plants	land plants	Fabaceae	<i>Swainsona swainsonioides</i>	downy swainsona		C		5/4
plants	land plants	Fabaceae	<i>Templetonia stenophylla</i>	leafy templetonia		C		1/1
plants	land plants	Fabaceae	<i>Tephrosia bidwillii</i>			C		4/2
plants	land plants	Fabaceae	<i>Tephrosia rufula</i>			C		1
plants	land plants	Fabaceae	<i>Tephrosia</i> sp. (Wyreema R.J.Fensham 2082)			C		2/2
plants	land plants	Fabaceae	<i>Tipuana tipu</i>	tipuana	Y			1/1
plants	land plants	Fabaceae	<i>Trifolium campestre</i>		Y			1
plants	land plants	Fabaceae	<i>Trifolium campestre</i> var. <i>campestre</i>		Y			2/2
plants	land plants	Fabaceae	<i>Trifolium repens</i> var. <i>repens</i>	white clover	Y			9/2
plants	land plants	Fabaceae	<i>Vicia monantha</i> subsp. <i>monantha</i>		Y			13/5
plants	land plants	Fabaceae	<i>Vicia monantha</i> subsp. <i>triflora</i>		Y			2/2
plants	land plants	Fabaceae	<i>Vicia sativa</i> subsp. <i>nigra</i>		Y			3/1
plants	land plants	Fabaceae	<i>Vigna suberecta</i>			C		12/1
plants	land plants	Fabaceae	<i>Vigna vexillata</i> var. <i>angustifolia</i>			C		2/2
plants	land plants	Fabaceae	<i>Zornia dyctiocarpa</i>			C		1
plants	land plants	Fabaceae	<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>			C		2/1
plants	land plants	Fabaceae	<i>Zornia muriculata</i> subsp. <i>angustata</i>			C		1/1
plants	land plants	Fabaceae	<i>Zornia pallida</i>			C		1/1
plants	land plants	Fabroniaceae	<i>Fabronia</i> sp. (Brisbane F.M.Bailey 296)			C		1/1
plants	land plants	Frullaniaceae	<i>Frullania rubella</i>			C		1/1
plants	land plants	Funariaceae	<i>Entosthodon radians</i>			C		1/1

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plants	land plants	Gentianaceae	<i>Centaurium erythraea</i>	common centaury	Y			2/1
plants	land plants	Geraniaceae	<i>Erodium cicutarium</i>	common crowfoot	Y			1
plants	land plants	Geraniaceae	<i>Erodium crinitum</i>	blue crowfoot		C		9/5
plants	land plants	Geraniaceae	<i>Geranium homeanum</i>			C		3/2
plants	land plants	Geraniaceae	<i>Geranium solanderi</i> var. <i>solanderi</i>	native geranium		C		25/1
plants	land plants	Gleicheniaceae	<i>Sticherus flabellatus</i> var. <i>flabellatus</i>			C		1/1
plants	land plants	Goodeniaceae	<i>Goodenia</i>					1
plants	land plants	Goodeniaceae	<i>Goodenia bellidifolia</i> subsp. <i>argentea</i>			C		1/1
plants	land plants	Goodeniaceae	<i>Goodenia delicata</i>			C		2/2
plants	land plants	Goodeniaceae	<i>Goodenia fascicularis</i>			C		1/1
plants	land plants	Goodeniaceae	<i>Goodenia glabra</i>			C		2/2
plants	land plants	Goodeniaceae	<i>Goodenia grandiflora</i>			C		1/1
plants	land plants	Goodeniaceae	<i>Velleia paradoxa</i>	spur velleia		C		1/1
plants	land plants	Gyrostemonaceae	<i>Codonocarpus attenuatus</i>			C		1
plants	land plants	Haloragaceae	<i>Haloragis heterophylla</i>	rough raspweed		C		2/1
plants	land plants	Hemerocallidaceae	<i>Dianella brevipedunculata</i>			C		1
plants	land plants	Hemerocallidaceae	<i>Dianella caerulea</i>			C		2/2
plants	land plants	Hemerocallidaceae	<i>Dianella longifolia</i>			C		12/5
plants	land plants	Hemerocallidaceae	<i>Dianella longifolia</i> var. <i>stupata</i>			C		1/1
plants	land plants	Hemerocallidaceae	<i>Dianella revoluta</i>			C		1/1
plants	land plants	Hemerocallidaceae	<i>Geitonoplesium cymosum</i>	scrambling lily		C		2
plants	land plants	Hemerocallidaceae	<i>Geitonoplesium cymosum</i> forma <i>album</i>			C		1
plants	land plants	Hydrocharitaceae	<i>Egeria densa</i>	dense waterweed	Y			2/2
plants	land plants	Hydrocharitaceae	<i>Hydrilla verticillata</i>	hydrilla		C		1
plants	land plants	Hydrocharitaceae	<i>Limnobium laevigatum</i>		Y			1
plants	land plants	Hydrocharitaceae	<i>Vallisneria nana</i>			C		1/1
plants	land plants	Hypoxidaceae	<i>Hypoxis arillacea</i>			C		1/1
plants	land plants	Hypoxidaceae	<i>Hypoxis hygrometrica</i> var. <i>villosisepala</i>			C		3/1
plants	land plants	Hypoxidaceae	<i>Hypoxis pratensis</i>			C		1
plants	land plants	Iridaceae	<i>Iridaceae</i>					1/1
plants	land plants	Iridaceae	<i>Moraea setifolia</i>		Y			1/1
plants	land plants	Iridaceae	<i>Sisyrinchium rosulatum</i>		Y			1/1
plants	land plants	Johnsoniaceae	<i>Caesia parviflora</i>			C		2/1
plants	land plants	Johnsoniaceae	<i>Caesia parviflora</i> var. <i>vittata</i>			C		1/1
plants	land plants	Juncaceae	<i>Juncus</i>					2
plants	land plants	Juncaceae	<i>Juncus articulatus</i>	jointed rush	Y			2/2
plants	land plants	Juncaceae	<i>Juncus bufonius</i>	toad rush	Y			2/2
plants	land plants	Juncaceae	<i>Juncus flavidus</i>			C		1/1
plants	land plants	Juncaceae	<i>Juncus polyanthemus</i>			C		1/1
plants	land plants	Juncaceae	<i>Juncus subglaucus</i>			C		1/1
plants	land plants	Juncaceae	<i>Juncus subsecundus</i>			C		1/1
plants	land plants	Juncaceae	<i>Juncus usitatus</i>			C		2/2
plants	land plants	Juncaginaceae	<i>Cycnogeton procerus</i>			C		1/1
plants	land plants	Lamiaceae	<i>Ajuga australis</i>	Australian bugle		C		4/1
plants	land plants	Lamiaceae	<i>Ajuga sinuata</i>			C		2/2
plants	land plants	Lamiaceae	<i>Clerodendrum floribundum</i>			C		4/1

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plants	land plants	Lamiaceae	<i>Coleus australis</i>			C		4/2
plants	land plants	Lamiaceae	<i>Coleus graveolens</i>			C		1/1
plants	land plants	Lamiaceae	<i>Lamium amplexicaule</i>	deadnettle	Y			10/2
plants	land plants	Lamiaceae	<i>Marrubium vulgare</i>	white horehound	Y			6/3
plants	land plants	Lamiaceae	<i>Mentha australis</i>	river mint		C		1
plants	land plants	Lamiaceae	<i>Mentha satureioides</i>	native pennyroyal		C		20/5
plants	land plants	Lamiaceae	<i>Prostanthera cryptandroides</i> subsp. <i>euphrasioides</i>			C		3/3
plants	land plants	Lamiaceae	<i>Prunella vulgaris</i>	self heal	Y			2/1
plants	land plants	Lamiaceae	<i>Salvia coccinea</i>	red salvia	Y			3/1
plants	land plants	Lamiaceae	<i>Salvia reflexa</i>		Y			18/3
plants	land plants	Lamiaceae	<i>Salvia verbenaca</i>	wild sage	Y			4/3
plants	land plants	Lamiaceae	<i>Stachys arvensis</i>	stagger weed	Y			5/4
plants	land plants	Lamiaceae	<i>Teucrium argutum</i>			C		3/2
plants	land plants	Lamiaceae	<i>Teucrium daucoides</i>			C		3/3
plants	land plants	Lamiaceae	<i>Teucrium junceum</i>			C		2/1
plants	land plants	Lauraceae	<i>Cinnamomum camphora</i>	camphor laurel	Y			2/1
plants	land plants	Laxmanniaceae	<i>Arthropodium fimbriatum</i>			C		3
plants	land plants	Laxmanniaceae	<i>Arthropodium milleflorum</i>	vanilla lily		C		1
plants	land plants	Laxmanniaceae	<i>Arthropodium paniculatum</i>			C		1/1
plants	land plants	Laxmanniaceae	<i>Cordyline petiolaris</i>	large-leaved palm lily		C		1
plants	land plants	Laxmanniaceae	<i>Eustrephus latifolius</i>	wombat berry		C		10/3
plants	land plants	Laxmanniaceae	<i>Laxmannia gracilis</i>	slender wire lily		C		1/1
plants	land plants	Laxmanniaceae	<i>Lomandra</i>					1/1
plants	land plants	Laxmanniaceae	<i>Lomandra confertifolia</i> subsp. <i>pallida</i>			C		2/2
plants	land plants	Laxmanniaceae	<i>Lomandra filiformis</i>			C		1
plants	land plants	Laxmanniaceae	<i>Lomandra filiformis</i> subsp. <i>filiformis</i>			C		1/1
plants	land plants	Laxmanniaceae	<i>Lomandra laxa</i>	broad-leaved matrush		C		1/1
plants	land plants	Laxmanniaceae	<i>Lomandra leucocephala</i> subsp. <i>leucocephala</i>			C		2/2
plants	land plants	Laxmanniaceae	<i>Lomandra longifolia</i>			C		2
plants	land plants	Laxmanniaceae	<i>Lomandra multiflora</i>			C		1
plants	land plants	Laxmanniaceae	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>			C		9/1
plants	land plants	Laxmanniaceae	<i>Thysanotus tuberosus</i>			C		2
plants	land plants	Lejeuneaceae	<i>Lejeunea aloba</i>			C		1/1
plants	land plants	Lentibulariaceae	<i>Utricularia gibba</i>	floating bladderwort		C		1/1
plants	land plants	Liliaceae	<i>Lilium formosanum</i>		Y			4
plants	land plants	Linaceae	<i>Linum marginale</i>	native flax		C		2/2
plants	land plants	Loranthaceae	<i>Amyema cambagei</i>			C		1/1
plants	land plants	Loranthaceae	<i>Amyema congener</i>			C		1
plants	land plants	Loranthaceae	<i>Amyema congener</i> subsp. <i>congener</i>			C		1
plants	land plants	Loranthaceae	<i>Amyema congener</i> subsp. <i>rotundifolia</i>			C		8/8
plants	land plants	Loranthaceae	<i>Amyema lucasii</i>			C		3/3
plants	land plants	Loranthaceae	<i>Amyema maidenii</i> subsp. <i>angustifolia</i>			C		1/1
plants	land plants	Loranthaceae	<i>Amyema miquelii</i>			C		3/2
plants	land plants	Loranthaceae	<i>Amyema pendula</i> subsp. <i>longifolia</i>			C		2/2
plants	land plants	Loranthaceae	<i>Amyema quandang</i>			C		1
plants	land plants	Loranthaceae	<i>Amyema quandang</i> var. <i>bancroftii</i>	broad-leaved grey mistletoe		C		1/1

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plants	land plants	Loranthaceae	<i>Amyema quandang</i> var. <i>quandang</i>			C		3/3
plants	land plants	Loranthaceae	<i>Amylothea dictyophleba</i>			C		9
plants	land plants	Loranthaceae	<i>Dendrophthoe glabrescens</i>			C		3/1
plants	land plants	Loranthaceae	<i>Lysiana exocarpi</i> subsp. <i>tenuis</i>			C		1
plants	land plants	Loranthaceae	<i>Lysiana subfalcata</i>			C		4/3
plants	land plants	Loranthaceae	<i>Muellerina eucalyptoides</i>			C		2/2
plants	land plants	Lunulariaceae	<i>Lunularia</i>					1/1
plants	land plants	Lythraceae	<i>Lagerstroemia indica</i>		Y			1
plants	land plants	Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife		C		1/1
plants	land plants	Malvaceae	<i>Abutilon calliphyllum</i>	velvet lanternflower		C		1/1
plants	land plants	Malvaceae	<i>Abutilon oxycarpum</i>			C		2
plants	land plants	Malvaceae	<i>Abutilon oxycarpum</i> var. <i>oxycarpum</i>			C		2/1
plants	land plants	Malvaceae	<i>Abutilon tubulosum</i> var. <i>tubulosum</i>			C		3/3
plants	land plants	Malvaceae	<i>Anoda cristata</i>	anoda weed	Y			17/1
plants	land plants	Malvaceae	<i>Gossypium hirsutum</i>		Y			1
plants	land plants	Malvaceae	<i>Hibiscus</i>					3
plants	land plants	Malvaceae	<i>Hibiscus tridactylites</i>				C	23/4
plants	land plants	Malvaceae	<i>Malva parviflora</i>	small-flowered mallow	Y			11/1
plants	land plants	Malvaceae	<i>Malvastrum americanum</i>		Y			12
plants	land plants	Malvaceae	<i>Malvastrum americanum</i> var. <i>americanum</i>		Y			5
plants	land plants	Malvaceae	<i>Malvastrum americanum</i> var. <i>stellatum</i>				C	1
plants	land plants	Malvaceae	<i>Malvastrum coromandelianum</i>	prickly malvastrum	Y			1
plants	land plants	Malvaceae	<i>Malvastrum coromandelianum</i> subsp. <i>coromandelianum</i>		Y			14/3
plants	land plants	Malvaceae	<i>Modiola caroliniana</i>	red-flowered mallow	Y			24/2
plants	land plants	Malvaceae	<i>Pavonia hastata</i>	pink pavonia	Y			23/3
plants	land plants	Malvaceae	<i>Sida</i>					2/2
plants	land plants	Malvaceae	<i>Sida cardiophylla</i>			C		1
plants	land plants	Malvaceae	<i>Sida cleisocalyx</i>			C		1/1
plants	land plants	Malvaceae	<i>Sida corrugata</i>			C		6/3
plants	land plants	Malvaceae	<i>Sida corrugata</i> var. <i>corrugata</i>			C		1/1
plants	land plants	Malvaceae	<i>Sida hackettiana</i>			C		4/3
plants	land plants	Malvaceae	<i>Sida hackettiana</i> subsp. (Gayndah P.Grimshaw+PG2388)			C		22
plants	land plants	Malvaceae	<i>Sida rhombifolia</i>		Y			32/3
plants	land plants	Malvaceae	<i>Sida rohlenae</i> subsp. <i>rohlenae</i>			C		1
plants	land plants	Malvaceae	<i>Sida spinosa</i>	spiny sida	Y			14/1
plants	land plants	Malvaceae	<i>Sida trichopoda</i>			C		17/3
plants	land plants	Marchantiaceae	<i>Marchantia foliacea</i>			C		2/2
plants	land plants	Marsileaceae	<i>Marsilea drummondii</i>	common nardoo		C		6
plants	land plants	Marsileaceae	<i>Marsilea hirsuta</i>	hairy nardoo		C		1
plants	land plants	Martyniaceae	<i>Proboscidea louisianica</i> subsp. <i>fragrans</i>		Y			2/2
plants	land plants	Meliaceae	<i>Melia azedarach</i>	white cedar		C		1/1
plants	land plants	Meliaceae	<i>Owenia venosa</i>	crow's apple		C		3/2
plants	land plants	Meliaceae	<i>Toona ciliata</i>	red cedar		C		1/1
plants	land plants	Meliaceae	<i>Turraea pubescens</i>	native honeysuckle		C		4/3
plants	land plants	Menispermaceae	<i>Legnephora moorei</i>			C		2/1

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plants	land plants	Menispermaceae	<i>Stephania japonica</i>			C		1
plants	land plants	Menispermaceae	<i>Stephania japonica</i> var. <i>discolor</i>			C		1/1
plants	land plants	Menispermaceae	<i>Tinospora smilacina</i>	snakevine		C		1
plants	land plants	Metzgeriaceae	<i>Metzgeria</i>					1/1
plants	land plants	Mimosaceae	<i>Acacia</i>					1
plants	land plants	Mimosaceae	<i>Acacia amblygona</i>	fan-leaf wattle		C		1/1
plants	land plants	Mimosaceae	<i>Acacia ammophila</i>			V	V	1
plants	land plants	Mimosaceae	<i>Acacia bancroftiorum</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia burrowii</i>			C		1
plants	land plants	Mimosaceae	<i>Acacia caroleae</i>			C		2/2
plants	land plants	Mimosaceae	<i>Acacia complanata</i>	flatstem wattle		C		1/1
plants	land plants	Mimosaceae	<i>Acacia concurrens</i>			C		2/1
plants	land plants	Mimosaceae	<i>Acacia conferta</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia deanei</i>			C		5/1
plants	land plants	Mimosaceae	<i>Acacia decora</i>	pretty wattle		C		3/2
plants	land plants	Mimosaceae	<i>Acacia excelsa</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia excelsa</i> subsp. <i>excelsa</i>			C		4/3
plants	land plants	Mimosaceae	<i>Acacia falcata</i>	sickle wattle		C		2/1
plants	land plants	Mimosaceae	<i>Acacia fimbriata</i>	Brisbane golden wattle		C		2/1
plants	land plants	Mimosaceae	<i>Acacia glaucocarpa</i>	hickory wattle		C		1
plants	land plants	Mimosaceae	<i>Acacia harpophylla</i>	brigalow		C		2/1
plants	land plants	Mimosaceae	<i>Acacia implexa</i>	lightwood		C		3/1
plants	land plants	Mimosaceae	<i>Acacia irrorata</i> subsp. <i>irrorata</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia ixiophylla</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia juncifolia</i>			C		2/2
plants	land plants	Mimosaceae	<i>Acacia leiocalyx</i> subsp. <i>leiocalyx</i>			C		2/2
plants	land plants	Mimosaceae	<i>Acacia lineata</i>	streaked wattle		C		1/1
plants	land plants	Mimosaceae	<i>Acacia loroloba</i>	Ma Ma Creek wattle		C		7/6
plants	land plants	Mimosaceae	<i>Acacia maidenii</i>	Maiden's wattle		C		9/7
plants	land plants	Mimosaceae	<i>Acacia melanoxylon</i>	blackwood		C		2/1
plants	land plants	Mimosaceae	<i>Acacia melvillei</i>			C		10/8
plants	land plants	Mimosaceae	<i>Acacia neriifolia</i>	pechey wattle		C		8/5
plants	land plants	Mimosaceae	<i>Acacia omalophylla</i>			C		1
plants	land plants	Mimosaceae	<i>Acacia paradoxa</i>	kangaroo thorn		C		2/2
plants	land plants	Mimosaceae	<i>Acacia pendula</i>	myall		C		4/4
plants	land plants	Mimosaceae	<i>Acacia penninervis</i> var. <i>longiracemosa</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia podalyriifolia</i>	Queensland silver wattle		C		4/3
plants	land plants	Mimosaceae	<i>Acacia pravifolia</i>	coil-pod wattle		C		1/1
plants	land plants	Mimosaceae	<i>Acacia pustula</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia resinicostata</i>			C		2/1
plants	land plants	Mimosaceae	<i>Acacia salicina</i>	doolan		C		16/1
plants	land plants	Mimosaceae	<i>Acacia semirigida</i>			C		2/2
plants	land plants	Mimosaceae	<i>Acacia sertiformis</i>			C		8/8
plants	land plants	Mimosaceae	<i>Acacia stenophylla</i>	belalie		C		1/1
plants	land plants	Mimosaceae	<i>Acacia victoriae</i> subsp. <i>victoriae</i>			C		1/1
plants	land plants	Mimosaceae	<i>Acacia viscidula</i>			C		2/2

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plants	land plants	Mimosaceae	<i>Neptunia gracilis</i>			C		1
plants	land plants	Mimosaceae	<i>Neptunia gracilis forma gracilis</i>			C		31/2
plants	land plants	Mimosaceae	<i>Pararchidendron pruinatum</i>			C		1/1
plants	land plants	Mimosaceae	<i>Prosopis velutina</i>		Y			2/2
plants	land plants	Mimosaceae	<i>Vachellia farnesiana</i>		Y			60/2
plants	land plants	Molluginaceae	<i>Glinus lotoides</i>	hairy carpet weed		C		1/1
plants	land plants	Moraceae	<i>Ficus coronata</i>	creek sandpaper fig		C		1/1
plants	land plants	Moraceae	<i>Ficus henneana</i>			C		1
plants	land plants	Moraceae	<i>Ficus rubiginosa forma glabrescens</i>			C		1/1
plants	land plants	Moraceae	<i>Ficus rubiginosa forma rubiginosa</i>			C		1/1
plants	land plants	Moraceae	<i>Maclura cochinchinensis</i>	cockspur thorn		C		1
plants	land plants	Moraceae	<i>Streblus brunonianus</i>	whalebone tree		C		3/1
plants	land plants	Moraceae	<i>Trophis scandens subsp. scandens</i>			C		2/1
plants	land plants	Myrsinaceae	<i>Lysimachia arvensis</i>		Y			3/2
plants	land plants	Myrsinaceae	<i>Myrsine variabilis</i>			C		6/5
plants	land plants	Myrtaceae	<i>Angophora floribunda</i>	rough-barked apple		C		4/2
plants	land plants	Myrtaceae	<i>Angophora leiocarpa</i>	rusty gum		C		1/1
plants	land plants	Myrtaceae	<i>Angophora subvelutina</i>			C		1/1
plants	land plants	Myrtaceae	<i>Corymbia citriodora subsp. variegata</i>			C		3/2
plants	land plants	Myrtaceae	<i>Corymbia clarksoniana</i>			C		2/2
plants	land plants	Myrtaceae	<i>Corymbia intermedia</i>	pink bloodwood		C		1
plants	land plants	Myrtaceae	<i>Corymbia tessellaris</i>	Moreton Bay ash		C		3
plants	land plants	Myrtaceae	<i>Corymbia trachyphloia</i>			C		1/1
plants	land plants	Myrtaceae	<i>Corymbia trachyphloia subsp. trachyphloia</i>			C		3/3
plants	land plants	Myrtaceae	<i>Eucalyptus</i>					6
plants	land plants	Myrtaceae	<i>Eucalyptus albens</i>	white box		C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus bakeri</i>	Baker's mallee		C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus biturbinata</i>			C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus camaldulensis subsp. camaldulensis</i>			C		4/3
plants	land plants	Myrtaceae	<i>Eucalyptus conica</i>	fuzzy box		C		4/4
plants	land plants	Myrtaceae	<i>Eucalyptus crebra</i>	narrow-leaved red ironbark		C		5/3
plants	land plants	Myrtaceae	<i>Eucalyptus decorticans</i>			C		2/1
plants	land plants	Myrtaceae	<i>Eucalyptus eugenioides</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus fibrosa subsp. fibrosa</i>			C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus helidonica</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus major</i>	mountain grey gum		C		3/3
plants	land plants	Myrtaceae	<i>Eucalyptus mediocris</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus melanoleuca</i>	Nanango ironbark		C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus melanophloia x Eucalyptus populnea</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus melliodora</i>	yellow box		C		6/4
plants	land plants	Myrtaceae	<i>Eucalyptus microcorys</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus moluccana</i>	gum-topped box		C		3/2
plants	land plants	Myrtaceae	<i>Eucalyptus montivaga</i>			C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus nobilis</i>	manna gum		C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus orgadophila</i>	mountain coolibah		C		14/11
plants	land plants	Myrtaceae	<i>Eucalyptus pilularis</i>	blackbutt		C		1/1

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plants	land plants	Myrtaceae	<i>Eucalyptus populnea</i>	poplar box		C		4/2
plants	land plants	Myrtaceae	<i>Eucalyptus saligna</i>			C		1/1
plants	land plants	Myrtaceae	<i>Eucalyptus tereticornis</i>			C		1
plants	land plants	Myrtaceae	<i>Eucalyptus tereticornis subsp. basaltica</i>			C		2/2
plants	land plants	Myrtaceae	<i>Eucalyptus tereticornis subsp. tereticornis</i>			C		4/4
plants	land plants	Myrtaceae	<i>Leptospermum microcarpum</i>	small-fruited tea-tree		C		1/1
plants	land plants	Myrtaceae	<i>Leptospermum neglectum</i>			C		1/1
plants	land plants	Myrtaceae	<i>Leptospermum polygalifolium</i>	tantoon		C		1/1
plants	land plants	Myrtaceae	<i>Leptospermum variabile</i>			C		2/2
plants	land plants	Myrtaceae	<i>Lophostemon confertus</i>	brush box		C		2/1
plants	land plants	Myrtaceae	<i>Melaleuca bracteata</i>			C		1
plants	land plants	Myrtaceae	<i>Melaleuca fluviatilis</i>			C		1
plants	land plants	Myrtaceae	<i>Melaleuca quercina</i>			C		4/4
plants	land plants	Myrtaceae	<i>Melaleuca uncinata</i>			C		1/1
plants	land plants	Myrtaceae	<i>Melaleuca viminalis</i>			C		3/3
plants	land plants	Nephrolepidaceae	<i>Nephrolepis cordifolia</i>	fishbone fern		C		8
plants	land plants	Nyctaginaceae	<i>Boerhavia dominii</i>			C		30/2
plants	land plants	Nyctaginaceae	<i>Boerhavia pubescens</i>			C		1/1
plants	land plants	Nyctaginaceae	<i>Bougainvillea</i>					1
plants	land plants	Nyctaginaceae	<i>Mirabilis jalapa</i>	four o'clock	Y			1/1
plants	land plants	Nymphaeaceae	<i>Nymphaea caerulea</i>		Y			1
plants	land plants	Ochnaceae	<i>Ochna serrulata</i>	ochna	Y			1
plants	land plants	Oleaceae	<i>Jasminum</i>					1
plants	land plants	Oleaceae	<i>Jasminum dianthifolium</i>			C		11/3
plants	land plants	Oleaceae	<i>Jasminum dianthifolium x Jasminum simplicifolium subsp. australiense</i>			C		1/1
plants	land plants	Oleaceae	<i>Jasminum didymum subsp. lineare</i>			C		3/2
plants	land plants	Oleaceae	<i>Jasminum didymum subsp. racemosum</i>			C		1
plants	land plants	Oleaceae	<i>Jasminum mesnyi</i>		Y			1
plants	land plants	Oleaceae	<i>Jasminum simplicifolium subsp. australiense</i>			C		2/2
plants	land plants	Oleaceae	<i>Jasminum simplicifolium subsp. australiense x J.suavissimum</i>			C		1
plants	land plants	Oleaceae	<i>Ligustrum lucidum</i>	large-leaved privet	Y			14/2
plants	land plants	Oleaceae	<i>Notelaea linearis</i>			C		2/2
plants	land plants	Oleaceae	<i>Notelaea longifolia</i>			C		1
plants	land plants	Oleaceae	<i>Notelaea microcarpa</i>			C		5/3
plants	land plants	Oleaceae	<i>Olea europaea subsp. cuspidata</i>		Y			3/3
plants	land plants	Oleaceae	<i>Olea paniculata</i>			C		1/1
plants	land plants	Onagraceae	<i>Epilobium billardierianum</i>			C		1
plants	land plants	Onagraceae	<i>Epilobium billardierianum subsp. hydrophilum</i>			C		1/1
plants	land plants	Onagraceae	<i>Epilobium hirtigerum</i>			C		2/2
plants	land plants	Onagraceae	<i>Ludwigia peploides subsp. montevidensis</i>			C		4/1
plants	land plants	Onagraceae	<i>Oenothera affinis</i>	long-flowered evening primrose	Y			2/2
plants	land plants	Onagraceae	<i>Oenothera curtiflora</i>		Y			16/2
plants	land plants	Onagraceae	<i>Oenothera stricta subsp. stricta</i>		Y			2/2
plants	land plants	Onagraceae	<i>Oenothera tetraptera</i>	four-winged evening primrose	Y			1/1

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plants	land plants	Ophioglossaceae	<i>Ophioglossum lusitanicum</i>	adder's tongue		C		1
plants	land plants	Ophioglossaceae	<i>Ophioglossum reticulatum</i>			C		2/2
plants	land plants	Orchidaceae	<i>Acianthus fornicatus</i>	pixie caps		C		1
plants	land plants	Orchidaceae	<i>Caladenia carnea</i>			C		1/1
plants	land plants	Orchidaceae	<i>Corybas</i>					1
plants	land plants	Orchidaceae	<i>Cyanicula caerulea</i>			C		1/1
plants	land plants	Orchidaceae	<i>Cymbidium canaliculatum</i>			C		2
plants	land plants	Orchidaceae	<i>Dendrobium aemulum</i>	ironbark orchid		C		1/1
plants	land plants	Orchidaceae	<i>Dendrobium gracilicaule</i>	slender orchid		C		2/2
plants	land plants	Orchidaceae	<i>Dendrobium monophyllum</i>			C		1
plants	land plants	Orchidaceae	<i>Dendrobium speciosum</i>			C		4/1
plants	land plants	Orchidaceae	<i>Dendrobium speciosum subsp. hillii</i>			C		1
plants	land plants	Orchidaceae	<i>Dendrobium x delicatum</i>			C		1/1
plants	land plants	Orchidaceae	<i>Dendrobium x gracillimum</i>			C		1/1
plants	land plants	Orchidaceae	<i>Dipodium variegatum</i>			C		2/2
plants	land plants	Orchidaceae	<i>Diuris abbreviata</i>	lemon doubletail		C		1
plants	land plants	Orchidaceae	<i>Diuris sulphurea</i>	tiger orchid		C		5/2
plants	land plants	Orchidaceae	<i>Dockrillia bowmanii</i>	scrub pencil orchid		C		3/1
plants	land plants	Orchidaceae	<i>Dockrillia cucumerina</i>			C		1
plants	land plants	Orchidaceae	<i>Dockrillia linguiformis</i>	tongue orchid		C		5/2
plants	land plants	Orchidaceae	<i>Dockrillia pugioniformis</i>	dagger orchid		C		1
plants	land plants	Orchidaceae	<i>Dockrillia schoenina</i>	pencil orchid		C		2/2
plants	land plants	Orchidaceae	<i>Dockrillia teretifolia</i>	rat's tail orchid		C		3/2
plants	land plants	Orchidaceae	<i>Microtis parviflora</i>	slender onion orchid		C		1/1
plants	land plants	Orchidaceae	<i>Plectorrhiza tridentata</i>	tangle orchid		C		2/2
plants	land plants	Orchidaceae	<i>Pterostylis</i>					3/3
plants	land plants	Orchidaceae	<i>Pterostylis acuminata</i>	sharp greenhood		C		1
plants	land plants	Orchidaceae	<i>Pterostylis bicolor</i>			C		1/1
plants	land plants	Orchidaceae	<i>Pterostylis curta</i>	blunt greenhood		C		2/2
plants	land plants	Orchidaceae	<i>Pterostylis cycnocephala</i>	swan greenhood		C		1/1
plants	land plants	Orchidaceae	<i>Pterostylis grandiflora</i>			C		1/1
plants	land plants	Orchidaceae	<i>Pterostylis mitchellii</i>			C		3/3
plants	land plants	Orchidaceae	<i>Pterostylis nutans</i>			C		2
plants	land plants	Orchidaceae	<i>Pterostylis obtusa</i>			C		1/1
plants	land plants	Orchidaceae	<i>Pterostylis ophioglossa</i>			C		1/1
plants	land plants	Orchidaceae	<i>Pterostylis revoluta</i>	autumn greenhood		C		1/1
plants	land plants	Orchidaceae	<i>Rhinerrhiza divitiflora</i>			C		1/1
plants	land plants	Orchidaceae	<i>Sarcochilus ceciliae</i>	fairy bells		C		3/1
plants	land plants	Orchidaceae	<i>Sarcochilus falcatus</i>	orange blossom orchid		C		4/4
plants	land plants	Orchidaceae	<i>Sarcochilus hillii</i>			C		2/2
plants	land plants	Orchidaceae	<i>Sarcochilus weinthalii</i>	blotched sarcochilus		E	V	3/3
plants	land plants	Orobanchaceae	<i>Orobanche minor</i>	lesser broomrape	Y			2/2
plants	land plants	Orobanchaceae	<i>Striga parviflora</i>			C		1/1
plants	land plants	Oxalidaceae	<i>Oxalis</i>					17
plants	land plants	Oxalidaceae	<i>Oxalis articulata</i>	shamrock oxalis	Y			1/1
plants	land plants	Oxalidaceae	<i>Oxalis chnoodes</i>			C		8

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plants	land plants	Oxalidaceae	<i>Oxalis corniculata</i>		Y			4
plants	land plants	Oxalidaceae	<i>Oxalis debilis</i> var. <i>corymbosa</i>	pink shamrock	Y			1
plants	land plants	Oxalidaceae	<i>Oxalis latifolia</i>	fishtail oxalis	Y			1/1
plants	land plants	Oxalidaceae	<i>Oxalis perennans</i>			C		10/4
plants	land plants	Oxalidaceae	<i>Oxalis radicata</i>			C		1/1
plants	land plants	Papaveraceae	<i>Argemone ochroleuca</i>		Y			1
plants	land plants	Papaveraceae	<i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	Mexican poppy	Y			1
plants	land plants	Papaveraceae	<i>Fumaria bastardi</i>	bastard fumitory	Y			2/2
plants	land plants	Papaveraceae	<i>Fumaria densiflora</i>	dense-flowered fumitory	Y			1/1
plants	land plants	Papaveraceae	<i>Fumaria muralis</i> subsp. <i>muralis</i>	wall fumitory	Y			1/1
plants	land plants	Papaveraceae	<i>Fumaria officinalis</i> subsp. <i>officinalis</i>		Y			1/1
plants	land plants	Papaveraceae	<i>Papaver hybridum</i>	rough poppy	Y			1/1
plants	land plants	Papaveraceae	<i>Papaver somniferum</i> subsp. <i>setigerum</i>		Y			4/1
plants	land plants	Papaveraceae	<i>Papaver somniferum</i> subsp. <i>somniferum</i>		Y			1/1
plants	land plants	Passifloraceae	<i>Passiflora aurantia</i>			C		6
plants	land plants	Passifloraceae	<i>Passiflora edulis</i>		Y			2/1
plants	land plants	Passifloraceae	<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	native passionfruit		C		1
plants	land plants	Passifloraceae	<i>Passiflora suberosa</i>	corky passion flower	Y			3
plants	land plants	Passifloraceae	<i>Passiflora suberosa</i> subsp. <i>litoralis</i>		Y			2/2
plants	land plants	Passifloraceae	<i>Passiflora subpeltata</i>	white passion flower	Y			5/1
plants	land plants	Phrymaceae	<i>Mimulus gracilis</i>	slender monkey flower		C		1/1
plants	land plants	Phyllanthaceae	<i>Breynia oblongifolia</i>			C		5/2
plants	land plants	Phyllanthaceae	<i>Bridelia exaltata</i>			C		1
plants	land plants	Phyllanthaceae	<i>Bridelia leichhardtii</i>			C		4/4
plants	land plants	Phyllanthaceae	<i>Phyllanthus</i>					2/1
plants	land plants	Phyllanthaceae	<i>Phyllanthus gunnii</i>			C		1
plants	land plants	Phyllanthaceae	<i>Phyllanthus similis</i>			C		1/1
plants	land plants	Phyllanthaceae	<i>Phyllanthus virgatus</i>			C		10/1
plants	land plants	Phyllanthaceae	<i>Synostemon hirtellus</i>			C		2/2
plants	land plants	Phytolaccaceae	<i>Phytolacca dioica</i>	bella sombra	Y			2/1
plants	land plants	Phytolaccaceae	<i>Phytolacca octandra</i>	inkweed	Y			4/1
plants	land plants	Pinaceae	<i>Pinus radiata</i>	radiata pine	Y			1/1
plants	land plants	Pittosporaceae	<i>Auranticarpa rhombifolia</i>			C		2
plants	land plants	Pittosporaceae	<i>Billardiera rubens</i>			C		1/1
plants	land plants	Pittosporaceae	<i>Bursaria incana</i>			C		4/2
plants	land plants	Pittosporaceae	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>			C		1
plants	land plants	Pittosporaceae	<i>Pittosporum angustifolium</i>			C		9/6
plants	land plants	Pittosporaceae	<i>Pittosporum undulatum</i>	sweet pittosporum		C		1
plants	land plants	Pittosporaceae	<i>Pittosporum viscidum</i>	black-fruited thornbush		C		1
plants	land plants	Plantaginaceae	<i>Gratiola pedunculata</i>			C		1/1
plants	land plants	Plantaginaceae	<i>Linaria texana</i>		Y			1/1
plants	land plants	Plantaginaceae	<i>Plantago cunninghamii</i>	sago weed		C		2
plants	land plants	Plantaginaceae	<i>Plantago debilis</i>	shade plantain		C		10/1
plants	land plants	Plantaginaceae	<i>Plantago lanceolata</i>		Y			45/4
plants	land plants	Plantaginaceae	<i>Plantago major</i>	greater plantain	Y			13
plants	land plants	Plantaginaceae	<i>Stemodia glabella</i>			C		1/1

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plants	land plants	Plantaginaceae	<i>Veronica plebeia</i>	trailing speedwell		C		5/4
plants	land plants	Plumbaginaceae	<i>Plumbago zeylanica</i>	native plumbago		C		3/3
plants	land plants	Poaceae	<i>Alloteropsis semialata</i>	cockatoo grass		C		1/1
plants	land plants	Poaceae	<i>Ancistrachne uncinulata</i>	hooky grass		C		1
plants	land plants	Poaceae	<i>Anthosachne kingiana subsp. multiflora</i>			C		5/5
plants	land plants	Poaceae	<i>Anthosachne plurinervis</i>			C		18/2
plants	land plants	Poaceae	<i>Anthosachne scabra</i>			C		5/3
plants	land plants	Poaceae	<i>Aristida acuta</i>			C		1/1
plants	land plants	Poaceae	<i>Aristida calycina</i>			C		8
plants	land plants	Poaceae	<i>Aristida calycina var. praealta</i>			C		2/2
plants	land plants	Poaceae	<i>Aristida caput-medusae</i>			C		1
plants	land plants	Poaceae	<i>Aristida gracilipes</i>			C		1
plants	land plants	Poaceae	<i>Aristida jerichoensis</i>			C		4
plants	land plants	Poaceae	<i>Aristida lazaridis</i>			C		3/3
plants	land plants	Poaceae	<i>Aristida leptopoda</i>	white speargrass		C		29/1
plants	land plants	Poaceae	<i>Aristida personata</i>			C		3/3
plants	land plants	Poaceae	<i>Aristida psammophila</i>			C		1/1
plants	land plants	Poaceae	<i>Aristida queenslandica var. dissimilis</i>			C		3/3
plants	land plants	Poaceae	<i>Arthraxon hispidus</i>			V	V	1/1
plants	land plants	Poaceae	<i>Arundo donax</i>		Y			2/1
plants	land plants	Poaceae	<i>Astrelia elymoides</i>	hoop mitchell grass		C		1/1
plants	land plants	Poaceae	<i>Astrelia lappacea</i>	curly mitchell grass		C		1/1
plants	land plants	Poaceae	<i>Austrostipa aristiglumis</i>	plains grass		C		29/5
plants	land plants	Poaceae	<i>Austrostipa nodosa</i>			C		2/2
plants	land plants	Poaceae	<i>Austrostipa ramosissima</i>	bamboo grass		C		5/1
plants	land plants	Poaceae	<i>Austrostipa rudis subsp. rudis</i>			C		1/1
plants	land plants	Poaceae	<i>Austrostipa scabra</i>			C		1
plants	land plants	Poaceae	<i>Austrostipa scabra subsp. falcata</i>			C		3/3
plants	land plants	Poaceae	<i>Austrostipa scabra subsp. scabra</i>			C		2/2
plants	land plants	Poaceae	<i>Austrostipa verticillata</i>	slender bamboo grass		C		16/2
plants	land plants	Poaceae	<i>Avena fatua</i>	wild oats	Y			6
plants	land plants	Poaceae	<i>Avena fatua x Avena sativa</i>		Y			1/1
plants	land plants	Poaceae	<i>Avena ludoviciana</i>		Y			2/1
plants	land plants	Poaceae	<i>Avena sativa</i>	common oats	Y			2
plants	land plants	Poaceae	<i>Bothriochloa biloba</i>			C		25/5
plants	land plants	Poaceae	<i>Bothriochloa bladhii</i>			C		11
plants	land plants	Poaceae	<i>Bothriochloa bladhii subsp. bladhii</i>			C		4/4
plants	land plants	Poaceae	<i>Bothriochloa bunyensis</i>	Bunya Mountains bluegrass		V	V	2/2
plants	land plants	Poaceae	<i>Bothriochloa decipiens</i>			C		12
plants	land plants	Poaceae	<i>Bothriochloa decipiens var. decipiens</i>			C		2/2
plants	land plants	Poaceae	<i>Bothriochloa erianthoides</i>	satintop grass		C		11/2
plants	land plants	Poaceae	<i>Bothriochloa macra</i>	redleg grass		C		3/3
plants	land plants	Poaceae	<i>Bothriochloa pertusa</i>		Y			1
plants	land plants	Poaceae	<i>Briza maxima</i>	quaking grass	Y			4/1
plants	land plants	Poaceae	<i>Bromus catharticus</i>	prairie grass	Y			12/1
plants	land plants	Poaceae	<i>Capillipedium parviflorum</i>	scented top		C		1

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plants	land plants	Poaceae	<i>Capillipedium spicigerum</i>	spicytop		C		3/2
plants	land plants	Poaceae	<i>Cenchrus caliculatus</i>	hillside burrgrass		C		1/1
plants	land plants	Poaceae	<i>Cenchrus ciliaris</i>		Y			15/1
plants	land plants	Poaceae	<i>Cenchrus clandestinus</i>		Y			8
plants	land plants	Poaceae	<i>Cenchrus longisetus</i>		Y			13/3
plants	land plants	Poaceae	<i>Cenchrus purpurascens</i>			C		1/1
plants	land plants	Poaceae	<i>Chloris divaricata</i>			C		1
plants	land plants	Poaceae	<i>Chloris divaricata</i> var. <i>cynodontoides</i>			C		1/1
plants	land plants	Poaceae	<i>Chloris divaricata</i> var. <i>divaricata</i>	slender chloris		C		2/1
plants	land plants	Poaceae	<i>Chloris gayana</i>	rhodes grass	Y			35/1
plants	land plants	Poaceae	<i>Chloris truncata</i>			C		5/5
plants	land plants	Poaceae	<i>Chloris ventricosa</i>	tall chloris		C		7/3
plants	land plants	Poaceae	<i>Chloris virgata</i>	feathertop rhodes grass	Y			16
plants	land plants	Poaceae	<i>Cortaderia selloana</i>	pampas grass	Y			1
plants	land plants	Poaceae	<i>Cymbopogon oblectus</i>			C		1
plants	land plants	Poaceae	<i>Cymbopogon refractus</i>	barbed-wire grass		C		15/2
plants	land plants	Poaceae	<i>Cynodon dactylon</i>		Y			3
plants	land plants	Poaceae	<i>Cynodon dactylon</i> var. <i>dactylon</i>		Y			18/1
plants	land plants	Poaceae	<i>Cynodon incompletus</i>		Y			4/4
plants	land plants	Poaceae	<i>Dactyloctenium radulans</i>	button grass		C		7/1
plants	land plants	Poaceae	<i>Dichanthium annulatum</i>	sheda grass	Y			2/1
plants	land plants	Poaceae	<i>Dichanthium aristatum</i>	angleton grass	Y			7/4
plants	land plants	Poaceae	<i>Dichanthium queenslandicum</i>			V	E	5/5
plants	land plants	Poaceae	<i>Dichanthium sericeum</i>			C		35/1
plants	land plants	Poaceae	<i>Dichanthium sericeum</i> subsp. <i>humilius</i>			C		1/1
plants	land plants	Poaceae	<i>Dichanthium sericeum</i> subsp. <i>polystachyum</i>			C		3/3
plants	land plants	Poaceae	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>			C		2/2
plants	land plants	Poaceae	<i>Dichanthium setosum</i>			C	V	1/1
plants	land plants	Poaceae	<i>Dichelachne crinita</i>	longhair plumegrass		C		18/5
plants	land plants	Poaceae	<i>Dichelachne micrantha</i>	shorthair plumegrass		C		7/2
plants	land plants	Poaceae	<i>Dichelachne montana</i>			C		2/2
plants	land plants	Poaceae	<i>Digitaria abyssinica</i>		Y			1/1
plants	land plants	Poaceae	<i>Digitaria brownii</i>			C		7/2
plants	land plants	Poaceae	<i>Digitaria ciliaris</i>	summer grass	Y			2/2
plants	land plants	Poaceae	<i>Digitaria diffusa</i>			C		1/1
plants	land plants	Poaceae	<i>Digitaria divaricatissima</i>	spreading umbrella grass		C		28/5
plants	land plants	Poaceae	<i>Digitaria eriantha</i> 'Pangola'		Y			11/1
plants	land plants	Poaceae	<i>Digitaria fumida</i>			C		1/1
plants	land plants	Poaceae	<i>Digitaria longiflora</i>			C		2
plants	land plants	Poaceae	<i>Digitaria parviflora</i>			C		1/1
plants	land plants	Poaceae	<i>Digitaria porrecta</i>			NT		639/27
plants	land plants	Poaceae	<i>Digitaria ramularis</i>			C		1
plants	land plants	Poaceae	<i>Dimorphochloa rigida</i>			C		1/1
plants	land plants	Poaceae	<i>Dinebra decipiens</i>			C		1
plants	land plants	Poaceae	<i>Dinebra decipiens</i> var. <i>asthenes</i>			C		2/2
plants	land plants	Poaceae	<i>Dinebra divaricatissima</i>			C		11/4

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plants	land plants	Poaceae	<i>Dinebra retroflexa</i>		Y			1/1
plants	land plants	Poaceae	<i>Diplachne fusca</i> var. <i>uninervia</i>		Y			1/1
plants	land plants	Poaceae	<i>Echinochloa colona</i>	awnless barnyard grass	Y			4/1
plants	land plants	Poaceae	<i>Echinochloa crus-galli</i>	barnyard grass	Y			5/1
plants	land plants	Poaceae	<i>Echinochloa esculenta</i>	Japanese millet	Y			1/1
plants	land plants	Poaceae	<i>Echinopogon nutans</i>			C		1
plants	land plants	Poaceae	<i>Echinopogon nutans</i> var. <i>nutans</i>			C		2/2
plants	land plants	Poaceae	<i>Echinopogon ovatus</i>			C		2/1
plants	land plants	Poaceae	<i>Ehrharta erecta</i> var. <i>erecta</i>		Y			2/2
plants	land plants	Poaceae	<i>Eleusine indica</i>	crowsfoot grass	Y			3/1
plants	land plants	Poaceae	<i>Eleusine tristachya</i>	goose grass	Y			5
plants	land plants	Poaceae	<i>Enneapogon gracilis</i>	slender nineawn		C		3/3
plants	land plants	Poaceae	<i>Enneapogon truncatus</i>			C		4/4
plants	land plants	Poaceae	<i>Enteropogon acicularis</i>	curly windmill grass		C		24/5
plants	land plants	Poaceae	<i>Enteropogon paucispiceus</i>			C		1/1
plants	land plants	Poaceae	<i>Enteropogon ramosus</i>			C		1/1
plants	land plants	Poaceae	<i>Enteropogon unispiceus</i>			C		3/1
plants	land plants	Poaceae	<i>Entolasia marginata</i>	bordered panic		C		1/1
plants	land plants	Poaceae	<i>Entolasia whiteana</i>			C		1/1
plants	land plants	Poaceae	<i>Eragrostis</i>					4/4
plants	land plants	Poaceae	<i>Eragrostis alveiformis</i>			C		10/6
plants	land plants	Poaceae	<i>Eragrostis brownii</i>	Brown's lovegrass		C		2/1
plants	land plants	Poaceae	<i>Eragrostis cilianensis</i>		Y			17/1
plants	land plants	Poaceae	<i>Eragrostis curvula</i>		Y			35/3
plants	land plants	Poaceae	<i>Eragrostis leptocarpa</i>	drooping lovegrass		C		2
plants	land plants	Poaceae	<i>Eragrostis leptostachya</i>			C		3/2
plants	land plants	Poaceae	<i>Eragrostis mexicana</i>	Mexican lovegrass	Y			1/1
plants	land plants	Poaceae	<i>Eragrostis minor</i>	smaller stinkgrass	Y			1/1
plants	land plants	Poaceae	<i>Eragrostis parviflora</i>	weeping lovegrass		C		12/3
plants	land plants	Poaceae	<i>Eragrostis pilosa</i>	soft lovegrass	Y			1/1
plants	land plants	Poaceae	<i>Eragrostis sororia</i>			C		2/2
plants	land plants	Poaceae	<i>Eragrostis spartnoides</i>			C		2/2
plants	land plants	Poaceae	<i>Eragrostis tenuifolia</i>	elastic grass	Y			7/2
plants	land plants	Poaceae	<i>Eragrostis trichophora</i>		Y			5
plants	land plants	Poaceae	<i>Eremochloa bimaculata</i>	poverty grass		C		1/1
plants	land plants	Poaceae	<i>Eriochloa crebra</i>	spring grass		C		5/3
plants	land plants	Poaceae	<i>Eriochloa procera</i>	slender cupgrass		C		10/3
plants	land plants	Poaceae	<i>Eriochloa pseudoacrotricha</i>			C		13/4
plants	land plants	Poaceae	<i>Eulalia aurea</i>	silky browntop		C		8/1
plants	land plants	Poaceae	<i>Heteropogon contortus</i>	black speargrass		C		7/1
plants	land plants	Poaceae	<i>Homopholis belsonii</i>			E	V	65/58
plants	land plants	Poaceae	<i>Hordeum glaucum</i>		Y			1
plants	land plants	Poaceae	<i>Hordeum vulgare</i>		Y			1
plants	land plants	Poaceae	<i>Hyparrhenia hirta</i>	coolati grass	Y			21/2
plants	land plants	Poaceae	<i>Imperata cylindrica</i>	blady grass		C		5/2
plants	land plants	Poaceae	<i>Lachnagrostis filiformis</i>			C		1/1

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plants	land plants	Poaceae	<i>Leptochloa digitata</i>			C		1/1
plants	land plants	Poaceae	<i>Lolium perenne</i>	perennial ryegrass	Y			12
plants	land plants	Poaceae	<i>Megathyrsus maximus</i>		Y			2
plants	land plants	Poaceae	<i>Megathyrsus maximus</i> var. <i>coloratus</i>		Y			1/1
plants	land plants	Poaceae	<i>Megathyrsus maximus</i> var. <i>pubiglumis</i>		Y			24/1
plants	land plants	Poaceae	<i>Melinis repens</i>	red natal grass	Y			16/3
plants	land plants	Poaceae	<i>Microlaena stipoides</i>			C		1
plants	land plants	Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>			C		1/1
plants	land plants	Poaceae	<i>Nassella neesiana</i>	Chilean needle grass	Y			3/3
plants	land plants	Poaceae	<i>Oplismenus aemulus</i>	creeping shade grass		C		4/2
plants	land plants	Poaceae	<i>Oplismenus aemulus</i> var. <i>lasiorhachis</i>			C		1
plants	land plants	Poaceae	<i>Oplismenus imbecillis</i>			C		2/2
plants	land plants	Poaceae	<i>Panicum antidotale</i>	giant panic	Y			1
plants	land plants	Poaceae	<i>Panicum bisulcatum</i>	blackseed panic		C		1/1
plants	land plants	Poaceae	<i>Panicum buncei</i>			C		8/3
plants	land plants	Poaceae	<i>Panicum coloratum</i>		Y			2/2
plants	land plants	Poaceae	<i>Panicum decompositum</i>			C		26
plants	land plants	Poaceae	<i>Panicum decompositum</i> var. <i>decompositum</i>			C		5/4
plants	land plants	Poaceae	<i>Panicum effusum</i>			C		3/2
plants	land plants	Poaceae	<i>Panicum miliaceum</i>	millet panic	Y			3
plants	land plants	Poaceae	<i>Panicum queenslandicum</i> var. <i>queenslandicum</i>			C		34/2
plants	land plants	Poaceae	<i>Panicum simile</i>			C		2/1
plants	land plants	Poaceae	<i>Paspalidium aversum</i>			C		1
plants	land plants	Poaceae	<i>Paspalidium caespitosum</i>	brigalow grass		C		1
plants	land plants	Poaceae	<i>Paspalidium constrictum</i>			C		2/1
plants	land plants	Poaceae	<i>Paspalidium distans</i>	shotgrass		C		16/3
plants	land plants	Poaceae	<i>Paspalidium globoideum</i>	sago grass		C		16/2
plants	land plants	Poaceae	<i>Paspalidium gracile</i>	slender panic		C		2/2
plants	land plants	Poaceae	<i>Paspalidium grandispiculatum</i>			V	V	2/2
plants	land plants	Poaceae	<i>Paspalidium jubiflorum</i>	warrego grass		C		1/1
plants	land plants	Poaceae	<i>Paspalum</i>					1/1
plants	land plants	Poaceae	<i>Paspalum dilatatum</i>	paspalum	Y			21/1
plants	land plants	Poaceae	<i>Paspalum distichum</i>	water couch	Y			3
plants	land plants	Poaceae	<i>Paspalum notatum</i>	bahia grass	Y			1
plants	land plants	Poaceae	<i>Phragmites australis</i>	common reed		C		2
plants	land plants	Poaceae	<i>Phyllostachys aurea</i>	fishpole bamboo	Y			1/1
plants	land plants	Poaceae	<i>Poa annua</i>	annual poa	Y			2
plants	land plants	Poaceae	<i>Poa labillardierei</i> var. <i>labillardierei</i>	tussock grass		C		3/3
plants	land plants	Poaceae	<i>Polypogon lutosus</i>		Y			2/2
plants	land plants	Poaceae	<i>Polypogon monspeliensis</i>	annual beardgrass	Y			2/2
plants	land plants	Poaceae	<i>Polypogon monspeliensis</i> var. <i>rosei</i>			C		1
plants	land plants	Poaceae	<i>Rytidosperma bipartitum</i>			C		6/5
plants	land plants	Poaceae	<i>Rytidosperma indutum</i>			C		2/2
plants	land plants	Poaceae	<i>Rytidosperma longifolium</i>			C		5/5
plants	land plants	Poaceae	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>			C		4/4
plants	land plants	Poaceae	<i>Rytidosperma tenuius</i>			C		14/3

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plants	land plants	Poaceae	<i>Sarga leiocladum</i>			C		2
plants	land plants	Poaceae	<i>Sehima nervosum</i>			C		1/1
plants	land plants	Poaceae	<i>Setaria pumila</i>		Y			1
plants	land plants	Poaceae	<i>Setaria pumila subsp. pumila</i>		Y			1/1
plants	land plants	Poaceae	<i>Setaria sphacelata</i>		Y			12
plants	land plants	Poaceae	<i>Setaria verticillata</i>	whorled pigeon grass	Y			2/2
plants	land plants	Poaceae	<i>Sorghum bicolor</i>	forage sorghum	Y			1/1
plants	land plants	Poaceae	<i>Sorghum halepense</i>	Johnson grass	Y			36
plants	land plants	Poaceae	<i>Sporobolus</i>					1
plants	land plants	Poaceae	<i>Sporobolus actinocladus</i>	katoora grass		C		1/1
plants	land plants	Poaceae	<i>Sporobolus africanus</i>	Parramatta grass	Y			3/1
plants	land plants	Poaceae	<i>Sporobolus caroli</i>	fairy grass		C		5/2
plants	land plants	Poaceae	<i>Sporobolus creber</i>			C		8/2
plants	land plants	Poaceae	<i>Sporobolus elongatus</i>			C		2/2
plants	land plants	Poaceae	<i>Sporobolus pyramidalis</i>		Y			1/1
plants	land plants	Poaceae	<i>Stenotaphrum secundatum</i>	buffalo grass	Y			1
plants	land plants	Poaceae	<i>Thellungia advena</i>	coolibah grass		C		4/4
plants	land plants	Poaceae	<i>Themeda avenacea</i>			C		28/3
plants	land plants	Poaceae	<i>Themeda triandra</i>	kangaroo grass		C		16/3
plants	land plants	Poaceae	<i>Tragus australianus</i>	small burr grass		C		2/1
plants	land plants	Poaceae	<i>Triodia</i>					1/1
plants	land plants	Poaceae	<i>Triodia scariosa</i>			C		4/4
plants	land plants	Poaceae	<i>Tripogon loliiformis</i>	five minute grass		C		1/1
plants	land plants	Poaceae	<i>Triraphis mollis</i>	purple plumegrass		C		1/1
plants	land plants	Poaceae	<i>Urochloa fusca</i>		Y			1/1
plants	land plants	Poaceae	<i>Urochloa mosambicensis</i>	sabi grass	Y			19
plants	land plants	Poaceae	<i>Urochloa panicoides</i>		Y			3
plants	land plants	Poaceae	<i>Urochloa panicoides var. panicoides</i>		Y			28/1
plants	land plants	Poaceae	<i>Vulpia muralis</i>		Y			1/1
plants	land plants	Poaceae	<i>Walwhalleya proluta</i>			C		14/2
plants	land plants	Polygonaceae	<i>Acetosella vulgaris</i>	sheep sorrel	Y			1/1
plants	land plants	Polygonaceae	<i>Antigonon leptopus</i>		Y			1
plants	land plants	Polygonaceae	<i>Duma florulenta</i>			C		1/1
plants	land plants	Polygonaceae	<i>Fallopia convolvulus</i>	black bindweed	Y			4/2
plants	land plants	Polygonaceae	<i>Muehlenbeckia gracillima</i>			C		2/1
plants	land plants	Polygonaceae	<i>Muehlenbeckia rhyticarya</i>			C		2/2
plants	land plants	Polygonaceae	<i>Persicaria attenuata</i>			C		5
plants	land plants	Polygonaceae	<i>Persicaria capitata</i>		Y			2
plants	land plants	Polygonaceae	<i>Persicaria decipiens</i>	slender knotweed		C		2/1
plants	land plants	Polygonaceae	<i>Persicaria hydropiper</i>	water pepper		C		4/2
plants	land plants	Polygonaceae	<i>Persicaria lapathifolia</i>	pale knotweed		C		2
plants	land plants	Polygonaceae	<i>Persicaria orientalis</i>	princes feathers		C		1
plants	land plants	Polygonaceae	<i>Persicaria prostrata</i>	creeping knotweed		C		1/1
plants	land plants	Polygonaceae	<i>Polygonum aviculare</i>	wireweed	Y			3
plants	land plants	Polygonaceae	<i>Rumex brownii</i>	swamp dock		C		25
plants	land plants	Polygonaceae	<i>Rumex crispus</i>	curled dock	Y			25/1

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plants	land plants	Polygonaceae	<i>Rumex dumosus</i>	wiry dock		C		2
plants	land plants	Polypodiaceae	<i>Dendroconche scandens</i>			C		2
plants	land plants	Polypodiaceae	<i>Dictymia brownii</i>	strap fern		C		1
plants	land plants	Polypodiaceae	<i>Drynaria rigidula</i>			C		1
plants	land plants	Polypodiaceae	<i>Platyserium bifurcatum</i>			C		5
plants	land plants	Polypodiaceae	<i>Platyserium superbum</i>	staghorn fern		C		3
plants	land plants	Polypodiaceae	<i>Pyrrosia confluens</i>			C		1
plants	land plants	Polypodiaceae	<i>Pyrrosia confluens</i> var. <i>confluens</i>			C		6/1
plants	land plants	Polypodiaceae	<i>Pyrrosia rupestris</i>	rock felt fern		C		5/1
plants	land plants	Portulacaceae	<i>Calandrinia eremaea</i>			C		1/1
plants	land plants	Portulacaceae	<i>Grahamia australiana</i>			C		1/1
plants	land plants	Portulacaceae	<i>Portulaca</i>					2/2
plants	land plants	Portulacaceae	<i>Portulaca bicolor</i>				C	2/2
plants	land plants	Portulacaceae	<i>Portulaca oleracea</i>	pigweed	Y			24/2
plants	land plants	Portulacaceae	<i>Portulaca pilosa</i>		Y			10/1
plants	land plants	Portulacaceae	<i>Talinum paniculatum</i>	talinum	Y			2/1
plants	land plants	Potamogetonaceae	<i>Potamogeton crispus</i>	curly pondweed		C		1/1
plants	land plants	Potamogetonaceae	<i>Potamogeton perfoliatus</i>	perfoliate pondweed		C		2/2
plants	land plants	Potamogetonaceae	<i>Potamogeton sulcatus</i>			C		1/1
plants	land plants	Potamogetonaceae	<i>Potamogeton tricarlinatus</i>	floating pondweed		C		1/1
plants	land plants	Pottiaceae	<i>Barbula calycina</i>			C		1/1
plants	land plants	Pottiaceae	<i>Weissia</i> sp. (Victoria Park H.Tryon AQ645533)			C		2/2
plants	land plants	Proteaceae	<i>Banksia integrifolia</i> subsp. <i>compar</i>			C		1/1
plants	land plants	Proteaceae	<i>Banksia spinulosa</i> var. <i>collina</i>			C		1/1
plants	land plants	Proteaceae	<i>Grevillea floribunda</i> subsp. <i>floribunda</i>			C		1/1
plants	land plants	Proteaceae	<i>Grevillea robusta</i>			C		2
plants	land plants	Proteaceae	<i>Hakea eriantha</i>			C		1/1
plants	land plants	Proteaceae	<i>Persoonia sericea</i>	silky geebung		C		1/1
plants	land plants	Proteaceae	<i>Petrophile canescens</i>			C		1/1
plants	land plants	Pteridaceae	<i>Adiantum aethiopicum</i>			C		6
plants	land plants	Pteridaceae	<i>Adiantum atroviride</i>			C		3/1
plants	land plants	Pteridaceae	<i>Adiantum formosum</i>			C		2
plants	land plants	Pteridaceae	<i>Adiantum hispidulum</i>			C		4
plants	land plants	Pteridaceae	<i>Adiantum hispidulum</i> var. <i>whitei</i>			C		1
plants	land plants	Pteridaceae	<i>Adiantum silvaticum</i>			C		3
plants	land plants	Pteridaceae	<i>Cheilanthes distans</i>	bristly cloak fern		C		5
plants	land plants	Pteridaceae	<i>Cheilanthes sieberi</i>			C		1
plants	land plants	Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>			C		7/1
plants	land plants	Pteridaceae	<i>Pellaea</i>					1/1
plants	land plants	Pteridaceae	<i>Pellaea nana</i>			C		1
plants	land plants	Pteridaceae	<i>Pteris vittata</i>	Chinese bracken		C		1
plants	land plants	Ptychomitriaceae	<i>Ptychomitrium australe</i>			C		2/2
plants	land plants	Putranjivaceae	<i>Drypetes deplanchei</i>	grey boxwood		C		1
plants	land plants	Racopilaceae	<i>Racopilum cuspidigerum</i> var. <i>cuspidigerum</i>			C		1/1
plants	land plants	Ranunculaceae	<i>Clematis</i>					1
plants	land plants	Ranunculaceae	<i>Clematis decipiens</i>			C		1

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plants	land plants	Ranunculaceae	<i>Clematis fawcettii</i>			V	V	2/1
plants	land plants	Ranunculaceae	<i>Clematis glycinoides</i>			C		2
plants	land plants	Ranunculaceae	<i>Clematis microphylla</i>			C		1/1
plants	land plants	Ranunculaceae	<i>Clematis pickeringii</i>			C		1/1
plants	land plants	Ranunculaceae	<i>Ranunculus lappaceus</i>	common buttercup		C		2
plants	land plants	Ranunculaceae	<i>Ranunculus meristus</i>			C		2/2
plants	land plants	Ranunculaceae	<i>Ranunculus muricatus</i>	sharp buttercup	Y			1/1
plants	land plants	Ranunculaceae	<i>Ranunculus sceleratus subsp. sceleratus</i>		Y			1/1
plants	land plants	Ranunculaceae	<i>Ranunculus sessiliflorus var. sessiliflorus</i>			C		1/1
plants	land plants	Rhamnaceae	<i>Alphitonia excelsa</i>	soap tree		C		3/1
plants	land plants	Rhamnaceae	<i>Pomaderris argyrophylla</i>			C		1/1
plants	land plants	Rhamnaceae	<i>Pomaderris canescens</i>			C		1/1
plants	land plants	Rhamnaceae	<i>Pomaderris queenslandica</i>			C		4/4
plants	land plants	Rosaceae	<i>Cotoneaster coriaceus</i>		Y			3/2
plants	land plants	Rosaceae	<i>Eriobotrya japonica</i>	loquat	Y			2/2
plants	land plants	Rosaceae	<i>Malus pumila</i>		Y			1
plants	land plants	Rosaceae	<i>Potentilla indica</i>		Y			3
plants	land plants	Rosaceae	<i>Prunus persica var. persica</i>		Y			5/4
plants	land plants	Rosaceae	<i>Prunus rivularis</i>		Y			2
plants	land plants	Rosaceae	<i>Pyracantha angustifolia</i>		Y			1/1
plants	land plants	Rosaceae	<i>Rosa bracteata</i>	Macartney rose	Y			1/1
plants	land plants	Rosaceae	<i>Rubus ellipticus</i>	yellow raspberry	Y			3/1
plants	land plants	Rosaceae	<i>Rubus moluccanus</i>			C		1
plants	land plants	Rosaceae	<i>Rubus parvifolius</i>	pink-flowered native raspberry		C		3/1
plants	land plants	Rosaceae	<i>Rubus probus</i>			C		1
plants	land plants	Rosaceae	<i>Rubus rosifolius</i>			C		1
plants	land plants	Rubiaceae	<i>Asperula conferta</i>			C		18/1
plants	land plants	Rubiaceae	<i>Asperula cunninghamii</i>	twining woodruff		C		1/1
plants	land plants	Rubiaceae	<i>Everistia vacciniifolia var. nervosa</i>			C		2/1
plants	land plants	Rubiaceae	<i>Everistia vacciniifolia var. vacciniifolia</i>			C		1/1
plants	land plants	Rubiaceae	<i>Galium aparine</i>	cleavers	Y			2/1
plants	land plants	Rubiaceae	<i>Galium leptogonium</i>			C		4/3
plants	land plants	Rubiaceae	<i>Galium terrae-reginae</i>			C		1/1
plants	land plants	Rubiaceae	<i>Pavetta australiensis</i>			C		1
plants	land plants	Rubiaceae	<i>Pomax umbellata</i>			C		2/2
plants	land plants	Rubiaceae	<i>Psydrax odorata</i>			C		2
plants	land plants	Rubiaceae	<i>Psydrax odorata forma australiana</i>			C		1
plants	land plants	Rubiaceae	<i>Psydrax odorata forma buxifolia</i>			C		4/2
plants	land plants	Rubiaceae	<i>Psydrax odorata forma subnitida</i>			C		1/1
plants	land plants	Rubiaceae	<i>Richardia brasiliensis</i>	white eye	Y			1
plants	land plants	Rubiaceae	<i>Triflorensia cameronii</i>			C		5/4
plants	land plants	Rutaceae	<i>Acronychia laevis</i>	glossy acronychia		C		1
plants	land plants	Rutaceae	<i>Boronia glabra</i>			C		6/6
plants	land plants	Rutaceae	<i>Correa reflexa var. reflexa</i>			C		2/2
plants	land plants	Rutaceae	<i>Dinosperma erythrococcum</i>			C		3/2
plants	land plants	Rutaceae	<i>Flindersia australis</i>	crow's ash		C		3/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Rutaceae	<i>Flindersia collina</i>	broad-leaved leopard tree		C		4/3
plants	land plants	Rutaceae	<i>Geijera parviflora</i>	wilga		C		9/2
plants	land plants	Rutaceae	<i>Geijera salicifolia</i>	brush wilga		C		9/6
plants	land plants	Rutaceae	<i>Melicope micrococca</i>	white evodia		C		1/1
plants	land plants	Rutaceae	<i>Murraya paniculata</i> 'Exotica'		Y			1
plants	land plants	Rutaceae	<i>Sarcomelicope simplicifolia</i> subsp. <i>simplicifolia</i>	yellow aspen		C		1/1
plants	land plants	Rutaceae	<i>Zanthoxylum brachyacanthum</i>			C		2/1
plants	land plants	Rutaceae	<i>Zieria aspalathoides</i> subsp. <i>aspalathoides</i>			C		3/3
plants	land plants	Rutaceae	<i>Zieria cytisoides</i>	downy zieria		C		5/5
plants	land plants	Rutaceae	<i>Zieria smithii</i>			C		1/1
plants	land plants	Salicaceae	<i>Casearia multinervosa</i>	casearia		C		1
plants	land plants	Salicaceae	<i>Populus nigra</i>	Lombardy poplar	Y			3
plants	land plants	Salicaceae	<i>Salix babylonica</i>	weeping willow	Y			4/2
plants	land plants	Salicaceae	<i>Xylosma terrae-reginae</i>	xylosma		C		1
plants	land plants	Santalaceae	<i>Choretrum candollei</i>	white sour bush		C		4/4
plants	land plants	Santalaceae	<i>Exocarpos cupressiformis</i>	native cherry		C		4/2
plants	land plants	Santalaceae	<i>Exocarpos latifolius</i>			C		1
plants	land plants	Santalaceae	<i>Leptomeria acida</i>	sour currant bush		C		1
plants	land plants	Santalaceae	<i>Santalum lanceolatum</i>			C		7/6
plants	land plants	Santalaceae	<i>Thesium australe</i>	toadflax		V	V	2/2
plants	land plants	Sapindaceae	<i>Alectryon connatus</i>	grey birds-eye		C		1
plants	land plants	Sapindaceae	<i>Alectryon diversifolius</i>	scrub boonaree		C		3/1
plants	land plants	Sapindaceae	<i>Alectryon oleifolius</i> subsp. <i>elongatus</i>			C		1/1
plants	land plants	Sapindaceae	<i>Alectryon pubescens</i>			C		9/8
plants	land plants	Sapindaceae	<i>Alectryon subdentatus</i>			C		1
plants	land plants	Sapindaceae	<i>Atalaya salicifolia</i>			C		3/1
plants	land plants	Sapindaceae	<i>Cardiospermum grandiflorum</i>	heart seed vine	Y			1
plants	land plants	Sapindaceae	<i>Cupaniopsis parvifolia</i>	small-leaved tuckeroo		C		4/3
plants	land plants	Sapindaceae	<i>Dodonaea heteromorpha</i>			C		2/2
plants	land plants	Sapindaceae	<i>Dodonaea triangularis</i>			C		5/5
plants	land plants	Sapindaceae	<i>Dodonaea triquetra</i>	large-leaved hop bush		C		1
plants	land plants	Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>			C		1/1
plants	land plants	Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>burmanniana</i>			C		2/2
plants	land plants	Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>spatulata</i>			C		1/1
plants	land plants	Sapindaceae	<i>Elaeagnus xylocarpa</i>	white tamarind		C		4/2
plants	land plants	Sapindaceae	<i>Guioa semiglaucula</i>	guioa		C		1/1
plants	land plants	Sapotaceae	<i>Planchonella cotinifolia</i> var. <i>pubescens</i>			C		2/2
plants	land plants	Sapotaceae	<i>Pleioloma macrocarpa</i>			C		1
plants	land plants	Scrophulariaceae	<i>Buddleja madagascariensis</i>	buddleia	Y			1/1
plants	land plants	Scrophulariaceae	<i>Eremophila debilis</i>	winter apple		C		11/1
plants	land plants	Scrophulariaceae	<i>Eremophila deserti</i>			C		4/3
plants	land plants	Scrophulariaceae	<i>Eremophila longifolia</i>	berrigan		C		2/2
plants	land plants	Scrophulariaceae	<i>Verbascum virgatum</i>	twiggy mullein	Y			13
plants	land plants	Simaroubaceae	<i>Ailanthus altissima</i>	tree-of-heaven	Y			2/2
plants	land plants	Smilacaceae	<i>Smilax australis</i>	barbed-wire vine		C		2/1
plants	land plants	Solanaceae	<i>Capsicum annuum</i> var. <i>glabriusculum</i>		Y			1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Solanaceae	<i>Cestrum parqui</i>	green cestrum	Y			1
plants	land plants	Solanaceae	<i>Datura ferox</i>	fierce thornapple	Y			2/1
plants	land plants	Solanaceae	<i>Datura stramonium</i>	common thornapple	Y			16
plants	land plants	Solanaceae	<i>Lycium barbarum</i>		Y			1
plants	land plants	Solanaceae	<i>Lycium ferocissimum</i>	African boxthorn	Y			53/2
plants	land plants	Solanaceae	<i>Nicotiana</i>					1
plants	land plants	Solanaceae	<i>Nicotiana megalosiphon subsp. megalosiphon</i>			C		1/1
plants	land plants	Solanaceae	<i>Physalis lanceifolia</i>		Y			2/1
plants	land plants	Solanaceae	<i>Physalis peruviana</i>		Y			6/1
plants	land plants	Solanaceae	<i>Solanum</i>					2/2
plants	land plants	Solanaceae	<i>Solanum amblymerum</i>			C		1/1
plants	land plants	Solanaceae	<i>Solanum americanum</i>		Y			22/6
plants	land plants	Solanaceae	<i>Solanum chenopodioides</i>	whitetip nightshade	Y			2/2
plants	land plants	Solanaceae	<i>Solanum elaeagnifolium</i>	silverleaf nightshade	Y			5/4
plants	land plants	Solanaceae	<i>Solanum ellipticum</i>	potato bush			C	4/4
plants	land plants	Solanaceae	<i>Solanum esuriale</i>	quena			C	1/1
plants	land plants	Solanaceae	<i>Solanum jucundum</i>				C	1/1
plants	land plants	Solanaceae	<i>Solanum latens</i>				C	2/2
plants	land plants	Solanaceae	<i>Solanum limitare</i>				C	4/4
plants	land plants	Solanaceae	<i>Solanum linearifolium</i>				C	1/1
plants	land plants	Solanaceae	<i>Solanum mauritianum</i>	wild tobacco	Y			6
plants	land plants	Solanaceae	<i>Solanum mitchellianum</i>			C		2/2
plants	land plants	Solanaceae	<i>Solanum nemophilum</i>			C		8/5
plants	land plants	Solanaceae	<i>Solanum nigrum</i>		Y			14/1
plants	land plants	Solanaceae	<i>Solanum papaverifolium</i>			E		295/8
plants	land plants	Solanaceae	<i>Solanum parvifolium</i>			C		2
plants	land plants	Solanaceae	<i>Solanum parvifolium subsp. parvifolium</i>			C		2/2
plants	land plants	Solanaceae	<i>Solanum pseudocapsicum</i>	Madeira winter cherry	Y			1
plants	land plants	Solanaceae	<i>Solanum rixosum</i>			C		1/1
plants	land plants	Solanaceae	<i>Solanum seaforthianum</i>	Brazilian nightshade	Y			4/1
plants	land plants	Solanaceae	<i>Solanum sisymbriifolium</i>		Y			1/1
plants	land plants	Solanaceae	<i>Solanum stelligerum</i>	devil's needles			C	4/3
plants	land plants	Solanaceae	<i>Solanum stenopterum</i>			V		6/6
plants	land plants	Solanaceae	<i>Solanum stupefactum</i>				C	5/5
plants	land plants	Sparmanniaceae	<i>Grewia latifolia</i>	dysentery plant			C	1/1
plants	land plants	Stackhousiaceae	<i>Stackhousia muricata</i>				C	3/3
plants	land plants	Stackhousiaceae	<i>Stackhousia viminea</i>	slender stackhousia			C	1
plants	land plants	Sterculiaceae	<i>Brachychiton discolor</i>				C	1/1
plants	land plants	Sterculiaceae	<i>Brachychiton populneus subsp. populneus</i>				C	1/1
plants	land plants	Sterculiaceae	<i>Brachychiton rupestris</i>				C	3/1
plants	land plants	Sterculiaceae	<i>Brachychiton x turgidulus</i>				C	2/2
plants	land plants	Stylidiaceae	<i>Stylidium laricifolium</i>	tree trigger plant			C	2/2
plants	land plants	Tamaricaceae	<i>Tamarix aphylla</i>	athel pine	Y			3
plants	land plants	Thelypteridaceae	<i>Christella dentata</i>	creek fern			C	3/2
plants	land plants	Thelypteridaceae	<i>Christella hispidula</i>				C	1
plants	land plants	Thymelaeaceae	<i>Pimelea curviflora</i>				C	3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Thymelaeaceae	<i>Pimelea curviflora</i> subsp. <i>divergens</i>			C		2/2
plants	land plants	Thymelaeaceae	<i>Pimelea glauca</i>	smooth riceflower		C		1
plants	land plants	Thymelaeaceae	<i>Pimelea neoanglica</i>	poison pimelea		C		31/6
plants	land plants	Thymelaeaceae	<i>Wikstroemia indica</i>	tie bush		C		2/2
plants	land plants	Tropaeolaceae	<i>Tropaeolum majus</i>	garden nasturtium	Y			2
plants	land plants	Typhaceae	<i>Typha domingensis</i>			C		1
plants	land plants	Typhaceae	<i>Typha orientalis</i>	broad-leaved cumbungi		C		2
plants	land plants	Ulmaceae	<i>Aphananthe philippinensis</i>			C		1
plants	land plants	Ulmaceae	<i>Celtis sinensis</i>	Chinese elm	Y			24
plants	land plants	Ulmaceae	<i>Trema tomentosa</i>			C		1
plants	land plants	Urticaceae	<i>Dendrocnide photiniphylla</i>	shiny-leaved stinging tree		C		1
plants	land plants	Urticaceae	<i>Elatostema reticulatum</i>	rainforest spinach		C		1/1
plants	land plants	Urticaceae	<i>Urtica incisa</i>	stinging nettle		C		5
plants	land plants	Urticaceae	<i>Urtica urens</i>	small nettle	Y			3/1
plants	land plants	Verbenaceae	<i>Glandularia aristigera</i>		Y			38/1
plants	land plants	Verbenaceae	<i>Lantana camara</i>	lantana	Y			37/5
plants	land plants	Verbenaceae	<i>Lantana montevidensis</i>	creeping lantana	Y			8/2
plants	land plants	Verbenaceae	<i>Phyla canescens</i>		Y			11/2
plants	land plants	Verbenaceae	<i>Phyla nodiflora</i>	carpetweed		C		2
plants	land plants	Verbenaceae	<i>Verbena</i>					1
plants	land plants	Verbenaceae	<i>Verbena africana</i>			C		2/2
plants	land plants	Verbenaceae	<i>Verbena bonariensis</i>	purpletop	Y			16/1
plants	land plants	Verbenaceae	<i>Verbena gaudichaudii</i>			C		18/1
plants	land plants	Verbenaceae	<i>Verbena halei</i>		Y			1/1
plants	land plants	Verbenaceae	<i>Verbena incompta</i>		Y			5/3
plants	land plants	Verbenaceae	<i>Verbena litoralis</i> var. <i>brevibracteata</i>		Y			1
plants	land plants	Verbenaceae	<i>Verbena litoralis</i> var. <i>litoralis</i>		Y			21/2
plants	land plants	Verbenaceae	<i>Verbena rigida</i>		Y			20/2
plants	land plants	Violaceae	<i>Pigea enneasperma</i>			C		1
plants	land plants	Violaceae	<i>Pigea stellarioides</i>			C		1/1
plants	land plants	Viscaceae	<i>Korthalsella breviarticulata</i>			C		2/2
plants	land plants	Viscaceae	<i>Korthalsella rubra</i> subsp. <i>geijericola</i>			C		2/2
plants	land plants	Viscaceae	<i>Notothixos cornifolius</i>	kurrajong mistletoe		C		1/1
plants	land plants	Viscaceae	<i>Notothixos subaureus</i>	golden mistletoe		C		1/1
plants	land plants	Viscaceae	<i>Viscum articulatum</i>	flat mistletoe		C		3/3
plants	land plants	Vitaceae	<i>Causonis clematidea</i>			C		4/2
plants	land plants	Vitaceae	<i>Cayratia acris</i>	hairy grape		C		1
plants	land plants	Vitaceae	<i>Cissus antarctica</i>			C		1
plants	land plants	Vitaceae	<i>Cissus sterculiifolia</i>			C		1
plants	land plants	Vitaceae	<i>Clematicissus opaca</i>			C		1
plants	land plants	Vitaceae	<i>Tetrastigma nitens</i>	shining grape		C		1
plants	land plants	Xanthorrhoeaceae	<i>Xanthorrhoea glauca</i> subsp. <i>glauca</i>			C		2
plants	land plants	Zygophyllaceae	<i>Tribulus micrococcus</i>	yellow vine		C		23/1
plants	land plants	Zygophyllaceae	<i>Tribulus terrestris</i>	caltrop		C		16
plants	land plants	Zygophyllaceae	<i>Zygophyllum apiculatum</i>	gall weed		C		4/4
plants	uncertain	Indet.	Indet.			C		6

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
protozoans	slime molds	Physaraceae	<i>Fuligo septica</i>			C		4

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

IN THE LAND COURT
OF QUEENSLAND

Annexure L

LAND COURT

01/10/2021

FILED

MRA026-21
MRA027-21
EPA028-21

BETWEEN

New Acland Coal Pty Ltd

Applicant

AND

Oakey Coal Action Alliance Inc & Ors

Respondents

STATEMENT OF EVIDENCE TO THE LAND COURT BY ADRIAN CANERIS

1. **Expert's details and qualifications**

1.1 My name is Adrian Caneris

1.2 My business address is 26-40 Delancey Street, Cleveland, Queensland 4163.

1.3 I hold the following qualifications:

(a) Certified Environmental Practitioner (CEnvP) with Ecology Specialist accreditation.

(b) **Annexure A** to this statement is my curriculum vitae.

2. **Statement of Evidence for Original Proceedings – Additional Considerations**

2.1 I was previously engaged by the Applicant as an expert witness in respect of Fauna and Fauna Habitats for the initial Land Court proceedings for this matter, which commenced in 2015 and concluded in 2017 (**Original Proceedings**).

2.2 I am aware that because of a series of subsequent challenges to the decision in the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).

2.3 I am engaged by the Applicant to act as an expert witness in the Rehearing in respect of Fauna and Fauna Habitats. **Annexure B** is my instructions dated 15 September 2021.

2.4 **Annexure C** to this statement is my statement of evidence that was given in the Original Proceedings dated 25th February 2016 (**original SOE**)¹,

2.5 Parts of the Original SoE have been redacted where they refer to the evidence of a lay witness in the original proceedings who I am advised by Clayton Utz is not being called to give evidence about ecology in the Rehearing;

2.6 I have reviewed my Original Statement and would like to make the following updates to address relevant matters that have occurred since the Original Proceedings:

(a) I have revisited the site in 2020 (10 – 12 May and 22 – 24 June 2021) to

¹ Document ID No. 417

assess current conditions and refresh my site familiarity. I noted that

- I. The extant landscape and associated habitats remain consistent with how I viewed them for the original proceeding, and I noted no changes or new values which has increase concern for any potential impacts on significant fauna known (Koala and Painted Honeyeater) or those species identified as having potential to occur. I view the EA as providing suitable management responses as detailed in paragraph 10.5 of my original SoE².
 - II. The main change I have observed is that the Koala tree plantings undertaken by NAC along Lagoon Creek have increased growth. There has been good success in the survival rate and establishment of those plantings. This demonstrates that the provision of replacement trees is very feasible. **Annexure D** to this statement, provides representative photos of the established Koala trees along Lagoon Creek.
- (b) On 15 February 2021, NAC filed a Draft EA³ and on 10 March 2021 Department of Environment and Science (DES) as the Statutory Party filed the draft EA⁴ and Schedule I (Biodiversity) is consistent in these documents.
 - (c) By letter dated 27 May 2021⁵, NAC provided further information to the Statutory Party in relation to the activities that it says will be regulated by the proposed EA and attached a Project Overview figure.
 - (d) The following outlines the changes which have relevance to fauna considerations between my original SoE and the Rehearing materials.
 - (e) In respect to fauna considerations relevant to the Coordinator Generals (CoG) change reports 1-3 and the filed statutory party EA, I note the following:
 - I. Technical corrections to departmental names and other updates for contemporary documents.
 - II. Updated Air quality and Noise conditions which would have reduced potential for dust related impacts on retained vegetation and noise nuisances to extant fauna. As previously expressed in my original SoE⁶ (paragraph 10.5) I consider there are adequate conditions to require suitable management responses to mitigate detrimental impacts.
 - III. Updated impact thresholds in table I1 of the EA, in accordance with the CoG change report No.3 (Schedule H) for Matters of State Environmental Significance (MSES) and associated offsetting requirements, based on refined field assessments of the extant values. This is further discussed in the paragraphs (f)-(s) below.
 - (f) Imposed Condition 14 of the CoG's Evaluation Report requires NAC to conduct pre-clearance fauna and flora surveys prior to the commencement of any Project construction activities. Condition 14 (g) requires that the survey results be included in an updated Environmental Offset Strategy EOS for the Project.
 - (g) There have been pre-clearance surveys conducted across the Project's disturbance footprint during 2019. This has further informed understanding of impacts and offsetting requirements.
 - (h) An updated EOS has been developed and approved by the office of the CoG

² Document ID No. 417

³ Document ID No. F.0003

⁴ Document ID No. F.0020

⁵ Document ID No. F.0063

⁶ Document ID No. 417

(10 January 2020) and was approved by the CoG on 10 January 2020.

- (i) Subsequent to the Original Proceedings there has been further refinement of calculations for the significant residual impacts on Matters of National Environmental Significance (MNES) and MSES. These refinements have been based on the project design, including associated ancillary infrastructure, and further advanced field assessments to identify the actual impacts more accurately⁷. These have informed the changes to the impact areas identified in Schedule I.
- (j) The area of suitable Koala habitat identified in the original Project documents (i.e., the EIS and EOS) was calculated based on the area of REs which were recognised as comprising Koala habitat at the time. The change in impact area and offsets required (tables H4 in the CoG Original Evaluation report and CoG Change Report 3) is a direct result of refinements to the RE mapping arising from the work by Andrew Daniel in the Original Hearing and a change to the offset requirements which now require individual Koala habitat trees to be offset.
- (k) The offsets required have now been updated and are correctly calculated using the *Queensland Guide to determining terrestrial habitat quality*.
- (l) The impacts on koala habitats can be summarised as the removal of 30.96 ha of remnant vegetation and the removal of 4,601 individual Koala habitat trees outside of the remnant areas, comprising 3,158 in preferred RE habitats and 1,443 Non Juvenile Koala habitat trees (NJKHT) within secondary RE habitat.
- (m) The offset for the individual koala habitat trees is converted to 18.40ha by calculating the area based on 250 trees per hectare. 4,601 divided by 250 = 18.40.
- (n) The impacted RE's are listed as:
 - RE 11.3.2 (Of Concern) – *Eucalyptus populnea* woodland on alluvial plains, 4.63 ha;
 - RE 11.3.17 (Of Concern) – *Eucalyptus populnea* woodland with *Acacia harpophylla* and/or *Casuarina cristata* on alluvial plains, 5.11ha;
 - RE 11.9.7 (Of Concern) – *Eucalyptus populnea*, *Eremophila mitchellii* shrubby woodland on fine-grained sedimentary rocks, 3.24ha;
 - RE 11.9.10 (Of Concern) – *Eucalyptus populnea*, *Acacia harpophylla* open forest on fine-grained sedimentary rocks, 14.36 ha; and
 - RE 11.9.13 (Of Concern) – *Eucalyptus moluccana* or *E. microcarpa* open forest on fine grained sedimentary rocks, 3.62ha.
- (o) In addition to the offsetting of the mapped remnant vegetation recognised as Koala habitats the CoG imposed conditions (table H4 CoG Change Report No.3) now also include replacement of individual Koala habitat trees (those outside of the remnant vegetation areas) which equates to offsets imposed for the unavoidable impacts to NJKHTs of 49.36ha.
- (p) Both the Applicant Draft EA⁸ and Statutory Party EA⁹ specify equivalent impacts and offsetting requirements (Table I1). I note Table I1 includes that significant residual impacts to prescribed MSES must not exceed the

⁷ Document ID No. 1004

⁸ Document ID No. F.0003

⁹ Document ID No F.0020

maximum authorised residual impact areas listed therein.

- (q) The proposed amendment to Table H4 of Condition H40 is consistent with the approved EOS and reflect the revised maximum areas of residual impact identified through the project's pre-clearance surveys and the flora expert evidence provided during the original Land Court proceedings. The proposed changes provide consistency between the CoG Imposed conditions, the Statutory Party EA and the approved EOS.
- (r) I note that whilst there is now a recognition of increased offsetting required for loss of Koala habitats by the requirement to offset individual Koala habitat trees, the actual impact (habitat loss) is substantially the same as discussed in my original statement of evidence. The increase is a result of advanced recognition of which Koala habitats requiring offsetting. I consider that the expanded Koala offsetting required will provide an overall increase in inter-connected koala habitats than was known to me during the compilation of my Original SoE or during the Original Proceedings.
- (s) The Koala offsets are being provided at locations that will provide increased habitat and habitat connectivity, and in combination with the actions imposed for Lagoon Creek Conservation Area will provide increased habitat and habitat connectivity.
- (t) Subsequent to the Original Proceedings, the Koala Species Management Plan (KSMP) Lagoon Creek crossing design was developed towards meeting the requirements of the DES Koala-sensitive Design Guideline.
- (u) The following factors were considered in the crossing design:
 - I. the likelihood of fauna movements through the area during active mining operations,
 - II. the species and movement requirements of all fauna species in the area with a focus on Koala,
 - III. the proposed management measures for an 'at-grade' crossing,
 - IV. the agricultural nature (heavily cleared) of the existing surrounding environment,
 - V. the current amount of fauna interactions that the existing Mine has experienced,
 - VI. the likelihood of fauna passage through the prior design and associated 75m long culverts, and
 - VII. flood mitigation and fish passage requirements within the creek crossing facility.
- (v) The design review resulted in an 'at-grade' crossing with specific design elements to mitigate potential Koala and other fauna interactions with mining vehicles. This 'at-grade' design is significantly more cost effective and will achieve the same, if not improved, environmental outcomes. The design has been developed to ensure the crossing does not present any additional risks of fauna incidents (deaths or injuries) and provides a more usable crossing for other local fauna species known or expected to occur in the location. The reduced construction costs have provided additional funding and opportunity to facilitate further Koala research in the Acland area.
- (w) The haul road design and crossing location at the Original Hearing was further to the south and entirely within ML50232. It now links ML50216 directly with ML50232 across Acland Silverleigh Road. The new location is comparable in respect to potential impacts on fauna and fauna habitats.

- (x) The revised 'at-grade' crossing over Lagoon Creek has been designed to install and operate fauna movement detection devices and warning systems.
- (y) The revised design is within the approved KSMP. In my opinion the design provides appropriate response for safe Koala and other fauna movements along Lagoon Creek.
- (z) DES advised the applicant and CoG office (by email:dated April 2020) that DES endorse the KSMP as meeting the requirements of the CoG imposed Condition 16 the relevant elements of the *Nature Conservation Act 1992* and related subordinate legislation. The CoG office advised the applicant (on 19 May 2020) of its approval of the KSMP.
- (aa) The updated KSMP has refined the Koala fencing locations in line with the changes to the crossing location, though the fencing is still indicative and is based on the required setback from the Lagoon Creek Conservation Corridor, (refer to Figure 3.1 KSMP)
- (bb) As a requirement of the CoG's original approval (Imposed Condition 13), during December 2019, NAC lodged an updated Environmental Offset Strategy (EOS) with the CoG to provide a summary of its planned management strategies for the clearance of all environmentally significant vegetation and flora within the project site (i.e., in relation to both State and Commonwealth requirements). The EOS documents the actions required to secure and manage offsets in accordance with *Queensland's Environmental Offsets Act 1994* and Queensland Nature Conservation Act (NC Act), and the Commonwealth's *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act).
- (cc) I note that Koala's have remained classed as *special least concern* under the NC Act for the application, Koala are currently listed as *vulnerable* under the Environment Protection and Biodiversity Conservation Act 1999 Act and NC Act.
- (dd) A notice of election (a Notice issued to DES as the administering agency pursuant to Section 19 of the *Environmental Offsets Act 2014*) to advise that the offset delivery approach by New Acland Coal Pty Ltd was received by DES on 4 March 2020 and included:
 - i. The offset delivery plan titled 'Offset Delivery Plan New Acland Coal Mine Stage 3 Operations (dated 4 March 2020);
 - ii. The financial settlement offset calculation titled 'Attachment #12 (Form 4) – .CSV Data file for Environmental Offsets Calculator Results' and 'Attachment #13 (Form 4) – Environmental Offsets Calculator Results E-mail' which were used to calculate the proposed financial payment of \$1,214,935.88; and
 - iii. The accompanying document titled 'Attachment 1 Supporting Information Document (Revision 0, dated 21 April 2020).
- (ee) The authority reference number for the corresponding prescribed activity related to the significant residual impact(s) the subject of this notice is EPML00335713.
- (ff) Although not specific to fauna, I note that the Offset Management Plan required under the EPBC Approval 2007/3423, was approved on 2 December 2019. This provides increased certainty on the location of offsets in respect to local fauna habitats. I have reviewed and inspected the proposed offset areas and I am satisfied they will form appropriate offsets and provide habitats for the relevant fauna.
- (gg) It is noted that should the application have been assessed by the regulators using the Koalas current classification (vulnerable under the EPBC Act and NC Act) offsets would be imposed under the EPBC Act. Whilst unknown due

to the complexity of the federal offsetting calculations, it is my view the extent or magnitude of offsetting under the EPBC Act would likely be substantially the same.

- (hh) Although there have been changes in the extent of various remnant vegetation areas, I am satisfied that the Statutory Party EA (Condition I1) which requires *The holder of the environmental authority must ensure that staff induction and environmental awareness programs include specific reference to Anomalopus mackayi (Five clawed Worm-skink, Long-legged Worm-skink) and Tympanocryptis pinguicolla Grassland Earless Dragon, South-eastern Lined Earless Dragon) to ensure that any individuals that might be present in the project area are identified and reported to the mine site environmental officer for recovery and release into suitable habitat* remains an appropriate condition for the risk.
- (ii) There has been adequate survey effort to identify relevant fauna species and potential impacts. The subsequent site assessments have only refined knowledge and have not identified any additional fauna species of conservation significance.
- (ji) Subsequent to the Original Proceedings, NAC funded a collaborative research project between the applicant and the Queensland Trust for Nature, The University of Queensland, and The New Hope Group. This research was focused on investigating koalas and their presence within the area of the New Acland Coal Mine and surrounds. A Queensland Trust for Nature Koala Research Project Report was prepared by The Koala Ecology Group of the University of Queensland and issued in 2017 (Appendix 2 of KSMP). The research sought to investigate the koala population in this area, with a view to understanding the population dynamics in the region, to put the population in a state and national context and to provide key inputs that will help reduce the loss and/or fragmentation of important koala habitat in the future. For example, the tracking program aimed to identify local connectivity, patterns of ranging and key habitat linkages. This study has provided valuable information on the local Koala population, though it does not provide any clear statements on key habitat linkages or locations. As stated by the authors *this is a "first step" in understanding how land use in the region may be impacting gene flow and genetic diversity across the whole population, so we are not generalising with regard to the total population and its genetics*. I understand NAC intend to continue with Koala Monitoring during the life of the project.
- (kk) There has been no additional significant fauna known to occur on the project site or surrounds.
- (ll) It is clear the revised imposed conditions have specific regard to ensuring commensurate offset actions are provided for all known and any subsequently identified MSES detrimentally impacted by the Project.
- (mm) The imposed conditions and identified offset areas in combination with the Lagoon Creek Conservation Zone and associated management actions will provide an increase in overall fauna habitat values and habitat connectivity.
- (nn) It is my opinion that the mitigation responses in combination with the imposed offsetting conditions will result in an overall net benefit for fauna and fauna habitats which would otherwise be unlikely to occur.
- (oo) The protection of the offset areas will also ultimately provide a more secured landscape for fauna species in the locality which would otherwise be unlikely to occur.

2.7 Other than where now superseded by the updates listed at paragraph 2.6 (a-oo), the opinions expressed in my Original SoE continue to be held by me for this rehearing.

2.8 I consider the conclusions provided in section 10 of my SoE for the Original Proceedings, as remaining appropriate to provide a summary of my views for the rehearing.

3. **Expert's Statement**

3.1 I confirm that:

- (a) the factual matters stated in this statement are, as far as I am aware, true;
- (b) I have made all enquiries that I consider appropriate;
- (c) the opinions stated in this statement are genuinely held by me;
- (d) this statement contains references to all matters I consider significant;
- (e) I understand I have a duty to the court and have complied with that duty;
- (f) I have read and understand the rules contained in Part 5 of the *Land Court Rules 2000* (Qld), as far as they apply to me; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.



Adrian Caneris

October 1, 2021

Annexure A

Curriculum vitae

SPECIALISATION

- Expert Witness – Queensland Planning and Environment and Queensland Land Court
 - Ecological expert peer reviews
 - Environmental Offsetting Assessment
 - Vertebrate fauna assessment and identification
 - Assessment of terrestrial habitats and ecological functions
 - Biodiversity planning
 - Ecological monitoring
 - Environmental Impact Assessment for major infrastructure projects
 - Feral species management
 - Restoration and Mitigation Action Plans
 - Wildlife management advice and infrastructure design
 - Community liaison and facilitation
-

PROFESSIONAL QUALIFICATIONS

Certified Environmental Practitioner (CEnvP)

Certified EIANZ Ecology Specialist

Diploma of Management

CAREER OUTLINE

Adrian has been involved in research, management, consulting, tertiary teaching and community-based studies of terrestrial ecology, particularly vertebrate fauna, across Queensland for over 25 years. He has experience at both State and Local government levels in all aspects of ecological management & planning, and community involvement. Adrian has previously held membership on several State Ministerial Advisory Committees and has been the nominated community representative for numerous ecological management committees.

Since 2002, Adrian has primarily undertaken specialist consultancy work for local and state governments and private organisations associated with ecological investigations, recommendations for fauna management and species recovery planning. Adrian has worked on numerous major infrastructure projects and has worked in all major Queensland townships.

Adrian is a recognised leader in wildlife management and through his career he has been a pioneer on and responsible for numerous projects which have advanced the knowledge or application of wildlife management. Adrian regularly provides peer review of ecological components of large development applications and identification of information gaps.

Ecological offset assessments and identification of actions required to meet the required mitigation of impacts is regularly provided to both government and private corporations.

Adrian has completed certification under the EIANZ Certified Environmental Practitioner and is also certified as an ecological specialist by EIANZ.

Adrian has completed certification as a Public Practitioner with the International Association for Public Participation (IAP2).

Adrian's experience and expertise are regularly sought for matters before the Queensland Planning and Environment Court. Adrian has provided expert advice to State and Local Governments on Development Applications, Strategic and Land use planning and State Significant developments as well as provision of expert advice for advancement of Priority Development Areas.

CAREER HISTORY

2002 – ongoing: Managing Director - Biodiversity Assessment and Management,

Specialist ecological assessment and management consultants. Consultancy work for all levels of local Government, industry and private clients. Conduct detailed field investigations and subsequent data collection and advice, including analysis and report compilation, for a range of clients on all aspects and issues relating to wildlife and habitat management. Project management and provision of high level expert advice and expert witness to Queensland's Planning and Environment Court.

2000 - ongoing: Director, Wildlife Land Trust Ltd Qld

Management board for not for profit company to acquire lands for conservation of Qld Wildlife. Recently purchased remnant rainforest jointly with State and Federal Governments, Bukulla Conservation Park. A first for Qld. Ongoing acquisition and management of lands held under the trust control.

2007 - 2015: The Redland Institute (President) - and Steering Committee Member - Environment

The Redlands Institute is an independent, community-based not-for-profit organisation working to create, implement and promote a shared vision for Redland City Council area. The Institute consists of committed community representatives who share a desire to create a clear identity for the new City of Redlands to 2020 and beyond. Adrian was selected to provide advice on ecological aspects and a sustainable future for the Redland City Municipality.

2005 - ongoing:- Glossy Black Cockatoo Conservancy

Adrian conceived the concept for the Glossy Black Conservancy (GBC) and he obtained the support needed to establish the group. The GBC was officially formed in 2005 and has since gone on to be recognised as a significant step in the application of species specific wildlife management. Through Adrian's leadership, since 2005 the participation of state and local government and NGO partners has continued. The GBC has developed the essential habitat layers and conservation action statements for the species.

2004 - 2007: Greenspace Advisory Committee, Redland Shire Council

One of three community representatives which provide expert advice and guidance to this Redland Shire Council Advisory Committee. This committee primarily advises the council on the strategic management of lands holding important ecological values within the shire.

2001 – 2004: Australian Wildlife Management and Services, Director

Specialist wildlife management consulting business. Consultancy work for local Government, development applications, recovery planning, and species management. Expert wildlife field investigations and management recommendations.

2003 - 2004: Chair, Queensland Wildlife Rehabilitation Council

This committee was formed to provide the state of Queensland with a single entity body to provide the required framework to advance the intentions of the recent legislation changes. Adrian was appointed by the Queensland EPA to chair the group and advise the state on how to form and operate such an association. The position required ongoing liaison with the Minister and departmental staff and all licensed groups and individuals on all aspects and issues pertaining to wildlife rehabilitation and permitting.

2002 - 2003: Pest Animal and Plague Advisory Committee

Appointed by the State Minister, Department Natural Resources.

This committee provided advice on appropriate responses to the Minister and departmental staff on all aspects and issues pertaining to pest and plague animal management. Broad ranging advice on relevant legislation, policies and practices.

1999 - 2003: Recreational & Commercial Animal Management Committee

Appointed by the State Minister for Environment and Natural Resources 1999-2000 and reappointed by Minister for Environment 2000. This committee was established to advise the State Environment Minister and departmental staff on all aspects and issues pertaining to the trade and utilisation of wildlife throughout Queensland. Broad ranging advice on relevant legislation, policies and practices. Formulation of legislation for Qld wildlife permitting system.

1999 - 2003: South East Queensland Conservation Strategy Committee – Community Representative

One of two community representatives on State Government committee involved in compiling a strategic planning document designed to help protect the biodiversity of SEQ. It was envisaged that this document when completed, would be adopted by the Queensland cabinet to form the basis for all landuse and planning decisions in natural areas. primarily in the southeast with plans for its use in other regions of Queensland.

1996 – 2002: Redland Shire Council, Senior Conservation Officer – Wildlife

Advise Redland Shire Council on all aspects and issues relating to wildlife management. Compile all associated reports on wildlife management, both formal and informal, for presentation to staff and committees. Conduct detailed field investigations and data collections to provide advice on fauna species presence, distribution and conservation significance.

Plan and present interpretative talks/training to council staff, volunteer workers and community interest groups. Liaise with community members on council policy for wildlife and bushland management.

Operation and coordination of Redland's After-hours Wildlife Ambulance service. This community service was a personal initiative and has been in operation since 1997 - Responsibilities include ensuring compliance with relevant Acts and Codes of Practise, volunteer adherence to local by-laws training of volunteers in rescue techniques, safety issues and relevant legislation, development of agreements with state departments, volunteer roster and vehicle maintenance.

1998 – 2001: Moreton Institute TAFE , Environmental Sciences Teacher

Development and delivery of curriculum, course structure and learning outcomes for environmental sciences unit.

Modules included:

- Endangered Species Management
- Faunal Monitoring,
- Data Collection,
- Care of Sick and Injured Wildlife
- Management of Fauna Populations
- Conflict resolution,
- NatureSearching.

1999 - 2002: Koala Coast Council - Advisor on Koala management in Koala coast region

Committee appointed to review and advise Queensland Parks and Wildlife Service on management issues relating to koala preservation. Also for the implementation and achievement of policy objectives within the "State Planning Policy 1/97 Koala Coast". Adrian represented the Redland Shire Council Mayor on this committee.

1994 - 2004: Wildlife Preservation Society of Queensland (WPSQ) State Council Member -

1994-1996 Elected Vice President
1996-2000 Elected State President
2001-2003 Vice President

Representation of 24 branches with over 2000 members. The position involved: Maintaining and growing the society in accordance with its constitution all society financial dealings. Including taxation, superannuation, holiday entitlements and investments, organisational planning, staff management and administration, policy formation, contract formulation, constitutional matters, public relations and media representation on State Departmental committees.

1997 - 2000: QPWS Macropod Management Advisory Committee

Appointed by the State Minister for Environment and Natural Resources. A State Ministerial advisory committee reporting to the Minister for Environment on the management of macropod populations (kangaroos & wallabies) and the harvesting of macropods for commercial use.

1997 -1999: National Heritage Trust - Technical Assessment Committee for NHT Grants SE Qld

Involved technical reviewing of all NHT grant applications, the rating of each on environmental and physical feasibility criteria and the compilation of reports for the Federal committee on funding and prioritisation of applications.

1993 – 1996: Ipswich City Council Environmental Advisory Committee Member

Responsible for the development of conservation policies and advisor to Ipswich City Council on all aspects of natural area management and policy formation.

1993 – 1996: Department of Environment and Heritage, NatureSearch - Wildlife Ranger

Required to locate, identify and record vertebrate and selected invertebrate species, process all survey results into report form. A vertebrate species monitoring project covering the entire Southeast Qld region. Development of monitoring plans, interpretative talk development and presentation.

Verification of all flora and fauna data collected by volunteers, public relations and field work. General maintenance duties such as the upkeep of a variety of traps, general fauna survey equipment and vehicles. Helping volunteers to focus their efforts to ensure the volunteers maintained a high level of motivation and enthusiasm for wildlife conservation and the objectives of the NatureSearch program.

SELECTED PROJECT EXPERIENCE

Economic Development Qld (EDQ) 2017-ongoing – Specialist ecological peer review and advice to the (EDQ) a division of Department of State Development, Manufacturing, Infrastructure and Planning on all priority development area applications within designated Priority Development Areas.

Toondah Harbor Koala Impact Assessment 2021 Koala assessment and detailed design advice for EPBC EIS chapter for Walker Corporation.

Fauna Movement Solutions – Jinker Track 2020, Green infrastructure review and advice to MBRC for fauna movement facilities along the Jinker Track roadway

Great Walk Survey and advice: 2018-2020 Detailed desktop and site assessment and reporting for Department of Environment and science on the Cooloola National park great walk design and alignment, covering all aspects of ecologically related planning and proposed land use. Review of EPBC species and advice on referral requirements.

Victoria Point Structure plan 2017-2019 development of the Victoria Point structure plan and associated development stage applications for Fiteni Homes. Site assessment and reporting on all aspects of ecologically related planning and land use issues.

Shorelines EPBC Referral 2017Overseeing the EPBC referral and project coordination on behalf of Shoreline Pty Ltd. Ensuring all aspects of EPBC protected matters are addressed and suitably

mitigated in referral documentation. Submission of referral documentation and subsequent liaison with Federal Government representatives on project.

Pelican Waters Planning Scheme Submission Review. 2017 Prepared for Sunshine Coast Council. Peer review and advice on ecological implication of proposed changes to the City Plan and offsetting requirements and capabilities of the site to meet required offsets. Ground truthing of extant values and written advice to Council.

Shorelines Ecological Assessment 2016 prepared for Shoreline Pty Ltd. Site assessment and reporting on all aspects of ecologically related planning and land use issues. Ongoing advice to client on site design and offsetting requirements as well as negotiations with Council on relevant approval conditions.

Acland Mine No3 Koala Species Management Plan; 2016 prepared for New Hope group. A Koala Management plan to ensure the proposed Mine extension is undertaken in compliance with relevant environmental authorities, Qld Coordinator Generals conditions and EPBC approval conditions.

Pelican Waters Lakes Edge Development Review 2016 commissioned by Sunshine Coast Council to undertake a peer review of ecological related components of a proposed development assessment application by the BCI Group, the owners of the Pelican Links Golf Course, located on Lot 65 on SP208108, on the Sunshine Coast. Review was to identify any gaps in information required and assessment of offsetting requirements.

Flying Fox Management Assessment and Advice 2016 Prepared for Whitsunday regional Council. Advice and guidance on Flying-fox dispersal from an urban camp. Advice included securing the relevant permits and overseeing actions to ensure compliance.

Wildlife Corridor Mapping for Redland City. 2016 BAAM was engaged by Redland City Council to use spatial modelling to generate a heat map showing key wildlife corridors that connect core vegetation areas throughout Redland City's mainland areas, North Stradbroke Island, Coochiemudlo Island and the Southern Moreton Bay Islands. The heat map was used to identify Established and Enhancement Corridors for wildlife over the entire Redland City local government area to inform the development of the new City Plan Conservation Layers.

Aquatic Survey – East End Mine. BAAM Pty Ltd was appointed by East End Mine (2016) to provide an assessment of aquatic macroinvertebrates at Mt Larcom Creek South-West of Mt Larcom near Gladstone. The aim of this survey was to use invertebrate family diversity to achieve a SIGNAL 2 score for measuring the health and quality of waterways upstream and downstream from an existing mine. A survey of targeted aquatic vertebrates, including turtles and fish, was also undertaken.

Regional Ecosystem and Offset Strategy Advice, Clutha Creek Quarry. 2016 Prepared for Groundwork Plus. 2016 An assessment to ground-truth regulated vegetation mapped over the site, as well as identification of vegetation that has the potential to be used as offsets for a quarry expansion. .

Ecological Assessment and Due Diligence Advice: 2016 BAAM was engaged by Redland Investment Corporation (2015) to review of nominated sites' vegetation and associated ecological significance, and an assessment against the Redland City Council's Local Law No. 6 – Protection of Vegetation and the draft Redlands Planning Scheme to inform site planning and potential future development applications.

Ecological review, Old Cleveland Road East, Birkdale. 2015 Prepared for Redland City Council Preliminary assessment of potential ecological constraints and opportunities to inform planning for potential future development.

Turtle Sands development Review and Information Request Advice. 2015 BAAM was engaged by Sunshine Coast Regional Council to undertake an independent expert peer review of relevant ecological reports within the Turtle Sands Development Application and to identify information required for an informed assessment and to provide details for the information request stage.

Terrestrial Ecological Assessment - Wynnum Health Precinct. 2016 Prepared for Destravis Group on behalf of Qld Health. The aim of this assessment was to identify any legislative environmental constraints to future development of the site.

Ecological Assessment - Redlands Mater Private Hospital. 2014 An ecological assessment was undertaken to identify constraints to developing car park facilities adjacent to the existing Mater Private Hospital. The accurate mapping of Koala habitat trees guided design plans for the car park and identification of offsetting requirements.

Lake Weyba Development Application- Peer Review. 2013 Prepared for Sunshine Coast Council.. Peer review of Ecological Assessment Report and Koala Impact and Net Benefit Assessment Report, as well as recommendations of issues for inclusion in Sunshine Coast Council's Information Request.

Review and map Koala habitats within Redland City mainland areas – Version 1. 2015. An assessment of Koala habitats and Koala habitat usage within the mainland areas of Redland City to inform the Redlands Planning Scheme.

Toondah Harbour and Weinam Creek PDA Ecological Assessment, 2014 Prepared for Redland City Council. Expert advice in ecology (marine and terrestrial) and coastal processes for input to the preparation of a structure plan and development scheme for Toondah Harbour and Weinam Creek Priority Development Areas (PDAs). The project provided a review and preliminary field assessment of the ecological values with the Toondah Harbour and Weinam Creek PDAs, provided expert advice in ecology (marine and terrestrial), coastal processes and impact assessment to inform the comparative assessment of alternative development options for the PDAs, and provided an assessment of benefits and legislative considerations for the preferred options for each PDA.

North Stradbroke Island Planning Study. 2014 Desktop assessment of ecological values on 38 properties in the Queensland Government Land Bank on North Stradbroke Island. Contribution of ecological information to the draft Planning Study Report and participation at a property assessment workshop on behalf of Department of Infrastructure & Planning.

NALL Vegetation Clearing Application, Oxley. Prepared for Groundwork Plus. May 2013. This project involved a site visit to record all vegetation listed as significant under the Brisbane City Council Natural Assess Law and provide recommendations for protection of significant vegetation.

Kinross Road Structure Plan Review. 2011-2012 Prepared for Redland City Council. September 2011. BAAM was commissioned by Redland City Council to analyse and respond to recommendations made by DERM regarding potential impacts to fauna habitat values within the Kinross Road MPA. The defined scope of work was to: (1) Review the size, width and location of the central habitat & fauna corridor based on contemporary ecological planning practices; (2) Review the inclusion of a Precinct in Environmental Protection zoning; (3) Examine a road deviation and determine the preferred alignment and design of a bridge structure and detail the design options necessary to minimise impacts on fauna and vegetation; (4) Assess the impacts of a potential busway within a conservation reserve within an existing Energex easement and determine a preferred alignment for the busway; and (5) Review external fauna movement linkages across Redland Bay Road and Boundary Road.

Flora and Fauna Assessment – QUT campus, Carseldine. 2011 Prepared for Urban Land Development Authority. The aim of the project was to provide an assessment of the flora and fauna, and associated habitat values for a proposed development at the old QUT campus site in Carseldine. A report was prepared, detailing the results of flora and fauna surveys, comparisons between DERM regional ecosystem mapping and ground-truthed vegetation mapping, weed identification and mapping, habitat values and movement corridor facilitation for fauna and management considerations for weed control and maintenance of biodiversity and ecological value.

APLNG Coal Seam Gas Project. 2009/10. Fauna habitat assessment and part of expert panel for impact assessment on species of conservation significance within the APLNG Coal Seam Gas fields.

Revised South-east Thornlands Structure Plan Review. 2009 Report prepared for the Redland City Council. This report was prepared for the Local Area Planning, Land Use Planning Group for the purposes of reviewing the revised plan against to original recommendations made by BAAM 2006 as well as its compliance with new Local and State Legislation that has come into effect since the adoption of the plan. In addition this included comment on and recommendations for the proposed locations of fauna crossings.

Audit and Gap Identification of Environmental Mechanisms – 2010. Prepared for Ipswich City Council, The specific objectives of the study included: (a) an analysis of Council's relevant environmental documentation; (b) a brief overview of how the documents assist Council to protect and manage nature to achieve conservation outcomes; (c) gap analysis to determine Council's ability to protect, manage, maintain or increase levels of vegetation, protect significant flora and fauna, manage Conservation Estates and Bushland Reserves, and protect and manage healthy waterways; (d) provide recommendations on what changes are required and how they can be implemented with examples for each; and (e) facilitate a workshop for Council employees in relevant departments to discuss how to address the identified gaps.

Fitzgibbon Urban Development Area- Squirrel Glider Management and Action Plan. 2009. Report prepared for the Urban Land Development Authority (ULDA) to prepare a Management and Action Plan for Squirrel Gliders *Petaurus norfolciensis* to inform the planning phase of the Fitzgibbon Urban Development Area and to guide future urban development approvals within the Fitzgibbon Urban Development Area. Lead Consultant.

Flora and Fauna Management Plan and Rehabilitation Plan – Fitzgibbon Precinct 4. 2009 This report was prepared for the Urban land Development Authority (ULDA) and aimed to ensure that activities associated with development do not cause any undue negative impacts on fauna/vegetation communities or on individual fauna/flora species. The report was designed to address the management of significant flora/fauna species on the site, included measures to minimise and mitigate impacts upon those species during all stages of development.

Fitzgibbon Urban Development Area- Flora and Fauna Habitat Assessment. 2009. Report prepared for the Urban Land Development Authority (ULDA) for the purpose of providing an assessment of the flora and fauna habitat values of areas within the designated Fitzgibbon Urban Development Area. Lead Consultant.

Refined Corridor Mapping – Ipswich. 2009 prepared for Ipswich City Council. The purpose of this report was to develop an implementation plan and toolbox to effectively achieve conservation outcomes and corridor linkages for priority areas in Ipswich City. Specific objectives were to: (a) analyse and prioritise areas for nature protection and rehabilitation; (b) map cadastral-specific information to inform of the most appropriate tools for protection and rehabilitation for the prioritised properties; (c) identify Council-owned assets (conservation estates, bushland reserves, parks) within the prioritised areas; and (d) identify stakeholders (i.e. State agencies, large landholders, private partnership agreements from prioritised properties) who will need to be involved for the project's implementation.

Research Project/Conservancy – Habitat Management for Glossy Black-Cockatoo populations of Queensland. Establishment of and lead role within this not for profit consortium (the 'Glossy Black Conservancy'), with initial and ongoing support from Brisbane City Council, Redland Shire Council and Consolidated Rutile Limited and subsequent involvement from Gold Coast City, Logan City, Caloundra City, Maroochy Shire, Caboolture Shire and Ipswich City Councils, as well as the Brisbane Bird Observer's Club of Australia, Birds Queensland, SEQ Catchments and the Burnett Inland North LGA Cluster. The Conservancy seeks to engage all relevant stakeholders (including government agencies, private enterprise and the community) to increase awareness and promote a collaborative conservation management approach across SEQ.

Biodiversity Assessment – Hilliards Creek Corridor, Redland City. 2007-ongoing. Redland City Council. Baseline assessment of flora, fauna and associated habitat values of the Hilliards Creek Corridor, as an initial step in an ongoing biodiversity monitoring program for this and other catchments within Redland City. Lead Consultant.

Baseline Terrestrial Fauna Assessment and Environmental Impact Assessment – Wyaralong

Dam and Offstream Storage Project. November 2007 .Report prepared for Queensland Water Infrastructure Pty Ltd. BAAM Pty Ltd was commissioned to assess the terrestrial fauna within and surrounding the proposed Wyaralong Dam site located between Boonah and Beaudesert. Field Assessment.

Preliminary Flora and Fauna Assessment – Mt Cotton Road Upgrade, Mt Gravatt/Capalaba Road to Tingalpa Creek. September, 2007. Preliminary assessment of the flora and terrestrial vertebrate fauna, and associated habitat values of the site of the proposed Mt Cotton Road upgrade. Field Assessment.

Wildwatch Facilitator's Manual April 2007. Report prepared for Brisbane City Council. The Wildwatch Facilitators Manual was prepared for the purpose of providing instructions for BCC Officers and commissioned consultants who lead community native fauna activities in Brisbane. It was designed to provide guidance on best practice survey methodologies, data collection and reporting, animal ethics and legislative responsibilities of Council and the community with regard to fauna survey activities.

Terrestrial Vertebrate Fauna Assessment Report – Proposed Boral Narangba Quarry Extension. Report prepared for Chenoweth EPLA, March 2007. Comprehensive assessment of the terrestrial vertebrate fauna and associated habitat values of the site of the proposed extension of Boral's existing Narangba Quarry. Field Assessment, Lead Consultant.

Fauna Habitat Assessment Reports – Southern Regional Water Pipeline Stage 1. Report prepared for the Southern Regional Water Pipeline Alliance. February 2007. Identification of areas along the length of the proposed pipeline route where there is a need to implement environmental safeguards and adopt environmentally sensitive work practices to protect habitat values. Field Assessment, Lead Consultant.

Glossy Black-Cockatoo Assessment and Management Strategy – North Stradbroke Island. 2006/2007 Prepared for Consolidated Rutile Limited. Assessment of the Glossy Black-Cockatoo population and their resource partitioning over the entire area of North Stradbroke Island to advance appropriate management strategies and recommendations for the species. Field Assessment, Lead Consultant.

Migratory Shorebird Habitat Assessment – East Gordon Street, Mackay. Prepared for The Potter Group. October 2007//2010. Rapid assessment of the presence or likely presence of migratory shorebirds and the extent and quality of extant habitat on the subject land, with particular focus on species listed as migratory under the EPBC. Field Assessment, Lead Consultant.

Eastern Grey Kangaroo Investigation – University of the Sunshine Coast. May, 2007. Assessment of the population of Eastern Grey Kangaroo that utilise habitat within or immediately adjacent to the University of the Sunshine Coast, Sippy Downs Campus. This information was to contribute to the Master Plan for the USC during its five yearly review. Field Assessment, Lead Consultant.

Ecological Site Management Reports – 2006 Appraisal and advice on Bushland Acquisition Sites within Brisbane. Reports prepared for Brisbane City Council. Assessments of the condition, conservation value and management intent of recently acquired lands through BCC's Bushland Acquisition program, and the identification of land use/management requirements for the identified features or values. Field Assessment.

Terrestrial Vertebrate Study – Coonar Beach. Prepared for Walker Corporation, August 2006. Study of the terrestrial vertebrate fauna over a 428ha property located at Coonarr Beach, near Elliott Heads. Field Assessment. Field work included general terrestrial vertebrate trapping techniques, as well as specialist **Water Mouse Xeromys myoides** and migratory wader surveys.

Terrestrial Fauna Assessment Report – Midge Point, Mackay. 2006 Prepared for Saunders Havill Group. Comprehensive assessment of the terrestrial vertebrate fauna and faunal values of land at Midge Point, Mackay. Field Assessment, Lead Consultant.

Terrestrial Fauna Assessment Report – Boral Petrie Quarry Proposed Extension Area. 2006 Prepared for Chenoweth EPLA. June. Assessment of the terrestrial fauna and associated habitat values of those areas subject to the proposed extension of the existing Boral Petrie Quarry. Field

Assessment.

Targeted Mammal Assessments for Logan City Council Reserves. Prepared for Logan City Council. May 2006. Targeted assessment of the terrestrial mammal fauna and associated habitat values of a number of major conservation reserves within Logan City. Field Assessment, Lead Consultant.

Flora, Fauna and Aquatic Ecology Assessment and Conservation Management Report – Springbrook Conservation Areas and Adjacent GCCC Land. 2006 Prepared for Gold Coast City Council. Comprehensive surveys of the terrestrial vertebrate fauna, flora and aquatic fauna (macroinvertebrates and fish) of the lands and major creeks within the Springbrook/Numinbah valley conservation areas, in order to contribute to existing knowledge of the areas' ecological values with the aim of developing a Conservation Management Plan. Field Assessment.

Terrestrial Fauna Assessment Report – Funnel Bay, Airlie Beach. 2006 Prepared for Chenoweth EPLA. Terrestrial fauna assessment of 2 lots at Funnel Bay, Airlie Beach. Field Assessment.

Koala Habitat Assessment – Old North Road Connection, Warner. Prepared for John Wilson and Partners Pty Ltd. July 2005. Assessment of Koala habitat adjacent to the Old North Road connection under construction between Kremzow Road and Warner Road in Warner. Field Assessment.

Fauna Assessment Report (Blossum Bat) – Seaside City. 2005 Report prepared for Richtech Pty Ltd. Assessment and advice on the Common Blossum Bat *Syconycteris australis* (scheduled 'Vulnerable' under the New South Wales [Threatened Species Conservation Act 1995](#)). Field based assessment and advice.

Squirrel Glider Corridor Action Plan – Bulimba Creek Catchment Area. 2005 Report prepared for Brisbane City Council. This Plan addressed Squirrel Glider population viability within a defined area of the Bulimba Creek Catchment, which is regarded as a highly significant habitat area within Brisbane City. Field Assessment, Lead Consultant.

Greater Glider Population Assessment – Greater Glider Conservation Reserve, Redland Bay Road, Capalaba. 2004 Report prepared for Redland Shire Council. November. This survey aimed to repeat a full population census previously undertaken by NatureSearch over the study area, in order to produce comparable results for ongoing and future monitoring of the Greater Glider population. Field Assessment, Lead Consultant.

Fauna Assessment Report – Water Mouse, Townsville Port Access Road. Report prepared for Department of Main Roads. November 2004. Assessment of unallocated State Land and Reserve Land on the southern bank of the mouth of the Ross River, Townsville for the presence of the **Water Mouse *Xeromys myoides***. Field Assessment, Lead Consultant.

Desktop Assessment of Fauna Crossing Infrastructure – Old North Road, Pine Rivers. Report prepared for John Wilson and Partners Pty Ltd. October 2004. Assessment of a proposed dedicated fauna underpass at Conflagration Creek as part of the construction of an arterial road connection known as Old North Road between Kremzow Road and South Pine Road at Warner, in Pine Rivers Shire. Lead Consultant.

Action Plan to Reduce Koala Hits from Vehicles in Redland Shire. Report prepared for Redland Shire Council. August 2004. The purpose of the consultancy was to assist Redland Shire Council with the development of a report that helps to guide their response to Koala mortality on roads within the Shire, through the identification of technically and economically feasible actions that can be implemented for roads identified as major contributors to Koala hits. Follow-up consultancies were also undertaken to train relevant council staff in the application of the recommendations of the Action Plan, and to review the plan's web site. Lead Consultant.

Ecological Impact Assessment and Environmental Management Plan for Dauan Island and Pumpkin (Koey) Islet HFSWR Project, Torres Strait. Fauna Surveys for Daronmont Technologies on behalf of CoastWatch and the Department of Defence. June 2004. BAAM Pty Ltd was commissioned by the Commonwealth Government (via Daronmont Technologies) and on behalf of the Dauan and Badu People, to address environmental issues associated with the

Commonwealth Government's proposal to install a high frequency Surface Wave Extended Coastal Area Radar (SECAR) receiving facility on Dauan Island in the Torres Strait, linking with a proposed transmit site on Koeu Ngurtai (Pumpkin Islet), for off-shore surveillance purposes. Field Assessment.

Specialist Fauna Management Advice – Compton Road Upgrade, Kuraby. Report prepared for Brisbane City Council, November 2003. Specialist fauna management advice to BCC's Transport and Structures City Design team for their intended widening of Compton Road at Kuraby. The study sought to ensure that the upgraded section of road is designed to incorporate opportunities for fauna movement between habitats north and south of the road and minimises fauna deaths by vehicle strike.

Draft Squirrel Glider (*Petaurus norfolcensis*) Conservation Action Statement. CAS prepared for Brisbane City Council Environment and Parks. September 2003. The CAS addressed the Squirrel Glider *Petaurus norfolcensis*, identified as a significant species within Brisbane, as per Council's Natural Assets Register.

Preliminary Assessment Report Water Mouse (*Xeromys myoides*) – Cairns Region. Report Prepared for Wildlife Preservation Society Qld, Cairns Branch. August 2003. The project had three main elements: (a) to contact enlist and train volunteers to search for evidence of the Water Mouse within suitable habitats throughout the project area; (b) to conduct inspections of suitable habitat areas as prioritised from aerial mapping; and (c) to record and report on the presence or absence of *X. myoides* and its distribution in the region.

**SELECTED EXPERT WITNESS (ECOLOGICAL) - QLD PLANNING AND ENVIRONMENT
AND/OR LAND COURTS**

- P&E Appeal No's. 3002 of 2012 and 391, 393, 1940 & 1941 of 2018, Traspunt No. 4 Pty Ltd v Moreton Bay Regional Council (Fauna expert for MBRC).
- P&E Appeal No 1499 of 2020, Matt Doolan v Moreton Bay Regional Council (Fauna expert for MBRC).
- P&E Appeal No BD 3709 of 2015, Braxdan Pty Ltd v Brisbane City Council & Rural Environmental Planning Association Inc (Ecology expert for REPA).
- P&E Appeal No's. 3002 of 2012 and 391, 393, 1940 & 1941 of 2018 Traspunt No. 4 Pty Ltd v Moreton Bay Regional Council (Fauna expert for MBRC)
- Land Court of Queensland Registry: EPA495 -15 New Acland Coal Pty Ltd. v Frank Ashman & Ors. (Fauna expert for New Acland Coal).
- Land Court of Queensland Proceedings no. MRA428-14, EPA429-14, MRA430-14, EPA431-14, MRA432-14 and EPA433-01, Adani Mining Pty Ltd v Land Services of Coast & Country Inc. & Anor (Ecological expert for Adani)
- P&E Appeal No 1987 of 2018 – Fairland Group v Moreton Bay Regional Council (Ecological expert for Fairland)
- Land Court of Queensland Registry: EPA081-13 Legend International Holdings Inc. v J W Taylor Aly Awaditiia & Anor (Ecological expert for legend)
- Land Court of Queensland Registry: AQL021-14, Phillip Usher Constructions Pty Ltd v Brisbane City Council (Fauna expert for Phillip Usher)
- P&E Appeal 79/18 Harris v Chief Executive, DSDMIP - Cairns P&E appeal (Ecological expert for Chief Executive, DSDMIP)
- P&E Appeal 3265 of 2016 Genamson Pty Ltd v Moreton Bay Regional Council. (Ecological expert for Genamson)
- P&E Appeal 2652 of 2015 Drywound Pty Ltd v Lockyer Valley Regional Council & Ors. Ecological (Ecological expert for Lockyer Valley Regional Council)
- P&E Appeal 4072 of 2012: Dickson Properties ATF and Brisbane City Council & Anors (Ecological expert for REPA Inc)
- P&E Appeal 4979 of 2016 Urbex No. 110 Pty Ltd v Council of the City of Gold Coast, (Ecological expert for City of Gold Coast)
- P&E Appeal 2768 of 2009 Rainbow Shores v Gympie Regional Council & Ors (DEHP fauna expert)
- P&E Appeal D220 & D221 or 2011 Holcim v. Ors ats Handyside (Ecological expert for Holcim)
- P&E Appeal BD1119 & 1120 of 2010 - Altitude Corporation Pty Ltd v Isaac Regional Council (flora and fauna expert for Altitude)
- P&E Appeal 4072 of 2012 between: Dickson Properties PTY ATF Dickson Investment Trust and Brisbane City Council & Anors (Ecological expert for REPA)

- P&E Appeal 3566 of 2009 – Casagrande v Redland City Council & Ors (Fauna expert for Cassgrande)
- P&E Appeal BD6 of 2009 - Altitude Corporation Pty Ltd v Isaac Regional Council (Ecological expert)
- P&E Appeal 3561 of 2010. Serbian Orthodox Church School Congregation v. Brisbane City Council & Green Bins. (Terrestrial fauna expert for Green Bins)
- P&E Appeal 889 & 890 of 2009 - Reynoldsman Pty Ltd & Bulimba Creek Catchment Committee v Brisbane City Council & Greendale Developments. (ecological expert for Bulimba Creek Catchment assoc)
- P&E Appeal BD531 of 2009 - Landmart Qld V Redland City Council (ecological expert for Landmart)
- P&E Appeal 2153 of 2008 – Palmer v Redland City Council (ecological expert for Palmer)
- P&E Appeal 3647 of 2008 - The Carindale Land Company v Brisbane City Council & Michael Pavlou (ecological expert for Carindale Land)
- PE Appeal BD3438 of 2007 - Barro Group v Redland Shire Council & Ors (ecological expert for Barro Group)
- P&E Appeal 3413 of 2007 - Wilson & Godfrey v Brisbane City Council & BMD properties Pty Ltd
- P&E Appeal 2529 of 2007 Randal & Lambert V Redland Shire Council (ecological expert for Randall & Lambert)
- P&E Appeal MD 205 of 2006 Endless View Holdings Pty Ltd v Hervey Bay City Council & Corporation Of The Synod of The Diocese of Brisbane - Fraser Island Anglican College

Annexure B

Instructions to Expert

Confidential

Email

15 September 2021

Adrian Caneris
BAAM Ecological Consultants
PO Box 1376 Cleveland, QLD 4163
adrian@baamecology.com

Dear Adrian

MRA026-21, MRA027-21, EPA028-21 - New Acland Coal Pty Ltd v OCAA Inc. & Ors

1. Introduction

- 1.1 We act for New Acland Coal Pty Ltd (**NAC**) in the above Land Court proceedings involving objections to NAC's mining lease applications (**MLA**) under the *Mineral Resources Act 1989* (**MRA**) and environmental authority (**EA**) amendment application under the *Environmental Protection Act 1994* (**EPA**) for the New Acland Coal Mine Stage 3 Project.
- 1.2 You were previously engaged by NAC as an expert witness in the initial Land Court proceedings, which concluded in 2017 (**Original Proceedings**). As you are aware, as a result of a series of subsequent challenges to the decision in the Original Proceedings, that decision has been set aside and the Land Court is now required to rehear the matter (**Rehearing**).
- 1.3 The parties are:
 - (a) Applicant - NAC;
 - (b) Objector- Oakey Coal Action Alliance (OCAA); and
 - (c) Statutory Party - the Chief Executive of the Department of Environment and Science.
- 1.4 All other objectors to the MLA and EA applications have elected to be non-active parties in this hearing. Notwithstanding the other objectors are non-active parties, the Court must consider their objections.
- 1.5 OCAA has not nominated a fauna expert in the Rehearing and you will not be required to participate in a joint expert process.

2. Draft Approval Documents

- 2.1 NAC and the Statutory Party have both filed draft EAs for the Land Court to consider in the event that it does recommend approval of the Project.
 - (a) On 15 February 2021 the Applicant filed a letter attaching a draft EA for stage 3. The Applicant's draft EA (Exhibit No. F.0003) represents NAC's current position on the conditions that ought to be included in any EA that may be issued for the Project, if the Project is approved. Proposed conditions relating to fauna commence at p 46 of the document.
 - (b) On 10 March 2021 the Statutory Party filed a draft EA for stage 3 (Exhibit No. F.0020) which identified further changes to the Draft EA proposed by the Statutory Party. Proposed conditions relating to fauna commence at p 53 of the document.
 - (c) Condition A2 of both of the draft EA's states:

In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Figure 1 (Revised Project Overview - Mine Area).

- 2.2 Figure 1 is found at page 71 of the Applicant's draft EA and p 79 of the Statutory Party's draft EA.
3. **Background**
- 3.1 The objection hearing concerns a proposed expansion for stage 3 of an existing mine.
- 3.2 In 2007, the Applicant first proposed the Project and the Coordinator-General declared the Project to be a significant project (later renamed as a "coordinated project") under the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).
- 3.3 In May 2007, MLA 50232 was applied for. Figure 1 (referred to above) shows the extent of MLA 50232 which is the subject of the current MLA.
- 3.4 In January 2014 NAC submitted the environmental impact statement (**EIS**) for the Stage 3 Project and in July 2014 an Additional Information to the EIS (**AEIS**). In December 2014, the Information Clarification to the AEIS was submitted. The Coordinator-General's Report on the EIS was release in December 2014.
- 3.5 In 2015 the application for the rail spur (MLA 700002) under the MRA and the environmental authority (**EA**) amendment were lodged. The draft EA was issued on 28 August 2015 and the MLs and EAs referred to the Land Court on 14 October 2015.
- 3.6 There were multiple objections to the MLA and the EA, some of which raised fauna issues.
- 3.7 The recommendation decision of the Land Court in the Original Proceeding has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.8 In June 2017 NAC applied for judicial review of the Original Decision. Bowskill J decided that Member Smith's decision in respect of the Original Decision was set aside, with the matter being remitted to President Kingham of the Land Court to make a recommendation (**2018 Remitted Decision**).
- 3.9 The Land Court's recommendation in the 2018 Remitted Decision, was conditional on the Coordinator-General (**CG**) lowering the noise limits. NAC applied to the CG for the noise limits to be lowered on 3 December 2018. The CG approved that change on 12 February 2019. The Department of Environment and Science (**DES**) issued the Stage 3 EA on 12 March 2019. That EA was conditional on the granting of the MLs, which never occurred. As set out below, that the March 2019 EA was subsequently set aside.
- 3.10 The recommendation decision of the Land Court in the 2018 Remitted Decision has been set aside by later Court decisions and should be disregarded by expert witnesses in this matter.
- 3.11 On 8 May 2019, NAC also applied to the CG to amend Stated Conditions B3 and H40, regarding the location of air quality monitoring points and the required environmental offsets. These updates were due to more recent surveys to land, the CG approved Environmental Offsets Strategy and the Air Emissions Management Plan. The change was approved in September 2020.
- 3.12 On 24 May 2019, NAC applied for a third change to the CG's conditions to Imposed Condition 4 (**IC4**). IC4 required the train load out facility to be built before the commencement of Stage 3 mining, so that it was the sole distribution point for the Stage 3 Project. In September 2020 the CG approved the change to IC4 which now requires the train load-out facility to be built within 2 years of the commencement of mining of Stage 3.

- 3.13 In 2019 the Court of Appeal declared that the Original Proceeding was affected by apprehended bias but allowed the EA to stand.¹
- 3.14 In October 2020, DES issued an amended EA, adopting the approved changes to the CG conditions.
- 3.15 In February 2021 the High Court determined that New Acland Coal's objections hearing should be remitted to the Land Court as the decision in the Original Proceedings and the 2018 Remitted Decision, which relied on findings of the decision in the Original Proceedings, were affected by apprehended bias. The High Court also set aside the Stage 3 EA.
- 3.16 The matter has therefore been remitted to the Land Court again for a recommendation, which will then be followed by a decision on the EA and the MLs.
- 3.17 In February 2021, the High Court determined that the First Remitted Hearing recommendation decision be set aside and the Stage 3 Project's objections hearing should be re-heard by the Land Court. The High Court also set aside the EA issued by the Statutory Party on 12 March 2019. Hence the March 2019 and October 2020 EAs have no effect.
- 3.18 The matter has therefore been remitted to the Land Court again for a new recommendation.
- 3.19 By letter dated 27 May 2021, NAC provided further information to the Statutory Party in relation to the activities that it says will be regulated by the proposed EA and attached a Project Overview figure.
- 3.20 The only mining (extraction) which is to be assessed for the proposed amended EA is as follows:
 - (a) on ML50216, mining (extraction) which is related to and would not occur in the absence of ML50232, being:
 - (i) that part of Willeroo in ML50216 shown as "new mining area"; and
 - (ii) a strip of contiguous land generally 15-40m wide, with a maximum width of 100m in a limited area for the connection of existing mining on ML50216 into Manning Vale East, which is identified as "Extent of mining progression across shared boundary" in the Project Overview figure; and
 - (b) on ML50232 are those areas marked as 'Manning Vale West', 'Manning Vale East' and that part of 'Willeroo' all shown as "new mining area".

Instructions

- 3.21 You are engaged by NAC to act as an expert witness in the Rehearing in respect of Fauna.
- 3.22 In your role as expert witness, you are instructed to prepare a statement of evidence to the Land Court in relation to matters relevant to your field of expertise that are raised in the MLA and EA amendment objections and that considers:
 - (a) your statements of evidence filed in the Original Hearing;
 - (b) the material you have been briefed with;
 - (c) those objections raised in the MLA and EA amendment objections hearing which relate to fauna; and

¹ Oakey Coal Action Alliance Inc v New Acland Coal Pty Ltd & Ors [2019] QCA 23.

- (d) the conditions in the Applicant's Draft EA and Statutory Party EA relevant to your area of expertise.
- 3.23 You may also be required to appear in person as an expert witness in the Rehearing.
- 3.24 You have been provided with access to an e-brief containing information relevant to your engagement. As additional information that is relevant to your engagement becomes available before and during the Rehearing, we will update your e-brief accordingly.
- 4. **Your statement of evidence**
 - 4.1 Your statement of evidence must be addressed to the Land Court and signed by you, and must include the following information:
 - (a) your qualifications;
 - (b) all material facts, whether written or oral, on which the statement is based;
 - (c) references to any literature or other material relied on by you to prepare the statement;
 - (d) for any inspection, examination or experiment conducted, initiated or relied on by you to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was done by you or under your supervision;
 - (iii) the name and qualifications of any other person involved; and
 - (iv) the result;
 - (e) if there is a range of opinion on matters dealt with in the statement, a summary of the range of opinion and the reasons why you adopted a particular opinion;
 - (f) a summary of the conclusions reached by you; and
 - (g) a statement about whether access to any readily ascertainable additional facts would assist you in reaching a more reliable conclusion.
 - 4.2 You should also confirm at the end of your statement of evidence, each of the following:
 - (a) the factual matters stated in the statement are, as far as you are aware, true;
 - (b) you have made all enquiries that you consider are appropriate;
 - (c) the opinions stated in the statement are genuinely held by you;
 - (d) the statement contains references to all matters you consider significant;
 - (e) you understand your duty to the court and have complied with that duty;

- (f) you have read and understand the rules contained in Part 5 of the *Land Court Rules 2000 (Qld)*² (**Rules**), as far as they apply to you; and
- (g) you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

5. **Your responsibilities as an expert witness**

- 5.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 5.2 We draw your attention to Part 5 of the Rules, which sets out the duties of expert witnesses. Specifically, under rule 24C of the Rules you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 5.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

6. **Timeframes**

- 6.1 Your statement of evidence is due to be filed on Friday, 24 September 2021.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely



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Our ref 12408/17428/80196876

² A copy of Part 5 of the Rules is contained in your e-brief (**Part 1 Document G1**) and is also attached. Also in your e-brief and attached is a copy of Land Court Practice Direction 6 of 2020 "Expert evidence in the Land Court" (**Part 1 Document G2**).

Annexure C
Statement of Evidence
for
Original Proceedings

STATEMENT OF EVIDENCE
Terrestrial Fauna Expert Statement

IN REGARDS TO -

Land Court of Queensland Registry: Brisbane

Numbers: EPA495-15, MRA496-15, MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

Respondents: Frank Ashman & Ors.

Statutory Party: Chief Executive, Department of Environment and
Heritage Protection

Prepared by:	Adrian Caneris,
Date:	25 February 2016

BAAM Pty Ltd
PO Box 1376
CLEVELAND 4163



STATEMENT

My name is Adrian Harold Caneris and I reside at 7 Dendy Place, Edens Landing, 4207. I have been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology, particularly vertebrate fauna and their habitat utilisation and management thereof, across Queensland for over 25 years.

I am currently a Managing Director with Biodiversity Assessment and Management (BAAM), a specialist fauna and flora consulting company and in this role I provide expert advice on a wide range of ecology related matters to government, industry, community based organisations and the Queensland Land and P&E Courts. I have conducted numerous field investigations and fauna and habitat assessments and compiled subsequent reports and/or management plans.

I have held public service positions in the area of nature conservation with state and local governments. I have previously worked for five years with the Queensland Government's NatureSearch program, conducting fauna surveys across SEQ and the wet tropics area and for six years at the then Redland Shire Council where I was employed as the Senior Conservation Officer – Wildlife and was responsible for conducting fauna surveys, providing technical and strategic advice to all levels of Council on fauna, flora and habitat management. I also lectured for 3 years in the fields of environmental sciences and fauna management at the Moreton Institute of TAFE.

I have been involved in numerous ecological management committees including State Ministerial Advisory Committees and I have chaired a state-wide committee to establish a stakeholder reference committee to direct and guide wildlife caring and permitting for Queensland. I have been appointed to several Local Government ecological related advisory committees.

I am a Past-President of the Wildlife Preservation Society Qld and a founding member and current Director on the Wildlife Land Fund Ltd. I have a thorough working knowledge of Queensland's fauna, fauna habitats and their ecological management.

My *Curriculum Vitae* is included as **Annexure 1**.

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, in my knowledge, been withheld from the Land Court.

I acknowledge that I have been instructed to assist the Land Court of Queensland by investigating and reporting on issues relevant to Terrestrial Fauna. I affirm that I am qualified to give opinion evidence as an expert witness in relation to this issue in dispute in the current proceeding.

I verify that my instructions have included the Land Court Rules 2000 and the Uniform Civil Procedure Rules 1999, which I have read and understand, and that no instructions were given or accepted to adopt or reject any particular opinion in preparing this report. I confirm that I understand my duty as an expert to the court and have complied with that duty.

All the opinions stated in this report are genuinely held by me and the report contains reference to all matters I consider of significant in respect to terrestrial fauna.

I acknowledge that in this proceeding:

- i. As an expert witness giving evidence (by report, or otherwise) I have a duty to assist the Court; and
- ii. That duty overrides any obligation I may have to any party to the proceeding or to any person who is liable for my fees or expenses.

I declare that:

- iii. No instructions were given to me, or accepted by me, to adopt or reject any particular opinion in preparing this statement.



Adrian Caneris

TERMINOLOGY

Common abbreviations used in this and referenced reports:

AEIS - Additional Information to the New EIS

BOS - Biodiversity Offset Strategy

DEHP - Queensland Department of Environment and Heritage Protection

CG - Queensland Coordinator General

CG's Report - The final CG report issued on the New EIS and AEIS¹

Court - Queensland Land Court

CZMP - Conservation Zone Management Plan (contained in Appendix J.06 of New EIS)

DoE - Commonwealth Department of the Environment

EA - Environmental Authority

EA Amendment Application - the application to amended EA number EPML00335713²

EHP Assessment Report - the EHP Assessment Report dated 28 August 2015 for the EA Amendment Application³

EOS - Environmental Offset Strategy

EIS - Environmental Impact Statement

EPBC Act - Commonwealth Environment Protection and Biodiversity Conservation Act 1999

EP Act - Environmental Protection Act 1994 (Qld)

First EIS - the EIS submitted by the Applicant in November 2009 for the Initial Expansion Project

KSMP - Koala Species Management Plan⁴

MLA - Mining Lease Application

MMP - MNES Management Plan

MNES - Matters of national environmental significance

MSES - Matters of state environmental significance

Mtpa - Million tonnes per annum

NAC – New Acland Coal Pty Ltd

NC Act - Nature Conservation Act 1992 (Qld)

New Acland Mine - The existing coal mine on ML 50170 and ML 50216

¹ Document ID: EHP.0016.

² Document ID: EHP.0003.

³ Document ID: EHP.0012.

⁴ Document ID: EHP.0099.

New EIS - the revised EIS submitted for the Revised Expansion Project in January 2014

NHG - New Hope Group

New Hope - New Hope Corporation Limited ACN 010 653 884

OAMP - Offset Area Management Plans

Project Site - the site for the Revised Expansion Project (MLA 50232 and MLA 700002)

PWMP - Pest and Weed Management Plan

RE - Regional Ecosystem as defined by the Queensland Vegetation Management Act 1999.

Revised Expansion Project - the New Acland Coal Mine Stage 3 and Rail Project within MLA 50232 and MLA 700002

SDPWO Act - *State Development and Public Works Organisation Act 1971* (Qld)

Subject Lands - MLA 50232 and MLA 700002

SSBV - State significant biodiversity values

the MLAs - MLA 50232 and MLA 700002

EXECUTIVE SUMMARY

Purpose of the report

- i. This report has been prepared on behalf of NAC to assist the Court by providing an independent expert assessment of the Revised Expansion Project for the purpose of these proceedings. I have been engaged by Clayton Utz, on behalf of NAC, to provide an expert report in the Land Court proceedings on terrestrial fauna related issues.
- ii. NAC is proposing to extend operations of the existing New Acland Mine to approximately 2029 with the inclusion and progressive mining and rehabilitation of new resource areas within MLA 50232 and a rail spur within MLA 70002.
- iii. NAC submitted an EIS and AEIS for the Revised Expansion Project, which is a coordinated project under the SDPWO Act. In December 2014, the CG issued the CG's report.

Prescribed environmental matter under consideration

- iv. This report and my consideration are restricted to that of terrestrial fauna.

Summary of expert opinion

- v. Taking into consideration the current and prospective uses of the Project Site, the Revised Expansion Project and associated habitat rehabilitation and restoration will provide commensurate mitigation of detrimental impacts and deliver strategically placed fauna movement options with increased management.
- vi. Whilst the proposed actions will impact on fauna and fauna habitats of conservation significance, offsets and associated management actions will provide an overall net benefit in retained/protected fauna habitats in the local landscape.
- vii. Following on from design changes to reduce potential impacts, such as retention of Lagoon Creek Corridor and its management, all unavoidable significant impacts are subject to imposed conditions which require that all residual significant impacts are to be offset.
- viii. It is important to note that the Project Site is recognised as holding significant values under federal and/or state regulations.
- ix. Currently, there is no certainty of any ongoing protection or management of the extant habitats.
- x. It is reasonable to assume that without active management existing threatening processes and associated detrimental impacts will continue.
- xi. It is my view, that the offset provisions and other management measures prescribed through conditions will provide increased habitat values and protection of fauna habitats.
- xii. A net benefit will be achieved through the proposed offset areas and the Lagoon Creek Corridor, through their long term protection and management, which would otherwise be unlikely to occur.

- xiii. It is quite conceivable that any fauna species currently utilising the habitats within the disturbance footprint will be present within retained habitats. That is, no species is known, or likely to be, restricted to the disturbance footprint.
- xiv. Fauna will be maintained in the landscape through the provision of the retained habitats and there is an increased likelihood of long term security as prescribed management actions are undertaken within the proposed offsets.
- xv. The proposed offset and associated management actions will provide a substantial net benefit to overall habitat values present in the local landscape over time. This will be a result of the restoration and enhancement of disturbed areas and removal or reduction of recognised threats and threatening processes.
- xvi. The offset areas and proposed Lagoon Creek Conservation Zone will achieve a net benefit and conservation outcome by replacing lost habitat/s and maintaining habitat connectivity within the site.
- xvii. The offset sites are owned and will be managed by NAC or NHG, who has committed to legally secure the offset areas. A management framework has been outlined for the establishment, maintenance and monitoring of the offsets, with clear management and reporting timeframes and target outcomes to inform adaptive management and ensure transparent and effective governance of the offsets.
- xviii. Overall, whilst recognising the fact the proposed actions will have a detrimental impact on fauna habitat values within the disturbance footprint, the mitigation responses (habitat offset provisions and associated management actions) will result in an overall net benefit and ultimately provide a more secure mosaic of fauna habitat and fauna movement options in the local landscape.

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1.0 INTRODUCTION AND BACKGROUND

- 1.1 I have been engaged by Clayton Utz, on behalf of NAC, to address terrestrial fauna habitat values on the Project Site and the potential impacts of the Revised Expansion Project and to produce a Statement of Evidence addressing these matters.
- 1.2 NAC currently operates the New Acland Mine, which is a 5.2 mtpa (product coal) open cut coal mine on mining leases (ML) 50170 and ML 50216, operated under the existing Environmental Authority (EA) EPML00335713⁵.
- 1.3 The Project Site is located within southeast Queensland's Darling Downs region 14 km north-northwest of Oakey, 35 km northwest of Toowoomba and 177 km west of Brisbane. The location is depicted in **Figure 1**.
- 1.4 In 2007, NAC made a decision to further expand the New Acland Mine to 10 mtpa as part of the Initial Expansion Project.
- 1.5 On 18 May 2007, the Initial Expansion Project was declared a significant project by the CG pursuant to section 26 of the SDPWO Act.
- 1.6 In November 2009, the Applicant submitted the First EIS for the Initial Expansion Project, which at that time still involved the staged expansion for the mine up to a capacity of 10 mtpa.
- 1.7 NAC scaled down the project's scope in direct response to comments and concerns raised by Government and other stakeholders during public consultation on the EIS for the Initial Expansion Project.
- 1.8 The changes to the project, being for the Revised Expansion Project, included:
 - a) a reduction in the surface area of MLA 50232 from 5,069 ha to 3,668 ha and a reduced mine capacity from 10 mtpa to a maximum of 7.5 mtpa to reduce overall impacts;
 - b) the exclusion of the Acland town area from MLA 50232 including Tom Doherty Park, the Acland War Memorial and the Acland No 2 Colliery;
 - c) the relocation of the train load-out facility from near Jondaryan to an area on MLA 50232;
 - d) the decommissioning of the train load-out facility near Jondaryan;
 - e) the construction of a rail spur (instead of a haul road) to transport the coal from the rail load-out facility to the West Moreton Rail System; and
 - f) removing the proposed diversion of Lagoon Creek.
- 1.9 The Revised Expansion Project is a coordinated project for which an EIS was required under the SDPWO Act. In January 2014, the Applicant submitted the New EIS for the Revised Expansion Project to the CG.
- 1.10 The New EIS proposed an extension of the existing New Acland Mine to approximately 2029, within the area now covered by MLA 50232.

⁵ Document ID: EHP.0015.

- 1.11 The Revised Expansion Project also proposes the construction of a rail spur within MLA 700002, instead of a haul road, to transport the coal from the rail load-out facility on MLA 50232 to the West Moreton Rail System.
- 1.12 The Revised Expansion Project and the indicative Lagoon Creek Corridor location, is shown on **Figure 2**.
- 1.13 I was involved in the preparation of the KSMP provided as part of the EIS process for the Revised Expansion Project. The KSMP is to be updated following the CG's Report.
- 1.14 On 19 December 2014, the CG issued the CG's Report.
- 1.15 The Revised Expansion Project is the subject of conditions detailed in:
- a) Draft environmental authority EPML00335713 (EA)⁶ and specifically Schedule H - Land and Rehabilitation and Schedule I - Biodiversity⁷; and
 - b) CG's Report, including imposed, stated and recommended conditions⁸;
- 1.16 The Revised Expansion Project is also a controlled action requiring assessment and approval under the EPBC Act.
- 1.17 I have conducted a review of relevant EIS and AEIS material, application materials and other information I have obtained that is of relevance to the matter to form my opinions.
- 1.18 I have carried out site inspections, which were timed to maximise capture of seasonal variations and to coincide with likely activity or visitation of conservation significant species which are identified as present or having potential to occur on the Project Site.
- 1.19 My site visits were conducted jointly with Dr Andrew Daniel (flora expert engaged by NAC) to assist in gaining a full understanding of the extent habitats and ecological values of the Project Site.
- 1.20 My site visits were undertaken on the following dates (inclusive) and included active searching for significant species and general habitat values, with the specific focus of each trip stated:
- 1.2.1 September 7-9, 2015 - Site familiarisation and identification of key habitat areas;
 - 1.2.2 October 12-16, 2015 - Koala and Koala habitat assessment;
 - 1.2.3 November 16-19, 2015 - targeting Painted Honeyeater occurrence and site context.
- 1.21 The overall findings and conclusions reached within this Statement of Evidence are based on my review of relevant material described above and my assessment and knowledge of the Project Site and the surrounding landscape, with consideration of the extant habitat values specifically in regard to fauna and fauna habitats.

⁶ Document ID: EHP.0009.

⁷ Document ID: EHP.0009, pp 32-40, 40-43.

⁸ Document ID: EHP.0016.

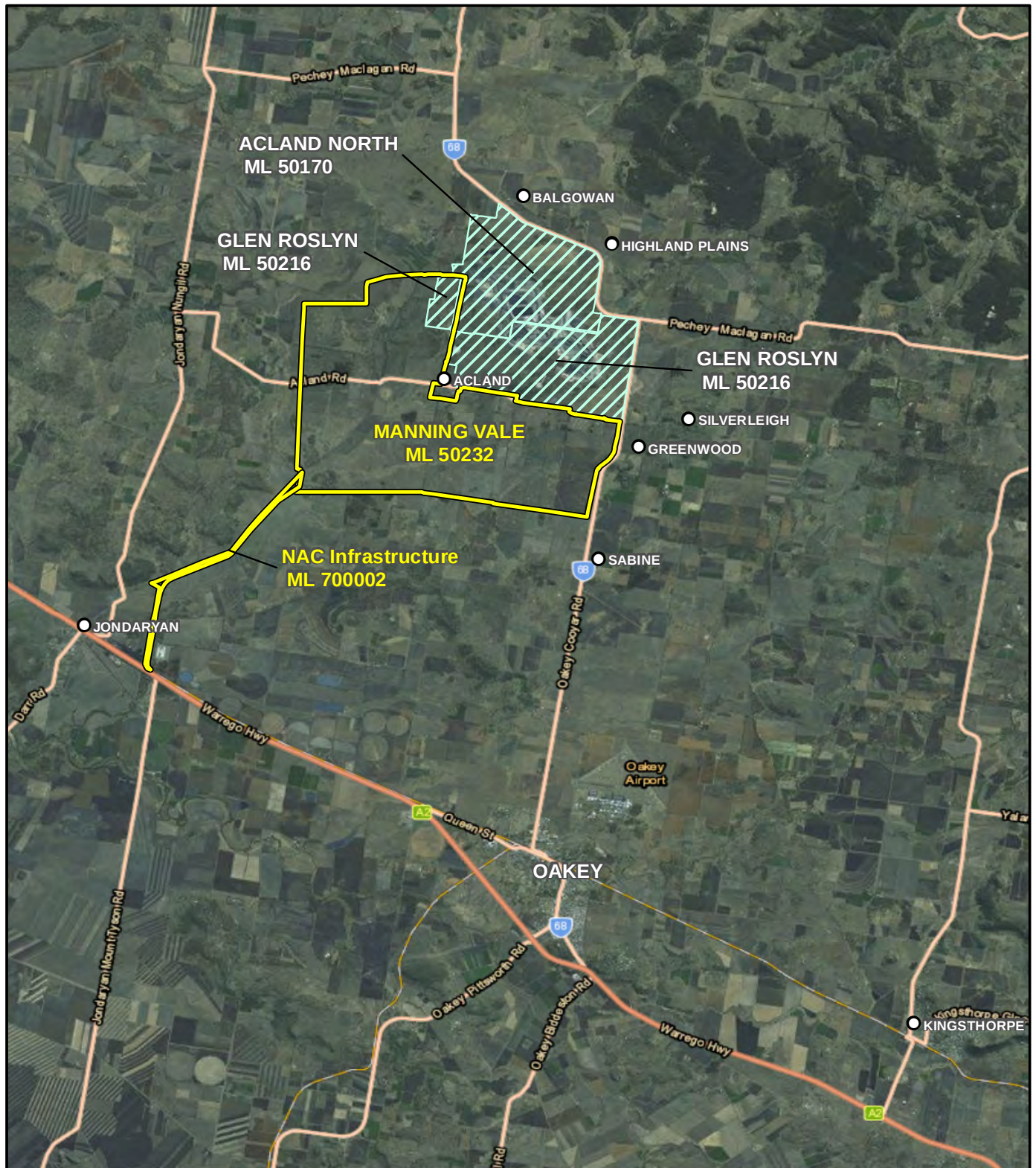


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Coordinate System: GCS Australian 1984
Datum: Australian 1984
Units: Degree



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LEGEND

- Locality
- The Revised Project MLA
- ▨ Existing Acland Mine MLA

Figure: 1
Title: Subject Site and Surrounding Locations

Project: New Acland Mine Stage 3

Client: Clayton Utz



Drawn By: MG

Reviewed by: LP

Date: 17/02/2016

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2.0 PROJECT SITE AND SURROUNDS

- 2.1 The Project Site (MLA 50232 and MLA 700002) (see: **Figure 1**) is within the Local Government Area of the Toowoomba Regional Council.
- 2.2 Much of the surrounding landscape has in the past been the subject of anthropogenic influences which include timber felling, agricultural/pastoral pursuits, residential uses, access tracks, and roadways.
- 2.3 In general terms, the Project Site and surrounds retains a mixture of natural vegetation cover (including remnant vegetation) and lands modified primarily for agricultural and pastoral uses. The modified portions have been cleared to varying degrees although the majority of the landscape is highly modified.
- 2.4 Portions of the Project Site and surrounding landscape are recognised as having value as habitat for fauna of conservation significance.
- 2.5 The local landscape is known to provide habitat for Koala and I have identified evidence of breeding (juvenile Koala Scats) within MLA 50232 and nearby lands.
- 2.6 Prior land uses and disturbances have reduced but not removed fauna habitat values. There are areas of high value habitat in the landscape.
- 2.7 The Project Site, in respect to Koala and other fauna, is part of a larger vegetated landscape and relatively safe movement options are present, although limited for some species by the large open pastoral areas.
- 2.8 The Project Site and surrounds contain several dams and bores which are providing reliable (permanent) water sources for fauna, and this access to water is contributing to the some species permanency in the landscape.
- 2.9 Vegetation and habitat along Lagoon Creek comprises scattered remnants of native vegetation, as either small clumps or scattered individual trees.
- 2.10 The habitats of the Project Site are typical of those within the wider landscape in the district.

3.0 REVISED EXPANSION PROJECT FOOTPRINT

- 3.1 The main components of the Revised Expansion Project relevant to fauna management considerations are:
 - 3.1.1 expansion of the existing mining activities into parts of the Manning Vale and Willeroo resource areas within MLA 50232, located to the south and west of the current MLs 50170 and 50216;
 - 3.1.2 progressive disposal of coarse rejects to cells within the overburden dumps, along with fine tailings being disposed of in In-Pit Tailings Storage Facilities;
 - 3.1.3 emplacement of two out-of-pit spoil dumps associated with the Manning Vale and Willeroo mine pits;
 - 3.1.4 generation of three depressed landforms at the end of mining by backfilling and re-profiling final mine pits;
 - 3.1.5 construction of a Materials Handling Facility on ML 50216;

- 3.1.6 stockpile areas and supporting infrastructure on ML 50170;
- 3.1.7 implementation of the current mine surface water management system involving various water management structures staged to accommodate the progressive development of the Mine and based on the principles of diverting clean water and capturing and reusing “mine affected” water from disturbed areas;
- 3.1.8 upgrades to the existing administration and heavy vehicle maintenance area on ML 50170;
- 3.1.9 diversion of the Jondaryan-Muldu Road around the Manning Vale resource area;
- 3.1.10 decommissioning of the Jondaryan Rail Loadout Facility (JRLF);
- 3.1.11 construction of a new 8 km rail spur line (MLA 700002) and balloon loop from Jondaryan onto MLA 50232;
- 3.1.12 construction of the Train Loadout Facility within MLA 50232;
- 3.1.13 rehabilitation, to grazing and cropping, of mined areas; and
- 3.1.14 offsetting impacts to MNES and MSES.
- 3.2 The disturbance footprint for the Revised Expansion Project on MLA50232, which includes pits, slope batters, out-of-pit dumps and infrastructure, is approximately 1,466ha, a majority of which is previously cleared and/or disturbed lands.
- 3.3 The construction of the rail spur on MLA 700002 will result in the clearing of 1.5 ha of Poplar Box woodland, south of Lagoon Creek and north of the Jondaryan-Sabine Road which has been included in the impact considerations (shown in Figure 7-6 of the Addition Information Clarification to AEIS⁹).
- 3.4 Other than the 1.5 ha of Poplar Box woodland, the remainder of the rail spur alignment will not impact on other areas of remnant native vegetation.
- 3.5 The area of vegetation affected by the rail spur has been incorporated into the offset requirements and offset package being developed by NAC (described in Section 5.2.4.16 of the AEIS¹⁰).
- 3.6 The actual area disturbed and offset requirements will be precisely determined as a result of the pre clearing surveys conditioned by the CG (CG's Report, Appendix 1, Condition 14¹¹).
- 3.7 The rail spur corridor has been reduced from 60 m to 40 m wide (20 m from the rail centreline to the boundary fence), within the Poplar Box woodland habitats, to reduce disturbance to the remnant vegetation, as described in Section 4.1 of Additional Information Clarification to AEIS¹².
- 3.8 For fauna related MNES that may be indirectly impacted by the Revised Expansion Project, the CG has conditions that require NAC to prepare an MMP

⁹ Document ID: EHP.0368, p 7.

¹⁰ Document ID: EHP.0093, p 27-29.

¹¹ Document ID: EHP.0016, p 176.

¹² Document ID: EHP. 0368, p 4.

- detailing how threatened species are to be managed to protect environmental values (CG's Report, Appendix 3, Condition 2¹³).
- 3.9 The CG's Report includes the requirement for pre-clearance surveys for MNES, MSES and protected wildlife under the NC Act (CG's Report, Appendix 1, Condition 14¹⁴). Condition 14 also requires that should additional MSES be located that were not previously identified, management plans and additional offsets may be required. Notification of the discovery of additional MSES species that will be impacted is to be provided to DEHP. In addition, recommended Condition 2 requires the MMP to include a process whereby any new finds (of MNES) are to be notified to the DoE (CG's Report, Appendix 3, Condition 2¹⁵).
- 3.10 Management strategies are to be approved as part of the MMP.
- 3.11 There are terrestrial fauna MSES under Queensland legislation which will be impacted as a result of the proposed actions.
- 3.12 The CG report¹⁶ (see pages 39-41) notes the following matters to reduce impacts to MSES:
- 3.12.1 the rehabilitation and management of the Lagoon Creek corridor under the CZMP;
 - 3.12.2 the implementation of a Koala Species Management Plan;
 - 3.12.3 pre-clearance surveys before construction;
 - 3.12.4 offsets to be provided for significant residual impacts; and
 - 3.12.5 imposed conditions that limit the amount of remnant vegetation to be cleared.
- 3.13 There are prescribed mitigation measures, including imposed approval conditions, to minimise risks to fauna as well as fauna habitat values and, where any significant residual impacts remain, those values are to be suitably offset to remove any significant impacts.
- 3.14 The relevant conditions imposed by the CG are provided within the CG's Report, being Conditions 13 -16 found in Appendix 1¹⁷.

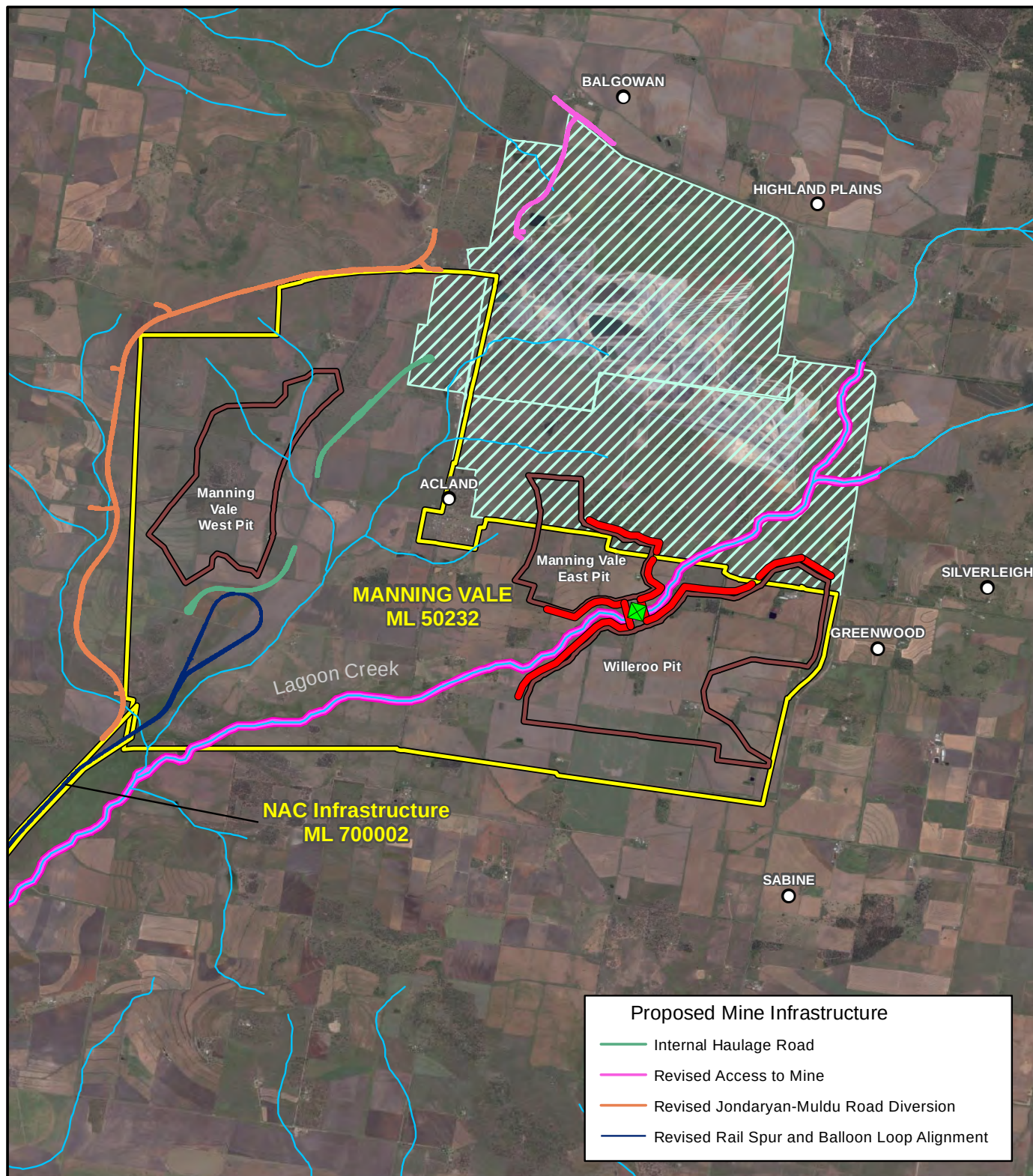
¹³ Document ID: EHP.0016, pp 215-216.

¹⁴ Document ID: EHP.0016, p 176.

¹⁵ Document ID: EHP.0016, pp 215-216.

¹⁶ Document ID: EHP.0016, p 39-41

¹⁷ Document ID: EHP.0016, pp 175-178.



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LEGEND

-  Indicative location of Koala underpass
-  Indicative Koala exclusion fence
-  Koala habitat rehabilitated
-  Waterways
-  Stage 3 Pit Areas
-  The Revised Project MLA
-  Existing Acland Mine MLA

Drawn By: MG Reviewed by: AC Date: 18/02/2016

Document Location: D:\GIS\Jobs\ACLAND COAL MINE\GIS\MXDs\Report\Maps\Updated\08022016\Figure 2 The Project.mxd Date: 18/02/2016 6:04:39 PM

Figure: **2**
Title: **The Project**
Project: **New Acland Mine Stage 3**
Client: **Clayton Utz**



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4.0 GROUNDS AND ISSUES

- 4.1 I have read the grounds of the objections, as far as they relate to terrestrial fauna issues.
- 4.2 In general terms, the submitted grounds in respect to fauna contend that the Revised Expansion Project will have unacceptable impacts on fauna and their habitats, with particular concern about Koalas.
- 4.3 I have addressed each objection specifically in **Annexures 2 and 3**, where I provide my opinion and findings on matters raised in objections and submissions and lay witness statements filed by objectors (respectively).
- 4.4 I have further addressed these concerns within this report.
- 4.5 The following summarises issues raised by objectors relating to terrestrial fauna, with the bracketed portion providing identification of where these concerns are further addressed within this report:
- 4.5.1 There has been insufficient database reviews and insufficient survey effort, utilising appropriate methodology, conducted to understand fauna habitats and species (**Section 5.0 -Assessment of the Project Site**).
 - 4.5.2 There are conservation significant fauna present or likely to be present in the Project Site that have not been considered or for which there is no appropriate management response in the approval conditions being the CG's imposed conditions¹⁸ and Draft EA¹⁹ (**Section 6.0 Conservation Significant Fauna**).
 - 4.5.3 Of high concern are the potential impacts to Koala and their habitats (**Section 6.6 NCA Listed Species - Known to occur**).
 - 4.5.4 The Project Site provides habitats for a range of common wildlife. The Revised Expansion Project will result in the loss of common species or reduce their presence in the local landscape (**Section 7.0 Fauna and Fauna Habitat Values**).
 - 4.5.5 Taking into consideration the current and prospective uses of the Project Site, the proposed mining operation and associated habitat restoration will not provide commensurate management responses, such as to provide improved habitat connectivity and safe movement options (**Sections 6.0, 7.0 & 9.0**).
 - 4.5.6 Mine associated traffic will result in the loss of fauna species due to traffic related impacts (**Section 8.1**).
 - 4.5.7 There will be adverse impacts on fauna associated with dust on native vegetation as a result of the Revised Expansion Project (**Section 8.2**).
 - 4.5.8 There will be adverse impacts on fauna associated with noise as a result of the Revised Expansion Project (**Section 8.3**).
 - 4.5.9 The Revised Expansion Project will result in an increase in recognised pest species (**Section 9.0 Pest Animal Management**).

¹⁸ Document ID: EHP.0016, pp 167-179.

¹⁹ Document ID: EHP.0009.

5.0 ASSESSMENT OF THE PROJECT SITE

- 5.1 There have been numerous site investigations conducted as part of the Revised Expansion Project and further assessment is included in CG imposed conditions²⁰ (e.g. pre clearance surveys).
- 5.2 For over a decade and ongoing, NAC has undertaken fauna surveys which have included targeted assessment of conservation significant species on the MLAs and other areas included in the NAC mine tenements.
- 5.3 As identified within the CG's Report (Section 8.2.3 Assessment Methodology²¹), the survey effort was iteratively informed by advice provided by DEHP and DoE on required approaches to verify ecological values at the Project Site and suitable mitigation and offsets approaches, and was sufficient to assess likely impacts on MNES and MSES on the extant flora, fauna and ecological communities.
- 5.4 The fauna surveys and associated methodologies have been described in Section 7.4.2 of the New EIS²² and the survey effort undertaken for these surveys is further detailed in Appendix G.5.2 (Section G.5.2²³) thereof.
- 5.5 The fauna surveys have occurred over a number of years, seasons and seasonal conditions.
- 5.6 There were fauna surveys conducted for the Acland Mine Stage 2 in 1998 and 1999.
- 5.7 For the Revised Expansion Project, the primary fauna surveys occurred from 26 February to 2 March 2007 (late summer-early spring) and 20 November 2008 (late spring), and during October to November 2013 (mid-late spring).
- 5.8 Primary locations for survey efforts were those that represented suitable habitat for threatened species, such as vegetated and riparian areas, farm dams and road sidings.
- 5.9 Seasonal and targeted assessments have been conducted and it is my view that all species of conservation significance, known or having potential to occur, which have relevance to the Revised Expansion Project have been appropriately considered in the assessment and imposed conditions.
- 5.10 The surveys have been undertaken in accordance with contemporary methodologies and guidelines.
- 5.11 I have also conducted assessment of the Project Site and surrounding areas to inform my understanding of the application and extant habitat values.
- 5.12 My assessment was primarily a broad site familiarisation targeting the key species and their habitats, particularly Koala, Painted Honeyeater and Grey-headed Flying-fox.

²⁰ Document ID: EHP.0016, pp 167-179.

²¹ Document ID: EHP.0016, pp 76-82.

²² Document ID: EHP.0025, pp 33-54.

²³ Document ID: EHP.0057, pp 21-24.

- 5.13 Due to the size of the Project Site, my investigations adopted a rapid search of the Project Site, focussing on the areas to be cleared and a focus on the habitat values within and outside of the disturbance footprint.
- 5.14 I note the criticisms within objections that there has been insufficient site assessment work conducted to date, to understand the actual impact of the proposed actions.
- 5.15 There will always be a need to undertake further work to fully measure the impact of the proposed actions (e.g. identification of Koala habitat outside of mapped remnant vegetation areas) this is consistent with the pre-clearance survey conditions imposed by the CG (CG's Report, Appendix 1, Condition 14²⁴).
- 5.16 As the Revised Expansion Project progresses, there is a requirement to undertake more detailed and specific assessment of the habitat values within the disturbance area and to have these assessments reviewed (See CG's Report, Appendix 1, Conditions 14 (a) to (f)²⁵).
- 5.17 The CG's conditions also require (Condition 14(e)²⁶) that – "Should additional MSES species be located that were not previously identified during field surveys, the development of management plans and/or additional offsets may be required to address any significant residual impacts for matters of state environmental significance in accordance with the EOS (required by CG imposed Condition 13²⁷) for the Revised Expansion Project".
- 5.18 This type of imposed condition helps ensure that, should there be any additional species of conservation significance identified, they are appropriately managed and applicable mitigation responses undertaken. This is a standard approach to such approval conditions. It is my view that, this is both an appropriate and proper time to undertake such additional detailed assessments.
- 5.19 Whilst acknowledging the need for additional information, the CG's Report recommended approval of the Revised Expansion Project, subject to conditions.
- 5.20 The ongoing monitoring and finer scale assessments, as required by the CG's imposed conditions, will provide a more thorough measurement of the impact and required offset area values.
- 5.21 My view is there has been extensive assessment to inform the subject application and imposed conditions are a standard and acceptable means by which the actual ecological values impacted will be fully identified.
- 5.22 In summary, there has been comprehensive assessment of the terrestrial fauna expected to be found on or in proximity to the Project Site and that the conditions provide for additional assessment (pre-clearance surveys) to ensure the actual offset requirements is appropriate to the impacts.

²⁴ Document ID: EHP.0016, p 176.

²⁵ Document ID: EHP.0016, p 176.

²⁶ Document ID: EHP.0016, p 176.

²⁷ Document ID: EHP.0016, p 165.

6.0 CONSERVATION SIGNIFICANT FAUNA

- 6.1 As detailed above in Section 5, there has been a considerable amount of site assessment conducted to inform the application.
- 6.2 There are conservation significant fauna present in the local landscape, which adds importance to the extant habitats and their management.
- 6.3 Although the Grey-headed Flying-fox *Pteropus poliocephalus* has been recorded onsite this is a single record and the species is not considered to have any reliance or relevance to the Project Site. Grey-headed Flying-fox is discussed further in sections 6.5.1 – 6.5.8 below.
- 6.4 The species of conservation significance of relevance to the Revised Expansion Project and local landscape are detailed below.

6.5 EPBC Listed Species - Known to occur

- 6.5.1 One species, Grey-headed Flying-fox *Pteropus poliocephalus*, which is listed as *Vulnerable* under the EPBC Act has been recorded within the Project Site.
- 6.5.2 The presence of a single record, despite considerable spotlighting and assessment work conducted, clearly indicates the Project Site should not be viewed as of national significance for this species.
- 6.5.3 This is further supported by the known distribution and records of the species (**Figures 3 & 4**).
- 6.5.4 Grey-headed Flying-fox can forage over considerable distances (up to 50km), but typically travels within 15-20 km to obtain feeding resources.
- 6.5.5 The Grey-headed Flying-fox is a social and nocturnal species that gathers in camps (usually in trees) during the day. There are no camps within the Project Site and the Revised Expansion Project will not prevent the species from occurring within or over the Project Site.
- 6.5.6 In addition, should the species occasionally occur within or around the Project Site, any loss of feeding resources will be readily replaced by the offsetting provisions and this wide ranging species will have access to those resources.
- 6.5.7 To supplement assessment of the species within the Project Site and surrounds, I have assessed the closest known Flying-fox camp which is present within the nearby Oakey Township for the presence of this species during my September, October and November 2015 site visits. The species has not been present in the local area during those times.
- 6.5.8 The Revised Expansion Project has little to no direct relevance to this species or its long term security.

6.6 NC Act Listed Species - Known to occur

- 6.6.1 Three species of conservation significance, listed under the NC Act, have been identified as present within subject area during field surveys. These species are:
- 1) Koala *Phascolarctos cinereus*;
 - 2) Painted Honeyeater *Grantiella picta*; and
 - 3) Little Pied Bat *Chalinolobus picatus*;
- 6.6.2 Koalas were classed at the relevant time (during the development of the New EIS and AEIS), as a *Special least concern* species under the NC Act.
- 6.6.3 Koalas are now listed as ‘*Vulnerable*’ across Queensland. Koalas are recognised as being in decline across Queensland.
- 6.6.4 Koalas are known to occur within the local landscape (**Figures 5 & 6**).
- 6.6.5 My site investigations identified evidence of Koala activity, in the form of scats and scratches, primarily within poplar box communities. Evidence of breeding and apparent health indicates the population is relatively stable.
- 6.6.6 The Project Site contains both remnant and non-remnant Koala habitats. The extant habitats vary in size and quality for the species.
- 6.6.7 There are areas of high value habitats within the Project Site (**Photo 1**)
- 6.6.8 The New EIS (Chapter 7, section 7.7.3²⁸) acknowledges that Koalas appear to move across the Project Site and make use of areas of isolated and fragmented habitat.
- 6.6.9 The Revised Expansion Project requires the clearing of known Koala refuge and feeding habitats (of-concern REs 11.3.2, 11.3.17, 11.9.10 and 11.9.13), which results in a residual impact to Koala habitat of 19.5ha.
- 6.6.10 There is potential risk of harm to Koalas during vegetation clearing, and construction and operation of the Revised Expansion Project. These potential impacts are addressed through a Koala Species Management Plan (KSMP)²⁹.
- 6.6.11 The KSMP (BAAM 2015) (section 2.4.1)³⁰ also identifies that the Project Site holds habitats which are known to provide refuge and feeding resources for Koala. Although primarily associated with the remnant vegetation, Koala habitats are scattered across the Revised Expansion Project area, and includes isolated trees.

²⁸ Document ID: EHP.0025, p 85.

²⁹ Document ID: EHP.0099.

³⁰ Document ID: EHP.0099, pp 11-12.

- 6.6.12 The AEIS (Appendix M - Revised Biodiversity Offsets Strategy³¹) has identified (Section 6, Proposed offsets for residual impacts on State significant biodiversity values) that the Revised Expansion Project will result in the clearing of remnant vegetation (REs 11.3.2, 11.3.17, 11.9.10 and 11.9.13) which comprises habitat for the Koala.
- 6.6.13 Details of impacted areas for each RE and proposed offset areas can be found in Table 3 of the Revised Biodiversity Offsets Strategy³².
- 6.6.14 It is noted that, the Commonwealth offsets for MNES do not overlap, as the EPBC Act referral for the Revised Expansion Project was undertaken prior to the listing of Koala under EPBC Act.
- 6.6.15 Therefore, impacts on known Koala habitat (of-concern REs 11.3.2, 11.3.17, 11.9.13, and 11.9.10) are subject to an imposed condition by the CG (CG's Report, Table H4 and Appendix 1, Condition 13³³) requiring an offset for significant residual impacts on these RE's in accordance with the requirements of the *Queensland Environmental Offsets Act 2014*, the *Environmental Offsets Regulation 2014* and *Environmental Offsets Policy 2014*.
- 6.6.16 In addition, the CG's Report includes an imposed condition (CG's Report, Appendix 1, Condition 13³⁴) requiring NAC to include details of where and how offsets for Koala habitat will be sourced within the EOS.
- 6.6.17 The CG's Report states that "The koala habitat offset should be provided through a land-based offset to ensure a local conservation outcome for koalas"³⁵. Condition 13(a)(v)³⁶ requires that the offset must be land based and benefit the local Koala population.
- 6.6.18 This is a much more appropriate mitigation response, as it ensures ongoing habitat for the species in the locality, than allowing a financial offset.
- 6.6.19 NAC has also committed (Appendix D AEIS – Commitment No 207³⁷) that, amongst other offset commitments, the Biodiversity Offset Strategy will be implemented, to secure offsets for poplar box woodland, mountain coolabah forest and gum-topped box woodland which all comprise Koala habitats.
- 6.6.20 In addition to the offset requirement for the remnant vegetation, there are also conditions requiring the restoration of Lagoon Creek (see: CG's

³¹ Document ID: EHP.0110.

³² Document ID: EHP.0110, pp 14-15.

³³ Document ID: EHP.0016, pp 205, 175-176

³⁴ Document ID: EHP.0016, pp 175-176.

³⁵ Document ID: EHP.0016, p 50.

³⁶ Document ID: EHP.0016, p 176.

³⁷ Document ID: EHP.0101, p 10.

Condition 15³⁸ & Draft EA Condition 12³⁹) which will provide additional Koala habitat and a vegetated safe movement corridor through MLA 50232 between the Willaroo and Manning Vale East pits (indicatively shown on **Figure 2**).

- 6.6.21 NAC has clearly stated its commitment (AEIS, appendix D⁴⁰) to ensuring fauna movement will be able to continue unaffected by the Revised Expansion Project.
- 6.6.22 I note that there is concern expressed by objectors that Koalas cannot be trained to go under a bridge (See: **Annexure 2**, point 1.2). Koalas are not trained to utilise crossing facilities such as underpasses and overpasses. The deployment of exclusion fencing (fencing designed to prevent Koalas accessing areas behind the fencing) is utilised to direct Koala movements. There are numerous examples of where this type of management response has been successful.
- 6.6.23 Areas of regional ecosystems and threatened ecological communities will be retained and restored along Lagoon Creek. The rehabilitation of Koala habitats within the Lagoon Creek Conservation Zone will provide increased Koala habitat values.
- 6.6.24 This additional rehabilitation will also contribute to the mitigation of non-remnant Koala habitats being removed within the disturbance areas.
- 6.6.25 The CG's Report has imposed a specific condition (CG's Report, Appendix 1, Condition 16⁴¹) requiring a Koala Species Management Plan (KSMP) for the management of Koala. Condition 16 is provided below for ease of reference.

Condition 16. Koala Species Management Plan (KSMP)

(a) NAC is to prepare and implement a KSMP for the Revised Expansion Project consistent with the requirements of the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016 (EPA 2006).

(b) The KSMP is required to address:

- (i) staff awareness training*
- (ii) the staging or limiting of vegetation clearance to what is required for safe and efficient mining operations*
- (iii) the exclusion of vegetation clearance between the hours of 6pm and 6am*

³⁸ Document ID: EHP.0016, pp 166-167.

³⁹ Document ID: EHP.0009, p 41.

⁴⁰ Document ID: EHP.0101.

⁴¹ Document ID: EHP.0016, p 178.

(iv) the sequential clearance of trees under the guidance of a licenced and experienced Koala Spotter to locate fauna prior to clearing of habitat and allow their safe dispersal

(v) identification of fauna movement corridors and the use of exclusion fencing around dangerous or high risk operational mining area or transport routes

(vi) for less high risk areas, identification and implementation of suitable fauna movement control devices (e.g. fences) and management responses, and

(vii) rehabilitation within the Lagoon Creek Conservation Zone and across the balance of the site with koala food trees.

(c) The recommendations and actions in the Revised Expansion Project's approved Environmental Management Plan (EM Plan), and the Revised Expansion Project's approved Conservation Zone Management Plan are to be consistent with the KSMP.

(d) The KSMP is required to be provided to the authority administering the Nature Conservation Act 1992 for approval at least six months prior to the commencement of clearing or construction works for the Revised Expansion Project.

6.6.26 DEHP has jurisdiction for the above condition.

6.6.27 A KSMP was provided with the AEIS⁴² and this document will be updated in line with the CG's imposed condition 16⁴³.

6.6.28 The KSMP included commitments to achieving a net benefit for Koala (section 4.3 KSMP⁴⁴) and performance monitoring and adaptive management (section 4.5 KSMP⁴⁵) which includes a monitoring regime to evaluate the rehabilitation success within the conservation zone to demonstrate the status of the enhancement of Koala habitat.

6.6.29 In addition to the rehabilitation performance criteria prescribed by the Conservation Zone Management Plan (appendix J.6, New EIS⁴⁶), NAC will also assess rehabilitation success against the performance criteria outlined in the Guideline: Offset for Net Gain of Koala Habitat in South East Queensland Policy (DEHP 2010) as detailed within Section 4.5 of the KSMP⁴⁷.

⁴² Document ID: EHP.0099.

⁴³ Document ID: EHP.0016, p 178.

⁴⁴ Document ID: EHP.0099, pp 17-18.

⁴⁵ Document ID: EHP.0099, pp 20-28.

⁴⁶ Document ID: EHP.0071.

⁴⁷ Document ID: EHP.0099, pp 20-28.



Photo 1: High value Koala habitats within the Project Site with natural regeneration occurring within.

- 6.6.30 It is my view that the potential for detrimental impacts on Koalas and their habitat has been avoided where practical and that mitigation responses, prescribed through the revised KSMP, NAC commitments and conditions of approval, will result in no residual significant impact on Koala.
- 6.6.31 Overall, given these mitigation responses and the offsets required, the Revised Expansion Project will not result in a long term detrimental impact on Koala or its persistence in the local landscape. In fact, there is expected to be an overall net benefit in available habitat and habitat quality.
- 6.6.32 Painted Honeyeater *Grantiella picta***
- 6.6.33 At the time of the development of the New EIS and AEIS, the Painted Honeyeater *Grantiella picta* was only listed under the NC Act, and, therefore, its habitat has been correctly considered as an MSES during the application.
- 6.6.34 The Commonwealth Minister subsequently approved a conservation advice on 25/06/2015 and included this species (*Grantiella picta*) in the *Vulnerable* category under the EPBC Act, effective from 08/07/2015.
- 6.6.35 This is a relatively recent listing and therefore the species was not listed within the EPBC database, and not recognised as an EPBC listed species during the New EIS and AEIS.

- 6.6.36 In Queensland, this species was listed as '*Rare*' under the NC Act wildlife regulations up to 2009, when that category was removed from the regulations. In reprint 2010 1C the species was and has continued to be listed as *Vulnerable*.
- 6.6.37 The Painted Honeyeater has previously been observed (once in 1990) within riparian habitat along Lagoon Creek.
- 6.6.38 It was not recorded as present, including targeted surveys, during the New EIS and AEIS field investigations.
- 6.6.39 There have been repeated surveys during suitable seasons and conditions for this species which did not record the species.
- 6.6.40 This migratory species is known to occur within the wider landscape, seasonally and primarily during late spring-summer. It is regularly recorded, during suitable seasons, approximately 7km from the Project Site within roadside vegetation to the east of Jondaryan township.
- 6.6.41 The species' visitation to the local landscape coincides with the flowering and fruiting of their main feeding resource which is *mistletoe sp* (**Photo's 2&3**).
- 6.6.42 I have subsequently recorded the species, within MLA 50232 during my targeted surveys conducted in November 2015.
- 6.6.43 The species was found to be primarily associated with Lagoon Creek and nearby road reserves which hold vegetation containing mistletoe, the species primary food source. These areas are outside of the proposed disturbance.



Photos 2 & 3: Showing Mistletoe holding flower and fruit within the Revised Expansion Project area

- 6.6.44 My assessment of the Project Site and surrounds identified suitable potential foraging habitat occurs in the local landscape both within and outside the MLAs.
- 6.6.45 I also recorded the species in locations outside of the Project Site, which indicates there are alternative and suitable feeding resources in the local area.
- 6.6.46 In addition, there are numerous historical records in the wider landscape clearly indicating that, although the Project Site holds habitats of value, there are considerable other habitats within the wider landscape and across the species broad range (**Figures 7&8**).
- 6.6.47 The habitats being removed or disturbed are a relatively small portion of the feeding resources in the local landscape for this wide ranging species.
- 6.6.48 It should be noted that the higher value habitats associated with Lagoon Creek are being retained and enhanced through the Lagoon Creek CZMP.
- 6.6.49 The proposed offsetting of remnant habitats and restoration of the Lagoon Creek Corridor will ultimately provide an actual increase in ongoing habitat which is protected and managed.
- 6.6.50 The species is known to utilise small narrow bands of vegetation and in association with highly modified human environments. In the local context the species is regularly found within 5 metres of the highly trafficked Warrego Highway in Jondaryan.
- 6.6.51 Given the relatively small disturbance footprint, in the context of the species range and its feeding resources, the Revised Expansion Project will not result in a significant impact on the species' ability to persist in the local landscape.
- 6.6.52 Further, the retained and restored habitats will continue to provide suitable feeding and breeding resources.
- 6.6.53 It is my view that the Revised Expansion Project will not result in any significant impact on the Painted Honeyeater or its presence in the local landscape.
- 6.6.54 Little Pied Bat *Chalinolobus picatus***
- 6.6.55 The Little Pied Bat is classified as a near threatened species in the NC Act Regulations; however its habitat is not classed as MSES and therefore does not require a specific offset.
- 6.6.56 The Little Pied Bat has been recorded only once during the targeted surveys for the Revised Expansion Project despite considerable targeted surveys.

- 6.6.57 The Revised Expansion Project footprint has little direct relevance to this species and its habitat requirements. Regardless, the proposed offsets for the clearing of remnant vegetation will replace and continue to provide ongoing habitat for the species and its prey.
- 6.6.58 The CG has required that the Little Pied Bat be considered within the Fauna Management Plan to avoid potential impacts during any clearing activities.
- 6.6.59 I do not view the Revised Expansion Project as having potential to significantly impact on the Little Pied Bat or its long term security.

Figure 3: Grey-headed Flying-fox Distribution and Occurrence Maps

Compiled distribution map



Compiled distribution map provided by Australia - Species of National Environmental Significance Database (Public Grids)

Occurrence records map

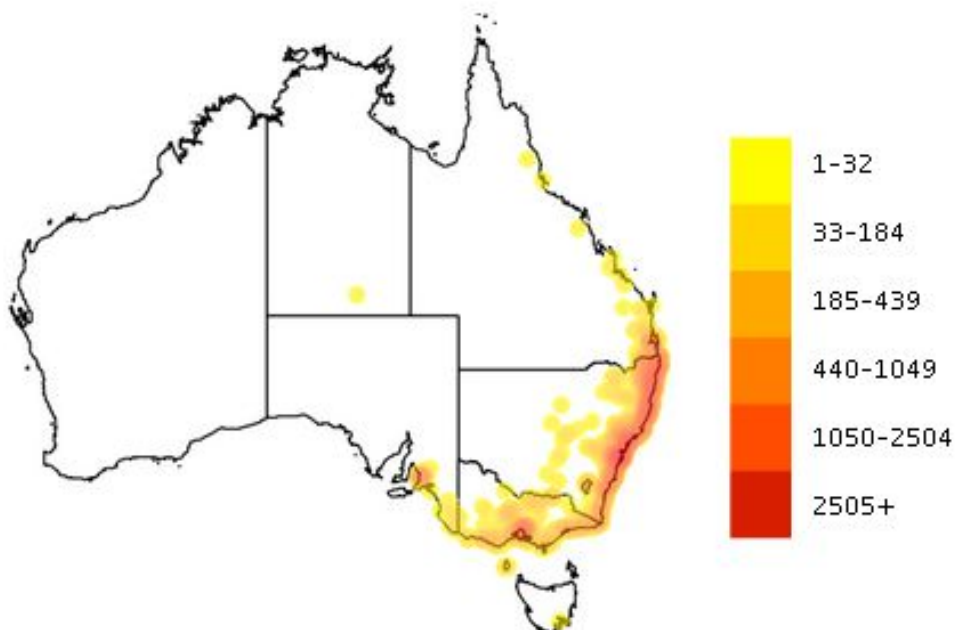


Figure 4: Grey-headed Flying-fox Regional and Local records

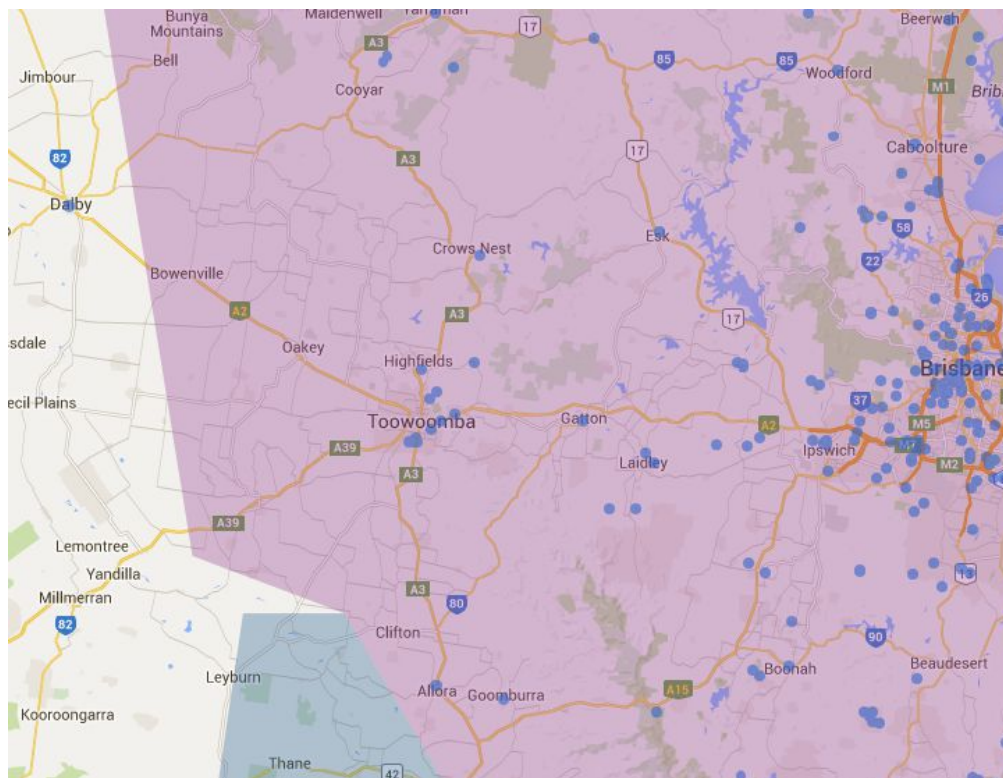
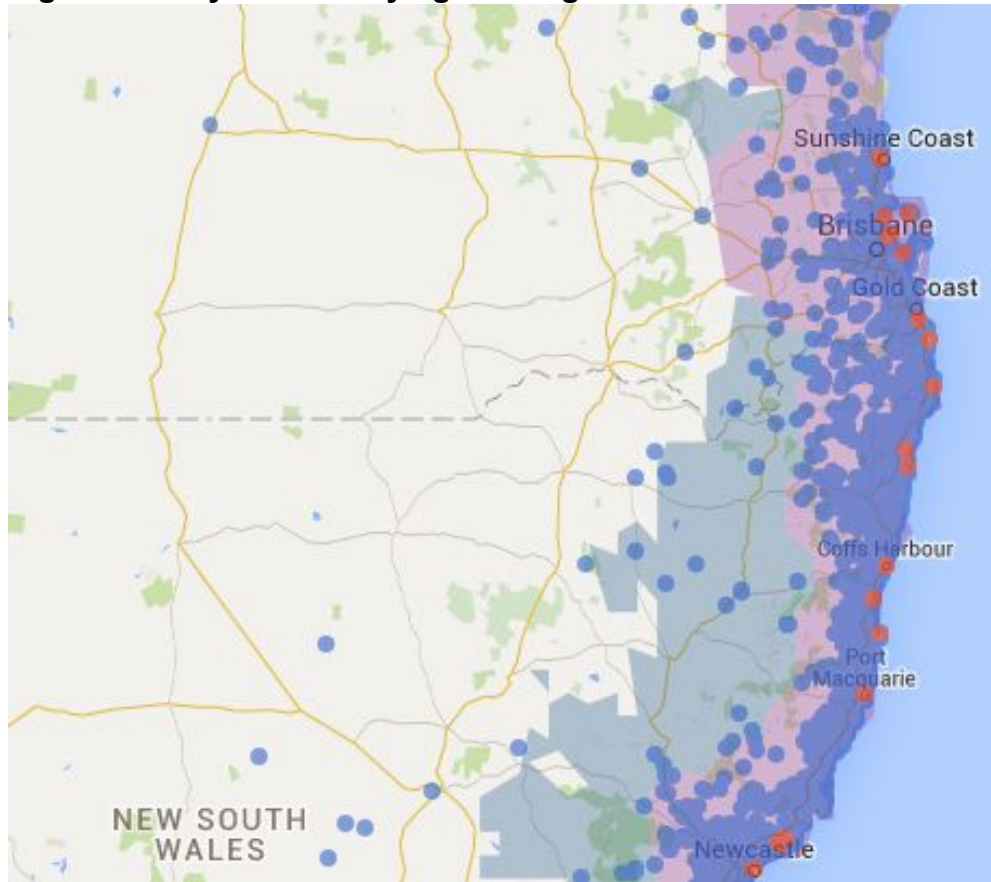


Figure 5: Koala Distribution and Occurrence Maps

Compiled distribution map



Compiled distribution map provided by Australia - Species of National Environmental Significance Database (Public Grids)

Occurrence records map

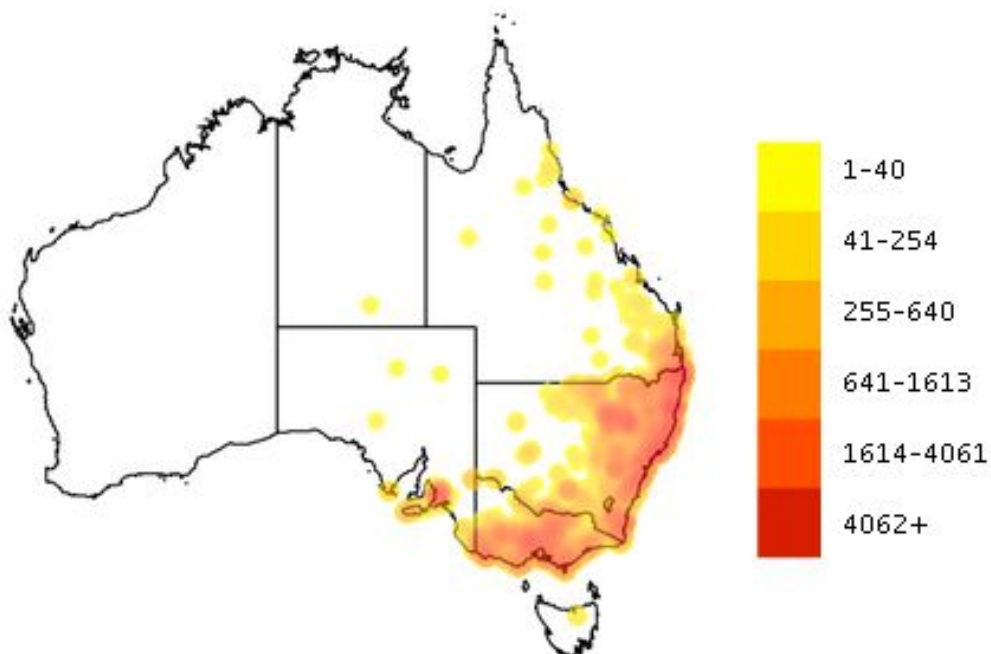


Figure 6: Koala Regional and Local Records

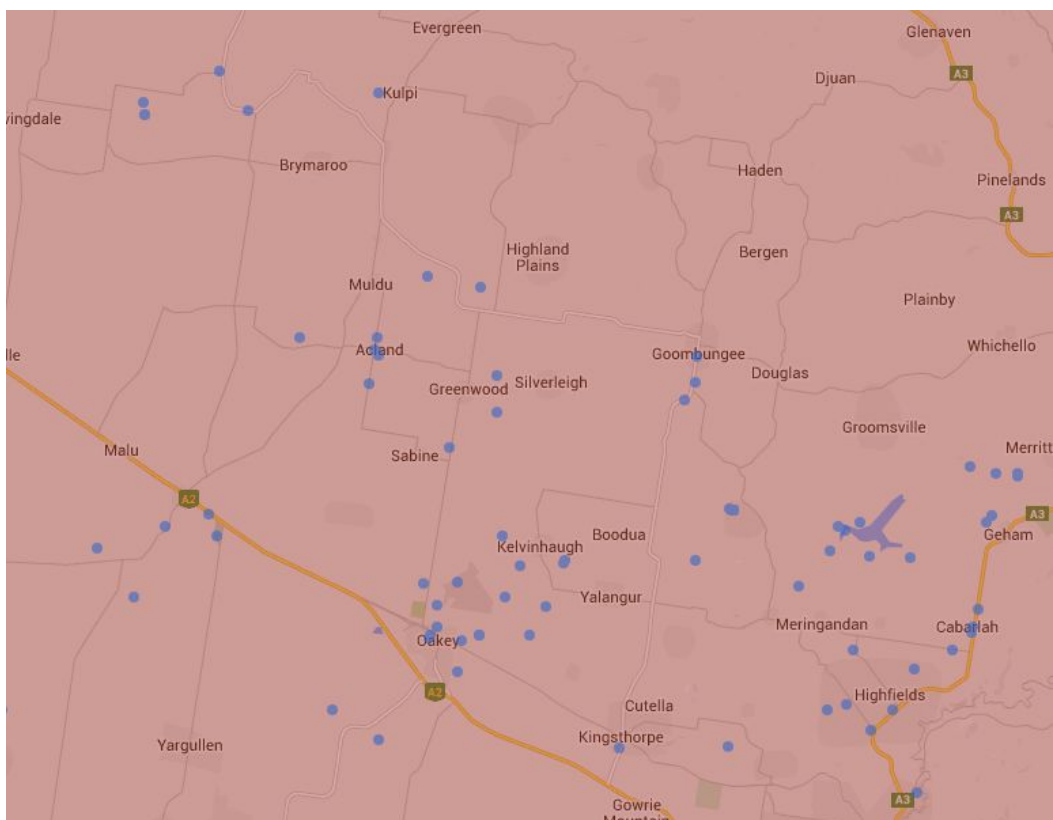
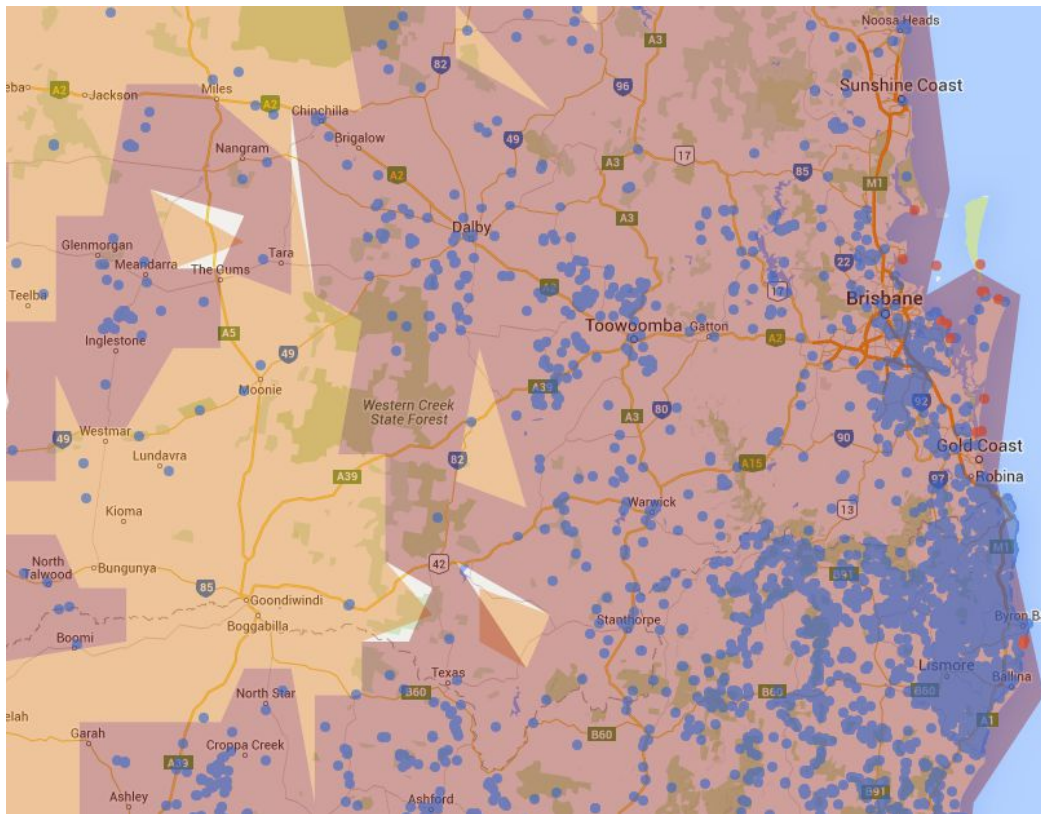


Figure 7: Painted Honeyeater Distribution Maps

Compiled distribution map



Compiled distribution map provided by BirdLife International species range maps

Occurrence records map

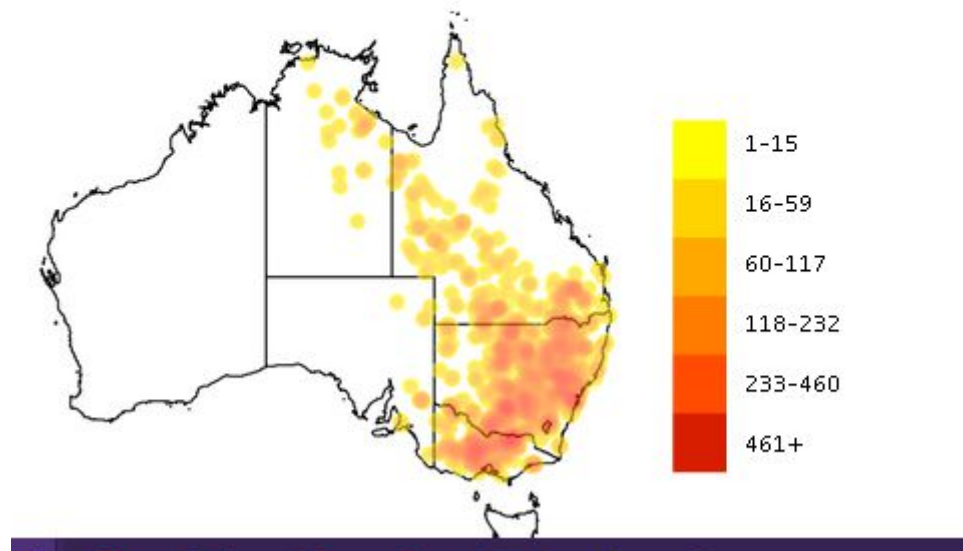
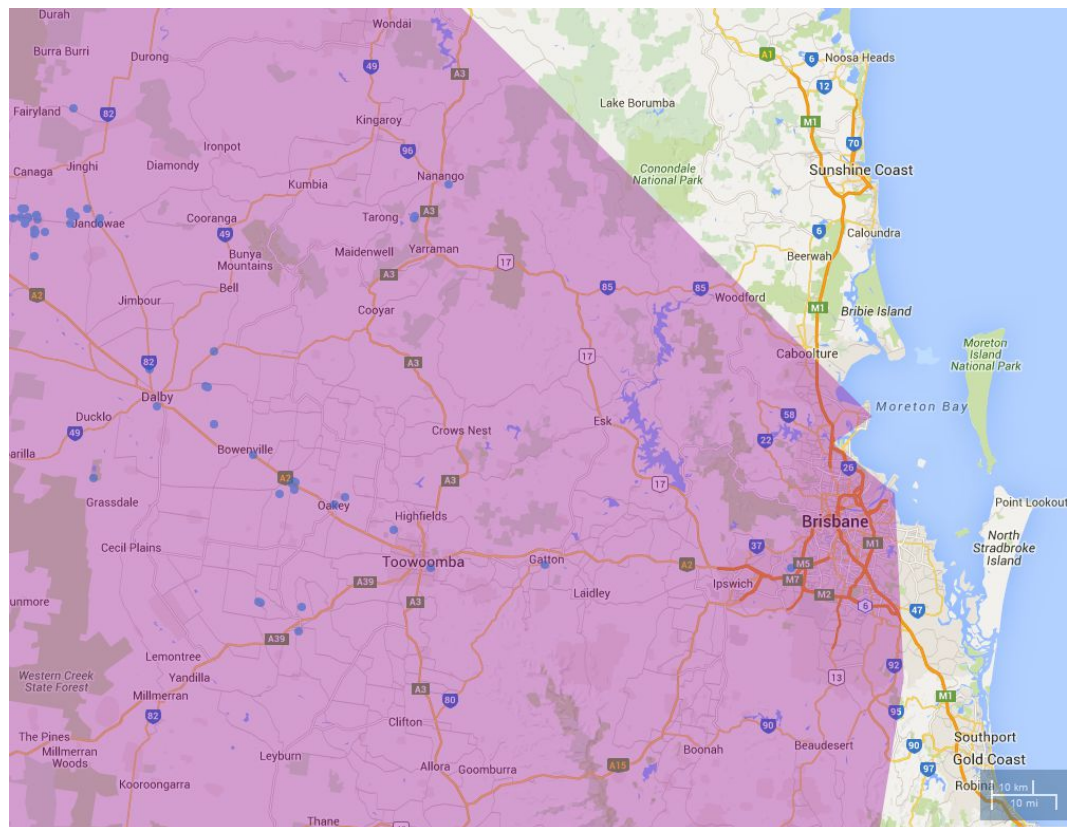
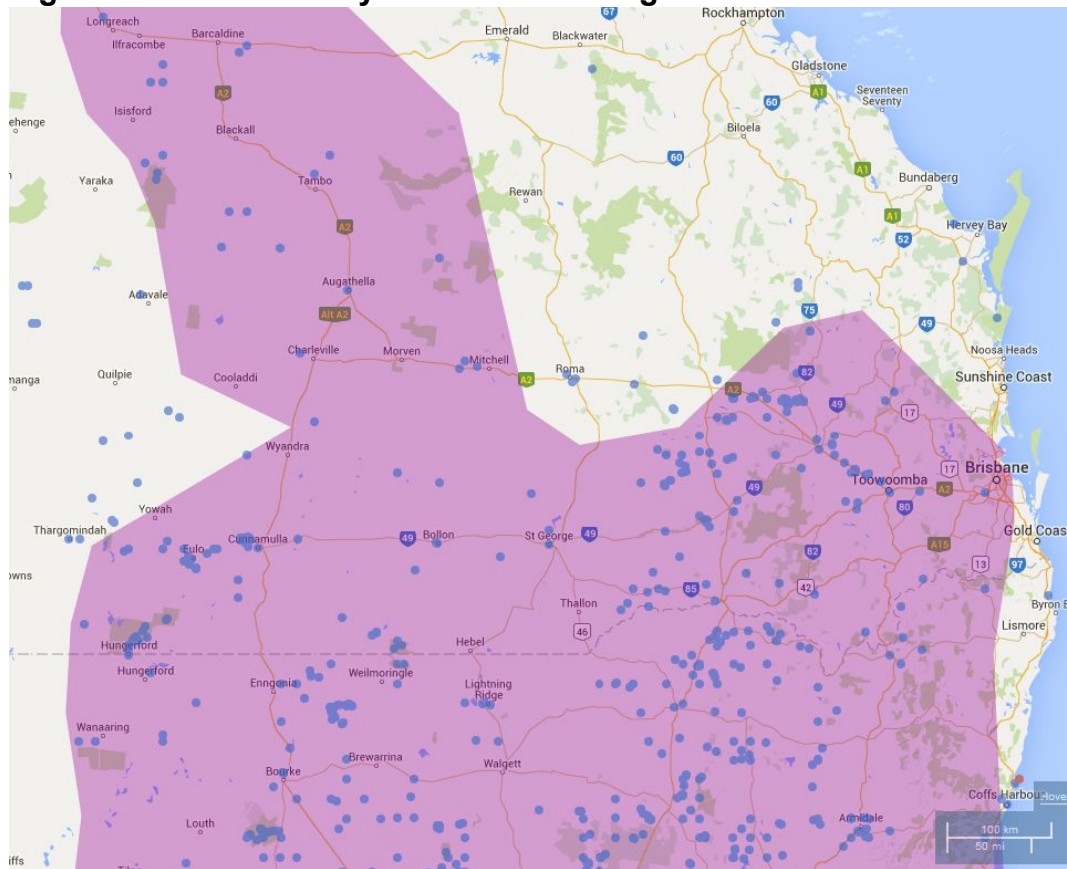


Figure 8: Painted Honeyeater Records Regional and Local records



6.7 Significant species with potential to occur

- 6.7.1 There are species of conservation significance which, although not recorded during field investigations, have potential, to varying degrees, to occur within the Project Site or surrounding lands.
- 6.7.2 The conservation significant species recognised as having potential to occur in the local landscape, based on results of my database searches, are the following:
- 6.7.3 *Lathamus discolor*, Swift parrot
 - 6.7.4 *Neochmia ruficauda*, Star finch
 - 6.7.5 *Poephila cincta*, black-throated finch (southern)
 - 6.7.6 *Xanthomyza Phrygia*, Regent honeyeater
 - 6.7.7 *Erythrorchis radiatus*, Red goshawk
 - 6.7.8 *Geophaps scripta*, Squatter pigeon
 - 6.7.9 *Rostratula australis/Rostratula benghalensis*, Australian painted snipe
 - 6.7.10 *Turnix melanogaster*, Black-breasted button-quail
 - 6.7.11 *Maccullochella peelii*, Murray cod
 - 6.7.12 *Dasyurus hallucatus*, Northern quoll
 - 6.7.13 *Chalinolobus dwyeri*, Large-eared pied bat, large pied bat
 - 6.7.14 *Nyctophilus corbeni*, South-eastern long-eared bat
 - 6.7.15 *Petrogale penicillata*, Brush-tailed rock-wallaby
 - 6.7.16 *Potorous tridactylus*, Long-nosed potoroo
 - 6.7.17 *Tympanocryptis pinguicolla*, Grassland earless dragon
 - 6.7.18 *Anomalopus mackayi*, Five-clawed worm-skink
 - 6.7.19 *Delma torquata*, Collared delma
 - 6.7.20 *Egernia rugosa*, Yakka skink
 - 6.7.21 *Furina dunmalli*, Dunmall's snake
 - 6.7.22 *Paradelma orientalis*, Brigalow scaly-foot
 - 6.7.23 *Jalmenus eubulus*, Pale Imperial Hairstreak.

- 6.7.24 Although many of the above species are listed as having potential to occur, based on a combination of the detailed site investigations and habitats present many of the above are unlikely to be present and none are known or expected to be reliant on the Project Site.
- 6.7.25 I have provided specific comment on the above species and their likelihood of occurrence in **Annexure 4**.
- 6.7.26 There have been some species (e.g. three species of mammal, brush-tailed rock wallaby, long nosed potoroo and the northern quoll) which were not subject to targeted surveys as suitable habitat for these species is not present in the area of the Revised Expansion Project.
- 6.7.27 This is further endorsed by the absence of any records of these species from the Queensland Museum and the DEHP Databases for the Acland area.
- 6.7.28 It is my view these species have no relevance to the Project Site.
- 6.7.29 In respect to potentially occurring conservation significant fauna, the CG has imposed the following condition relating to pre-clearance fauna and flora surveys (CG's Report, Appendix 1, Condition 14⁴⁸):
- (a) *Prior to commencement of any project construction activities, the proponent must conduct pre-clearance ecological surveys of areas to be impacted, consistent with:*
 - (i) *Queensland state government survey guidelines*
 - (ii) *Requirements of the Nature Conservation Act 1992*
 - (iii) *Australian government threatened species guidelines.*
 - (b) *The surveys must be sufficient to identify the extent to which the following will be unavoidably impacted by the project:*
 - (i) *protected wildlife listed under the Nature Conservation Act 1992*
 - (ii) *matters of state environmental significance as defined by the State Planning Policy*
 - (iii) *MNES as listed under the EPBC Act*
 - (c) *The surveys must include areas of potential foraging, roosting or nesting habitat for the painted honeyeater Grantiella picta. If the Painted Honeyeater is found during pre-clearance surveys, then any significant impacts on its habitat may require additional offsets in accordance with the EOS for the project.*

⁴⁸ Document ID: EHP.0016, p 176.

(d) If protected plants are found during pre-clearance surveys, then impacts may require a permit under the Nature Conservation Act 1992 and offsets under the Environmental Offsets Act 2014.

(e) Should additional MSES species be located that were not previously identified during field surveys, the development of management plans and/or additional offsets may be required to address any significant residual impacts for matters of state environmental significance in accordance with the EOS for the project.

(f) Notification of the discovery of additional protected plants or MSES species that will be impacted is to be provided to the administering authority within five business days of the discovery. The proponent is required to propose how the species is to be managed and to seek advice from DEHP on the undertaking.

(g) Survey results must be included in an updated Environmental Offset Strategy (EOS) for the project.

6.8 DEHP has jurisdiction for Condition 14⁴⁹.

6.9 The requirements of the CG's Condition 14⁵⁰ will ensure additional assessment of the disturbance area will include appropriate methodology targeted on the occurrence of significant fauna known and with potential to occur.

6.10 Further, if any additional species are found to be present, these species will be subject to the development of management plans and/or additional offsets to address any significant residual impacts for MSES in accordance with the EOS (required by CG Condition 13⁵¹) for the Revised Expansion Project.

6.11 It is my view that there are no conservation significant fauna present, or likely to be present, which have not been appropriately assessed or addressed by the imposed conditions.

6.12 The imposed conditions prescribe required mitigation actions for all known and potential detrimental impacts.

6.13 Overall, the imposed conditions require appropriate management responses to result in an overall net benefit in habitat values for conservation significant fauna known, or with potential, to occur.

7.0 FAUNA AND FAUNA HABITAT VALUES

7.1 The magnitude of the proposed offsets and associated management actions, if undertaken, will provide an overall net benefit in terms of retained/protected habitats for fauna, including conservation significant fauna.

⁴⁹ Document ID: EHP.0016, p 176.

⁵⁰ Document ID: EHP.0016, p 176.

⁵¹ Document ID: EHP.0016, p 165.

- 7.2 It is important to note that, although the Project Site and surrounding lands have areas providing valuable fauna habitats, currently those values are largely unmanaged and relatively unprotected.
- 7.3 It should be noted that the extant habitats within the MLAs, as are all lands in the region, are subject to recognised ecological threats (e.g. weed invasion and feral animals) and these threats are ongoing.
- 7.4 Should the Revised Expansion Project not proceed, there is no certainty of any ongoing protection, restoration of native vegetation and active management of the extant habitats as would be achieved through the imposed offset conditions and CZMP (CG's Report, Appendix 1, Conditions 13 & 15⁵²).
- 7.5 In regard to ongoing fauna habitat values, my site investigations and viewing of the surrounding landscape identified that there are areas where historic land uses (agricultural and pastoral pursuits, exotic plant invasions and habitat loss or modification) have degraded the extant habitat values.
- 7.6 The modified landscape and subsequent fragmented distribution of native vegetation patches, has resulted in a significantly altered landscape with reduced fauna habitat values retained for many native fauna species.
- 7.7 Fauna, and fauna habitat values, will be increased and maintained in the landscape through the management of retained habitats and provision of offsets.
- 7.8 There is no species which is, or likely to be, restricted to the disturbance footprint.
- 7.9 There are common species, those listed as '*Least Concern*' under the NC Act, which are known or considered likely to be present in the local landscape which have not been recorded by the New EIS or AEIS fauna surveys.
- 7.10 This is not an uncommon result for fauna investigations.
- 7.11 The presence of some fauna species can be difficult to confirm. It is well accepted that it takes numerous repeated surveys over varying seasonal and field conditions to obtain a comprehensive list of fauna present in a given landscape.
- 7.12 This is primarily due to many species having a cryptic lifestyle, being wide ranging or seasonal visitors.
- 7.13 Whilst the fauna assessments have not identified all known or likely species to occur within the Project Site, the assessment has been appropriately conducted (refer to section 5.0). The CG has acknowledged and addresses this by requiring pre-clearance surveys (CG's Report, Appendix 1, Condition 14⁵³).

⁵² Document ID: EHP.0016, pp 165-167.

⁵³ Document ID: EHP.0016, p 176.

- 7.14 The New EIS and AEIS have considered the presence of likely or potentially occurring conservation significant fauna.
- 7.15 It should be noted that the lack of a comprehensive listing of all common (*Least Concern*) fauna species does not prevent effective mitigation of potential impacts.
- 7.16 Further, even if all possible common species were recorded and confirmed within the disturbance footprint, there would unlikely be any changes in imposed conditions and no additional offsetting requirements.
- 7.17 There are numerous known or potential threats to the fauna habitat values across the local landscape which include:
- 7.17.1 clearing and fragmentation of habitats for pastoral or other purposes;
 - 7.17.2 degradation of habitat by domestic stock and feral animals, including alterations to fuel load,
 - 7.17.3 changes to vegetation structure as a result of disturbances resulting in reduced habitat values;
 - 7.17.4 exotic weed invasion including, but not limited to exotic grasses;
 - 7.17.5 altered fire regimes; and
 - 7.17.6 predation by introduced (feral and domestic) predators.
- 7.18 It is my view that the imposed conditions for offset requirements and prescribed management actions will provide a net benefit in area and overall protection of fauna habitat values which would otherwise be unlikely to occur in the local landscape.
- 7.19 Fauna species currently utilising habitat within the disturbance footprint, would have opportunity to find suitable habitats within retained habitats and the proposed offsets and/or Lagoon Creek Corridor.
- 7.20 Although some individual animals of various species will lose home range/s or currently occupied habitats, the overall outcome will see an increase in fauna habitat and habitat values.
- 7.21 The Blue-tongue lizard and Echidna will continue to have a secure future in the landscape and their persistence in the local and wider landscape has no direct relevance to the Revised Expansion Project.
- 7.22 The provision of the proposed offsets and associated protection and management will provide increased long term security in the retention of fauna habitats in the local landscape.
- 7.23 I cannot perceive any other likely means by which such a large protection of suitable habitat is likely to occur in the foreseeable future in the location.

- 7.24 Therefore, there is an overall net benefit in respect to fauna habitat values as a result of the Revised Expansion Project and associated imposed conditions.
- 7.25 There will be a Fauna Management Plan which will address management of all fauna and fauna habitats for the Revised Expansion Project.
- 7.26 If the Revised Expansion Project proceeds, it will not result in significant residual impacts to fauna or faunal habitats within, and associated with, the Project Site.
- 7.27 Although there will be a loss of some existing vegetated connections which will reduce or remove fauna movement in those locations, overall the Revised Expansion Project presents an opportunity to retain and secure important fauna habitat and linkages.
- 7.28 NAC has undertaken to implement the CZMP (New EIS, Appendix J.6⁵⁴) to manage the Lagoon Creek Corridor to rehabilitate vegetation and fauna habitat along Lagoon Creek.
- 7.29 The CG has imposed an approval condition to ensure the management of Lagoon Creek (CG's Report, Appendix 1, Condition 15⁵⁵).
- 7.30 Condition 15⁵⁶ requires NAC to implement the CZMP.
- 7.31 The extent of the Lagoon Creek Conservation Zone is to be as described in Figure 4-1 Rehabilitation Plan, Appendix J6, New EIS⁵⁷.
- 7.32 Condition 15⁵⁸ requires a revegetated area of at least 50 metres either side of the high bank of Lagoon Creek within the conservation zone. Should instream storage such as a dam or other infrastructure be constructed within the conservation zone, NAC must ensure no net loss of the required buffer.
- 7.33 NAC has commenced surveys of the Lagoon Creek Corridor.
- 7.34 The delineation of the bank is somewhat crucial to the determination of the extent of conservation and non-mining zones. As the bank edge is not clearly defined, the aquatic ecology (the riparian vegetation zone and areas of sedges, rushes and identifiers of high bank habitat) is being utilised to determine the high bank line.
- 7.35 Where Lagoon Creek is clearly braided into multiple waterways, the extent of the conservation zone will be determined from the edge or banks of the outer network channels, to avoid the boundary of the 'no disturbance' buffer being located within the creek itself.

⁵⁴ Document ID: EHP.0071.

⁵⁵ Document ID: EHP.0016, pp 176-178

⁵⁶ Document ID: EHP.0016, pp 176-178.

⁵⁷ Document ID: EHP.0071, p 17.

⁵⁸ Document ID: EHP.0016, pp 176-178.

- 7.36 It should be noted that, in many locations, due to the multiple or width of the creek channels the Lagoon Creek corridor is considerably wider than the minimum 50 meter buffer.
- 7.37 Any infrastructure (e.g. Koala fencing, levees and dams) will need to take the new 'high bank' delineation in to account during the detailed design phase of the Revised Expansion Project.
- 7.38 The restoration of the Lagoon Creek Corridor (and management actions prescribed under the CZMP) will provide a long term benefit to fauna movement and, in combination with the proposed offsets, an overall increase in extant fauna habitats and long term protection of safe movement options in the local landscape.
- 7.39 The proposed establishment of the Lagoon Creek Conservation Zone will provide a corridor which includes the provision of fauna exclusion fencing to choreograph fauna movement to and through the corridor and prevent entry into dangerous operational areas. Koalas, and many other fauna species, are well known to utilise similar underpasses with deployment of suitable fencing to direct their movements.
- 7.40 The Revised Expansion Project includes a dedicated fauna crossing facility under the proposed roadway between the Manning Vale East and Willeroo Pits. This crossing is subject to detailed design and is shown indicatively on **Figure 2**.
- 7.41 The CZMP⁵⁹ focuses on returning the riparian zone of Lagoon Creek to an ecosystem comprising *Eucalyptus populnea* woodland with *Acacia harpophylla* and/or *Casuarina cristata* on alluvial plains (RE 11.3.17). This goal is consistent with the Queensland Herbarium's pre-clearance vegetation mapping data for the Acland area.
- 7.42 The KSMP's monitoring regime (section 4.5 KSMP⁶⁰) will evaluate the rehabilitation of fauna habitats within the Project Site. In addition to the rehabilitation performance criteria prescribed by the CZMP⁶¹, NAC will also assess rehabilitation success against the performance criteria outlined in the "Guideline: Offset for Net Gain of Koala Habitat in South East Queensland Policy (DEHP 2012)".
- 7.43 The preclearing surveys and engagement of fauna spotter catchers, prior to and during vegetation clearing, will reduce the likelihood of death or injury of fauna species during vegetation clearing.
- 7.44 Overall, due to the offsetting and management associated with the Revised Expansion Project, there is no significant impact on the long term security of fauna species within the local landscape as a result of the proposed actions.

⁵⁹ Document ID: EHP.0071.

⁶⁰ Document ID: EHP.0099, pp 20-28.

⁶¹ Document ID: EHP.0071.

8.0 INDIRECT IMPACTS

8.1 There have been concerns stated by objectors about the potential for indirect impacts of traffic from the Revised Expansion Project.

8.1.1 The traffic and transport assessment undertaken as part of the New EIS examined potential traffic impacts from the Revised Expansion Project, in terms of its construction and operational phases, which include:

- Increased vehicle movements on the existing road network associated with the Revised Expansion Project workforce;
- Materials supply during the construction and operational phases; and
- Altered traffic patterns and journey times resulting from permanent road closures and realignment.

8.1.2 The main concerns raised, in objections, are in respect to heavy vehicles and their impact on fauna.

8.1.3 The removal of haul trucks and replacement with the proposed rail loop transfer will reduce the amount of large truck movements.

8.1.4 I understand that, though I defer to the traffic experts, the amount of additional heavy vehicle traffic generated by the Project is relatively small and in fact will reduce on Jondaryn-Muldu Road as a consequence of the proposed rail spur.

8.1.5 I understand, though defer to the traffic experts, that there will not be any significant increase in traffic as a result of the Revised Expansion Project.

8.1.6 It is my view that, even if there is an increase in vehicular movements, no wildlife species will be at risk of localised extinctions as a result of vehicle related fatalities.

8.1.7 The New EIS (Chapter 13⁶²) addresses traffic and transport.

⁶² Document ID: EHP.0031.

- 8.1.8 During detailed construction planning, Traffic Control Plans will be prepared to safely manage road works and minimise disruption to traffic during construction (New EIS Chapter 13, Section 13.14⁶³).
- 8.1.9 Notwithstanding the latter, the existing road network is, as I understand, considered to be adequate for the anticipated heavy vehicles generated by the Revised Expansion Project.
- 8.1.10 Although all roadways have potential for fauna / vehicle collisions, there is little to no likelihood that any of the proposed road changes or mine related traffic would result in a significant impact on any species or their long term security in the local landscape.
- 8.1.11 The roadways around the subject area have potential for roadkill regardless of whether or not the Revised Expansion Project achieves approval.
- 8.1.12 The traffic assessment found that both the construction and operational phases are not expected to have a significant impact on traffic operations on any of the key road links.
- 8.1.13 In respect to vehicle and fauna interactions the existing roadways are generally, in my view, low volume with a corresponding low likelihood of any significant impact on fauna.
- 8.1.14 The one species for which roadways and vehicle related death warrants consideration of management is Koala. The KSMP⁶⁴ includes Koala monitoring surveys to be conducted to assess the progress of the restoration of Koala habitat, which is designed to provide safe movement options along Lagoon Creek, and the status of the Koala population within the vicinity of the Revised Expansion Project.
- 8.1.15 An annual report will be completed on the Koala population monitoring surveys and general Koala management actions, which includes a register of Koala sightings, incidents – near misses, injuries and/or deaths, and corrective actions.
- 8.1.16 This register would include road related incidents and will allow identification of any specific areas (hot spots), if any, where Koala vehicle interactions are regularly occurring. Upon identification of such an area, suitable management responses can be considered and corrective actions taken.
- 8.1.17 Suitable actions could include increased signage, verge treatments, reduced speed limits/slow points and deployment of exclusion fencing to choreograph Koala movements away from dangerous areas.

⁶³ Document ID: EHP.0031, p 52.

⁶⁴ Document ID: EHP.0099,

8.1.18 It is my view the application does not present a significant threat to fauna populations due to traffic related impacts.

8.2 There have been concerns (objections) raised in regard to dust and its impacts on fauna habitat values and animal health. I defer to the air quality experts as to the likelihood of any significant increase in coal dust in regards to the Project site and surrounds. In regard to dust and terrestrial fauna I provide the following opinions:

8.2.1 I have no knowledge of any specific evidence to suggest that Koalas will move away from the local area due to coal dust.

8.2.2 I note that, there are currently Koalas present in the local area and in close proximity to the mine and haul roads.

8.2.3 Koalas are known from several existing coal mines and numerous quarries, demonstrating their ability to persist in these environments.

8.2.4 I have seen five Koalas in the local area during my site visits and all appeared healthy with no visible signs of chlamydia suggesting there is a low level of stress in the area for this species.

8.2.5 Based on my site investigations and results I did not identify anywhere where vegetation, particularly Koala food trees, was exhibiting poor health due to dust.

8.2.6 Whilst dust may reduce palatability of leaves for Koalas and other herbivores, this would be limited to certain areas in close proximity to the dust source. The majority of higher value Koala habitats are not in close proximity to the proposed pits.

8.2.7 There would be little to no impact on Koala habitats situated away from the active areas or interior vegetation within larger stands in close proximity.

8.2.8 I also note that, in my experience, dust would be generally removed or reduced during rainfall and wind events.

8.2.9 The CG has imposed a condition (CG's Report, Appendix 1, Condition 3⁶⁵) that requires from the commencement of construction NAC is to prepare and make publicly available each month (including online) environmental monitoring reports that address performance against EA conditions that set limits for air, noise, and vibration impacts. The CG has jurisdiction for this condition.

8.2.10 The ongoing monitoring of the Koala population as detailed in the KSMP⁶⁶ will also provide ongoing assessment of Koala health and will assist in identifying any adverse impacts on the species.

⁶⁵ Document ID: EHP.0016, pp 175-176.

⁶⁶ Document ID: EHP.0099.

8.3 Noise has been raised by objectors as of concern to terrestrial fauna. I defer to the noise experts in respect to this issue and as to the likelihood of any significant increase in noise and its appropriate management. In respect to noise and fauna the I provide the following opinions:

- 8.3.1 The New EIS (See Executive Summary Chapter 11⁶⁷) provides guidance on noise related issues.
- 8.3.2 Regardless of the potential noise, the draft EA (Schedule F - Noise⁶⁸) provides the approved limits for noise levels.
- 8.3.3 Although fauna generally becomes accustomed to consistent noise levels or relocates away from the source, (e.g Painted Honeyeaters and Koalas utilising habitats immediately adjoining high volume roadways and industrial areas) there is some potential for fauna to be alarmed by the blasting events.
- 8.3.4 I note that these events are not consistent and in my view fauna will respond in a manner similar to that of natural noise events (e.g. loud thunder).
- 8.3.5 The fauna that is present within the Project Site is there despite the existing mining operations, which has in general terms similar existing noise events.
- 8.3.6 I understand that the imposed conditions will require a reduction in the overall noise permitted as imposed by the Draft EA.
- 8.3.7 Therefore, I do not see any notable grounds for concern, or refusal of the application based on potential noise impacts on terrestrial fauna within the local landscape.
- 8.3.8 I envisage that the more noise sensitive species will avoid prolonged inhabitation of the areas in close proximity of the louder noise generating portions of the Revised Expansion Project.

8.4 Overall, through the proposed management actions, imposed conditions and active monitoring (particularly of the Koala population) during the project, I do not view indirect impacts (traffic, noise and dust) as presenting a significant impact on terrestrial fauna or resulting in habitat loss as a result of the Revised Expansion Project.

9.0 PEST ANIMAL MANAGEMENT

- 9.1 The Revised Expansion Project has addressed pest animal management.
- 9.2 Appropriate management of pest species within the Project Site will be provided through an integrated Pest Management Plan.
- 9.3 The *Land Protection (Pest and Stock Route Management) Act 2002*, regulates the management of pest plants and pest animals in Queensland.

⁶⁷ Document ID: EHP.0031

⁶⁸ Document ID: EHP.0009, pp 29-31.

- 9.4 There has been five declared class 2 pest animal species recorded on the Project Site, being:
- European Fox *Vulpes vulpes*
 - Feral pigs *Sus scrofa*
 - European rabbit *Oryctolagus cuniculus*
 - Wild dog *Canis familiaris*
 - Feral cat *Felus catus*
- 9.5 NAC has committed (Appendix D AEIS – Proponent Commitment No 212⁶⁹) that the Pest and Weed Management Plan (PWMP) and a Pest and Domestic Animal Management Plan will be implemented to oversee the management of weeds and pest animals at the Project Site.
- 9.6 The PWMP will provide an integrated approach to managing all declared pest plant infestations and includes the use of controlled burns, manual removal and herbicide application to reduce weed infestations. It identifies integrated pest management treatments, including baiting, trapping and shooting, to adequately control class 2 pests.
- 9.7 The enactment of the PWMP and associated actions would provide a positive benefit in reduction of pest species in the local landscape and thus assist with maintaining habitat values.
- 9.8 The implementation of an Integrated Pest Management Plan will provide appropriate management responses to reduce the presence of pest animal species.
- 9.9 NAC has undertaken (New EIS Section 7.9.2 Management Plans⁷⁰) to continue to take reasonable steps to keep the Project Site free of Class 1 and Class 2 declared animal pests, in accordance with the requirements of the *Land Protection (Pest and Stock Route Management) Act 2002*.
- 9.10 Management of animal pests will also be consistent with any pest management plans set by the Toowoomba Regional Council.
- 9.11 NAC undertakes periodic consultation with Toowoomba Regional Council and Agforce to keep up to date with pest management issues.
- 9.12 To protect native fauna within the revised Project Site, Project employees, contractors or visitors will not be allowed to bring domestic animals, such as cats and dogs, onto the Project Site.
- 9.13 Whilst pest animals do have potential to impact on native fauna populations, it should be noted that those species persisting in the local landscape have continued their occurrence despite the presence of the pest animals identified in section 9.4.
- 9.14 Overall, the Revised Expansion Project will not result in a net benefit to pest species or provide for an increase in their presence in the local landscape.

⁶⁹ Document ID: EHP.0101, p 10.

⁷⁰ Document ID: EHP.0025, pp 90-92.

10.0 SUMMARY

- 10.1 There is clear recognition of the fact the Revised Expansion Project would result in a significant impact on some conservation significant native fauna or their habitats if suitable mitigation and offsetting actions were not undertaken.
- 10.2 It is my opinion that the mitigation responses and imposed conditions will result in an overall net benefit and ultimately provide a more secure future for fauna species in the local landscape than currently exists.
- 10.3 It is clear the imposed conditions have specific regard to ensuring commensurate offset actions are provided for all known and any subsequently identified ecological significance detrimentally impacted by the Revised Expansion Project.
- 10.4 It is noteworthy to acknowledge that, there are ample lands available under the ownership of the NHG to readily provide additional offset and/or mitigation responses in the local landscape, if required.
- 10.5 The key species of conservation significance known to occur in the disturbance area are the Koala and Painted honeyeater. There are conditions of approval in place, both CG⁷¹ and Draft EA⁷² conditions, which require suitable management responses to mitigate detrimental impacts.
- 10.6 The Lagoon Creek Conservation Zone and the CZMP⁷³ in combination with the nearby offset areas will provide improved habitat connectivity and safe movement options, which will improve fauna movement options through the local landscape.
- 10.7 The KSMP⁷⁴ provides a framework to mitigate Koalas being adversely impacted during operations and to provide improved habitat values.
- 10.8 Taking into consideration the current and prospective uses of the Project Site, the Revised Expansion Project and associated habitat rehabilitation and restoration will provide commensurate mitigation of detrimental impacts and deliver strategically placed fauna movement options with increased management.
- 10.9 It is my view that the offset provisions will provide protection of fauna habitat and habitat values above that which would occur without the Revised Expansion Project being undertaken.
- 10.10 A net benefit in fauna habitat values would be achieved through the proposed offset areas and their long term protection and management in the local landscape, which would otherwise be unlikely to occur.
- 10.11 The provision of the proposed offset and associated protection and prescribed management actions will provide increased long term retention of fauna habitat values and movement options.

⁷¹ Document ID: EHP.0016.

⁷² Document ID: EHP.0009.

⁷³ Document ID: EHP.0071.

⁷⁴ Document ID: EHP.0099.

- 10.12 There are mitigation responses proposed along Lagoon Creek which are proximate to the disturbance area and readily accessible by fauna present in the disturbance area.
- 10.13 Lagoon Creek will provide ongoing movement options for fauna to and through MLA 50232.
- 10.14 In addition to the offset provisions, there is a management framework outlined for the establishment, maintenance and monitoring of the offsets, with clear management and reporting timeframes and target outcomes to inform adaptive management and ensure transparent and effective governance of the offsets.
- 10.15 Indirect impacts (traffic, noise & dust) have been appropriately considered and the imposed conditions and monitoring will mitigate potential detrimental impacts where practical. I do not view indirect impacts as resulting in any significant impact on fauna habitats or their presence in the local landscape.
- 10.16 The approval conditions include precautionary measures and regular reviews to ensure sufficient commensurate offsets are ultimately provided.
- 10.17 Overall, it is my view that the Revised Expansion Project will not result in unacceptable impacts on fauna or fauna habitat values.

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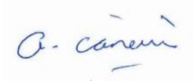
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12.0 ACKNOWLEDGEMENT

I confirm that:

- a) the factual matters stated in this statement are, as far as I know, true;
- b) I have made all enquiries that I consider appropriate;
- c) the opinions stated in this statement are genuinely held by me;
- d) this statement contains reference to all matters I consider significant;
- e) I understand I have a duty to assist the court and that duty overrides any obligation I may have to any party to these proceedings or any person who is liable for my fees or expenses and I have complied with that duty;
- f) I have read and understand the rules contained in Part 5 of the Land Court Rules 2000, as far as they apply to me; and
- g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in these proceedings.



.....
Adrian Caneris dated - 25 February 2016

**ANNEXURE 1:
CURRICULUM VITAE – ADRIAN CANERIS**

BORN: 27 February 1965, Brisbane, Queensland.

CURRENT ADDRESS – 7 Dendy Place, Edens Landing, Queensland, 4207.

POSITION

Managing Director & Principal Wildlife Expert

Biodiversity Assessment & Management Pty Ltd (BAAM)

AREAS OF EXPERTISE

- Expert Witness – Ecological
- Wildlife management
- Biodiversity planning
- Ecological monitoring
- Koala management
- Vertebrate fauna assessment and identification
- Vegetation management
- Assessment of terrestrial habitats
- Feral species management
- Community liaison and facilitation
- Land use planning

CAREER OUTLINE

Adrian has been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology, particularly vertebrate fauna, across Queensland for over 25 years. He has experience at both State and Local government levels in all aspects of ecological management & planning, and community involvement. Adrian has previously held membership on several State Ministerial Advisory Committees and has been the nominated community representative for numerous committees.

Since 2002, Adrian has primarily undertaken specialist consultancy work for local and state governments and private organisations associated with ecological investigations, recommendations for fauna management and species recovery planning. Adrian has worked on numerous major infrastructure Revised Expansion Projects and has worked in all major Queensland townships.

Adrian is a recognised leader in wildlife management and through his career he has been a pioneer on and responsible for numerous Revised Expansion Projects which have advanced the knowledge or application of wildlife management.

Adrian has completed and been certified as an international Public Participation Practitioner by the International Association for Public Participation (IAP2)

Adrian is a certified environmental practitioner and is recognised under the EIANZ Certified Environmental Practitioner **CEnvP** and holds certification under CEnvP as an Ecological Specialist. Adrian has also completed the EIANZ NSW Environmental Expert Training Course.

CAREER HISTORY

2002 – ongoing: Managing Director - Biodiversity Assessment and Management

Specialist ecological assessment and management consultants. Consultancy work for all levels of local Government, industry and private clients. Conduct detailed field

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investigations and subsequent data collection and advice, including analysis and report compilation, for a range of clients on all aspects and issues relating to wildlife and habitat management. Revised Expansion Project management and provision of high level expert advice and expert witness to Queensland's Planning and Environment Court.

2000 - ongoing: Director, Wildlife Land Trust Ltd Qld

Management board for not for profit company to acquire lands for conservation of Qld Wildlife. Recently purchased remnant rainforest jointly with State and Federal Governments, Bukulla Conservation Park. A first for Qld. Ongoing acquisition and management of lands held under the trust control.

**2007 - 2012:- The Redland Institute - President 2010,
Reference Committee Member – Environment 2007-2009**

The Redlands Institute is an independent, community-based not-for-profit organisation working to create, implement and promote a shared vision for Redland City Council area. The Institute consists of committed business and community representatives who share a desire to create a clear identity for the new City of Redlands to 2020 and beyond. Adrian was selected to provide advice on ecological aspects and a sustainable future for the Redland City Municipality. As president Adrian represents the Redlands community on a wide range of social and environmental issues.

2005 - ongoing:- Glossy Black Cockatoo Conservancy

Adrian conceived the concept for the Glossy Black Conservancy (GBC) and he obtained the support needed to establish the group. The GBC was officially formed in 2005 and has since gone on to be recognised as a significant step in the application of species specific wildlife management. Through Adrian's leadership, since 2005 the number of partners within the GBC has continually grown, with the GBC currently made up of 18 partners:

2004 - 2007: Greenspace Advisory Committee, Redland Shire Council

One of three community representatives which provide expert advice and guidance to this Redland Shire Council Advisory Committee. This committee primarily advises the council on the strategic management of lands holding important ecological values within the shire.

2001 – 2004: Australian Wildlife Management and Services, Director

Specialist wildlife management consulting business. Consultancy work for local Government, development applications, recovery planning, and species management. Expert wildlife field investigations and management recommendations.

2003 - 2004: Chair, Queensland Wildlife Rehabilitation Council

This committee was formed to provide the state of Queensland with a single entity body to provide the required framework to advance the intentions of the recent legislation changes. Adrian was appointed by the Queensland EPA to chair the group and advise the state on how to form and operate such a association. The position required ongoing liaison with the Minister and departmental staff and all licensed groups and individuals on all aspects and issues pertaining to wildlife rehabilitation and permitting.

2002 - 2003: Pest Animal and Plague Advisory Committee

Appointed by the State Minister, Department Natural Resources.

This committee provided advice on appropriate responses to the Minister and departmental staff on all aspects and issues pertaining to pest and plague animal management. Broad ranging advice on relevant legislation, policies and practices.

1999 - 2003: Recreational & Commercial Animal Management Committee

Appointed by the State Minister for Environment and Natural Resources 1999-2000 and reappointed by Minister for Environment 2000. This committee was established to advise the State Environment Minister and departmental staff on all aspects and issues pertaining

to the trade and utilisation of wildlife throughout Queensland. Broad ranging advice on relevant legislation, policies and practices. Formulation of legislation for Qld wildlife permitting system.

1999 - 2003: South East Queensland Conservation Strategy Committee – Community Representative

One of two community representatives on State Government committee involved in compiling a strategic planning document designed to help protect the biodiversity of SEQ. It was envisaged that this document when completed, would be adopted by the Queensland cabinet to form the basis for all landuse and planning decisions in natural areas. primarily in the southeast with plans for its use in other regions of Queensland.

1996 – 2002: Redland Shire Council, Senior Conservation Officer – Wildlife

Advise Redland Shire Council on all aspects and issues relating to wildlife management. Compile all associated reports on wildlife management, both formal and informal, for presentation to staff and committees. Conduct detailed field investigations and data collections to provide advice on fauna species presence, distribution and conservation significance.

Operation and coordination of Redland's After-hours Wildlife Ambulance service. Responsibilities included ensuring compliance with relevant Acts and Codes of Practice, volunteer adherence to local by-laws training of volunteers in rescue techniques, safety issues and relevant legislation, development of agreements with state departments, volunteer roster and vehicle maintenance.

1998 – 2001: Moreton Institute TAFE , Environmental Sciences Teacher

Development and delivery of curriculum, course structure and learning outcomes for environmental sciences unit.

Modules included:

- Endangered Species Management
- Faunal Monitoring,
- Data Collection,
- Care of Sick and Injured Wildlife
- Management of Fauna Populations
- Conflict resolution,
- Nature Searching.

1999 - 2002: Koala Coast Council - Advisor on Koala management in Koala coast region

Committee appointed to review and advise Queensland Parks and Wildlife Service on management issues relating to koala preservation. Also for the implementation and achievement of policy objectives within the "State Planning Policy 1/97 Koala Coast". Adrian represented the Redland Shire Council Mayor on this committee.

1994 - 2004: Wildlife Preservation Society of Queensland (WPSQ) State Council Member -

1994-1996 Elected Vice President
1996-2000 Elected State President
2001-2003 Vice President

Representation of 24 branches with over 2000 members. The position involved: Maintaining and growing the society in accordance with its constitution all society financial dealings. Including taxation, superannuation, holiday entitlements and investments, organisational planning, staff management and administration, policy formation, contract formulation,

constitutional matters, public relations and media representation on State Departmental committees.

1997 - 2000: QPWS Macropod Management Advisory Committee

Appointed by the State Minister for Environment and Natural Resources. A State Ministerial advisory committee reporting to the Minister for Environment on the management of macropod populations (kangaroos & wallabies) and the harvesting of macropods for commercial use.

1997 -1999: National Heritage Trust - Technical Assessment Committee for NHT Grants SE Qld

Involved technical reviewing of all NHT grant applications, the rating of each on environmental and physical feasibility criteria and the compilation of reports for the Federal committee on funding and prioritisation of applications.

1993 – 1996: Ipswich City Council Environmental Advisory Committee Member

Responsible for the development of conservation policies and advisor to Ipswich City Council on all aspects of natural area management and policy formation.

1993 – 1996: Department of Environment and Heritage, NatureSearch - Wildlife Ranger

Required to locate, identify and record vertebrate and selected invertebrate species, process all survey results into report form. A vertebrate species monitoring Revised Expansion Project covering the entire Southeast Qld region and greater Townsville areas. Development of monitoring plans, interpretative talk development and presentation.

Verification of all flora and fauna data collected by volunteers, public relations and field work. General maintenance duties such as the upkeep of a variety of traps, general fauna survey equipment and vehicles.

Selected Expert Witness (Ecological) - Qld Planning and Environment and/or Land Courts.

- Land Court of Queensland Registry: EPA081-13 Legend International Holdings Inc. v J W Taylor Aly Awaditiia & Anor (Ecological expert for Legend Holdings)
- Land Court of Queensland Proceedings no. MRA428-14, EPA429-14, MRA430-14, EPA431-14, MRA432-14 and EPA433-01, Adani Mining Pty Ltd v Land Services of Coast & Country Inc. & Anor (Ecological expert for Adani)
- Land Court of Queensland Registry: AQL021-14, Philip Usher Constructions Pty Ltd v Brisbane City Council (Fauna Expert for Phillip Usher)
- P&E Appeal 4072 of 2012 between: Dickson Properties PTY ATF Dickson Investment Trust and Brisbane City Council & Anors (Ecological expert for REPA)
- P&E Appeal 2768 of 2009 Rainbow Shores v Gympie Regional Council & Ors. (Fauna expert for Department of Environment & Heritage)
- P&E Appeal BD1119 & 1120 of 2010 - Altitude Corporation Pty Ltd v Isaac Regional Council (Flora and Fauna expert for Altitude)
- P&E Appeal D60 of 2009 - Luis Serafini v Gladstone Regional Council (Koala Expert for Serafini)
- P&E Appeal 3566 of 2009 – Casagrande v Redland City Council & Ors (Fauna expert for Casagrande)

- P&E Appeal BD6 of 2009 - Altitude Corporation Pty Ltd v Isaac Regional Council (flora and fauna expert)
- P&E Appeal 889 & 890 of 2009 - Reynoldsman Pty Ltd & Bulimba Creek Catchment Committee v Brisbane City Council & Greendale Developments.
- P&E Appeal BD531 of 2009 - Landmart Qld V Redland City Council
- P&E Appeal 2153 of 2008 – Palmer v Redland City Council
- P&E Appeal 3647 of 2008 - The Carindale Land Company v Brisbane City Council & Michael Pavlou
- P&E Appeal BD3438 of 2007 Barro Group v Redland Shire Council & Ors
- P&E Appeal 3413 of 2007 - Wilson & Godfrey v Brisbane City Council & BMD properties Pty Ltd
- 2529 of 2007 Randal & Lambert V Redland Shire Council
- P&E Appeal 2434 of 1998 – James Thomas Barnes & Lynette Joy Barnes v Maroochy Shire Council
- P&E Appeal 314 of 2006 - P.D & MA Wruck v Redland Shire Council and Esvee Pty Ltd (Maroochydhore)
- P&E Appeal MD 205 of 2006 - Endless View Holdings Pty Ltd v Hervey Bay City Council & Corporation Of The Synod of The Diocese of Brisbane - Fraser Island Anglican College (Brisbane Registry)

CURRENT ECOLOGICAL RELATED MEMBERSHIPS

- **Queensland Environmental Law Association (QELA)**
- **Environment Institute of Australia and New Zealand (EIANZ)**
- **Wildlife Preservation Society Qld**
- **Wildlife Land Fund Limited**
- **Queensland Bird Society**
- **Queensland Frog Society**
- **Redlands Institute**

Additional information on Adrian and his experience can be obtained from www.baamecology.com

ANNEXURE 2:
RESPONSE TO TERRESTRIAL FAUNA MATTERS RAISED IN
MLA AND EA OBJECTIONS

Annexure 2 – Response to terrestrial fauna matters raised in MLA and EA objections

Objector References:

Frank and Lynn Ashman (**Ashman**); Glenn Beutel (**GB**); Russell Byron (**RB**); John Cook (**JC**); Patricia Cook (**PC**); Darling Downs Environment Council (**DDEC**); Paul Evans (**PE**); Hazel Green (**HG**); Aileen Harrison (**AH**); Karen Lavin (**KL**); Carolyn Lunt (**CL**); Paul and Angela Mason (**Mason**); John Millane (**JM**); Oakey Coal Action Alliance (**OCAA**); Marilyn Plant (**MP**); Sid Plant (**SP**); Tanya Plant (**TP**); Frances Scarano (**FS**); Max North Scholefield and Jane Pamela Scholefield (**MJS**); John Standley (**Standley**); David and Cheryl Vonhoff (**DCV**); Dr Steven Ward (**Ward**); Noel and Fay Wieck (**NFW**).

Table 1 – Response to terrestrial fauna matters raised in MLA and EA objections.

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
1.1	If the Revised Expansion Project proceeds, it will have an unacceptable impact on biodiversity. The proposed Revised Expansion Project will cause damage destruction to local flora and fauna, some of which is protected under various State and commonwealth legislation.	DDEC; OCAA; Glenn Beutel; Tanya Plant; Hazel Green; Marilyn Plant; Sid Plant	Paragraph 34 (DDEC and OCAA); Page 4, page 12 (GB); Paragraph 131, EIS submission p34, 35 (TP); Paragraph 18, 23 (HG); Paragraph 24, 25, 34; EIS submission, under heading 5 (MP); Paragraph 132 (SP)	Tanya Plant; Nardi Rowe; Max and Jane Scholefield; Marilyn Plant; OCAA; Dr Steven Ward; John Standley; Frank and Lynn Ashman; John Cook; Patricia Cook; Frank and Lynn Ashman; John Cook; Patricia Cook; Russell Byron; Glenn Beutel	EA submission paragraph 66, 69 (TP); EA submission paragraph 66, 69 (SP); Page 4, dot point 1 (NR EA Objection); Page 7, paragraph 26 (MJS EA submission); Page 6, paragraphs 34 and 49 (MP EA Submission); Paragraph 31 (OCAA); Para 33 EA Submission and Objection (Ward); Page 2 (Standley EA submission) and Page 2 (Standley EA objection);	Please see the following sections of my statement: - Section 5.0, Assessment of the Site - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts - Section 9.0 Pest Species Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					Page 6 and 7 of the EA Submission (Ashman); EA Submission page 5 para 24 (JC); EA Submission page 5 para 24 (PC); Page 3, 6 and 7 of EA Submission (Ashman); EA Submission page 5 para 25 (JC); EA Submission page 5 para 25 (PC); EA Submission Page 5 (RB); EA Submission Attachment A page 4/17 (GB)	
1.2	The ecological assessments done for the Revised Expansion Project were inadequate to appropriately determine the extent of those impacts.	DDEC; OCAA; Tanya Plant; Marilyn Plant	Paragraph 35 (DDEC and OCAA); EIS submission p35 (TP); AEIS submission (Feb 2014), Page 53 (MP)	Tanya Plant; Max and Jane Scholefield; Marilyn Plant; OCAA; Dr Steven Ward; Frank and Lynn Ashman; John Cook; Patrici Cook	EA submission paragraph 67, 71 (TP); EA submission paragraph 67 (SP); Page 7, paragraph 26 (MJS EA submission); Page 6, paragraph 35	Please see the following sections of my statement: • Section 5.0, Assessment of the Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					(MP EA Submission); Paragraph 32 (OCAA); Para 34 EA Submission and Objection (Ward); Page 6 and 7 of the EA Submission (Ashman); EA Submission page 5 para 26 (JC); EA Submission page 5 para 26 (PC)	
1.3	Species that will be severely impacted by the mine include, but are not limited to, the koala. A population of koalas is located within the mine lease area. No confidence can be placed in species impact mitigation measures, such as the Koala Management Plan, which are inadequate.	DDEC; OCAA; Hazel Green; Marilyn Plant; Sid Plant; Tanya Plant	Paragraph 36 (DDEC and OCAA); Paragraph 23 (HG); Paragraph 22; Annexure "Further notes on reasons for objections" under heading 3, AEIS submission (Feb 2014), Page 28, 29, AEIS submission (29/09/13),	Tanya Plant; Paul Evans; Carolyn Lunt; John Millane; Nardi Rowe; Frances Scarano; Max and Jane Scholefield; Marilyn Plant; Aileen Harrison; OCAA; Dr Steven Ward; Glenn Beutel	EA submission paragraph 68 (TP); EA submission paragraph 68 (SP); Page 1, dot point 5 (PE EA Submission); Page Please see the following paragraphs from my statement:1, dot point 5 (CL EA submission); Page 1, dot point 5 (JM EA submission); Page 1, dot point	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
			page 13 (MP); Paragraph 134 - 138, 141, submission on revised EIS, page 6, "Koalas" (SP); EIS submission p35, AEIS submission p34 (TP)		5 (NR EA submission); Page 1, dot point 5 (FS EA submission); Page 7, paragraph 26 (MJS EA submission); Page 6, paragraph 36 (MP EA Submission); Page 3 of Appendix and Paragraph 11 (AH); Paragraph 33 (OCAA); Para 35 EA Submission and Objection (Ward); EA Objection Attachment B page 1/2 (GB)	
1.4	Koalas will not stay anywhere where the dust settles on trees because they are reluctant to eat contaminated leaves. The atmospheric dust has visibly dramatically increased above what it was prior to	Sid Plant	Paragraph 139, 140, submission on revised EIS, page 6, "Koalas" (SP)	Merilyn Plant; Aileen Harrison Sid Plant	MP Annexure to EA submission "Acland Stage Three Take Four" under heading "3 - Flora and fauna"; Page 3 of	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	the mine. (MP; AH) Expert advice that I have been able to get suggests that koals will not stay anywhere where the dust settles on trees because they are reluctant to eat contaminated leaves. The atmospheric dust has visibly dramatically increased above what it was prior to the mine. (SP)				Appendix (AH) EA submission paragraph 77, 78 (SP)	
1.5	If the Revised Expansion Project proceeds, it will have unacceptable noise impacts on human and environmental health, including wildlife	DDEC; OCAA	Paragraph 23 (DDEC; OCAA)	Tanya Plant; Sid Plant; Aileen Harrison; Karen Lavin; OCAA; David and Cheryl Vonhoff; Dr Steven Ward; Noel and Fay Wieck; John Cook; Patricia Cook	EA submission paragraph 48, 98 (TP); EA submission paragraph 48,106 (SP); Page 2 of Appendix (AH); Point 5 of email (KL); Paragraph 22 (OCAA); Page 2 paragraph 22 (EA Submission) (DCV); Para 29 EA submission and objection (Ward); Para 2 under Social Impact heading of EA	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 pest Species Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					submission (NFW); EA Submission page 5 para 20 (JC); EA Submission page 5 para 20 (PC)	
1.6	There will be significant adverse environmental impacts caused by those operations. Endangered species will be adversely affected. Fauna such as Koalas will be obliterated. Example provided by PC: "[L]oss of habitat and disturbance".	John Cook; Patricia Cook	Page 2 (JC; PC)	Aileen Harrison	Page 3 of Appendix (AH), Paragraph 11 (AH)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management
1.7	These developments will lead to a net loss of Endangered Regional ecosystems, koala habitat and movement corridors, bird nesting sites and hollows, biodiversity loss, especially on roadside reserves. Much of the natural landscape has been already destroyed to grow crops. (Some of this now only grows weeds). Eighty percent of stage 3 land was deemed to be "good quality	Glenn Beutel	Page 4 (GB) Page 14 (GB) Page 12 (GB) Page 7 (GB) Page 11 (GB)	Glenn Beutel	EA Submission Attachment A page 4/17, 7/17, 8/17, 11/17, 12/17 (GB)	Please see the following sections of my statement: • Section 5.0, Assessment of the Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	agricultural land". The remainder is habitat for fauna. The movement corridors of Koalas, Echidnas and other species has not been considered. The nest sites and hollows have not been considered or mitigated. The proposed upgrade of the Acland Sabine Road and possible relocation of power lines along this corridor / and/or railway reserve is of great concern as this contains Koala habitat (not shown) and homopholis Belsonii (not shown on clarification maps) and potentially listed fauna species. Echidnas are not mentioned in the fauna studies, nor are a lot of other species which occur in this region. The effort of the proponent to document the fauna and flora is rather wanting when this entire landscape is to be destroyed. The once common Blue Tongue lizard is rarely seen now. In recent years the diversity of moths is much diminished.					

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	I noted in my 1st EIS Stage 3 that the methodology and locations for animal trapping was not appropriate for the target species. Since New Hope Group purchased land around Acland, Box thorn, Tree pear, fox, pigs, rabbits and Mother of Million have all got out of control. I have trapped more than 50 feral and abandoned cats and taken them into Toowoomba RSCPA.					
1.8	Species severely and permanently impacted by the mine will include by are not limited to two listed species, the Koala and Grey-headed flying fox , and two Rare fauna species (Painted Honeyeater and Little Pied Bat) recognised under the Nature Conservation Act 1992 (NC Act). Areas of Koala habitat existing in poplar box communities are located outside of the conservation zone and fall within the disturbance footprint. Considering s269(4)(j) of the	Paul and Angela Mason	Paragraph 39 and 40 (Mason)			Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Animal Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	MRA, the EIS and AEIS do not adequately demonstrate that the mine will not have unacceptable long term or permanent adverse environmental impacts on biodiversity, including threatened species and ecosystems caused by mining operations and the extent of mining operations at the mine.					
1.9	Proposed offsets are a poor alternative to refusing the Revised Expansion Project and maintaining the existing ecosystems.	Tanya Plant; Sid Plant	Paragraph 132, EIS submission p36 (TP); Paragraph 133 (SP) Paragraph 48, EIS submission p36 (TP); Paragraph 49 (SP)	Tanya Plant	EA submission paragraph 70 (TP); EA submission paragraph 70 (SP) EA submission paragraph 70 (TP); EA submission paragraph 70 (SP)	Please see the following sections of my statement: • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Animal Management
1.10	The EIS acknowledges that there are areas of various endangered and "of concern" and "least of concern" regional ecosystems on the site of the proposed Revised Expansion Project (chapter 7). The proposed site also	Tanya Plant	EIS submission p34, 35 (TP)			Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	includes species that are listed as endangered and vulnerable under the EPBC Act. The proposed pits would destroy these areas and ecosystems (see figure 7-7 for example). The proposed Revised Expansion Project would result in clearing 64.7ha of threatened communities listed under the EPBC Act and 142.9ha of regional ecosystems listed under state legislation (see page 7-78). This disturbance should not be allowed.					Section 9.0 Pest Animal Management
1.11	The Acland area has been rich in biodiversity including plants, marsupials, reptiles, insects and smaller useful biota. The destruction caused by stage 2 would be much worse if stage 3 were to take place. This is an important area for koala habitat and because of many pressures on the koalas I have worked in various organisation to help restore/preserve some	Hazel Green	Paragraph 23 (HG).			Please see the following sections of my statement: - Section 5.0, Assessment of the Project Site - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts - Section 9.0 Pest Animal Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	habitat. The government has made grants to help with this. It would be extremely irresponsible to allow expansion of the New Acland mine to further undermine koala survival by destruction of habitat, increased traffic and noise. Current federal laws acknowledge that the koala is vulnerable.					
1.12	We have many visitors who come to see the Australian wildlife will so it has a huge impact on our ability to fulfil their expectations. The mine will destroy lots of trees and plants and habitat if this Revised Expansion Project is approved.	Merilyn Plant	Paragraph 23, 25 (MP)	Merilyn Plant	Page 6, paragraphs 38 and 40 (MP EA Submission)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 9.0 Pest Species Management
1.13	The proposed Revised Expansion Project seems to have inadequately considered the impact on some species			Tanya Plant; Sid Plant	EA submission paragraph 71 (TP); EA submission paragraph 71 (SP)	Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
1.14	In 1976 we made our best efforts to count the resident koalas on our place and found there to be in the vicinity of 80. They don't normally move far and often spend days on one tree. Since the mine started our population has declined. Now there are rarely more than 6 on the property at any one time.			Sid Plant	EA submission paragraph 73, 74, 75, 76 (SP)	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts - Section 9.0 Pest Species Management
1.15	I think the mine's koala management plan is grossly inadequate.			Sid Plant	EA submission paragraph 79 (SP)	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts - Section 9.0 Pest Species Management
1.16	The Revised Expansion Project will cause negative impacts on threatened species and communities, including the Koala			Paul Evans; Carolyn Lunt; John Millane; Nardi Rowe; Frances Scarano; John Cook	Page 1, dot point 5 (PE EA Submission); Page 1, dot point 5 (CL EA submission); Page 1, dot point 5 (JM EA submission); Page 1, dot point 5 (NR EA	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 9.0 Indirect Impacts - Section 9.0 Pest Animal Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					submission); Page 1, dot point 5 (FS EA submission); EA Submission page 5 para 18 (JC)	
1.17	There are always accidents and spills at a mine and it is near protected and sensitive vegetation and water supplies.			Frances Scarano	Page 4 (FS EIS Objection)	Please see the following sections of my statement: • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts
1.18	The remaining vegetation must be preserved for food and habitat for our endangered wildlife.			Carolyn Lunt	Page 4 (CL EA Objection)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 9.0 Pest Species Management
1.19	We have a seriously declining population of Koala on and near our farm. (example by MJS: Less than 2 years ago, between 2 and 6 Koalas would be seen on our early morning walk, we now only occasionally see one.)			Max and Jane Scholefield; Merilyn Plant	Page 7, paragraph 29 (MJS EA submission); Page 6, paragraph 37 (MP EA Submission); Annexure "Acland Stage Three Take Four" under	Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Animal Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
					heading "3 - Flora and fauna"	
1.20	Traffic kills wildlife. The mine creates more traffic.			Merilyn Plant	Page 6, paragraph 39 (MP EA Submission)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts
1.21	Some people's animals seem to have had health problems when close to the mine or its impacts.			Merilyn Plant	Page 6, paragraph 50 (MP EA Submission)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts
1.22	Planting box trees for the koalas is ineffective as it takes many years for trees to grow. Koalas cannot survive this waiting period. Koalas have left the area because of noise stress, poor nutrition of the few trees left, the distance they have to travel between trees.			Aileen Harrison	Page 3 of Appendix (AH), Paragraph 11 (AH)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management
1.23	The proposed bridge under Lagoon Creek would not be used by the koalas as they travel East-West, not North-South which is Lagoon			Aileen Harrison	Page 3 of Appendix (AH)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	conservation area. Koalas cannot be trained to go under the bridge.					Habitat Values Section 9.0 Pest Species Management
1.24	New Hope has stated that all animals become accustomed to noise, but observations over the last 8 years suggest that animals never get used to the ground tremble and are startled by it. The effects of noise and blasting on wildlife have not been studied by New Hope, and the experience here is that stock cannot exist healthy in the vicinity of the mine.			Aileen Harrison	Page 2 of Appendix (AH)	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts
1.25	Koala road kills from mine trucks have been reported widely. The impact of the expansion of the mine into the remaining koala habitat would inevitably seen the end of the koala as an endemic species in the district. The propoent's proposals re plant koala food trees are completely misguided as they will not reach maturity for many decades after the last colony has disappeared.			Aileen Harrison	Paragraph 11 (AH)	Please see the following sections of my statement: - Section 6.0, Conservation Significant Fauna - Section 7.0, Fauna and Fauna Habitat Values - Section 8.0 Indirect Impacts - Section 9.0 Pest Animal Management

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
1.26	The Court should consider refusing the application because elimination of the koala conflicts with Queensland wildlife legislation and has the potential to trigger protection under the EPBC Act.			Aileen Harrison	Paragraph 12 (AH)	Please see the following sections of my statement: • Section 5.0, Assessment of the Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management
1.27	The koalas have migratory patterns and trails to follow - the mine will interrupt these patterns particularly with blasting noise and mine vehicles. Clearing of their traditional habitats also destroys their source of fodder.			Patricia Cook	EA Submission page 5 para 26 (PC)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts • Section 9.0 Pest Species Management
1.28	The proposed upgrade of the Acland Sabine Road and possible relocation of powerlines along this corridor and/or railway reserve is of great concern as this contains koala habitat (not shown) and homophobic Belsonisi (not shown on clarification maps) and potentially listed fauna			Glenn Beutel	EA Submission Attachment A page 12/17 (GB)	Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values

Table 1	Specific Objection	MLA Objector	MLA Reference	EA Objector	EA Reference	Response
	species.					
1.29	The proposed upgrade of the Acland Sabine Road and possible relocation of power lines along this corridor / and/or railway reserve is of great concern as this contains Koala habitat (not shown) and homopholis Belsonii (not shown on clarification maps) and potentially listed fauna species.	Glenn Beutel	Page 12			Please see the following sections of my statement: • Section 5.0, Assessment of the Project Site • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values
1.30	Traffic kills wildlife. The mine creates more traffic.	Merilyn Plant	Paragraph 24 (MP)	Merilyn Plant	Page 6, paragraph 39 (MP EA Submission)	Please see the following sections of my statement: • Section 6.0, Conservation Significant Fauna • Section 7.0, Fauna and Fauna Habitat Values • Section 8.0 Indirect Impacts

ANNEXURE 3:
RESPONSE ON MATTERS RAISED IN LAY WITNESS
STATEMENTS FILED BY OBJECTORS

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
1.			
1.1		46	Based on my site investigations, the results of the fauna assessments for the Revised Expansion Project I am unaware of any notable health impacts on fauna populations. There will be no net loss of habitat as the offset requirements and Lagoon Creek restoration will provide an overall increase in habitat and habitat values.
1.2		61	All roadways have an impact on fauna. The roadways around the subject area have potential for roadkill regardless of whether or not the Revised Expansion Project achieves approval. The proposal to construct a new 8 km rail spur line and balloon loop from Jondaryan onto MLA 50232 will significantly reduce the level of heavy truck movements. The New EIS (section 3.10 ⁷⁵) addresses traffic and transport. The traffic assessment found that both the construction and operational phases are not expected to have a significant impact on traffic operations on any of the key road links, with the Level of Service for each phase estimated to remain unchanged for each road section in comparison to the background traffic volumes. It is my view the application does not present a significant threat to fauna populations due to vehicle movements.
1.3		62	I am unaware of a single species which has been lost to the local landscape as a result of the existing mine. It should be noted that the rehabilitation is primarily focussed on land stabilisation and return the lands to pastoral uses. Where trees are planted in straight lines this is primarily associated with screen plantings to reduce aesthetic impacts. Even so, the screen plantings have value for fauna and many local species, as I have observed during site investigations, are utilising the screen plantings.
1.4		63	The clearing will have impacts on individual animals that have home ranges within the disturbance footprint. Many of these species will have opportunity for relocation into adjoining areas. There will also be fauna spotter catchers engaged to ensure clearing is conducted with as little as possible fauna casualties. I am very confident Koalas will not be harmed by the proposed clearing. The Koala species management plan provides prescribed actions to limit any potential detrimental impacts.
1.5		64	The traffic assessment found that both the construction and operational phases are not expected to have a significant impact on traffic operations on any of the key road links, with the Level of Service for each phase estimated to remain unchanged for each road section in

⁷⁵ Document ID: EHP.0021, pp 90-98.

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
			comparison to the background traffic volumes. It is my view the Revised Expansion Project does not present a significant threat to fauna populations due to vehicle movements.
1.6	[REDACTED]	65	The traffic issue is addressed above in 1.2 & 1.5. The potential for noise and dust is also reduced due to the conversion to transport the product via rail to Jondaryan. Whilst dust may reduce palatability of leaves for Koalas and other herbivores, this would be limited to certain areas in close proximity to the dust source and little to no impact on habitats further away or interior vegetation within larger stands. The provision of the offsets will remove any likelihood of habitat loss.
1.7	[REDACTED]	66	There appears to be some confusion in regards to the rehabilitation and aims. It should be noted that there are areas which have, and will be, rehabilitated back to be pastoral areas as opposed to rehabilitated to native habitats. In respect to the statement "The rehabilitation so far has failed to achieve anything of consequence and is not used by fauna in the area"- I disagree that the rehabilitated areas are not nor will not being used by fauna. There are vast examples of natural regeneration and planted vegetation being used by native fauna. Where there are suitable Koala food trees these will/would provide for Koala if/when present in that area. There is a plethora of examples where Koalas are well known to utilise rehabilitated lands, and this includes rehabilitated Coal Mines. In respect to the last sentence – “We believe that the New Acland Mine rehabilitation to date has just been an exercise for media and photoshoots”. I can’t really comment on what has been undertaken and the primary reason for the action, in the past. However, I can state that the current application includes rehabilitation of the Lagoon Creek corridor which has been specifically identified for the ecological outcomes this action would achieve. This will provide a functioning corridor through the local landscape along the creek corridor which is already known to be utilised by many native species including species of conservation significance (Koala & Painted honeyeater). There is no doubt that as the rehabilitation is progressed – which includes natural regeneration these areas will provide high value habitats in the landscape. As stated by Sid Plant (section 2.2 below) “the number and density of the Poplar Box has increased significantly, including in the period since the mine started” which clearly shows that natural and assisted rehabilitation is occurring.

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
2.	[REDACTED]		
2.1	[REDACTED]	94	I have no knowledge of any specific evidence to suggest that Koalas will move away due to Coal dust. In fact, there are koalas present in the local area and in close proximity to the mine and haul roads. Koalas are known from several existing coal mines and this demonstrates their ability to persist in these areas. I have seen 5 Koalas in the local area during my site visit and all appeared healthy with no visible signs of chlamydia suggesting there is a low level of stress in the area for this species (discussed further in 2.2).
2.2	[REDACTED]	95	[REDACTED], based on historical aerial photos and site observations, that there has in relatively recent times been an increase in Poplar box and other native vegetation. This is mostly a result of altered land use, reduced cropping and stocking, and natural regeneration has progressively established. [REDACTED] - "Although the chlamydia disease was a problem for the koala population years ago". Chlamydia is present in most koala populations. Chlamydia is an organism which lives in the body tissues of even the healthiest Koalas. Chlamydia can and does make Koalas sick. The organism is generally harmless in populations with good habitat and resources, but manifests in times of stress, such as happens when habitat is reduced. The weaker animals succumb to the disease, become sick, infertile or die, leaving the genetically stronger animals to continue breeding. Disease is part of the natural history of the Koala. There are 4 common koala diseases caused by the chlamydia organism: conjunctivitis which can cause blindness, pneumonia, urinary tract infections and reproductive tract infections, which can cause female infertility. The symptoms of chlamydia manifest as sore eyes, chest infections, and "wet bottom" or "dirty tail". Different strains of chlamydia bacteria are thought to cause these various diseases. It is when the disease manifests as sore eyes or wet bottom/dirty tail, that it is obvious to the observer that a koala is sick. [REDACTED] - "the chlamydia disease was a problem for the koala population years ago", and also that, "the number and density of the Poplar Box (the koala's preferred food in the area) has increased significantly." This scenario is reflective of the increased habitat and reduced stress resulting in an overall healthier Koala population. [REDACTED] [REDACTED] There is no immunity in the local population, or koala scientists

Annexure 3 - Response on matters raised in lay witness statements filed by objectors

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
			would be climbing all over the population trying to work out how and why. The apparent increase in health will be directly related to habitat values and other stress related influences (natural and anthropogenic) being reduced. I have observed Koala's on 5 separate locations within the MDA and surrounds and all were in very good health. Whilst there may be some increased stress for an individual animal or two who occupy areas within the disturbance footprint, the proposed restoration and offset plantings will provide an increase in habitat and habitat linkage.
3.			
3.1		118	Koala numbers have dropped across their range in Queensland. The reduction in truck movements due to the creation of a rail link to Jondaryan will reduce potential truck related incidents.
3.2		119	I cannot comment on the number or relevance of Koala road kills in respect to stages 1 & 2 of the mine. I have not received any evidence which demonstrates an increase in road kills at any point of the operation. I do note that Koalas are present in the area, and the population is generally healthy and breeding is occurring.
3.3		120	The removal of the trucks and commencement of Rail transportation will significantly reduce the likelihood of trucks killing Koalas. There is ways to reduce Koala road deaths through the deployment of barrier fencing, reduced speeds and provision of fauna crossings as is proposed and required by imposed conditions.
3.4		121	The loss of food trees can be readily mitigated through the provision of suitable offsets as imposed by conditions.
3.5		122	The Revised Expansion Project will not wipe out Koalas from the district. This statement suggests that the Project Site is the one and only core habitat in the district which is just incorrect. There is significant stands of habitat outside of the disturbance area and Koala are known to be present within.
3.6		123	There are numerous examples of natural regeneration of Koala food trees in the local landscape. Whilst it does take time for these trees to establish and obtain a suitable size to have value as Koala habitat the provision of offsets and lagoon creek restoration will provide suitable habitats for Koala. It should be noted that the Mine is a staged development and the proposed clearing is progressive which reduces the time lag between habitat loss and the replacement plantings providing suitable habitat.
4.			

Annexure 3 - Response on matters raised in lay witness statements filed by objectors

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
4.1	[REDACTED]	56	The Revised Expansion Project will change the landscape both within the disturbance area and outside. It is apparent that the disturbance area will be significantly changed. It is also clear that with the imposed conditions there will be a significant change in other lands being converted from agricultural to managed offsets. The overall result will be a net increase in fauna habitat in the local landscape.
5.	[REDACTED]		
5.1	[REDACTED]	73	There will be a loss of fauna from the proposed mine pits. However, this will not be a total wipe out of those species or individual animals. Many will disperse of their own volition and other more sedentary or less vagile species will be subject to relocation by fauna spotter catchers. It should be noted clearing is staged and progressive and this approach allows ample opportunity for fauna to relocate away from the disturbance.
6.	[REDACTED]		
6.1	[REDACTED]	93	My site investigations identified that Koalas are utilising a range of habitats within the local area. It is only with detailed and repeated Koala monitoring surveys can any confidence be placed on the actual number and population dynamics be established. Koalas are a relatively cryptic species and incidental sightings are an unreliable source for establishing the actual number and status of the species in any given area.
6.2	[REDACTED]	94	Koalas do eat Mountain Coolabah and will readily move to, from and or through various properties and lands to access individual trees or stands of trees on surrounding properties. There are few barriers to Koala movement in the local landscape.
7.	[REDACTED]		
7.1	[REDACTED]	Page 1	The species listed do provide support for the statement about inconsistencies within the reporting. Whilst some of these species can be difficult to confirm as present – due to their wide ranging nature, seasonal visitation and/or cryptic behaviour, there are others which I would have expected to have been identified as being present. It is my view that this is a result of the various reporting formats and different companies undertaking the work. I do note that the listed species are all listed as common species (<i>Least Concern</i> under the NC Act) and none of these species were or should have been the subject of targeted surveys. Notwithstanding the above, any inconsistencies within reporting have no relevance to the

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
	[REDACTED]		imposed conditions or management responses required. No significant impact is expected on any of the species listed. There will be a loss of tree hollows, where present, within the disturbance footprint. Tree hollows are of value for many hollow dependant species. These values will be replaced within the offset areas over time. Should a considerable shortfall of hollows be identified this could be readily offset through the provision of artificial nest boxes in the interim period.
7.2	[REDACTED]	Pages 8 - 11	It is correct that the fauna survey reporting could have presented results in a clearer manner. The New EIS chapter 7 terrestrial ecology although having various details about the fauna surveys and methodologies it is difficult to relate these back to site specific locations. Whilst I agree that a 600x30mm steel pipe is basically useless as a pit fall trap for most reptiles I note that in table 7-5 this is listed as both 600x30mm steel pipe and 600x300mm steel pipe. I do not know which is correct but I doubt that a 300mm diameter steel pipe (that's a heavy item to be deploying) was used, and have to agree that a 30mm pipe would not be an effective pitfall trap. [REDACTED]

⁷⁸ Document ID: EHP.0074.

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response
	[REDACTED]		also be consistent with any pest management plans set by the Toowoomba Regional Council. NAC has undertaken to have periodic consultation with Toowoomba Regional Council and Agforce to keep up to date with pest management issues. In addition, to protect native fauna within the Project Site, employees, contractors or visitors will not be allowed to bring domestic animals, such as cats and dogs, onto the Project Site. I am satisfied that the Revised Expansion Project will not provide a significant advantage to pest animals.

No.	Objectors' issues raised in lay witness statements	Paragraph or page reference	Response

ANNEXURE 4:
**COMMENTS ON SIGNIFICANT SPECIES WITH POTENTIAL
TO OCCUR**

ANNEXURE 4 - COMMENTS ON CONSERVATION SIGNIFICANT FAUNA WITH POTENTIAL TO OCCUR WITHIN THE PROJECT SITE

Conservation significant terrestrial fauna species recorded or predicted to occur within a 5 km radius of the Project Site and their likelihood of occurrence (known, likely, potential, unlikely) within or immediately adjoining the Project Site.

Likelihood of occurrence categories: **Likely to occur** – species not known to occur onsite but the site is within the known range of the species, potentially suitable habitat is present and there are either database records for the local region or knowledge of the species occurrence suggests it may occur as a resident or visitor; means ‘high potential’ or good habitat is present but no species were observed onsite; **Potential to occur** – the site is within the known range of the species and potentially suitable habitat is present but there are no database records for the local region and/or it is a rare, erratic or poorly known species; means ‘low potential’ or habitat for species is not definitive; **Unlikely to occur** – no suitable habitat present and/or the site is outside of the known range of the species.

Species	Common name	Preferred habitat characteristics and distribution	Likelihood of occurrence
<i>Neochmia ruficauda</i>	Star finch	The Star Finch is typically gregarious, usually in small flocks of up to 30 individuals, but may be encountered as singles or in flocks of hundreds. The species occurs mainly in dense, damp grasslands bordering wetlands and watercourses, but also in open grassy woodlands that are near permanent water or are subject to regular inundation. It forages mainly in tall grass and eats seeds of native grasses, especially Sorghum. Some invertebrate prey is also consumed (Higgins et al. 2006). The species occurs across northern Australia, from the Pilbara region of Western Australia to near Rockhampton in Queensland. It formerly extended south to the Liverpool Plain in New South Wales but its range has contracted and in Queensland it is now only found at scattered sites.	Unlikely: Species is not known from local landscape.
<i>Maccullochella peelii</i>	Murray cod	The Murray Cod utilises a diverse range of habitats from clear rocky streams to slow-flowing, turbid lowland rivers and billabongs (McDowall 1996). Murray Cod are frequently found in the main channels of rivers and larger tributaries. The species is, therefore, considered a main-channel specialist. Murray Cod tend to occur in floodplain channels and anabranches when they are inundated but the species' use of these floodplain habitats appears limited (EPBC Sprat Profile).	Unlikely: Species is not known from local landscape and the waterway present has low value as habitat for this species.
<i>Nyctophilus corbeni</i>	South-eastern long-eared bat	The South-eastern Long-eared Bat is a medium-sized insectivorous bat species that occurs in variety of dry forest habitats including river red gum, open woodland, mallee, brigalow and other arid and semi-arid habitats. It appears to be more common in box, ironbark and cypress-pine forests on sandy soils on the western slopes of New South Wales and southern Queensland (Churchill 2008; Turbill et al. 2008). It roosts in tree hollows or under bark and is a little known species that is rarely caught (Churchill 2008).	Potential: The site is within the species range and holds suitable habitats in some portions of the Revised Expansion Project area. The proposed disturbance area has little direct relevance due to the lack hollow bearing trees.

1.0 ANNEXURE 4 - COMMENTS ON CONSERVATION SIGNIFICANT FAUNA WITH POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

Species	Common name	Preferred habitat characteristics and distribution	Likelihood of occurrence
<i>Petrogale penicillata</i>	Brush-tailed rock-wallaby	The species occurs along the Great Dividing Range from about 100 km north-west of Brisbane to northern Victoria. This species inhabits rock piles and cliff lines in vegetation ranging from rainforest to dry sclerophyll forests (Short and Milkovits 1990). It is increasingly restricted to isolated cliffs in parts of its former range and can be found in loose piles of large boulders consisting of a maze of subterranean holes, passageways; cliffs (usually over 15 m high), ledges, caves and some ledges covered by overhangs and isolated rock stacks (Short 1982).	Unlikely: No suitable sandstone or rocky outcrops are present and species not recorded by targeted surveys.
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Little known, but may depend heavily on sandstone outcrops. It has been found roosting in disused mine shafts, caves, overhangs and disused Fairy Martin <i>Petrochelidon ariel</i> nests (Hoye and Schulz 2008). It also possibly roosts in the hollows of trees (Duncan <i>et al.</i> 1999).	Unlikely: No sandstone outcrops were present and very minor occurrences of hollow-bearing trees present.
<i>Dasyurus hallucatus</i>	Northern Quoll	This species is most common in rocky eucalypt woodland and open forest within 200 kilometres of the coast (Menkhorst and Knight 2004).	Unlikely: Species is not known from local landscape.
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (SE mainland)	A variety of habitats including rainforests, wet and dry sclerophyll forests coastal heath and scrubs. Uses dense vegetation for cover.	Unlikely: Not known in local area and the study area habitats have little relevance to this species habitat preferences.
<i>Delma torquata</i>	Collared Delma	Open eucalypt forest with a shrub and tussock grass understorey. Soil type is usually shallow and deep-cracking or stony (Ehmann 1992; Wilson and Swan 2008)	Unlikely: Little to no suitable habitats present and the species not known in local landscape.
<i>Egernia rugosa</i>	Yakka skink	Known from the Brigalow Belt and Mulga lands bioregions. Patchy distribution from McIlwraith Range in the north to the Qld/NSW border (Curtis <i>et al.</i> 2012). The Yakka Skink is a secretive species that lives in colonies, occupying communal burrows. It is found in dry open forests and woodlands, usually on coarse gritty soils that are well drained, including Poplar Box Eucalyptus populnea on alluvial soils, low ridges, Callitris on sands, Belah Casuarina cristatus, Mulga Acacia aneura and Eucalyptus intertexta (Ehmann, 1992; Cogger, 2000; Drury, 2001).	Potential: There is suitable habitats in the local landscape which hold potential for this species to occur within. It was not found during targeted surveys and no prior records exist. If present most likely to occur within the larger woodland patches.

ANNEXURE 4 - COMMENTS ON CONSERVATION SIGNIFICANT FAUNA WITH POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

Species	Common name	Preferred habitat characteristics and distribution	Likelihood of occurrence
<i>Paradelma orientalis</i>	Brigalow scaly-foot	Mostly recorded in the Brigalow Belt region from Dipperu National Park in the north, to the inland central NSW border region in the south (Curtis et al. 2012). The species occurs east to Gladstone (Boyne Island) and west to around Morven (Eyre et al. 1997; Schulz and Eyre 1997; Tremul 2000). Records of the species have also recently been made in central inland NSW (Curtis et al. 2012). Most records are from relatively undisturbed habitats but the species can also occur in young regrowth (two-three years old) (Kutt et al. 2003). The species may be locally abundant in preferred habitat. (Curtis et al. 2012). Given the species requirement for good groundcover shelter sites (sandstone slabs, logs, leaf litter, fallen bark, grass tussocks) (Curtis et al. 2012) it is less likely to occur in disturbed habitats (EPA 2003).	Unlikely: The highly disturbed habitats and lack of good groundcover shelter sites severely limits the likelihood of this species occurring on the Revised Expansion Project area.
<i>Furina dunmalli</i>	Dunmall's Snake	Poorly known but most records appear in open forests and woodlands, particularly Brigalow and woodlands growing on cracking black clay and clay loams (Cogger et al. 1993).	Potential: There are suitable habitats present, although the substrate generally lacks suitable large cracking clay soils. If present the species would be mostly associated with the large woodland areas along in proximity to Lagoon Creek.
<i>Tympanocryptis pinguicollis</i>	Grassland earless dragon	The grassland earless dragon is a native grassland specialist inhabiting natural temperate grasslands. This habitat is best described in the endangered ecological community description for natural temperate grasslands of the Southern Tablelands (Department of the Environment 2015). Burrows of the wolf spider (<i>Lycosa</i> spp.) and wood cricket <i>Cooraboorama canberrae</i> , embedded surface rocks and tussocks are habitat components critical to this species survival.	Potential: There are some potentially suitable grassland habitats present, although the prior land uses and disturbance levels have severely degraded the potential for this species. Not found during targeted trapping and active searching.
<i>Anthochaera phrygia</i>	Regent Honeyeater	Box-ironbark eucalypt forests and woodlands on the inland slopes of the Great Dividing Range, preferring the wettest, most fertile sites (Garnett et al 2011).	Unlikely: No suitable habitats present. There are no database records for this species within 5 km of the site.
<i>Anomalopus mackayi</i>	Five-clawed worm-skink	In south-eastern Queensland, the species' known distribution is on the upper Condamine River Floodplain from Warwick in the south to the Jimbour region in the north and bordered by the western edge of the granite belt. The species has been historically recorded in the Oakey area. The Five-clawed Worm-skink is known to occur in both remnant and non-remnant woodlands and grasslands. In areas modified by agriculture and other human activities, the species has been found sheltering under artificial materials lying flat on the ground, such as discarded railway sleepers, sheet metal and hay bales (Brigalow Belt Reptiles Workshop 2010; Richardson 2006).	Unlikely: Not recorded during targeted surveys and low likelihood of being present within the local landscape.

ANNEXURE 4 - COMMENTS ON CONSERVATION SIGNIFICANT FAUNA WITH POTENTIAL TO OCCUR WITHIN THE PROJECT AREA

Species	Common name	Preferred habitat characteristics and distribution	Likelihood of occurrence
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Prefers permanent shallow, vegetated freshwater or brackish swamps, favouring those dominated by sedges, rushes and/or reeds (Garnett <i>et al.</i> 2011).	Potential: There are some waterbodies and riparian habitats within the Revised Expansion Project area which have some potential for this species to occur. There is no high value habitats within the disturbance footprint.
<i>Erythroriorchis radiatus</i>	Red Goshawk	Woodlands and forests, ideally with a mosaic of vegetation types and permanent water, particularly riverine forests. The species avoids both very dense and very open habitats (Marchant and Higgins, 1993).	Unlikely: Species is wide ranging and could occur over the subject site or even occasion habitats within. Proposed actions have little to no relevance to this species.
<i>Geophaps scripta scripta</i>	Squatter Pigeon (southern)	Mainly in dry grassy woodlands and open forests, in sandy sites near permanent water.	Unlikely: The Revised Expansion Project area provides limited habitats for this species. As there are no database records for this species within 5 km of the site, it is not expected to occur.
<i>Lathamus discolor</i>	Swift Parrot	Mainly dry open eucalypt forest and woodland, including those with Grey Box or River Red Gum (Higgins 1999).	Unlikely: Potential habitat is present within the riparian vegetation. However, it is of such small size and there are no database records for this species within 5 km of the site; therefore it is considered that this species would not be present.
<i>Poephila cincta cincta</i>	Black-throated Finch (Southern subsp)	Dry open grassy woodlands and forests with seeding native grasses and free-standing water (Higgins <i>et al.</i> 2006).	Unlikely: Species is considered extinct in southern Queensland. Little to no suitable habitats present. No database records for species within 5 km of the site.
<i>Rostratula australis</i>	Australian Painted Snipe	Terrestrial shallow wetlands, ephemeral and permanent, usually freshwater but occasionally brackish. They also use inundated grasslands, saltmarsh, dams, rice crops, sewage farms and bore drains (Marchant and Higgins, 1993). Most likely in alluvial areas but could also occur in gilgaied areas.	Unlikely: Only low value habitats present. Where suitable habitat is present it is outside of the disturbance area.
<i>Turnix melanogaster</i>	Black-breasted Button-quail	Semi-evergreen vine thicket and low microphyll vine forest; also dry rainforest (softwood scrubs) of Brigalow Belt, mature Hoop Pine <i>Araucaria cunninghamii</i> plantations, and <i>Acacia</i> and <i>Austromyrtus</i> scrubs on sandy coastal soils (Garnett <i>et al.</i> 2011).	Unlikely: No suitable habitats present.
<i>Jalmenus eubulus</i>	Pale Imperial Hairstreak	Patchily found in central and southern inland Queensland, ranging from Eungella, west to Carnarvon and south to Boggabilla in New South Wales. Restricted to mature stands of Brigalow <i>Acacia harpophylla</i> that are at least 100 m wide. Like many lycaenid butterflies, the larvae are usually attended by ants (<i>Iridomyrmex</i> spp.) (Braby 2000, 2004). The larvae are specialised to feeding on small understorey Brigalow, contrary to reports of feeding on <i>Acacia penninervis</i> and other acacias (Eastwood <i>et al.</i> 2008). Adults are seen to fly from October to April.	Unlikely: There are limited suitable habitats present within the subject area. The proposed disturbance footprint will not remove any high value habitat for this species.

ANNEXURE 5:
INSTRUCTING SOLICTORS - LETTER OF INSTRUCTION

Confidential

Email

22 January 2016

Adrian Caneris
BAAM Ecological Consultants
233 Middle Street
CLEVELAND QLD 4163

adrian@baamecology.com

Dear Adrian

New Acland Coal Mine Stage 3 Project

1. Introduction

- 1.1 We refer to our letter of engagement dated 1 October 2015. Capitalised terms in this letter have the same meaning as provided in the engagement letter, unless otherwise defined.
- 1.2 As you are aware, on behalf of NAC, we have filed and served a notice of NAC's additional issues (**List of Issues**) that NAC's various experts propose to either:
- (a) seek agreement on at joint expert meetings where there is an expert proposed by the objectors relating to that issue (**Part 1**); or
 - (b) address in individual statements of evidence where there is no expert proposed by the objectors relating to that issue (**Part 2**).
- 1.3 A copy of the List of Issues is **enclosed**.

2. Instructions

- 2.1 You are instructed to prepare a statement of evidence to the Land Court in relation to the objections lodged in opposition to the Project (the **Objections**). Specifically, your statement of evidence will be required to address:
- (a) the propositions identified in Part 2 of the List of Issues at paragraphs 13 - 19; and
 - (b) certain matters relevant to your field of expertise that have been raised in the lay witness statements, which we will send to you separately.
- 2.2 Your report must be limited to addressing issues to the extent they fall within your field of expertise.
- 2.3 You may also be required to appear in person as an expert witness in the Land Court proceedings.
- 2.4 Please see section 4 below regarding your duties as an expert witness.
- 2.5 Pursuant to the order of the Land Court, your statement of evidence must be filed in the Land Court by 4pm on **12 February 2016**.

3. **Format of report**

3.1 Any statement that you prepare should include the following:

- (a) a copy of these instructions;
- (b) details of your relevant qualifications, experience and expertise (preferably as an annexure to the report);
- (c) all material facts, whether written or oral, on which the statement is based;
- (d) references to any literature or other material on which you have relied to prepare the statement;
- (e) details of any assumptions you have relied on for the purposes of the statement;
- (f) details of any additional facts or documents which would assist you in reaching a more reliable conclusion on any aspect about which you have been instructed to prepare the statement;
- (g) in respect of any inspection, examination or experiment conducted, initiated or relied on to prepare the statement:
 - (i) a description of what was done;
 - (ii) whether the inspection, examination or experiment was undertaken by you or under your supervision;
 - (iii) the names and qualifications of any other person involved; and
 - (iv) the result;
- (h) if there is a range of opinions or values on matters dealt with in the statement, a summary of the range of opinions or values and the reasons why you have adopted a particular opinion or value in respect of that matter; and
- (i) a summary of the conclusions that you have reached.

3.2 You should also confirm at the end of your report each of the following:

- (a) the factual matters stated in the statement are, as far as you are aware, true;
- (b) that you have made all enquiries that you consider are appropriate for the purpose of providing the opinions that you have expressed;
- (c) the opinions stated in the report are genuinely held by you;
- (d) the statement contains references to all matters you consider significant in reaching the conclusions that you have expressed;
- (e) that you understand your duty to the court and have complied with that duty;

- (f) that you have read and understand the rules contained in Part 5 of the Land Court Rules 2000 (Qld) (**Land Court Rules**), a copy of which is **enclosed**, as far as they apply to you; and
- (g) that you have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

4. **Your responsibilities as an expert witness**

- 4.1 You are retained as an independent expert and may be required to assist the Land Court, to whom you have a duty.
- 4.2 Again, we draw your attention to Part 5 of the Land Court Rules, which set out the duties of expert witnesses. Specifically, under rule 24C of the Land Court Rules, you will be acting in these proceedings as an expert to assist the Land Court and this duty overrides any obligation you may have to NAC.
- 4.3 The Land Court expects you to be objective, professional and to form an independent view as to the matters in respect of which your opinion is sought.

Please do not hesitate to contact us should you have any questions or require any further information.

Yours sincerely

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Our ref 12408/17428/80145086

LAND COURT OF QUEENSLAND

REGISTRY: Brisbane

NUMBER: EPA495-15

MRA496-15

MRA497-15

Applicant: New Acland Coal Pty Ltd ACN 081 022 380

AND

Respondents: Frank Ashman & Ors

AND

Statutory Party: Chief Executive, Department of Environment and Heritage
Protection

APPLICANT'S NOTICE OF ADDITIONAL ISSUES

PART 1: Additional issues that the Applicant's notified experts propose to seek agreement on at the joint expert meeting, where there is an expert proposed by the objectors relating to that issue

AGRICULTURAL ECONOMICS

OCAA LIST OF ISSUES

1. In relation to paragraph 24(a) of the OCAA List of Issues, if groundwater impacts occur and they are mitigated by the groundwater mitigation measures to be implemented for the Revised Expansion Project there will be no impacts on regional economic issues or agricultural production.
2. In relation to paragraph 24(c) of the OCAA List of Issues, the reduced output during the life of mine and post mining due to disturbance to SCL is not significant from a regional perspective and will be further ameliorated with increased productivity and increased intensity of operations of other cropping land in the region, as has occurred over the last 40 years.

APPLICANT'S NOTICE OF ADDITIONAL ISSUES
Filed on behalf of Applicant

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AIR QUALITY, DUST

OCAA LIST OF ISSUES

3. In relation to paragraphs 14(a) to 14(e), 14(g), 15 and 19 of the OCAA List of Issues:
 - (a) the methodology adopted for the air quality assessment is in accordance with industry accepted techniques and is appropriate;
 - (b) whilst in some instances alternative assumptions and factors might have been adopted to configure the meteorological model and the dispersion model, ultimately the same conclusion would be reached, that is the adoption of an Air Quality Management Plan with Adaptive Management will ensure that the Environment Protection (Air) Policy objectives will not be exceeded by the Revised Expansion Project;
 - (c) the horizontal resolution of the model is sufficient and is consistent with regulatory recommendations. The terrain is adequately addressed in both the meteorological model and the dispersion model. Terrain and land-use changes associated with mining are addressed through pit retention factors; and
 - (d) particulate emissions from the combustion of diesel in vehicles were included in the New EIS air quality assessment.
4. In relation to paragraphs 14(f) and 19 of the OCAA List of Issues, blasting at the Revised Expansion Project can be conducted and managed so that the Revised Expansion Project does not cause air quality objectives to be exceeded and does not adversely affect air quality or human health.
5. In relation to paragraph 14(g) of the OCAA List of Issues:
 - (a) the emission sources and meteorological conditions with potential to affect air quality at sensitive receptors is available in the dispersion modelling that was conducted; and
 - (b) in any event, is not critical to determining the suitability of the assessment in the New EIS.
6. In relation to paragraphs 14, 15, 16, 17(a) to 17(c), 18(a), 18(b) and 19 of the OCAA List of Issues, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health and amenity.
7. In relation to paragraphs 15 and 18 of the OCAA List of Issues, additional monitoring and reporting to that required by the CG's imposed conditions and the Draft EA conditions is not required.

8. In relation to paragraph 15(f) of the OCAA List of Issues:
- (a) the objector has misconstrued the Draft EA conditions referred to in paragraph 15(f)(i) of the OCAA List of Issues;
 - (b) the conditions of the Draft EA for the Revised Expansion Project are adequate and appropriate to manage air emissions;
 - (c) the compliance monitoring regime required in the Draft EA conditions is adequate to inform the operators of ongoing air quality impacts such that the mine operators can manage activities to not cause elevated levels of TSP, PM₁₀ and PM_{2.5}; and
 - (d) the PM₁₀ and PM_{2.5} objectives have been formulated such that if a mining activity achieves compliance with the objective for PM₁₀, compliance with the PM_{2.5} objective will also be achieved. Consequently, parallel monitoring requirements for PM₁₀ and PM_{2.5} are not necessary.

ECONOMICS

OCAA LIST OF ISSUES

9. The input/output modelling done in the New EIS:
- (a) was appropriately applied to measure the economic impact of the Revised Expansion Project and was appropriately undertaken for the purposes of the New EIS; and
 - (b) was not designed to measure whether the Revised Expansion Project will demonstrate a net economic benefit or whether the mine is economically viable.

FLOODING, SURFACE WATER QUALITY

OCAA LIST OF ISSUES

10. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(a)(ii) and 2(b)(ii) of the OCAA List of Issues, extensive baseline surface water monitoring data is available for the key parameters and given in the NEW EIS. The use of end of pipe release limits, receiving water flow criteria and trigger investigation levels in the Draft EA is appropriate to protect the environmental values of the receiving waters.
11. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(ii) and 2(d) of the OCAA List of Issues any potential for impacts on water quality due to waste rock leachate can be managed.

12. In relation to Dr Matthew Currell's (EDO) Groundwater Conceptualisation and paragraph 2(c)(i) of the OCAA List of Issues, the drainage system will not be inadequate and will be designed to meet or exceed any relevant guideline criteria.

DR JOHN STANDLEY'S LIST OF ISSUES

13. Relevant details regarding surface flows and surface flow impacts of the existing operation and the Revised Expansion Project are contained in the New EIS.
14. Relevant details regarding surface water quality, including analyses, are contained in the New EIS.
15. The water management system and the Draft EA conditions are designed to protect the environmental values of surface waters. Monitoring water quality in pit is not required.
16. The flood assessment for the proposed rail line is given in Section 5.11 of the New EIS. The impact of a one in ten year AEP event, which is likely to occur over the life of the rail line is generally less than 0.2 m and at most 0.35 m.
17. There is no evidence of contaminated water seeping into the groundwater from surface waters. Water is released from the mine to surface waters in accordance with the EA conditions and these conditions are designed to protect the environmental values of surface waters, which would in turn protect the environmental values of groundwater if seepage occurred.

GROUNDWATER CONCEPTUALISATION

OCAA LIST OF ISSUES

18. In relation to paragraph 1 of the OCAA List of Issues:
- (a) the groundwater impacts for the Revised Expansion Project were assessed at a regional scale, and were based on an appropriate conceptualisation of the hydrogeology of the area;
 - (b) there is sufficient data for the various aquifers to provide a suitable basis for assessing aquifer properties; and
 - (c) predicted impacts on the basalt aquifer are conservative as they do not take into consideration likely compartmentalisation through discrete fracturing that forms the aquifer.
19. In relation to paragraphs 1(c), 2(a), 2(b)(i) and 3 of the OCAA List of Issues, there is sufficient long term water level and groundwater quality data to provide a baseline for the

Revised Expansion Project and the Draft EA conditions and CG's imposed conditions are adequate to detect and assess any other impacts on groundwater.

20. In relation to paragraphs 2(c)(ii) and 2(d) of the OCAA List of Issues, there is minimal waste-rock-acid generating potential and there are mitigation measures proposed to minimise impact on the groundwater receiving environment.
21. In relation to paragraph 4 of the OCAA List of Issues:
 - (a) the impact and risks to groundwater from the Revised Expansion Project were defined, and were assessed to be manageable;
 - (b) the CG's conditions and Draft EA conditions provide for ongoing review and assessment and are adequate; and
 - (c) the potential impacts on groundwater and on water users will be addressed and managed through compliance with conditions 10, 11 and 12 of the CG's imposed conditions and Schedule D of the Draft EA and implementation of a Bore Baseline Assessment Program and Make Good Agreements.

GROUNDWATER MODELLING

OCAA LIST OF ISSUES

22. In relation to paragraphs 5 and 6 of the OCAA List of Issues:
 - (a) the predictive numerical model is 'fit for purpose' to undertake assessment of potential impacts resulting from the Revised Expansion Project; and
 - (b) there are no modelling deficiencies that detract from its fitness for purpose.

NOISE, VIBRATION

OCAA LIST OF ISSUES

23. In relation to paragraphs 7 and 9 of the OCAA List of Issues:
 - (a) assessment of health and wellbeing impacts of noise is not reliant on an assessment of "background plus" noise levels;
 - (b) it is not appropriate for the Revised Expansion Project to comply with the Planning for Noise Control Guideline as it is not relevant to mining projects; nor is AS 1055 appropriate as it states "[This Standard] excludes the setting of environmental noise criteria.";

- (c) the noise and vibration criteria nominated in the Draft EA noise conditions adequately deal with impacts on human health and wellbeing for neighbouring residences;
 - (d) compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing; and
 - (e) corrections for tonality and impulsivity should be taken into account when assessing compliance with the Draft EA noise conditions.
24. In relation to paragraph 8 of the OCAA List of Issues:
- (a) the noise modelling undertaken for the Revised Expansion Project was adequate to appropriately determine the extent of the impacts and compliance with the Draft EA noise conditions can occur with mitigation and management measures in place;
 - (b) utilisations of mobile fleet justify the 2 dB noise reduction and also provide margin for the need to apply tonality or impulsivity (or both) penalty corrections (should such corrections be appropriate); and
 - (c) by limiting the Leq noise levels to the values stated in the Draft EA noise conditions, compliance with recognised sleep disturbance criteria for maximum noise levels (ie WHO, Environment Protection (Noise) Policy, L1 Acoustic Quality Objectives) will be achieved.
25. In relation to paragraphs 10 and 11 of the OCAA List of Issues, the TARP (including “live dashboard”) is an effective approach to manage noise impacts from the Revised Expansion Project due to its “live” assessment of noise levels in combination with real-time management interventions as required.
26. In relation to paragraph 10 of the OCAA List of Issues, the noise mitigation options (eg silencing of mobile plant, broad-band reversing alarms), which are detailed and modelled in the New EIS and are appropriate.
27. In relation to paragraph 11 of the OCAA List of Issues:
- (a) technical capabilities of commercially available directional noise loggers are satisfactory; and
 - (b) the noise monitoring system of the TARP and the proposed Noise and Vibration Management Plan will be adequate to monitor and manage noise from the Revised Expansion Project.
28. In relation to paragraph 12 of the OCAA List of Issues:
- (a) the operation of the rail loadout facility is expected to meet the Draft EA noise limits (as the EIS modelling has accounted for mobile plant at the rail loadout facility as well as

train movements along the spur itself) and therefore will not substantially impact on the surrounding sensitive receptors;

- (b) aside from a typographical error (in the last paragraph of Section 5.2.1 of the CG's Report) the recommended noise limits of the CG's Report are contained in the Draft EA; and
- (c) low frequency noise is not a phenomenon associated with train noise from a rail loadout facility.

HEALTH

TANYA PLANT LIST OF ISSUES

29. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:

- (a) the Revised Expansion Project will not cause unacceptable adverse health effects associated with:
 - (i) fine particulates PM₁₀ and PM_{2.5};
 - (ii) blast fumes;
 - (iii) diesel fumes;
 - (iv) water quality; and
 - (v) noise;
- (b) the proposed transport of coal from the proposed mine will not cause unacceptable adverse health effects associated with:
 - (i) particle pollution; and
 - (ii) diesel combustion.

MENTAL HEALTH

TANYA PLANT LIST OF ISSUES

30. In relation to the issues notified by Tanya Plant on 27 November 2015 and 15 December 2015:
- (a) there is no reliable evidence that there will likely be any increase in mental health illness as a consequence of the Revised Expansion Project;
 - (b) solastalgia is not a recognised psychiatric condition;
 - (c) mental illness is a multi-faceted condition and highly unlikely to be caused by a single specific factor such as the development or expansion of a mine;
 - (d) complaints of stress, anxiety or unhappiness do not fulfil the Diagnostic and Statistical Manual of Mental Disorders DSM-V criteria for a mental illness.

PART 2: Additional issues that the notified experts of the applicant will address, where there is no expert proposed by the objectors relating to that issue

ECONOMICS

1. CGE modelling calculates the direct and indirect impact over time on the regional, Queensland and Australian economies of the construction and operation of a project and is the most comprehensive assessment that can be made of a project on an economy.
2. A CGE analysis, unlike an input/output analysis:
 - (a) does take account of the fact that there are limited productive resources in the economy;
 - (b) does not ignore the opportunity costs associated with using resources from one project rather than another;
 - (c) does not assume fixed prices; and
 - (d) does include substitution between goods in consumption and inputs to the production of goods and services, as relative prices change.
3. A CGE analysis comprehensively accounts for the indirect impact on other industries.
4. A CGE analysis takes into account the impact on the economy of the project relative to a scenario where the mine does not go ahead.
5. CGE modelling undertaken for the Revised Expansion Project shows that the impact on the State and local economies will be positive.
6. A CBA estimates the net social benefits for the community as a whole that result from a project.
7. A CBA for the Revised Expansion Project shows that the benefits of the project will greatly exceed its costs.
8. This CBA analysis for the Revised Expansion Project takes account of the mine's costs including environmental and social costs.
9. Even when adopting assumptions that make the benefits unrealistically small and the costs unrealistically large, the CBA for the Revised Expansion Project shows that the benefits greatly exceed its costs.
10. Even on a very unrealistic assumption that all agricultural land upon which there is drawdown of one metre or more will be rendered immediately worthless for agricultural

production, the CBA analysis for the revised Expansion Project shows the benefits of the Revised Expansion Project far outweighs its costs.

11. The CGE and CBA modelling shows that the value of the coal mined over the mine's life far exceeds the value of agriculture in the district into the indefinite (indeed, infinite) future.
12. The environmental effects of burning thermal coal are properly considered in CBAs of coal fired power plants, not coal mines.

TERRESTRIAL FAUNA

13. There have been database reviews and sufficient survey effort, utilising appropriate methodology, conducted to understand fauna habitats and species.
14. There are no conservation significant fauna present or likely to be present in the area of the Revised Expansion Project that have not been considered or for which there is no appropriate management response in the approval conditions (the CG's imposed conditions and Draft EA).
15. The site provides habitats for a range of common wildlife. The Revised Expansion Project will not result in the loss of any common species or reduce their long term security in the local landscape.
16. Taking into consideration the current and prospective uses of the area of the Revised Expansion Project, the proposed mining operation and associated habitat restoration will provide commensurate and strategically placed fauna movement options with increased management, such as to provide improved habitat connectivity and safe movement options.
17. Appropriate management responses can and will be adopted to mitigate potential impacts on fauna and fauna habitats.
18. Appropriate management of pest species for the Revised Expansion Project will be provided through an integrated Pest Management Plan.
19. The Revised Expansion Project will not result in the loss of any fauna species in the local landscape due to traffic.

TERRESTRIAL FLORA

20. The occurrence of threatened flora species have been identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions, leading to no net loss of threatened species.

21. The type, extent and condition of threatened vegetation communities were identified and will be further assessed through pre-clearance surveys and any impacts will be offset through the environmental offset strategy prepared in accordance with the CG's imposed conditions and the Draft EA conditions. It is not expected that there will be any additional significant impacts not subject to management conditions in place under the CG's imposed conditions and the Draft EA conditions.
22. The upgrade of the local electricity grid with new powerlines is located outside the MLAs, other than the connection from the rail loop, and will be subject to a separate approvals. In any event, the design and upgrade to the electricity grid can be managed to ensure retention of most of the verge vegetation and requires clearing of only a small amount of native vegetation.
23. The implementation of the Pest and Weed Management Plan will avoid significant impacts from listed weed species.
24. Given:
 - (a) much of the native vegetation that will be removed by the proposed mine extension occurs on areas previously cleared for agriculture; and
 - (b) vegetation communities that are MSES will be offset on land that similarly has been previously cleared for agriculture,rehabilitation is considered to be an adequate response to the loss of any native vegetation communities.
25. The Draft EA conditions are adequate to protect significant flora and vegetation communities within the footprint of the Revised Expansion Project.
26. In relation to paragraph 1(e)(v) of the OCAA List of Issues based on vegetation community composition it is unlikely that any of the relevant communities mapped are groundwater dependant. Regardless of whether or not drawdown will impact mapped vegetation communities, it is unlikely to impact vegetation that is otherwise mapped as MSES.

COAL MARKETS AND CLIMATE CHANGE

27. In absolute terms, during the life of the Revised Expansion Project, demand for thermal coal is forecast to grow, particularly in India and South East Asia.
28. Thermal coal is a vital component of the global energy mix during the life of the Revised Expansion Project.
29. Uncertainties over domestic and international energy policies have been taken into account in forecasts undertaken by reputable agencies such as the International Energy Agency.

30. There are many good reasons as to why the Revised Expansion Project is economically viable.
31. The incremental tonnes that will be produced because of the Revised Expansion Project are negligible additions from the perspective of global volumes. Should the Revised Expansion Project not produce and supply its customers the additional volume, the coal will be supplied from another source. The consequence of this is that CO₂ emissions will not vary materially. Furthermore, as the New Acland Mine produces high-energy thermal coal, which compares favourably to lower quality coals from Indonesia and domestic Chinese and India coals, if the Revised Expansion Project does not proceed global CO₂ emissions may increase depending upon the country involved and the quality of the coal.

VISUAL AMENITY AND LIGHTING

32. Lighting for the Revised Expansion Project can be managed to avoid unacceptable impacts.
33. There will be no unacceptable visual or character impacts on the receiving environment, including those from lighting that cannot be adequately managed using standard measures.

GROUNDWATER

34. The Applicant's current mining impacts to groundwater have been restricted to immediately adjacent to the active mining area, with minimal impact observed on the surrounding groundwater environment.
35. The predicted water usage is within the New Acland Mine's allocation under existing authorisations to take water.

FLOODING, SURFACE WATER QUALITY

36. The water balance modelling for the Revised Expansion Project water management system is sufficient to demonstrate the operation of the water management system and the indicative sizes of the water management infrastructure. The Draft EA release limits have been developed to limit the extent of the impact of the mine regardless of the water balance assessment.
37. The New EIS demonstrates that the levee banks and rail line will impact on flood levels but the impacts are acceptable. The impact of the levee banks are all located on the mine lease and the impact of the rail line is mostly confined to land owned by the Applicant.

38. The flood modelling of the New EIS has fully considered the catchment upstream of the mine. The models were prepared in accordance with best practice commensurate with a concept level assessment. Additional modelling will be undertaken during the detailed design phase to minimise any impacts identified in this study.
39. The adopted monitoring program covers both end of pipe water quality investigation limits and receiving water triggers. The monitoring program is both practical and reasonable given the low potential risk of impacts on surface water quality of the Revised Expansion Project
40. The issues that caused the elevated historical releases have been identified and rectified on site. The Draft EA also requires separation of mine affected and sediment affected water, which will further reduce the potential for elevated releases.
41. The assessment of impacts of the Revised Expansion Project on surface water and water quality is appropriate.

NOISE AND VIBRATION

TANYA PLANT LIST OF ISSUES

31. In relation to the issues raised by Tanya Plant notified on 27 November 2015 and 15 December 2015, compliance with the Draft EA noise conditions will ensure that the Revised Expansion Project will not have adverse impacts on human health and wellbeing. The proposed Draft EA conditions are adequate to protect human health.

OTHER

42. The noise and vibration criteria nominated in the Draft EA noise conditions in conjunction with the Noise and Vibration Management Plan will adequately manage the impacts on wildlife from the Revised Expansion Project.
43. The blasting criteria documented in the Draft EA are appropriate to protect the amenity of residents and their homes from the Revised Expansion Project.
44. The extraction of basalt already occurs on the mining lease and will not result in additional (measurable) noise.
45. The Revised Expansion Project does not rely on untypical and unproven measures to manage noise.
46. With regard to the suggestion by one objector that mine noise was measured at 40.1 dB LAeq at a property 8 kilometres from the existing New Acland Mine, it is not possible for mine noise to be dominant at this distance.

47. It is not appropriate to set environmental authority conditions for certification of noise levels from items of plant or prescribing specific noise management measures.
48. Inaudibility is both an unreasonable and unfeasible condition.

LAND USE, SOILS

49. The offset areas identified for priority agricultural land use and the rehabilitation proposed and required by the CG's imposed conditions and the Draft EA will be more than sufficient to compensate for any loss of cropping land disturbed by the Revised Expansion Project.
50. The Revised Expansion Project will not reduce productivity or alienate areas outside of the mined areas from cropping use.
51. There will be no indirect impacts (such as through land fragmentation, flooding or adverse impacts on water supplies) on the cropping capacity of non-disturbed areas arising from the Revised Expansion Project that cannot be mitigated.
52. Apart from the lands of SCL status that will be in the depressed landform all other lands of SCL status will be rehabilitated to SCL compliant conditions as required by the CG's imposed conditions.
53. Adequate offset arrangements are in place to mitigate the impact on land within the depressed landform that cannot be returned to SCL compliant status.
54. Good Quality Agricultural Land designation is irrelevant as the State Planning Policy SPP1/92 lapsed in Dec 2012.
55. The impact of the Revised Expansion Project on the extent of regional cropping soils is insignificant.
56. The conclusions reached in relation to the Revised Expansion Project areas with respect to the quality of land and subsequent rehabilitation are valid for the land located inside ML50216 that will be impacted for the Revised Expansion Project.

COMMUNITY, SOCIAL

57. The Applicant has made significant efforts to engage with landholders and other community members. The stakeholder engagement program for the Revised Expansion Project is equal to or better than industry best practice.

58. The Revised Expansion Project was revised to address community concerns and avoid direct impacts on Acland and the Applicant has committed to the Acland Management Plan, which will conserve existing values.
59. Tom Doherty Park will be retained by the State and will not be directly impacted by the Revised Expansion Project.
60. The Revised Expansion Project is likely to have a positive effect on a number of Acland sites that have cultural heritage values through the Acland Management Plan.
61. Whilst some people will see the Revised Expansion Project as a detraction from sense of place, others value the New Acland Mine as an important part of the area's social and economic fabric.
62. A population decline was already being experienced in Acland before the Applicant began property acquisitions.
63. The Applicant has made significant contributions to supporting community cohesion through its community investment fund, sponsorships and donations.
64. Community members hold differences of opinion about the Revised Expansion Project and divisions are likely to continue whether the Revised Expansion Project is approved or not.
65. Failure of the Revised Expansion Project to proceed is likely to have negative impacts on community cohesion through loss of mining families from the area.
66. The New EIS including the SIA and SIMP was reviewed by Government agencies and approved in December 2014 after a lengthy process of consideration. The additional information and clarifications provided as part of the AEIS addressed the substantive issues raised by submitters in relation to the SIA and SIMP.
67. The Applicant consulted with Traditional Owners about their values relating to the Revised Expansion Project area, employment opportunities and cultural awareness and is involved in a range of activities with the Western Wakka Wakka people (eg social investment, engagement and CHMP implementation). The outcomes of this consultation are represented in the CHMP developed for the Revised Expansion Project.
68. The Revised Expansion Project would provide significant benefits for employees, families, community organisations and regional economic outcomes, as documented in the New EIS. The Revised Expansion Project offers security of employment and additional employment at a time when mining industry employment opportunities are very limited.
69. The numbers of registered businesses (including agricultural businesses) in Oakey and Toowoomba have remained stable during the past three years. The Revised Expansion Project also offers benefits for businesses in Oakey and the Toowoomba region. There is no evidence that the Revised Expansion Project would cause negative impacts on businesses.

70. Both families and the local community are likely to experience negative social impacts if the Revised Expansion Project does not proceed.
71. There is evidence of strong community support for the Revised Expansion Project to proceed.
72. An independent mental health study is beyond the usual scope for an SIA.
73. The New EIS adequately addresses the impact of the Revised Expansion Project on the amenity experienced by people who live in the affected area.
74. The social impacts of the Revised Expansion Project will be managed effectively by the SIMP and the CG's imposed conditions.

AIR QUALITY AND GREENHOUSE EMISSIONS

TANYA PLANT LIST OF ISSUES

75. In relation to the issues raised by Tanya Plant as notified on 27 November 2015 and 15 December 2015, the Revised Expansion Project can be conducted and managed so as not to cause air quality objectives to be exceeded. Compliance with the CG's imposed conditions and Draft EA conditions and the adoption of the proposed Air Quality Management Plan with adaptive management are adequate to protect human health.

OTHER

76. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect flora and fauna.
77. The Revised Expansion Project can be conducted and managed so that dust emissions do not adversely affect agriculture.
78. Air quality associated with the existing mine has been consistently shown to be within the objectives of the Environment Protection (Air) Policy and the existing Environmental Authority.
79. The appropriate air quality assessment criteria are the air quality objectives that are specified in the Environment Protection (Air) Policy. The New EIS assessed impacts against these objectives and demonstrated that compliance could be achieved.
80. The measures under the proposed Air Quality Management Plan for the materials handling facility and associated infrastructure are appropriate to minimise dust emissions from that infrastructure.

81. A number of studies in Queensland and New South Wales, including studies conducted on the South West System have demonstrated that coal dust emissions from coal carrying trains and empty coal trains do not cause exceedances of air quality objectives for PM₁₀ and PM_{2.5}. A dispersion modelling study of coal dust from trains therefore provides no practical benefit to demonstrating the appropriateness of the Revised Expansion Project.
82. Coal dust emissions from trains can be adequately and reliably managed through the use of the measures proposed in the New EIS. The Revised Expansion Project will implement strategies consistent with the South West System Coal Dust Management Plan which has been adopted by Aurizon to manage the impact of coal dust emissions from trains.
83. The Revised Expansion Project is not responsible for nor in control of the emissions from diesel locomotives, which are owned and operated by Aurizon. Notwithstanding this, a number of studies in Queensland and New South Wales, including studies conducted on the South West System, have demonstrated that particulate levels in the vicinity of coal rail networks with diesel locomotives do not exceed of air quality objectives for PM₁₀ and PM_{2.5}.
84. Scope 1 and 2 emissions have been calculated in accordance with relevant regulatory requirements at the time of the New EIS. Greenhouse gas emission estimates included the key greenhouse gases: carbon dioxide, methane and nitrous oxide.
85. Scope 3 emissions from the Revised Expansion Project are likely to be 198,485 kt CO₂-e for the Revised Expansion Project life. This equates to an annual average Scope 3 emission rate of 15,268 kt CO₂-e, which is a very small percentage of Australia's emission reduction target for 2020. The Revised Expansion Project's Scope 3 emissions are almost entirely generated offshore and therefore fall under the control, and emissions target, of another jurisdiction.

AGRICULTURAL ECONOMICS

86. The Revised Expansion Project will not cause significant displacement or loss of agricultural enterprises.
87. The Revised Expansion Project will not cause significant loss of business or jobs for lost agricultural enterprises.
88. The Revised Expansion Project is not inconsistent with the expansion of rural tourism.
89. Draw-down of groundwater levels will not adversely affect regional economics due to the resulting impacts on agriculture.
90. The Revised Expansion Project will not significantly restrict the use of land for alternative uses.

91. The claim that agriculture brings \$155 billion to the Australian economy and creates 1.6 million jobs is incorrect.

LIVESTOCK, REHABILITATION

92. The impact of the Revised Expansion Project on cropping land will not reduce grazing land to marginal, low intensity grazing.
93. The Revised Expansion Project will not adversely affect the health of livestock.
94. The performance of livestock and pasture on rehabilitated soils is currently comparable to livestock and pasture on unmined soils.

TRAFFIC, TRANSPORT, ROADS

95. The closure and/or diversion of public roads, whilst being acknowledged as having an impact, has been considered in the context of the small number of road users impacted by the closure and/or diversion and such impacts are small and are manageable.
96. There are no significant matters of road safety that are not capable of being addressed and if necessary improved by the road upgrading conditions imposed upon the Revised Expansion Project by the CG's imposed conditions.
97. Additional road usage created by the expansion will be appropriately managed by a Road Impact Assessment and a Road Use Impact Management Plan.
98. The impacts of additional traffic at the materials handling facility were appropriately considered in the EIS process and such impacts are satisfactorily addressed in the CG's imposed conditions.
99. Any perceived or real errors or inadequacies in the New EIS or AEIS raised by objectors regarding roads, traffic, bus routes or transport do not undermine the integrity of the EIS process or its findings and the resulting conditions issued by the CG are appropriate.
100. Upgrading of the surrounding road network in the vicinity of the Revised Expansion Project as proposed by the Applicant is appropriate to address the impacts of the Revised Expansion Project.
101. The necessary road closures for blasting will be of a short duration and infrequent, such that impacts on Oakey-Cooyar Road are reasonable and acceptable.

102. The impacts on traffic generated by the Revised Expansion Project have been considered and determined to be reasonable, acceptable and manageable and are satisfactorily addressed in the CG's imposed conditions.

VALUATION

103. There is no evidence of diminution in property values in the Acland area.

Definitions used in this document

In this document, unless otherwise defined, capitalised terms in this document have the meanings given to them in the Affidavit of Bruce Douglas Denney sworn 10 December 2015 and filed with the Court on 11 December 2015, and:

AEP means annual exceedance probability.

CBA means cost benefit analysis.

CGE means Computable General Equilibrium.

Draft EA means the draft EA issued by the Department of Environment and Heritage Protection dated 28 August 2015.

ha means hectare.

MNES means Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*.

MR Regulations means the Mineral Resources Regulation 2013.

MSES means matters of State Environmental Significance.

New Hope Group means the New Hope group of companies.

OCAA List of Issues means the Updated Notice of Issues by Oakey Coal Action Alliance Inc (undated).

SCL means strategic cropping land.

SIA means Social Impact Assessment.

SIMP means Social Impact Management Plan.

[r 21]

proceeding until the court is satisfied the parties have complied with the orders or directions.

- (3) The parties must comply with the orders or directions before the proceeding is heard, unless the court considers it appropriate, because of the circumstances of the case, to hear the proceeding without the orders or directions being complied with.

21 Power to correct mistakes

- (1) This rule applies if—
- (a) there is a clerical mistake in an order or certificate of the court or in a record of an order or certificate of the court; and
 - (b) the mistake resulted from an accidental slip or omission.
- (2) At any time, the court, on application by a party or on its own initiative, may correct the mistake.

Part 5 Evidence

Division 1 Preliminary

22 Definitions for pt 5

In this part—

expert means a person who would, if called as a witness in a proceeding, be qualified to give opinion evidence as an expert witness in relation to an issue in dispute in the proceeding.

joint report, for a proceeding, means a report—

- (a) stating the joint opinion of experts in relation to an issue in dispute in the proceeding; and

- (b) identifying the matters about which the experts agree or disagree and the reasons for any disagreement.

meeting of experts—

- 1 A *meeting of experts* is a meeting at which experts in each area of expertise relevant to a proceeding meet, in the absence of the parties—

- (a) to discuss and attempt to reach agreement about the experts' evidence in relation to an issue in dispute in the proceeding as it relates to the experts' area of expertise; and
- (b) to prepare a joint report.

- 2 The term includes —

- (a) a resumed meeting of experts or further meeting of experts; and
- (b) a meeting attended by the experts in either, or a combination, of the following ways—
 - (i) personally;
 - (ii) a way that allows contemporaneous communication between the experts, including by telephone, video link or email.

party, for a proceeding, means a party to the proceeding or the party's lawyer or agent.

statement of evidence, of an expert, see rule 24E.

Division 2 Meetings of experts

23 Application of div 2

Unless the court otherwise orders, this division applies in relation to a meeting of experts ordered or directed by the court at any time in a proceeding.

[r 24]

24 Party must ensure expert ready to take part in meeting of experts

Before a meeting of experts, a party to a proceeding must do all things reasonably necessary or expedient to ensure an expert chosen by the party is ready to take part fully, properly and promptly in the meeting, including by giving the expert—

- (a) reasonable prior notice that the court has ordered or directed a meeting of experts; and
- (b) notice of the contents of any order or direction about the meeting, including the time by which the meeting must be held; and
- (c) reasonable notice of the issue in dispute in the proceeding to the extent it is relevant to the expert's expertise; and
- (d) enough information and opportunity for the expert to adequately investigate the facts in relation to the issue in dispute in the proceeding; and
- (e) written notice that the expert has a duty to assist the court and the duty overrides any obligation the expert may have to the party or any person who is liable for the expert's fee or expenses.

24A Experts attending meeting must prepare joint report

- (1) The experts attending a meeting of experts must, without further reference to or instruction from the parties, prepare a joint report in relation to the meeting.
- (2) However, the experts attending the meeting may, at any time before the joint report is completed, ask all parties to respond to an inquiry the experts make jointly of all parties.
- (3) Despite subrule (1), any of the experts may participate in a mediation involving the parties.
- (4) The joint report must—
 - (a) confirm that each expert understands the expert's duty to the court and has complied with the duty; and

- (b) be given to the parties.
- (5) The applicant or appellant must deliver to the registry, personally or by facsimile or email, a copy of the joint report received under subrule (4) at least 21 days before the date set for the hearing.

24B Admissions made at meeting of experts

- (1) Subrule (2) does not apply to a joint report prepared in relation to a meeting of experts.
- (2) Evidence of anything done or said, or an admission made, at a meeting of experts is admissible at the hearing of the proceeding or at the hearing of another proceeding in the court or in another civil proceeding only if all parties to the proceeding agree.
- (3) In this rule—
civil proceeding does not include a civil proceeding founded on fraud alleged to be connected with, or to have happened during, the meeting.

Division 3 Evidence given by experts

24C Duty of expert

- (1) A witness giving evidence in a proceeding as an expert has a duty to assist the court.
- (2) The duty overrides any obligation the witness may have to any party to the proceeding or to any person who is liable for the expert's fee or expenses.

24D Giving or accepting instructions to adopt or reject a particular opinion prohibited

A person must not give, and an expert must not accept, instructions to adopt or reject a particular opinion in relation to an issue in dispute in a proceeding.

[r 24E]

24E Expert must prepare statement of evidence

- (1) An expert must prepare a written statement of the expert's evidence (a *statement of evidence*) for the hearing of a proceeding.
- (2) If the expert has taken part in a meeting of experts—
 - (a) a joint report prepared in relation to the meeting is taken to be the expert's statement of evidence in the proceeding; and
 - (b) a further statement of evidence in relation to any issue of disagreement recorded in the joint report is to be prepared by the expert.
- (3) However, the further statement of evidence must not, without the court's leave—
 - (a) contradict, depart from or qualify an opinion in relation to an issue the subject of agreement in the joint report; or
 - (b) raise a new matter not already mentioned in the joint report.

24F Requirements for statement of evidence other than joint report

- (1) An expert's statement of evidence, other than a joint report, must be addressed to the court and signed by the expert.
- (2) The statement of evidence must include the following information, to the extent the information is not already contained in a joint report prepared for the proceeding—
 - (a) the expert's qualifications;
 - (b) all material facts, whether written or oral, on which the statement is based;
 - (c) references to any literature or other material relied on by the expert to prepare the statement;

- (d) for any inspection, examination or experiment conducted, initiated or relied on by the expert to prepare the statement—
 - (i) a description of what was done; and
 - (ii) whether the inspection, examination or experiment was done by the expert or under the expert's supervision; and
 - (iii) the name and qualifications of any other person involved; and
 - (iv) the result;
 - (e) if there is a range of opinion on matters dealt with in the statement, a summary of the range of opinion and the reasons why the expert adopted a particular opinion;
 - (f) a summary of the conclusions reached by the expert;
 - (g) a statement about whether access to any readily ascertainable additional facts would assist the expert in reaching a more reliable conclusion.
- (3) The expert must confirm, at the end of the statement of evidence—
- (a) the factual matters included in the statement are, as far as the expert knows, true; and
 - (b) the expert has made all enquiries considered appropriate; and
 - (c) the opinions included in the statement are genuinely held by the expert; and
 - (d) the statement contains reference to all matters the expert considers significant; and
 - (e) the expert understands the expert's duty to the court and has complied with the duty; and
 - (f) the expert has read and understood the rules contained in this part, as far as they apply to the expert; and

[r 24G]

- (g) the expert has not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

24G Serving statement of evidence other than joint report

- (1) This rule applies to a statement of evidence other than a joint report.
- (2) A party to a proceeding intending to call evidence by an expert in the proceeding must deliver to the registry, personally or by facsimile or email, and serve on each other party to the proceeding, a copy of the expert's statement of evidence.
- (3) A party must comply with subrule (2) at least 21 days before the date set for the hearing or, if the court directs a different time, within the time directed by the court.

24H Matters contained in statement of evidence not to be repeated

During examination in chief, an expert must not, without the court's leave, repeat or expand on matters contained in the expert's statement of evidence or introduce new material.

24I Evidence from only 1 expert may be called

Other than with the court's leave, a party to a proceeding, at any hearing of the proceeding, may call evidence from only 1 expert for each area of expertise dealt with in the hearing.

Division 4 Non-expert statements of evidence

24J Statement of evidence of witness other than expert

- (1) This rule applies to a party who intends to do either or both of the following—
 - (a) give evidence in a proceeding;

- (b) call another person, other than an expert, to give evidence in a proceeding.
- (2) Before giving the evidence or calling the other person, the party must deliver to the registry, personally or by facsimile or email, and serve on each other party, a written statement containing—
 - (a) the name, address and occupation of the party or other person; and
 - (b) the evidence of the party or other person for the hearing.
- (3) The party must comply with subrule (2) at least 21 days before the date set for the hearing or, if the court directs a different time, within the time directed by the court.
- (4) During examination in chief, the party or other person must not, without the court's leave, repeat or expand on matters contained in the party's or person's statement delivered under subrule (2) or introduce new material.

Division 5 General

24K Way evidence given

- (1) Unless the court orders that a witness's evidence in a proceeding be given by affidavit or in another way, the evidence may only be given orally.
- (2) Giving evidence orally may include merely swearing to the accuracy of a statement of evidence submitted to the court.
- (3) If the court orders that evidence be given by affidavit, the court may impose conditions on the order.

24L Calling witnesses

A party to a proceeding must not, without the court's leave, call an expert or another person to give evidence in the proceeding unless the party has complied with the rules contained in this part.

Annexure D

Representative Photos of
Planted Koala Trees along
Lagoon Creek Corridor

Representative photos showing examples of Koala tree establishment along Lagoon Creek Corridor



