



Carmichael Coal Mine and Rail Project Supplementary Environmental Impact Statement

Volume 4, Appendix C3d – Vegetation Reports for SP1 Rail Alignment

Containing

- SP1 Rail Alignment Vegetation Reports:
 - Part 2:
 - Permit RVMC Response
 - SP1 RVMC response IDAS Form 11

IDAS form 11—Clearing native vegetation

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications that involve the clearing of native vegetation.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application
- include the relevant application fee, noting that referral agency fees (where applicable) are to be paid to the referral agency

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. What type of development is proposed?

- ☒ Operational work for clearing vegetation made assessable under Schedule 3 of the Sustainable Planning Regulation 2009
- ☐ Material change of use of the premises
- ☐ Reconfiguring a lot

2. What type of approval is being sought?

- ☒ Development permit
- ☐ Preliminary approval
- ☐ Both—provide details below

Mandatory supporting information

3. Confirm that the following mandatory supporting information accompanies this application

For ALL applications	Confirmation of lodgement	Method of lodgement
A property vegetation management plan including as defined under the Vegetation Management Act 1999 schedule. Note: A property vegetation management plan must show the matters prescribed in s.11 of the Vegetation Management Regulation 2012.	☒ Confirmed	
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	

For ALL applications	Confirmation of lodgement	Method of lodgement
For an operational work application for which the assessment manager is the local government		
Written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the <i>Vegetation Management Act 1999</i> , section 22A.	☐ Confirmed ☒ Not applicable	
For an operational work application where the assessment manager is the Department of Natural Resources and Mines		
Either of the following: - written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the <i>Vegetation Management Act 1999</i>, section 22A; or - information identifying the relevant purpose under the <i>Vegetation Management Act 1999</i>, section 22A and demonstrating how the proposed clearing is for that purpose.	☒ Confirmed ☐ Not applicable	
For applications for a material change of use or reconfiguring a lot		
The following additional detail to be included in the property vegetation management plan: - details of the location and extent of: - infrastructure, including buildings, fences, roads and electrical, telecommunication or sewerage services; and - firebreaks and fire management lines; and - details of the way the proposed clearing complies with the applicable concurrence agency policy under the <i>Vegetation Management Act 1999</i>.	☐ Confirmed ☒ Not applicable	

Notes for completing this form

- The Department of Natural Resource and Mines (DNRM) website contains a comprehensive range of information about the *Vegetation Management Act 1999*, including assessment codes and policies, as well as the *Landholder's guide to vegetation clearing applications*.
- Question 3 for operational work applications —Under the *Vegetation Management Act 1999*, the proposed vegetation clearing is only for a relevant purpose if the applicant satisfies the chief executive of the Department of Natural Resources and Mines (DNRM) that the development applied for is one of the purposes listed in section 22A of that Act. If the assessment manager is the local government, the applicant must obtain confirmation from the chief executive of DNRM that the proposed clearing is for a relevant purpose and provide this with the application. However, if DNRM is the assessment manager, the applicant has the choice of either obtaining this confirmation before making the application, or providing adequate information for DNRM to make the decision on whether the proposed clearing is for a relevant purpose at the time the application is received.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

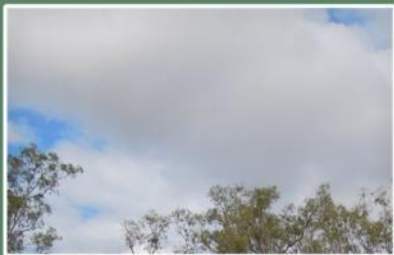
OFFICE USE ONLY

Date received

Reference numbers

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

environmental management



Regional Vegetation Management Code Response

Carmichael Coal Project (Rail)
Separable Portion 1 (SP1)

6867
10 July 2013
Adani Mining Pty Ltd





Document Control

Title	Regional Vegetation Management Code Response – Carmichael Coal Project (Rail) – Separable portion 1 (SP1)
Bioregions	Western Bioregions Brigalow Belt and New England Tablelands
Job Number	6867
Client	Adani Mining Pty Ltd

Document Issue

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Reports and/or Plans by Others

Reports and/or plans by others may be included within this Environmental Management report to support the document.



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I. Introduction

The *Environmental Management Division* of the **Saunders Havill Group** was engaged by **Adani Mining Pty Ltd** (Adani) to prepare applications for native vegetation clearing permits under the *Vegetation Management Act 1999* for the Carmichael Coal Project (Rail) (referred to within this report as the rail alignment). This includes a response to the relevant Regional Vegetation Management Codes and PVMPs for the 95 m wide corridor within **Separable Portion 1** (SP1). This report addresses Part 5 of the Regional Vegetation Management Code for the following bioregions:

- Brigalow Belt and New England Tablelands; and
- Desert Uplands (included within the Western bioregions)

Adani propose a coal mine on their coal tenement (Exploration Permit for Coal (EPC) 1690) in the Galilee Basin, West of Moranbah in central Queensland. The proposed Carmichael Rail links the mine to the ports of Dudgeon Point and Abbot Point. The rail line is divided as follows:

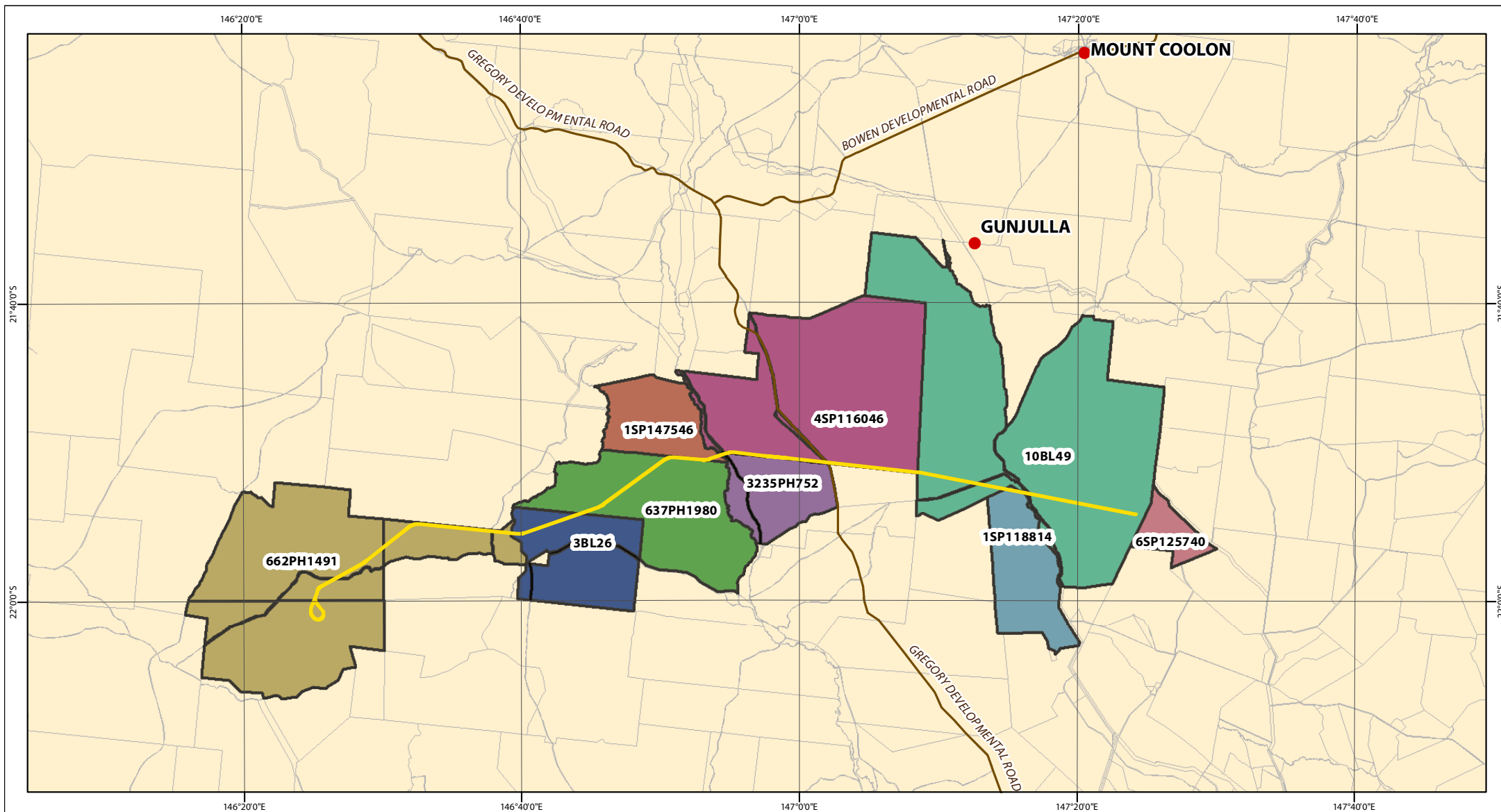
- **Separable Portion 1 (SP1)** – known as ‘west rail’ which traverses approximately 120km from the Mine site East towards Moranbah; and
- **Separable Portion 2 (SP2)** – known as ‘east rail’ which connects ‘west rail’ with the existing Goonyella rail system and provides access to Dalrymple Bay and Hay Point coal terminals.

The Carmichael Coal Project (Rail) has been declared a 'significant project' under the *State Development and Public Works Organisation Act 1971* and as such, an Environmental Impact Statement (EIS) is required for the Project. This report is prepared to accompany EIS documentation to seek approval to clear ‘Assessable Vegetation’ under the provisions of the *Vegetation Management Act, 1999*. Specifically, an approval is sought for the clearing of a 95 m wide corridor required to facilitate the construction and operation of the rail alignment.

This application covers the clearing of assessable vegetation within **Separable Proportion 1** (SP1) which is made up of the following properties (**Plan 1**):

1. Lot 662 on PH1491;
2. Lot 3 on BL26;
3. Lot 637 on PH1980;
4. Lot 1 on SP147546;
5. Lot 3235 on PH752;
6. Lot 4 on SP116046;
7. Lot 10 on BL49; and
8. Lot 1 on SP118814.
9. Lot 6 on SP125740

It is noted that this RVMC response and associated PVMP's are for areas external to the Adani Mine EPC. Clearing within the EPC is subject to other approval processes.



Legend

- Place Name
- Major Roads
- Rail Alignment Corridor (SP-1)
- QLD DCBD

Plan 1 Rail Project Overview (SP-1)

File ref. 6396 E 01 Rail Project Overview A

Date 5/07/2013

Project Carmichael Coal Rail Project

0 2 4 6 8 10 20 km
Scale (A4): 1:650,000 [GDA 1994 MGA Z55]



adani **SH** **saunders havill group**

THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. SAUNDERS HAVILL GROUP CANNOT ACCEPT RESPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY.



2. Bioregions

Queensland is divided into 13 Bioregions based on broad landscape patterns of the area including the major geological structure, climate patterns and broad groups of plants and animals. The Carmichael Coal Project (Rail) alignment traverses two bioregions:

1. **Desert Uplands** – is applicable to a 5.6 km stretch of the rail alignment located approximately 2.6 km east of the rail loop (refer to **Plan 2**).

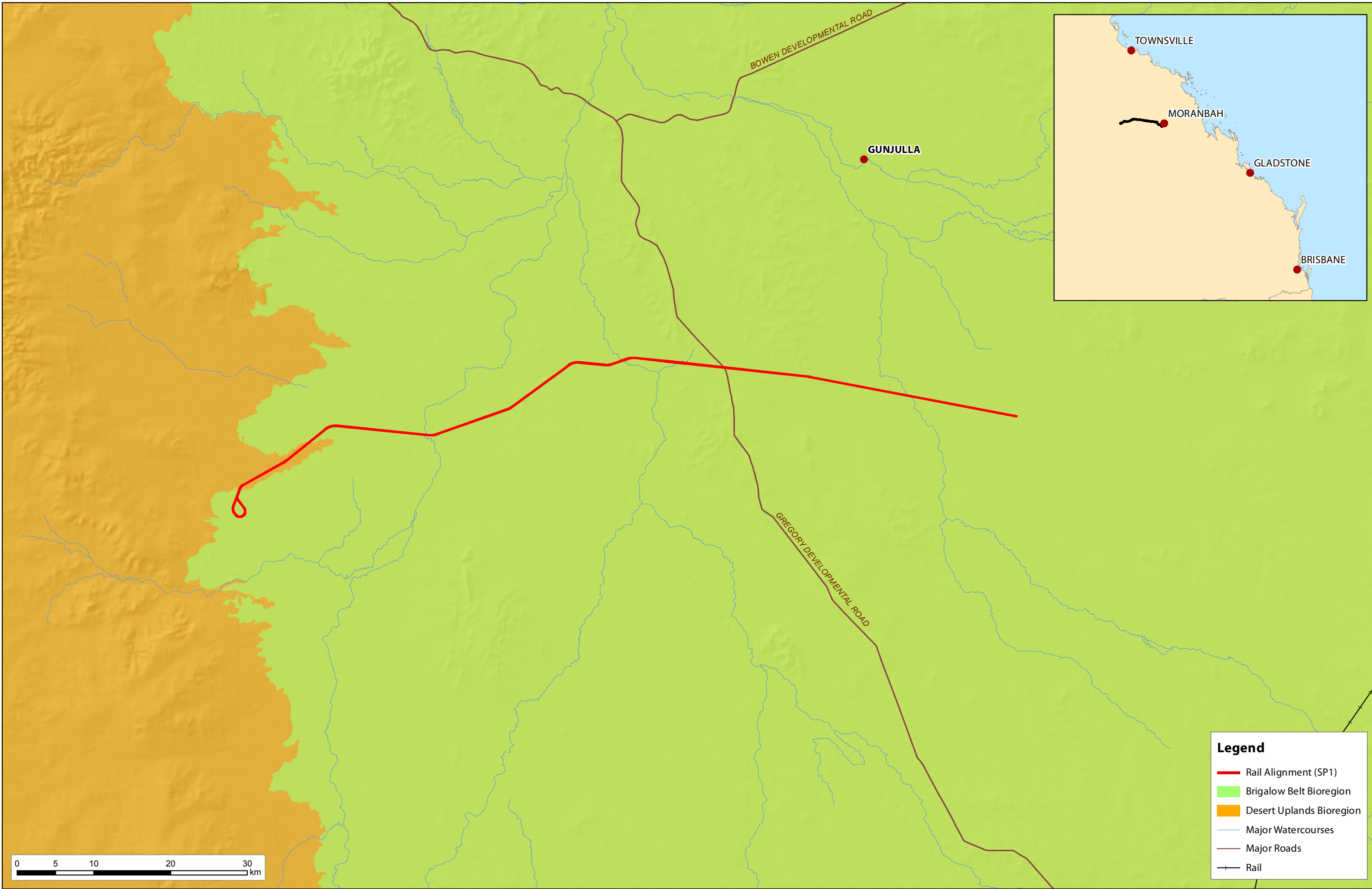
The bioregion is approximately 70,000km² and located in central Queensland. The bioregion is characterised by upland landforms including sandstone ranges and sand plains. The area is thickly vegetated with eucalypt and *Acacia* woodlands, with 77 Regional Ecosystems mapped

2. **Brigalow Belt North**– is applicable to the remainder the rail alignment (refer to **Plan 2**).

The Brigalow Belt northern bioregion is approximately 60,000 km² in central-east Queensland. The bioregion is characterised by rugged ranges and alluvial plains. Vegetation is mainly *Acacia* open forest and eucalypt woodlands.

Regional Ecosystem descriptions vary subject to the Bioregion and associated Land Zone and vegetation characteristics. Each bioregion has its own Regional Vegetation Management Code (RVMC) and performance requirements which have been addressed within this report. The following RVMCs are applicable to the site:

- Western Bioregions Regional Vegetation Management Code; and
- Brigalow Belt and New England Tablelands Regional Vegetation Management Code.





3. Carmichael Coal Rail Corridor

The rail alignment is located within a nominal 95 metre (m) wide corridor that runs from the Mine approximately 189 km eastwards to connect with existing Aurizon Goonyella Coal Rail System (**Plan 1**).

The Rail (west) portion is designed to accommodate a dual gauge (i.e. narrow gauge and standard gauge) with a capacity up to 100 Mtpa. This will allow for future connections to other existing and/or proposed third party rail infrastructure via standard and/or narrow gauge lines. The Rail (east) will be a narrow gauge track with capacity assessed at 60 Mtpa.

The 95 m wide rail corridor is required to facilitate the construction of the rail including earthworks (cut and fill), drainage, associated utilities, access roads and fencing. Example sections detailing the 95 m wide corridor are presented in **Appendix A**.

Other components of the rail include areas for the establishment of construction camps, maintenance yards, temporary works areas (concrete batching plants, ballast stockpiles etc). Information presented in this application only relates to the clearing required to facilitate the construction of the rail (95 m wide corridor).

3.1. Construction

It is expected that construction of the Project (Rail) will commence in early to mid 2014, for a period of approximately two years. The construction schedule currently indicates that construction activities in the first year are largely concerned with the undertaking of civil works (earthworks and structures), such as the establishment of watercourse crossings. Yard works are also scheduled during this period. Earthworks are planned to commence in 2014 and continue through 2015. Track laying, followed by ballasting and tamping, will commence in 2015 and are scheduled for completion in 2016.

The Construction Environmental Management Plan will detail the various requirements for the clearing, earthworks and construction phase aspects of the project relevant to meeting the requirements of the *Vegetation Management Act, 1999*. Specific to the requirements of the VMA are:

- Planning and sequencing of clearing activities;
- Requirements for site stabilization and erosion and sediment control; and
- Specific management strategies within sensitive areas (e.g. watercourse and wetland areas).



4. Ecological Assessments

To describe the ecological values along the rail alignment and to verify the desktop assessment results, extensive field surveys have been undertaken along the corridor and surrounding areas.

4.1. Property Map of Assessable Vegetation

The **Saunders Havill Group** was engaged by **Adani Mining Pty Ltd** to prepare Complex Property Maps of Assessable Vegetation (PMAV) to support requested Regional Ecosystem (RE) mapping changes for SP1 of the Carmichael Coal Project (Rail) investigation corridor. Desktop assessment and field surveys were carried out within the 95 m wide investigation area along the proposed rail corridor to map and define vegetation into categories as defined by the Queensland Herbarium.

A significant level of survey effort was completed along the SP1 alignment to describe and characterise the condition of mapped remnant areas. Field surveys noted significant variations in current RE mapping, with the most notable changes associated with mapped composite REs (as typically expected). Single RE codes were assigned to surveyed polygons (where possible). In locations where vegetation communities have mixed, or are not easily discernible, mapping retains a composite RE description.

The PMAV report should be read in conjunction with this application to clear assessable vegetation. Responses to relevant RVMC Performance Requirements (PR) are based on the findings of the PMAV survey. In addition, an assessment of the rail balloon loop was conducted by GHD in June 2013 as part of the *Carmichael Coal Mine and Rail Project Offsite Infrastructure Property Map of Assessable Vegetation* (GHD 2013). Information from that PMAV assessment has been incorporated into this report and associated *Carmichael Coal Project (Rail) Separable Proportion 1 (SP1) Property Map of Assessable Vegetation* (SHG 2013).

4.2. Geotechnical Site Investigations

A number of desktop and detailed field geotechnical surveys have been completed along the Carmichael Coal Project (Rail) alignment. To support geotechnical works, ecological field surveys were completed and a number of *Vegetation Management Act 1999* (VMA) and *Nature Conservation Act 1992* (NCA) permits obtained (VMA permit already issued 2012/005626 and 2012/005659). The RVMC responses included in this report build on the information provided during extensive negotiations with NRM officers from the Mackay office.

4.3. Environmental Impact Statement

Field surveys were conducted by GHD to identify the existing terrestrial and aquatic ecological values along the rail alignment for the Ecological Impact Assessment technical study. An autumn survey was undertaken in dry conditions between 16 May 2011 and 20 May 2011 and a spring survey was undertaken in dry conditions between 5 September 2011 and 9 September 2011. For further details refer to 'Report for Carmichael Coal Mine and Rail Project: Rail Technical Report Ecology' prepared by GHD.



5. RVMC for Western Bioregions

Only a relatively small segment of Least Concern remnant vegetation is required to be cleared to facilitate the rail alignment within the Western Bioregion.

The area of clearing is approximately 200 m² of mapped Least Concern vegetation fringing a Stream Order 2 watercourse. The extent of clearing is shown in Property Vegetation Management Plan (PVMP) 3 included within **Appendix B**.

Due to the limited amount of clearing, a brief response to the Performance Requirements (PR) and Acceptable Solutions (AS) of the Western Bioregions RVMC is provided.

5.1. Performance Requirement I – Limits to Clearing

Table 1: Limits to Clearing (PRS1) Performance Requirements and Acceptable Solutions

Performance Requirement
PR S.1: Limits to clearing
To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes—subject to the limitations required to meet PR S.2 to PR S.10—clearing is limited to the extent that is necessary for the project, any associated ancillary works, and the operation of works that comprise a project declared to be a significant project under the <i>State Development and Public Works Organisation Act 1971</i> , section 26.

5.1.1 Response

The Carmichael Coal Project (Rail) is a declared significant project under the *State Development and Public Works Act 1971*, section 26.

The Project (Rail) alignment was the subject of detailed route analysis which examined environmental and engineering criteria. The Project (Rail) concept design is based on:

- Minimising environmental impact;
- Minimising disturbance to existing infrastructure;
- Limiting fragmentation of landholdings; and
- Meeting engineering design criteria.

The subsequent alignment requires a 95 m wide corridor in order to facilitate the construction and ongoing operation of the rail. This construction width has been selected post detailed survey and analysis of a 500 m wide investigation corridor. **Section 3** and **Appendix A** summarise the requirements of the rail corridor.



5.2. Performance Requirement 2 – Wetlands

Table 2: Wetlands (PRS2) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.2: Wetlands To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes—<u>maintain the current extent of assessable vegetation associated with any natural significant wetland</u> and/or natural <u>wetland</u> to provide— a) water quality by filtering sediments, nutrients and other pollutants; and b) aquatic habitat; and c) terrestrial habitat.	AS S.2 S.2.1 Clearing does not occur— a) in any natural <u>wetland</u>; and b) within 100 metres from any natural <u>wetland</u>; and c) in any natural <u>significant wetland</u>; and d) within 200 metres from any natural <u>significant wetland</u>.

5.2.1 Response

The clearing will not occur in or within 200 m of a natural or significant wetland.

Performance Requirement S.2 is met using Acceptable Solution S.2.

5.3. Performance Requirement 3 – Watercourses

Table 3: Watercourses (PRS3) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.3: Watercourses To regulate the clearing of vegetation in a way that does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes—<u>maintain the current extent of assessable vegetation associated with any watercourse</u> to provide— a) bank stability by protecting against bank erosion; and b) water quality by filtering sediments, nutrients and other pollutants; and c) aquatic habitat; and d) terrestrial habitat.	AS S.3 S.3.1 Clearing does not occur— a) in any <u>watercourse</u>; and b) within 200 metres from each high bank of each <u>watercourse</u> with a <u>stream order</u> 5 or greater; and c) within 100 metres from each high bank of each <u>watercourse</u> with a <u>stream order</u> 3 or 4; and d) within 50 metres from each high bank of each <u>watercourse</u> with a <u>stream order</u> 1 or 2.



5.3.1 Response

The proposed 200 m² of clearing occurs in a lineal polygon adjoining a substantially larger extent of remnant vegetation (108 ha). The proposed corridor has already been substantially narrowed and is required to facilitate construction. Due to the limited amount of clearing and the continued presence of vegetation on either side of the watercourse, it is concluded that the structure and function of the regional ecosystem is maintained.

Performance Requirement S.3 is met using an alternative solution.

5.4. Performance Requirement 4 – Connectivity

Table 4: Connectivity (PRS4) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.4: Connectivity To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes— <u>areas of mapped remnant vegetation</u> are— a) of sufficient size and configured in a way to maintain ecosystem functioning; and b) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and c) located on the lot(s) that are the subject of the application to maintain connectivity to <u>mapped remnant vegetation</u> on adjacent properties.	AS S.4 S.4.1 Where clearing is less than— a) 25 metres wide; or b) 5 hectares; clearing does not— i) reduce the width of <u>mapped remnant vegetation</u> to less than 200 metres; and ii) occur where the width of <u>mapped remnant vegetation</u> is less than 200 metres; AND S.4.2 Clearing does not— a) reduce areas of contiguous <u>mapped remnant vegetation</u> to less than 50 hectares; and b) occur in areas of contiguous <u>mapped remnant vegetation</u> that are less than 50 hectares; and c) reduce the width of <u>mapped remnant vegetation</u> to less than 200 metres; and d) occur where the width of <u>mapped remnant vegetation</u> is less than 200 metres;



	and e) reduce the total extent of <u>mapped remnant vegetation</u> to less than 30%; and f) occur where the total extent of <u>mapped remnant vegetation</u> is less than 30%. AND S.4.3 Where clearing is for a <u>significant community project</u>, maintain the current extent of <u>mapped remnant vegetation</u> where the vegetation is— a) of sufficient size and configured in a way to maintain ecosystem functioning; and b) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and c) located on the lot(s) that are the subject of the application to maintain connectivity to <u>mapped remnant vegetation</u> on adjacent properties.
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5.4.1 Response

The proposed clearing is less than 25 m wide and 5 ha; however does occur in an area where the mapped remnant vegetation is less than 200 m. The minor footprint of the clearing and its lineal location along the existing edge will not impact on the current ecological processes. The remaining mapped area is configured in a way to achieve PR.S4 (a), (b), and (c).

Performance requirement S.4 is met using an alternative solution



5.5. Performance Requirement 5 – Soil Erosion

Table 5: Soil Erosion (PRS5) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.5 Soil erosion To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—the effect of clearing does not result in— a) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding; and b) any associated loss of chemical, physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients, within and/or outside the lot(s) that are the subject of the application.	AS.5 S.5.1 <u>Mechanical clearing</u> only occurs on— a) <u>stable soils</u> on a <u>slope</u> less than 10%; and b) <u>unstable soils</u> on a <u>slope</u> less than 3%; and c) <u>very unstable soils</u> on a <u>slope</u> less than 1%.

5.5.1 Response

Erosion and sediment control measures will be undertaken within and adjacent to cleared areas in accordance with an Erosions and Sediment Control Plan and the Construction Environmental Management Plan for the rail alignment. This will include both temporary and permanent measures to limit land degradation, particularly in proximity to waterways, drainage lines and floodplains. Measures will be implemented to reduce sedimentation within these systems and disturbance to watercourse bed and banks. The incorporation of Erosion and sediment control measures and the minor linear nature of clearing will not cause land degradation and will maintain the area's ecological processes.

Performance Requirement S.5 is met using an alternative solution.



5.6. Performance Requirement 6 – Salinity

Table 6: Salinity (PRS6) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.6: Salinity To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—clearing does not contribute to— a) waterlogging; or b) the <u>salinisation of groundwater</u>, surface water or soil.	AS S.6 S.6.1 Where clearing is less than— a) 2 hectares; or b) 10 metres wide; clearing does not occur in any <u>discharge area</u>. AND S.6.2 Where clearing is less than— a) 5 hectares; or b) 50 metres wide— clearing does not occur— i. in any <u>discharge area</u>; and ii. within 200 metres of any <u>discharge area</u>. AND S.6.3 Clearing does not occur in areas greater than 5 hectares

5.6.1 Response

Clearing is less than 2 ha and does not occur in any discharge area.

Performance requirement S.6 is met using acceptable solutions S6.1-6.3.



5.7. Performance Requirement 7 – Conserving remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems

Table 7: Conserving Remnant vegetation that are Endangered regional ecosystems and Of Concern regional ecosystems (PR57) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR 5.7 Conserving remnant vegetation that are <i>endangered</i> regional ecosystems and <i>of concern</i> regional ecosystems To regulate the clearing of vegetation in a way that conserves remnant vegetation that are <i>endangered</i> regional ecosystems and <i>of concern</i> regional ecosystems—<u>maintain the current extent of <i>endangered</i> regional ecosystems and <i>of concern</i> regional ecosystems.</u>	AS S.7 S.7.1 Clearing— a) does not occur in an endangered regional ecosystem or an of concern regional ecosystem that is listed in Table 3; and b) in an endangered regional ecosystem or an of concern regional ecosystem that is not listed in Table 3 only occurs where the clearing is less than 10 metres wide or 0.5 hectares.

5.7.1 Response

Clearing will not occur within an Endangered or Of Concern regional ecosystem.

Performance Requirement 5.7 is met using Acceptable Solution S7.1.

5.8. Performance Requirement 8 – Essential Habitat

Table 8: Essential Habitat (PR58) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR 5.8: Essential habitat To regulate the clearing of vegetation in a way that prevents the loss of biodiversity—<u>maintain the current extent of essential habitat.</u>	AS S.8 S.8.1 Clearing does not occur in an area shown as essential habitat on the essential habitat map.

5.8.1 Response

Clearing will not occur within essential habitat.

Performance Requirement 5.8 is met using Acceptable Solution S.8.1



5.9. Performance Requirement 9 – Conservation Status Thresholds

Table 9: Conservation Status Thresholds (PRS9) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.9: Conservation status thresholds To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and conserves remnant vegetation that are regional ecosystems—<u>maintain the current extent</u> of regional ecosystems listed in Table 5.	AS S.9 S.9.1 Clearing in a regional ecosystem listed in Table 4 does not occur unless the clearing is less than— 10 metres wide; or 2 hectares.

5.9.1 Response

Clearing will not occur within a regional ecosystem listed within Table 4 of the RVMC.

Performance Requirement S.9 is met using acceptable solution S9.1.

5.10. Performance Requirement 10 – Acid Sulfate Soils

Table 10: Acid Sulfate Soils (PRS10) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.10: Acid sulfate soils To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes in the <u>coastal subregions of the Brigalow Belt Bioregion</u>, and the Marlborough Plains subregion (11.14)—clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either— a) aerate horizons containing iron sulfides; or b) mobilise acid and/or metals.	AS S.10 S.10.1 Clearing in land zone 1, land zone 2 or land zone 3 in areas below 5 metre Australian Height Datum— a) is carried out in accordance with an acid sulfate soils environmental management plan as outlined in the <i>State Planning Policy 2/02 Guideline: Planning and Managing Development Involving Acid Sulfate Soils</i>; and b) follows management principles in accordance with the <i>Soil Management Guidelines in the Queensland Acid Sulfate Soil Technical Manual</i>.



5.10.1 Response

The rail alignment is not within areas below 5 m AHD and therefore PR S.10 is not applicable.



6. RVMC for Brigalow Belt and New England Tablelands Bioregions

The majority of SP1 is located within the Brigalow Belt North Bioregion and as such a response has been prepared to the Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions (Version 2.1 – 30th November 2012).

Extensive vegetation surveys have been completed along the SP1 rail corridor resulting in the reclassification of remnant vegetation at the property scale. A Property Map of assessable Vegetation (PMAV) report is submitted within EIS documentation demonstrating proposed changes to RE mapping and should be read in conjunction with this report.

Property Vegetation Management Plans (PVMP) contained within this report reflect Version 6.1 of Regional Ecosystem mapping, however, responses to the RVMC take into consideration the results of the PMAV survey. Refer to **Appendix B** for the PVMP mapping.

Refer to the PMAV document for Regional Ecosystem changes, and remnant polygon size and boundary changes.



6.1. Performance Requirement 1 – Limits to Clearing

Table 11: Limits to Clearing (PRS1) Performance Requirements and Acceptable Solutions

Performance Requirement
PR S.1: Limits to clearing To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes—subject to the limitations required to meet PR S.2 to PR S.10—clearing is limited to the extent that is necessary for the project, any associated ancillary works, and the operation of works that comprise a project declared to be a significant project under the <i>State Development and Public Works Organisation Act 1971</i>, section 26.

6.1.1 Response general

The Carmichael Coal Project (Rail) is a declared significant project under the *State Development and Public Works Act 1971*, section 26.

The Project (Rail) alignment was the subject of detailed route analysis which examined environmental and engineering criteria. The Project (Rail) concept design is based on:

- Minimising environmental impact;
- Minimising disturbance to existing infrastructure;
- Limiting fragmentation of landholdings; and
- Meeting engineering design criteria.

The subsequent alignment requires a 95 m wide corridor in order to facilitate the construction and ongoing operation of the rail. This construction width has been selected post detailed survey and analysis of a 500 m wide investigation corridor. **Section 3** and **Appendix A** summarise the requirements of the rail corridor

6.2. Performance Requirement 2 – Wetlands

Table 12: Wetlands (PRS2) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.2: Wetlands To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes—<u>maintain the current extent of assessable vegetation</u> associated with any natural <u>significant wetland</u> and/or natural <u>wetland</u> to provide— d) water quality by filtering sediments, nutrients and other pollutants; and	AS S.2 S.2.1 Clearing does not occur— e) in any natural <u>wetland</u>; and f) within 100 metres from any natural <u>wetland</u>; and g) in any natural <u>significant wetland</u>; and h) within 200 metres from any natural <u>significant</u>



Performance Requirement	Acceptable Solutions
e) aquatic habitat; and f) terrestrial habitat.	<u>wetland.</u>

6.2.1 Response general

The RVMC includes a comprehensive definition as to what constitutes a Wetland or a Significant Wetland. These definitions were consulted to identify areas along SP1 that require consideration against PR S.2.

Natural Significant Wetland (determination)

- The project area is located within the Burdekin catchment and therefore part A of the definition applies when determining the presence of a significant wetland.
- In pockets along watercourses, dams and other drainage features areas of land are assessed as supporting plants which have adapted to or are dependent on living in wet conditions. However, Vegetation Management Wetland mapping does not identify any Great Barrier Reef Wetlands along the alignment.
- Based on the above explanation, the rail line will not result in the clearing of assessable vegetation in or within 200 m of a natural significant wetland.

Wetland

- None of the Regional Ecosystems mapped within the study area and identified on-site are listed in Table 14 of the RVMC.
- The rail alignment does not contain a natural spring listed within the Queensland Springs Database.
- Topographic data from DNRM does not have coverage for this area, however Geoscience Australia topographic data has been used to identify mapped swamps, lakes, marshes, waterholes wetlands, billabongs, pools, springs or the like.

In addition to an area being mapped, the location must also display on ground characteristics of a wetland as defined by State Government wetland definitions (Wetland Info).

Wetlands are areas of permanent or periodic/intermittent inundation, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 metres. To be a wetland, the area must have one or more of the following attributes:

1. *The land supports, at least periodically, plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle*
2. *The substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers The substratum is not soil and is saturated with water, or covered by water, at some time.*

Review of the topographic data mapping identified the presence of a mapped Wetland (perennial lake) associated with Logan Creek – Refer PVMP 26 response below.



6.2.2 Response PVMP 26 (Lot IO BL 49)

PVMP 26 includes areas of remnant vegetation associated with Logan Creek. The area was described as containing Of Concern remnant vegetation 11.3.3 during PMAV field investigations (see **Figures 2 & 3**).

Logan Creek runs from the north-west to the south-east and is surrounded by intensive agriculture along large sections of its banks. The riparian vegetation associated with this watercourse is predominantly *Eucalyptus camaldulensis* and *Eucalyptus coolabah* as fringing vegetation with *Acacia cambagei* further away from the watercourse banks.

Avon lagoon is a large waterhole of variable depth and width that has high habitat values for both aquatic and terrestrial fauna. Substantial aquatic habitat is available within this watercourse in the form of submerged logs and aquatic macrophytes.

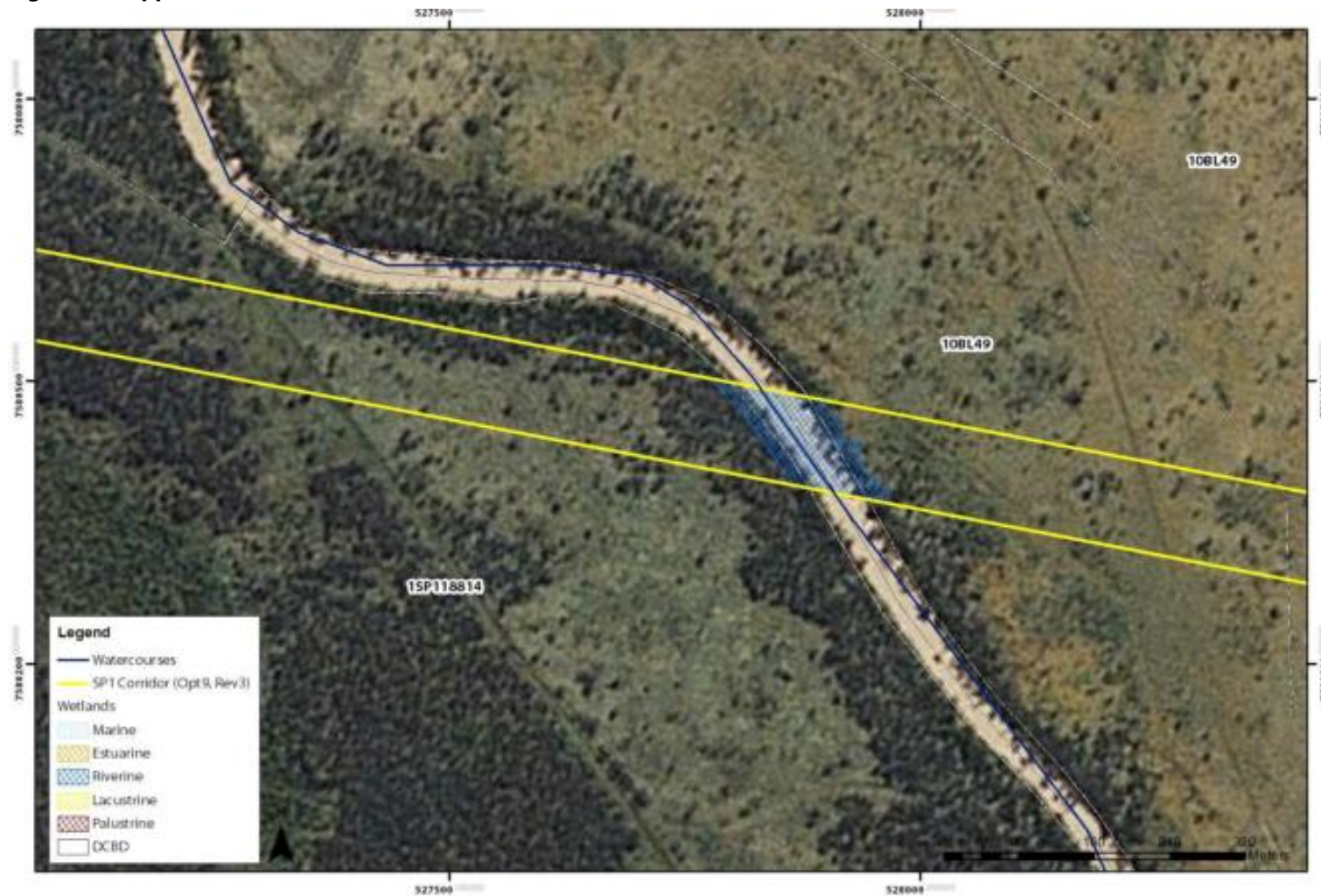
This location along Logan Creek is mapped as a perennial lake within the Geoscience Australia topographic data (**Figure 1**), and meets the definition of a wetland. Clearing will be required within these areas to facilitate the construction of the rail crossing structures (bridge).



Photo: Logan Creek and associated vegetation



Figure 1: Mapped Wetland (Queensland Wetland Data Version 3.0)



Legend

- Property Boundary
- Study Corridor
- Quaternary Assessment Site
- Vegetation Transect Site
- Observation Site

Regional Ecosystem

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE
- Non-Remnant

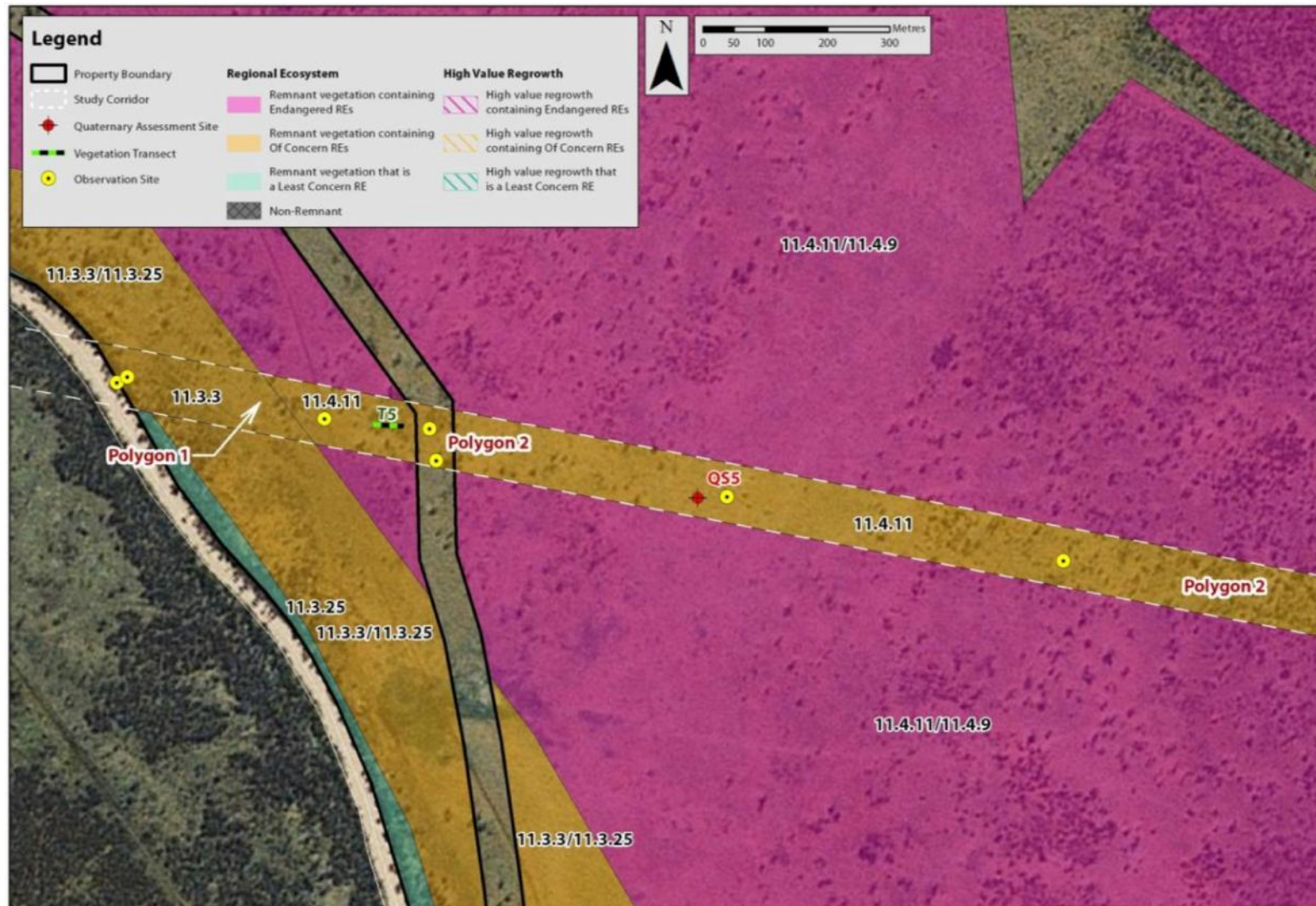
High Value Regrowth

- High value regrowth containing Endangered REs
- High value regrowth containing Of Concern REs
- High value regrowth that is a Least Concern RE

The map displays a study area with a property boundary and a study corridor. Four polygons (Polygons 1, 2, 3, and 4) are identified, each associated with a specific Regional Ecosystem (RE) code: 11.4.6, 11.3.3, 11.3.3/11.3.37, and 11.3.3. The map also shows Quaternary Assessment Sites (QS2, QS3, QS4) and a Vegetation Transect Site (T). The legend defines the colors and patterns used for different vegetation types: Remnant vegetation containing Endangered REs (pink), Remnant vegetation containing Of Concern REs (orange), Remnant vegetation that is a Least Concern RE (light blue), Non-Remnant (grey), High value regrowth containing Endangered REs (pink with diagonal lines), High value regrowth containing Of Concern REs (orange with diagonal lines), and High value regrowth that is a Least Concern RE (light blue with diagonal lines). A scale bar indicates distances up to 300 metres, and a north arrow is present.



Figure 3: Regional Ecosystem Changes (Refer PMAV Report - Lot 10 on BL49, Area C, Polygons 1-2)





6.3. Performance Requirement 3 – Watercourses

Table 13: Watercourses (PR S.3) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.3: Watercourses To regulate the clearing of vegetation in a way that does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes—<u>maintain the current extent of assessable vegetation</u> associated with any <u>watercourse</u> to provide— e) bank stability by protecting against bank erosion; and f) water quality by filtering sediments, nutrients and other pollutants; and g) aquatic habitat; and h) terrestrial habitat.	AS S.3 S.3.1 Clearing does not occur— a) in any <u>watercourse</u>; and b) within the relevant distance stipulated in Table 2, of each high bank of each <u>watercourse</u>.

6.3.1 Response General

Due to the linear nature of the proposed infrastructure, the rail alignment intersects with watercourses at nineteen (19) locations. Nine of these watercourses are located within remnant vegetation ranging from Stream Order (SO) 1 to 8. The remaining watercourses occur within areas mapped as non-remnant.

In the context of this RVMC response it is noted that all 10 of the depicted watercourses not mapped as remnant by version 6.1 of Regional Ecosystem mapping comply with PR S.3. The Rail Corridor will achieve the requirement to “maintain the current extent”.

“Maintain the current extent” requires applicants to:

- *Not clear the Regional Ecosystem; or*
- *Ensure the structure and function of the RE is maintained*

For the remaining nine locations, the proposed clearing of remnant vegetation requires consideration against Acceptable Solution (AS) S.3. Each area is addressed in Table 14 below.

Where through specific construction methods the Acceptable Solution cannot be achieved an offset will be provided for the clearing of all “Assessable Vegetation” within or associated with the defined watercourse area. The offset will be addressed as part of the Carmichael Coal Mine and Rail Offset Strategy and will achieve the criteria from the applicable Policy for Vegetation Management Offsets.



An offset area for a watercourse must be:

- a) Be located within the same bioregion
- a) The same or higher stream order as the watercourse proposed for clearing
- b) A Regional Ecosystem associated with a watercourse which assists with maintaining bank stability, water quality, aquatic habitat and terrestrial habitat.

Table 14: Requirements of PR S.3 Watercourses

PVMP	Lot	RE observed	Stream order
8	Lot 662 PH1491	Least Concern RE 11.3.37	2
8	Lot 3 BL26	Least Concern RE11.3.37/11.3.25	8
9	Lot 3 BL26	Least Concern RE 11.3.37/11.3.25	1
16	Lot 1 SP147546	Least Concern RE 11.3.37/11.3.25	2
16	Lot 3235 PH752	Least Concern RE 11.3.25/11.3.37	6
21	Lot 4 SP116046	Non Remnant	1
25	Lot 10 BL49	Of Concern RE 11.3.3 / Non Remnant	2
26	Lot 1 SP118814	Of Concern RE 11.3.3	5



6.4. Performance Requirement 4 – Connectivity

Table 15: Connectivity (PRS4) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.4: Connectivity To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes—areas of <u>mapped remnant vegetation</u> are— d) of sufficient size and configured in a way to maintain ecosystem functioning; and e) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and f) located on the lot(s) that are the subject of the application to maintain connectivity to <u>mapped remnant vegetation</u> on adjacent properties.	AS.4 S.4.1 Where clearing is less than — a) 10 metres wide in the <u>coastal subregions of the Brigalow Belt Bioregion</u>; or b) 2 hectares in the <u>coastal subregions of the Brigalow Belt Bioregion</u>; or c) 25 metres wide in the <u>non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion</u>; or d) is less than 5 hectares in the <u>non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion</u>; clearing does not— a) reduce the width of <u>mapped remnant vegetation</u> to less than 200 metres; and b) occur where the width of <u>mapped remnant vegetation</u> is less than 200 metres; AND S.4.2 Clearing does not— a) reduce areas of contiguous <u>mapped remnant vegetation</u> to less than 10 hectares, in the <u>coastal subregions of the Brigalow Belt Bioregion</u>; and b) occur in areas of contiguous <u>mapped remnant vegetation</u> that are less than 10 hectares, in the <u>coastal subregions of the Brigalow Belt Bioregion</u>; and c) reduce areas of contiguous <u>mapped remnant vegetation</u> to less than 50 hectares, in the <u>non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion</u>; and d) occur in areas of contiguous <u>mapped remnant vegetation</u> that are less than 50 hectares, in the <u>non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion</u>; and e) reduce the width of <u>mapped remnant vegetation</u> to less than 200 metres; and f) occur where the width of <u>mapped remnant vegetation</u> is less than 200 metres; and g) reduce the total extent of <u>mapped remnant vegetation</u> to less than 30%; and h) occur where the total extent of <u>mapped remnant vegetation</u> is less than 30%.



	AND S.4.3 Where clearing is for a <u>significant community project</u>, maintain the current extent of <u>mapped remnant vegetation</u> where the vegetation is— a) of sufficient size and configured in a way to maintain ecosystem functioning; and b) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and c) located on the lot(s) that are the subject of the application to maintain connectivity to <u>mapped remnant vegetation</u> on adjacent properties.
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6.4.1 Response General

The location of the rail alignment took into consideration the impact on property owners, and a range of other social, environmental, and technical constraints. In considering these constraints, the alignment has been located wherever possible in areas that have been cleared or degraded through historical or current land uses. Volume 1 Section 3 of the Environmental Impact Statement provides a discussion on the alternatives for the project.

This planning process has resulted in large parts of the rail corridor being located within areas subject to historical broad scale clearing. As such, much of the remaining vegetation is fragmented.

There are areas however where the alignment intersects contiguous areas of remnant vegetation with potential to impact on connectivity through creating a permanent barrier. Areas of mapped vegetation impacted by the rail corridor are discussed in Table 16.

The impact of the rail alignment on connectivity of mapped remnant vegetation should be considered in parallel to the Carmichael Coal Rail Corridor Fauna Crossing Strategy. This document, included as part of the EIS, discusses the measures to be employed into the design to maintain connectivity across the landscape.

Table 16: Requirements of PR S.4 Connectivity

PVMP	Lot (s)	RE observed	Comment
4, 5 & 6	Lot 662 PH1491	Of Concern RE 11.4.11	Refer Section 6.4.2
8	Lot 662 PH1491	Of Concern RE 11.3.11,	Refer Section 6.4.3
		Least Concern RE 11.3.37	
		Least Concern RE 11.3.10	
9	Lot 3 BL26	Least Concern RE 11.3.10/11.3.7	Refer Section 6.4.4
9	Lot 3 BL26	Of Concern RE 11.3.3	Refer Section 6.4.5
		Least Concern RE 11.3.37/11.3.25	



PVMP	Lot (s)	RE observed	Comment
11	Lot 637 PH1980	Endangered 11.3.1/11.3.5	Refer Section 6.4.6
		Of Concern 11.3.3	
		Of Concern 11.4.6	
12	Lot637 PH1980	Endangered RE 11.3.1	Refer Section 6.4.7
		Least Concern RE 11.5.3	
14	Lot 637 PH1980	Of Concern RE 11.4.6	Refer Section 6.4.8
15	Lot 1 SP147546	Least Concern RE 11.5.3	Refer Section 6.4.9
16	Lot 1 SP147546	Of Concern RE 11.3.3/11.3.5	Refer Section 6.4.10
		Least Concern RE 11.3.25/11.3.37	
		Of Concern 11.3.3	
		Least Concern RE11.3.25/11.3.37	
		Of Concern 11.3.5/11.3.3	
17	Lot 3235 PH752	Of Concern RE 11.3.5/11.3.3	Refer Section 6.4.11
		Least Concern RE11.3.10	
23	Lot 10 BL49	Endangered RE 11.4.9	Refer Section 6.4.12
25	Lot 10 BL49	Of Concern RE 11.4.6	Refer Section 6.4.13
26-29	Lot 1 SP118814,	Of Concern RE 11.4.6	Refer Section 6.4.14
		Of Concern RE11.3.3	
	Lot 10 BL49	Of Concern RE 11.3.3	
		Of Concern RE 11.4.11	
		Least Concern RE 11.4.4	

6.4.2 Response PVMP 1a, 1b, 4, 5 & 6 (Lot 662 PH 1491)

PVMP 1a & 1b

Field assessment undertaken by **GHD** as part of the *Offsite Infrastructure PMAV* (GHD 2013) describes mapped Of Concern RE's 11.4.11 and 11.4.11 / 11.4.5 as non-remnant (Refer also *Carmichael Coal Project (Rail) Separable Proportion 1 (SP1) Property Map of Assessable Vegetation* (SHG 2013)).

As such no clearing of assessable vegetation is proposed within these locations (Refer PVMP 1a & 1b).

PVMP 4, 5 & 6

Vegetation observed during field surveys included a disturbed grassland community consistent with RE 11.4.1 (Refer PMAV). The location was heavily disturbed by cattle grazing and displayed significant infestations of pasture weed species within the ground layer. Patches of native grassland areas were observed in sections within this polygon however were fragmented by extensive areas dominated by Buffel Grass (Refer photo).



It is noted that the PMAV process does not allow the remapping of Grassland areas, however, the degraded nature of this location should be considered when being assessed against the RVMC. It is suggested that the integrity of this grassland RE has been removed as a result of cattle grazing.

Despite this, the rail design in this location requires the installation of a number of culvert structures that will assist in maintaining connectivity for local fauna in the landscape (refer Carmichael Coal Rail Fauna Crossing Strategy).

Based on the degraded nature of this mapped remnant polygon, it is determined that the Carmichael Coal Project (Rail) by incorporating measures outlined in the Crossing Strategy will not alter the ecological process and opportunities of the clearing area.



*Photo: The area mapped as remnant grassland RE11.4.11 within the investigation area is dominated with *Pennisetum ciliare* (Buffel Grass).*

6.4.3 Response PVMP 8 (Lot 662 PHI49I)

This location is associated with tributaries of the Belyando River. Contextually vegetation associated with this watercourse forms part of a fragmented North-South corridor which follows the Belyando Rivers various vegetated tributaries.

This rail design requires significant bridge and culvert structures within this location to provide flood immunity to the rail line. The area is also identified as one of 3 major corridors within the landscape where the SP1 rail corridor intercepts.



The Carmichael Coal Project (Rail) Fauna Crossing Strategy provides detailed consideration of this area and identifies measures to reduce impacts to fauna and associated habitats.

The rail design will satisfy PR S.4 via the implementation of fauna sensitive rail design outcomes which maintain the current extent of ecological process.

6.4.4 Response to PVMP 9 (Lot 3 BL26)

The site is located within a Least Concern mapped vegetation community described as RE 11.3.10 / 11.3.7. Species composition and vegetation structure are consistent with a composite vegetation community of RE 11.3.10 / 11.3.7. The presence of *Corymbia dallachiana*, *Corymbia clarksoniana* and *Eucalyptus brownii* within the T1 and T2 layers and *Acacia salicina*, *Acacia excelsa*, *Eremophila mitchellii* and *Carissa ovata* within the shrub layer is consistent with species associated with Least Concern RE 11.3.10 and Least Concern RE 11.3.7.

The area is highly disturbed and is in poor condition with a large quantity of dead standing timber and dense weed infestations. *Pennisetum ciliare* and *Parthenium hysterophorus* are dominant within the ground layer. Heavy grazing pressure was also observed within the area.

Although this location like many areas along the rail alignment is degraded and the actual works are not likely to result in the removal of outstanding environmental features, the construction of the line will alter the current unrestrained fauna movement opportunities typically associated with large rural allotments. These open movement opportunities cannot be easily mapped as per critical corridors, habitat areas and key watercourse areas however are considered via the solutions in the overarching Carmichael Coal Rail Fauna Crossing Strategy.



Photo: Area mapped as Endangered and Least Concern High value regrowth. Observed species consistent with RE 11.3.10/11.3.7



6.4.5 Response to PVMP 9 (Lot 3 BL26)

This location is associated with tributaries of the Belyando River. Contextually vegetation associated with this watercourse forms part of a fragmented North-South corridor which follows the Belyando Rivers various vegetated tributaries.

This rail design requires significant bridge and culvert structures within this location to provide flood immunity to the rail line. The area is also identified as one of 3 major corridors within the landscape where the SP1 rail corridor intercepts.

The Carmichael Coal Project (Rail) Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.

The rail design will satisfy PR S.4 via the implementation of fauna sensitive rail design outcomes which will maintain the current extent of ecological processes.

6.4.6 PVMP II (Lot 637 PHI980)

The proposed rail corridor will intersect an area of Endangered and Of Concern vegetation which forms part of a larger polygon of vegetation extending to the North and more degraded corridor to the South.

The proposed lineal rail alignment does logically alter the current width of connectivity through these bushland patches and replaces it with more concentrated and funneled movement solutions. The specific use of this area based on the detailed fauna studies completed in the EIS has been taken into account in the Carmichael Coal Rail Fauna Crossing Strategy which uses this fauna data in the design specifications for culvert size, numbers and separation distances. This data analysis and scientific approach to design of fauna movement solutions has been adopted to work in with remaining remnant vegetation areas and ensure no loss in biodiversity and ecological processes.

6.4.7 Response PVMP I2 (Lot 637 PHI980)

The proposed rail corridor will intersect an extensive area of Endangered and Least Concern vegetation which forms part of a larger polygon of vegetation extending to the North however has limited connectivity to the South via historical broad scale clearing.

Consideration is given to the impacts on connectivity of this area within the Carmichael Coal Rail Fauna Crossing Strategy.

6.4.8 Response PVMP I4 (Lot 637 PHI980)

The site is located within a mapped vegetation community comprised of Endangered RE 11.4.8 / 11.4.6. Canopy species recorded in this location are dominated by *Acacia cambagei* and *Acacia harpophylla*. No *Eucalyptus cambageana* (indicating RE 11.4.8) were observed during the field assessment. The species mix within this area appears consistent with Of Concern RE 11.4.6.

This vegetated polygon extends further North, forming part of a broader area of *Acacia* and eucalypt woodland habitat. However limited connectivity remains to the South of the rail corridor due to historical broad scale clearing within the landscape. Consideration is given to the impacts on connectivity of this area within the Carmichael Coal Rail Fauna Crossing Strategy.



6.4.9 Response PVMP I5 (Lot I SPI47546)

The site is located within a mapped vegetation community comprised of Least Concern RE 11.5.3 - *Eucalyptus populnea* and/or *E. melanophloia* and/or *Corymbia clarksoniana* on *Cainozoic sand plains/remnant surfaces*. Canopy species in this location was dominated by *Corymbia clarksoniana*, *Corymbia dallachiana* and *E. brownii*. The understory is highly disturbed due to cattle grazing; however species observed are consistent with RE 11.5.3.

The rail alignment extends through the southern limit of this fragmented patch of vegetation which contextually remains isolated within the landscape. Consideration is given to the impacts on connectivity of this area within the Carmichael Coal Rail Fauna Crossing Strategy.



Photo: Least Concern RE 11.5.3 vegetation

6.4.10 Response PVMP I6 (Lot I SPI47546)

This location is associated with tributaries of Mistake Creek. Contextually vegetation associated with this watercourse forms part of a fragmented North-South corridor which follows the Belyando Rivers various vegetated tributaries.

This rail design requires significant bridge and culvert structures within this location to provide flood immunity to the rail line. The area is also identified as one of 3 major corridors within the landscape where the SP1 rail corridor intercepts.

The Carmichael Coal Project (Rail) Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.

The rail design will satisfy PR S.4 via the implementation of fauna sensitive rail design outcomes which will maintain the current extent of ecological processes.



6.4.II Response PVMP 17 (Lot 4 SPII6046)

The site contains two adjoining RE types, one described as an Of Concern Community and the other a Least Concern community. The Of Concern area is located adjacent to cleared open paddocks managed for cattle and representative of Land Zone 3. Species observed throughout the mapped Of Concern polygon represent a composite Regional Ecosystem 11.3.5 / 11.3.3. Recent flood damage is evident throughout the area.

The Least Concern site is mapped as a composite vegetation community described as Endangered RE 11.3.5 / 11.3.1 / 11.3.10. Species observed represent Least Concern Regional Ecosystem 11.3.10 and 11.3.5. These two Least Concern communities form a composite Regional Ecosystem polygon.

This patch of vegetation is located to the East of vegetation forming part of the Mistake Creek corridor. The proposed rail design includes culverts which will assist with maintaining fauna connectivity.

A network of bridges and open culverts are proposed to cater for the crossing of Stream Orders and other drainage features along the rail alignment. In each location where a crossing structure is proposed the results of the technical fauna studies have been considered in addition to flooding and engineering outcomes. The specific fauna data and anticipated ongoing movement requirements of identified species has been incorporated into the design of the crossing structure. It is also noted that in each of these locations separate Waterway Barrier Works Permits are required which also require detailed assessment of fauna movement. The clearing of any assessable vegetation within or associated with these watercourses will also be offset in accordance with the criteria from the 30th of September 2011 Policy for Vegetation Management Offsets. The Carmichael Coal Rail Project Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.

6.4.I2 Response PVMP 23 (Lot 10 BL49)

The site is located within a mapped Endangered vegetation community dominated by *Acacia harpophylla* and currently mapped as Endangered RE 11.4.9. This vegetation community forms part of a broader patch of vegetation which extends north of the rail alignment. The rail alignment extends through the southern boundary of this mapped polygon.

The proposed lineal rail alignment does logically alter the current width of connectivity through these bushland patches and replaces it with more concentrated and funneled movement solutions. The specific use of this area based on the detailed fauna studies completed in the EIS has been taken into account in the Carmichael Coal Rail Fauna Crossing Strategy which uses this fauna data in the design specifications for culvert size, numbers, separation distances, exclusion fencing etc. This data analysis and scientific approach to design of fauna movement solutions has been adopted to work in with remaining remnant vegetation areas and ensure no loss in biodiversity and ecological processes. The Carmichael Coal Rail Project Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.



Photo: mapped Endangered vegetation community dominated by Acacia harpophylla

6.4.13 Response PVMP 25 (Lot 10 BL49)

This vegetation polygon involves the southern extent of mapped vegetation including Of Concern RE 11.3.3. The vegetation surrounds a Stream Order 2 watercourse.

The Carmichael Coal Project (Rail) Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.

The rail design will satisfy PR S.4 via the implementation of fauna sensitive rail design outcomes.

6.4.14 Response PVMP 26 - 29 (Lot 1 SPII8814)

This area of remnant vegetation consists of multiple communities which connect to the major landscape corridor associated with Logan Creek. Adjoining Logan Creek the vegetation is consistent with Of Concern RE 11.3.3 with fringing areas of Of Concern RE 11.4.6 to the West.

To the East of Logan Creek is an extensive native grassland area described as Of Concern RE 11.4.11. This area has varying levels of disturbance associated with agricultural activities, however maintains the most intact areas of native grasslands along the Carmichael Coal Rail corridor.

Logan Creek is identified as a major crossing location within the rail design with the proposed bridge structures providing adequate opportunity to ensure fauna passage is maintained within the landscape. In addition, numerous culvert structures are proposed within the grassland areas.



A network of bridges and open culverts are proposed to cater for the crossing of Stream Orders and other drainage features along the rail alignment. In each location where a crossing structure is proposed the results of the technical fauna studies have been considered in addition to flooding and engineering outcomes. The specific fauna data and anticipated ongoing movement requirements of identified species has been incorporated into the design of the crossing structure. It is also noted that in each of these locations separate Waterway Barrier Works Permits are required which also require detailed assessment of fauna movement. The clearing of any assessable vegetation within or associated with these watercourses will also be offset in accordance with the criteria from the 30th of September 2011 Policy for Vegetation Management Offsets.

The rail design will satisfy PR S.4 via the implementation of fauna sensitive rail design outcomes. The Carmichael Coal Project (Rail) Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.

6.4.15 Response PVMP 31 (Lot 6 SPI25740)

The site is located within a mapped vegetation community comprised of Of Concern RE 11.3.3 / 11.4.11. This Of Concern remnant polygon forms part of an extensive North-South corridor which connects into Diamond Creek. This creek system combines with Logan Creek to the North.

The proposed lineal rail alignment does logically alter the current wide width of connectivity through these bushland patches and replaces it with more concentrated and funneled movement solutions. The specific use of this area based on the detailed fauna studies completed in the EIS has been taken into account in the Carmichael Coal Rail Fauna Crossing Strategy which uses this fauna data in the design specifications for culvert size, numbers, separation distances etc. This data analysis and scientific approach to design of fauna movement solutions has been adopted to work in with remaining remnant vegetation areas and ensure no loss in biodiversity and ecological processes.

The Carmichael Coal Project (Rail) Fauna Crossing strategy provides detailed consideration of this area and identifies strategies to reduce impacts to fauna and associated habitats.



6.5. Performance Requirement 5 – Soil Erosion

Table 17: Soil Erosion (PRS5) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.5 Soil erosion To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—the effect of clearing does not result in— c) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding; and d) any associated loss of chemical, physical or biological fertility—including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients, within and/or outside the lot(s) that are the subject of the application.	AS.5 S.5.1 <u>Mechanical clearing</u> only occurs on— d) <u>very stable soils</u> on a <u>slope</u> less than 15%; and e) <u>stable soils</u> on a <u>slope</u> less than 12%; and f) <u>unstable soils</u> on a <u>slope</u> less than 8%; and g) <u>very unstable soils</u> on a <u>slope</u> less than 5%.

6.5.1 Response

Erosion and sediment control measures will be undertaken within and adjacent to cleared areas in accordance with an Erosion and Sediment Control Plan and the Construction Environmental Management Plan for the rail alignment. This will include both temporary and permanent measures to limit land degradation, particularly in proximity to waterways, drainage lines and floodplains. Measures will be implemented to reduce sedimentation within these systems and disturbance to watercourse bed and banks.

Performance Requirement S.5: Soil Erosion is met using an alternative solution.



6.6. Performance Requirement 6 – Salinity

Table 18: Salinity (PRS6) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.6: Salinity To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—clearing does not contribute to— c) waterlogging; or d) the <u>salinisation of groundwater</u> , surface water or soil.	AS S.6 S.6.1 Where clearing is less than— c) 2 hectares; or d) 10 metres wide; clearing does not occur in any <u>discharge area</u> . AND S.6.2 Where clearing is less than— c) 5 hectares; or d) 50 metres wide— clearing does not occur— iii. in any <u>discharge area</u> ; and iv. within 200 metres of any <u>discharge area</u> . AND S.6.3 Clearing does not occur in areas greater than 5 hectares

6.6.1 Response

EIS documentation provides a detailed analysis of impacts to ground and surface water as a result of the Carmichael Coal Project (Rail). Due to the linear nature of vegetation clearing it is not expected that the clearing will result in waterlogging or the salinization of groundwater, surface water or soil.



6.7. Performance Requirement 7 – Conserving remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems

Table 19: Conserving Remnant vegetation that are Endangered regional ecosystems and Of Concern regional ecosystems (PRS7) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR 5.7 Conserving remnant vegetation that are <i>endangered</i> regional ecosystems and of concern regional ecosystems To regulate the clearing of vegetation in a way that conserves remnant vegetation that are <i>endangered</i> regional ecosystems and <i>of concern</i> regional ecosystems—<u>maintain the current extent</u> of <i>endangered</i> regional ecosystems and <i>of concern</i> regional ecosystems.	AS 5.7 5.7.1 Clearing— a) does not occur in an <i>endangered</i> regional ecosystem or an <i>of concern</i> regional ecosystem that is listed in Table 4; and b) in an <i>endangered</i> regional ecosystem or an <i>of concern</i> regional ecosystem that is not listed in Table 4 only occurs where the clearing is less than 10 metres wide or 0.5 hectares.

6.7.1 Response

Clearing within a Table 4 Regional Ecosystems

The majority of the vegetation identified within the rail alignment is not listed within Table 4 of the RVMC as dense Regional Ecosystems and mid-dense wet sclerophyll, *Melaleuca*, mangrove and wetland Regional Ecosystems.

Some areas of Of Concern RE 11.4.6 were encountered along the rail alignment which is a community listed within Table 4 of the RVMC (Refer to **Table 20**). Clearing of Endangered and Of Concern Regional Ecosystems are described in Table 21 in this report.

Offsets for these vegetation areas will be provided in accordance with the Carmichael Coal Mine and Rail Project Offset Strategy thereby maintaining the current extent of *Endangered* Regional Ecosystems.



Table 20: RVMC Table 4 RE's along SP1 Rail Corridor

PVMP	Lot	Mapped RE	RE Observed	Table 4 RVMCRE (Y/N)	Area of Clearing	Comment
4&5	Lot 662 PH1491	Endangered RE 11.4.11/11.4.5/11.4.6/11.4.9	Of Concern RE 11.4.11	N	NA	Field survey did not locate the presence of RE 11.4.6 within the rail corridor
11	Lot 637 PH1980	Of Concern RE 11.4.6	Of Concern RE 11.4.6	Y	3.5ha	Field survey located the presence of RE11.4.6 within the rail corridor
11	Lot 637 PH1980	Least Concern RE 11.3.10	Of Concern RE 11.4.6	Y	< 0.5 ha	Field survey located the presence of RE11.4.6 and non-remnant areas within the rail corridor
12	Lot 637 PH1980	Of Concern RE 11.4.6	Least Concern RE 11.5.3	N	NA	Field survey located the presence of RE11.4.6 within the rail corridor
14	Lot 637 PH1980	Endangered RE 11.4.8/11.4.6	Of Concern RE 11.4.6	Y	1.5ha	Field survey located the presence of RE11.4.6 within the rail corridor
20 & 21	Lot 4 SP116046	Endangered RE 11.4.6/11.4.9	Non Remnant	N	NA	Regional Ecosystem mapping inaccurate in this location.
22	Lot 4 SP116046	Endangered RE 11.4.6	Non Remnant	N	NA	Regional Ecosystem mapping inaccurate in this location.
26	Lot 1 SP118814	Endangered RE 11.4.9/11.4.6	Non remnant	N	NA	Regional Ecosystem mapping inaccurate in this location.
26	Lot 1 SP118814	Of Concern RE 11.4.6	Of Concern RE 11.4.6	Y	8ha	Some areas of this polygon remapped as non-remnant and Of Concern RE 11.3.3.



Table 21: Endangered and Of Concern RE's along SP1 Rail Corridor

PVMP	Lot	Mapped RE	RE Observed	Clearing within an Endangered or Of Concern RE	Comment
1a & 1b	Lot 62 PH1491	Of Concern RE 11.4.11	Non Remnant	-	Field assessment undertaken by GHD as part of the Offsite Infrastructure PMAV (GHD 2013) describes mapped Of Concern RE's 11.4.11 and 11.4.11/11.4.5 as non-remnant.
		Of Concern RE 11.4.11/11.4.5	Non Remnant	-	
		Of Concern RE 11.4.11/11.4.5	Non Remnant	-	
4, 5 & 6	Lot 662 PH1491	Endangered RE 11.4.11/11.4.5/11.4.6/11.4.9	Of Concern RE 11.4.11	29.5ha	The grassland community observed within this location was highly disturbed and contained areas dominated by pasture weeds (Buffel Grass). No process currently exists for challenging the remnant status of grassland areas, however large parts of this polygon should be considered non-remnant.
		Of Concern RE 11.4.11	Of Concern RE 11.4.11	13ha	
8	Lot 662 PH1491	Endangered RE 11.3.5/11.3.1/11.3.3/11.3.10	Least concern 11.3.5/ Of Concern 11.3.3	11.5ha	Offset required. The field survey identified 11.5ha of Least concern 11.3.5/ Of Concern 11.3.3
		Endangered RE 11.3.3/11.3.1	Of Concern 11.3.3	NA	Included in above area
		Endangered 11.3.25/11.3.37/11.3.1	Least Concern 11.3.25/11.3.37	NA	No offset required. The field survey did not identify an Endangered or Of Concern regional ecosystem
	Lot 3 BL26	Endangered RE 11.3.25/11.3.37/11.3.1	Of Concern 11.3.25/11.3.37	2.7ha	Offset required. The field survey identified 2.7ha of Of Concern 11.3.25/11.3.37
9	Lot 3 BL26	Of Concern RE 11.3.3	Of Concern RE 11.3.3	0.36ha	No offset required. Below 0.5ha threshold of Endangered or Of Concern regional ecosystem clearing.
		Endangered RE 11.3.25/11.3.37/11.3.25	Of Concern 11.3.25/11.3.37	2.7ha	Offset required. The field survey identified 2.7ha of Of Concern 11.3.25/11.3.37



		Of Concern RE 11.3.3	Of Concern 11.3.3 & Non Remnant	1.4ha	Offset required. The field survey identified 1.4ha of Of Concern 11.3.3
11	Lot 637 PH1980	Endangered RE 11.3.1/11.3.5	Endangered RE 11.3.1/11.3.5 & Non Remnant	4.9ha	Offset required. The field survey identified 4.9ha of Endangered RE 11.3.1/11.3.5
		Of Concern RE 11.3.3	Of Concern RE 11.3.3 & Non Remnant	4.6ha	Offset required. The field survey identified 4.6ha of Of Concern RE 11.3.3
		Of Concern RE 11.4.6	Of Concern RE 11.4.6	3.5ha	Offset required. The field survey identified 3.5ha of Of Concern RE 11.4.6
12	Lot 637 PH1980	Endangered RE 11.3.1	Endangered RE 11.3.1 & non Remnant	2.4ha	Offset required. The field survey identified 2.4ha of Endangered RE 11.3.1
		Of Concern RE 11.4.6	Least Concern RE11.5.3	NA	No offset required. Field observation identified a Least Concern regional ecosystem
14	Lot 637 PH1980	Endangered RE 11.4.8/11.4.6	Of Concern RE 11.4.6	1.5ha	Offset required. The field survey identified 1.5ha of Of Concern RE11.4.6
16	Lot 1 SP147546	Of Concern RE 11.3.3/11.3.5	Of Concern RE 11.3.3/11.3.5	2.2ha	Offset required. The field survey identified 2.2ha of Of Concern RE11.3.3/11.3.5
		Of Concern RE 11.3.3	Of Concern RE 11.3.3	4.2ha	Offset required. The field survey identified 4.2ha of RE11.3.3
	Lot 4 SP116046	Of Concern RE 11.3.5/11.3.3	Of Concern RE 11.3.3 & Non Remnant	6.2ha	Offset required. The field survey identified 6.2ha of RE11.3.3
17	Lot 4 on SP116046	Of Concern RE11.3.5/11.3.3	Of Concern RE11.3.3	6.5ha	Offset required. The field survey identified 6.5ha of Of Concern RE11.3.3
		Endangered RE 11.3.5/11.3.1/11.3.10	Of Concern RE11.3.5/RE11.3.10 & Non Remnant	NA	Offset required. Field observation identified 5.4ha of an Of Concern regional ecosystem
19, 20 & 21	Lot 3235 PH752	Endangered RE 11.4.6/11.4.9	Non Remnant	NA	No offset required. Regional Ecosystem mapping inaccurate in this location.
22	Lot 4 SP116046	Of Concern RE 11.9.10	Non Remnant	NA	No offset required. Regional Ecosystem mapping inaccurate in this location.
23	Lot 10	Endangered RE	Endangered RE 11.4.9	6.7ha	Offset required. The field survey identified 6.7ha of Endangered



	BL49	11.5.3/11.7.2/11.4.9			RE11.4.9
		Endangered RE 11.4.9	Endangered RE 11.4.9	6.1ha	Offset required. The field survey identified 6.1ha of Endangered RE11.4.9
25	Lot 10 BL49	Of Concern RE 113.3/11.3.37	Of Concern RE 11.3.3 & Non Remnant	1.4ha	Offset required. The field survey identified 1.4ha of Of Concern RE 11.3.3
26	Lot 1 SP118814	Endangered RE11.4.9/11.4.6	Non remnant	NA	No offset required. Regional Ecosystem mapping inaccurate in this location.
		Of Concern RE 11.4.6	Of Concern RE 114.6	5.5ha	Offset required. The field survey identified 5.5ha of Of Concern RE11.4.6
			Of Concern RE 11.3.3	8ha	Offset required. The field survey identified 8ha of Of Concern RE11.3.3
		Of Concern RE 11.3.3/11.3.37	Of Concern RE 11.3.3	5.9ha	Offset required. The field survey identified 5.9ha of Of Concern RE 11.3.3
	Lot 10 BL49	Of Concern RE 11.3.3/11.3.25	Of Concern RE 11.3.3	2.6ha	Offset required. The field survey identified 2.6ha of Of Concern RE11.3.3.
26 - 29	Lot 10 BL49	Endangered RE 11.4.11/11.4.9	Of Concern RE 11.4.11	74.6ha	The mapped polygon contains both areas of intact native grasslands and also highly disturbed areas containing numerous weedy ground layer species including <i>Pennisetum ciliare</i> (Buffel Grass) and <i>Parthenium hysterophorus</i> (Parthenium). No process currently exists for challenging the remnant status of grassland areas, however large parts of this polygon should be considered non-remnant.
		Endangered RE 11.4.11/11.4.9	Of Concern RE 11.4.11	0.5ha	No offset required. Below 0.5ha threshold of Endangered or Of Concern regional ecosystem clearing.
30	Lot 6 SP125740	Of Concern RE 11.4.11/11.4.6	Of Concern RE 11.4.11/11.4.6	4.9ha	Offset required. The field survey identified 4.9ha of Of Concern RE 11.4.11/11.4.6
31	Lot 6 SP125740	Of Concern RE 11.3.3/11.4.11	Of Concern RE 11.3.3/11.4.11	19.8ha	Offset required. The field survey identified 19.8ha of Of Concern RE11.3.3/11.4.11. Land Zone investigations would be required to



					separate these communities. Areas include road reserve.
32	Road Reserve	Endangered RE 11.4.11/11.4.9	Of Concern RE 11.4.11	0.9ha	Offset required. The field survey identified 0.6ha of Of Concern RE11.4.11



6.8. Performance Requirement 8 – Essential Habitat

Table 22: Essential Habitat (PRS8) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.8: Essential habitat To regulate the clearing of vegetation in a way that prevents the loss of biodiversity—<u>maintain the current extent of essential habitat.</u>	AS S.8 S.8.1 Clearing does not occur in an area shown as essential habitat on the essential habitat map.

6.8.1 Response

The proposed clearing will not occur in an area shown as essential habitat on an essential habitat map. Refer to **Appendix C** for the SP1 essential habitat maps.

Performance requirement S.8 is met using Acceptable Solution S8.1



6.9. Performance Requirement 9 – Conservation Status thresholds

Table 23: Conservation Status Thresholds (PRS9) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.9: Conservation status thresholds To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and conserves remnant vegetation that are regional ecosystems—<u>maintain the current extent</u> of regional ecosystems listed in Table 5.	AS S.9 S.9.1 Clearing in a regional ecosystem listed in Table 5 does not occur unless the clearing is less than— 10 metres wide; or 2 hectares.

6.9.1 Response

The majority of the vegetation identified within the rail alignment is not listed within Table 5 of the RCMC as a Regional Ecosystem that is at risk of the remnant extent falling below 30% of its pre-clearing extent, or having a remnant extent of less than 10,000 hectares.

Clearing of vegetation within a Regional Ecosystem listed within Table 5 is outlined within **Table 24**. It is noted that these Regional Ecosystem classifications and areas are those identified on-site and included within the proposed Property Map of Assessable Vegetation rather than that mapped within Regional Ecosystem mapping V6.1.

Offsets for these vegetation areas will be provided in accordance with the Carmichael Coal Rail Project Offset Strategy.



Table 24: RVMC Table 5 RE's along SP1 Rail Corridor

PVMP	Lot	Mapped RE	RE Observed	Area of Clearing within a Table 5 RE	Comment
1a & 1b	Lot 62 PH1491	Of Concern RE 11.4.11	Non Remnant	-	Field assessment undertaken by GHD as part of the Offsite Infrastructure PMAV (GHD 2013) describes mapped Of Concern RE's 11.4.11 and 11.4.11/11.4.5 as non-remnant.
		Of Concern RE 11.4.11/11.4.5	Non Remnant	-	
		Of Concern RE 11.4.11/11.4.5	Non Remnant	-	
4, 5 & 6	Lot 662 PH1491	Endangered RE 11.4.11/11.4.5/11.4.6/11.4.9	Of Concern RE 11.4.11	29.5ha	The grassland community observed within this location was highly disturbed and contained areas dominated by pasture weeds (Buffel Grass). No process currently exists for challenging the remnant status of grassland areas, however large parts of this polygon should be considered non-remnant.
		Of Concern RE 11.4.11	Of Concern RE 11.4.11	13ha	
8	Lot 662 PH1491	Endangered RE 11.3.5/11.3.1/11.3.3/11.3.10	Least concern 11.3.5/ Of Concern 11.3.3	N/A	No Offset required. The field survey did not identify RE11.3.5 (Table 5 RE)
11	Lot 637 PH1980	Endangered RE 11.3.1/11.3.5	Endangered RE 11.3.1/11.3.5 & Non Remnant	4.9ha	Offset required. The field survey identified RE11.3.5 (Table 5 RE) within a composite vegetation community
16	Lot 1 on SP147546	Of Concern RE11.3.5/11.3.37	Of Concern RE11.3.3/11.3.5	2.2ha	Offset required. The field survey identified RE11.3.5 (Table 5 RE) within a composite vegetation community
	Lot 3235 on PH752	Of Concern RE11.3.5/11.3.3	Of Concern RE11.3.5/11.3.3	6.2ha	Offset required. The field survey identified RE11.3.5 (Table 5 RE) within a composite vegetation community
17	Lot 4 on SP116046	Of Concern RE11.3.5/11.3.3	Of Concern RE11.3.3	NA	No Offset required. The field survey did not identify RE11.3.5 (Table 5 RE)
		Endangered RE11.3.5/11.3.1/11.3.10	Of Concern RE11.3.5/11.3.10	5.4ha	Offset required. The field survey identified RE11.3.5 (Table 5 RE) within a composite vegetation community
26-29	Lot 10 on BL49 and Road	Endangered RE11.4.11/11.4.9	Of Concern RE11.4.11	74.6ha	The mapped polygon contains both areas of intact native grasslands and also highly disturbed areas containing numerous weedy ground layer species including <i>Pennisetum</i>



	Reserve				<i>ciliare</i> (Buffel Grass) and <i>Parthenium hysterophorus</i> (Parthenium). No process currently exists for challenging the remnant status of grassland areas, however large parts of this polygon should be considered non-remnant.
	Lot 10 on BL49	Of Concern RE11.4.11/11.4.6	Of Concern RE11.4.11/11.4.6	0.5ha	Offset required. The field survey identified RE11.4.11 (Table 5 RE) within a composite vegetation community
31	Lot 6 on SP125740	Of Concern RE11.4.11/11.4.6	Of Concern RE11.4.11	4.9ha	Offset required. The field survey identified RE11.4.11 (Table 5 RE)
	Lot 6 SP125740	Of Concern RE 11.3.3/11.4.11	Of Concern RE 11.3.3/11.4.11	19.8ha	Offset required. Land Zone investigations would be required to separate these communities. Including area within road.
32	Road Reserve	Endangered RE11.4.11/11.4.9	Of Concern RE11.4.11	0.9ha	Offset required. The field survey identified RE11.4.11 (Table 5 RE)



6.10. Performance Requirement 10 – Acid Sulfate Soils

Table 25: Acid Sulfate Soils (PRS10) Performance Requirements and Acceptable Solutions

Performance Requirement	Acceptable Solutions
PR S.10: Acid sulfate soils To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes in the <u>coastal subregions of the Brigalow Belt Bioregion</u>, and the Marlborough Plains subregion (11.14)—clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either— c) aerate horizons containing iron sulfides; or d) mobilise acid and/or metals.	AS S.10 S.10.1 In the <u>coastal subregions of the Brigalow Belt Bioregion</u>, and the Marlborough Plains subregion (11.14), clearing <u>in land zone 1, land zone 2 or land zone 3</u> in areas below 5 metre Australian Height Datum— a) is carried out in accordance with an acid sulfate soils environmental management plan as outlined in the <i>State Planning Policy 2/02 Guideline: Planning and Managing Development involving Acid Sulfate Soils</i>; and b) follows management principles in accordance with the Soil Management Guidelines in the <i>Queensland Acid Sulfate Soil Technical Manual</i>.

6.10.1 Response

The rail alignment is predominantly located within Land Zone 3 (Alluvium river and creek flats) and 4 (clay plains not associated with current alluvium), with a small area within Land Zone 5 (Old loamy and sandy plains).

The proposed clearing will not occur within areas below 5 metres (Australian Height Datum).

Performance Requirement S.10 is met using Acceptable Solution S.10.1



7. Appendices

Appendix A

Engineering Plans

Appendix B

Property Vegetation Management Plans

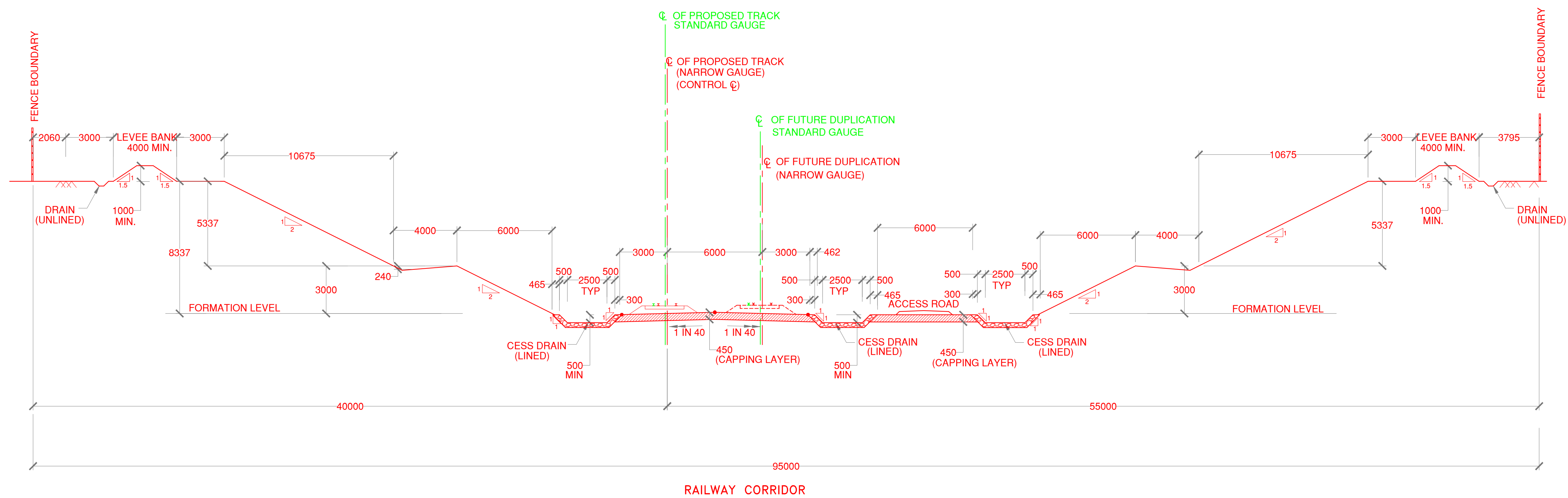
Appendix C

Essential Habitat Plans



Appendix A

Engineering Plans



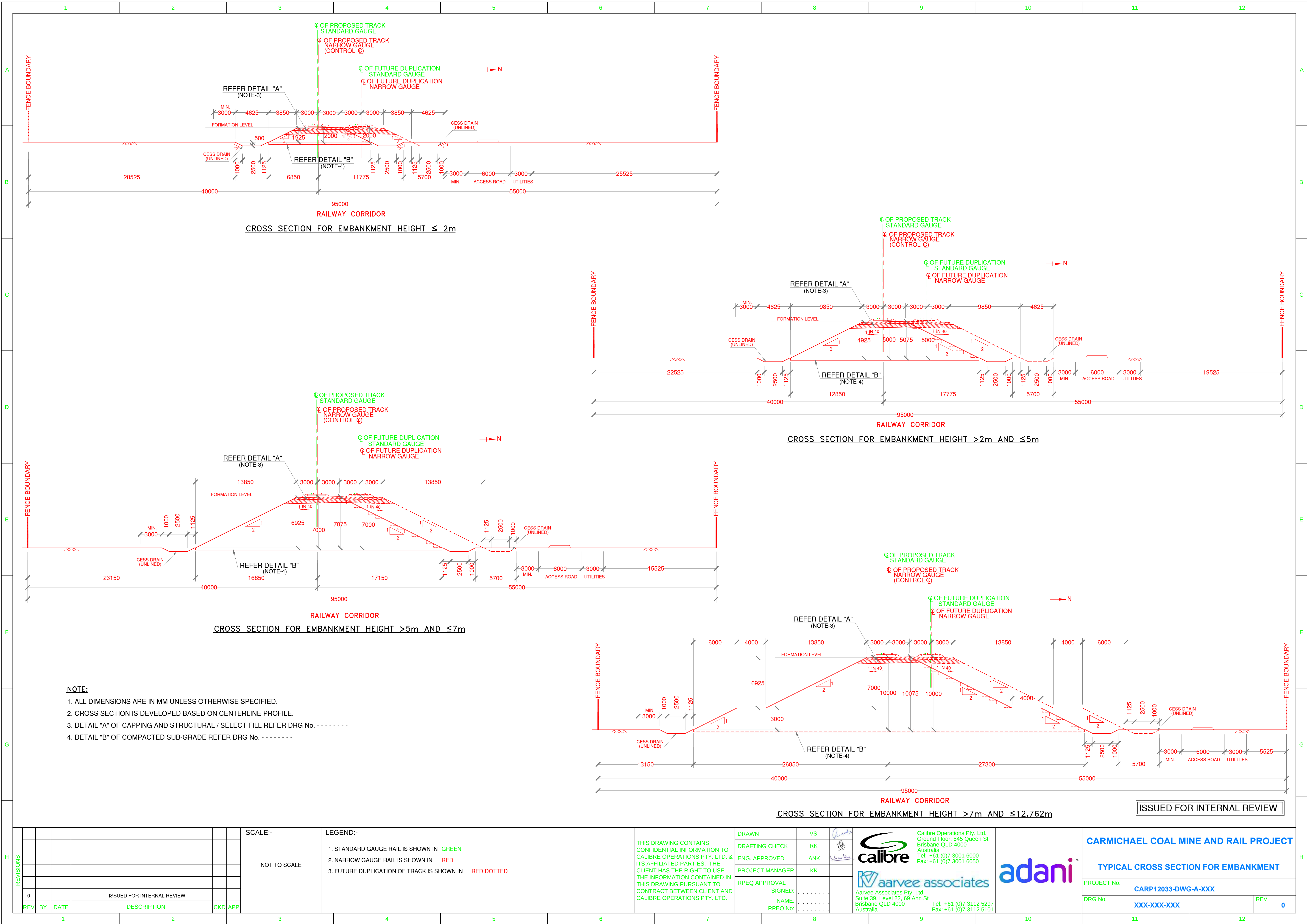
CROSS SECTION AT MAXIMUM CUT

NOTE:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ADDITIONAL WIDTH IS PROPOSED BEYOND LEVEE BANK IS SUBJECT TO GEOTECH REPORT & FIELD VARIATIONS.
3. CROSS SECTION IS DEVELOPED BASED ON CENTERLINE PROFILE.

ISSUED FOR INTERNAL REVIEW

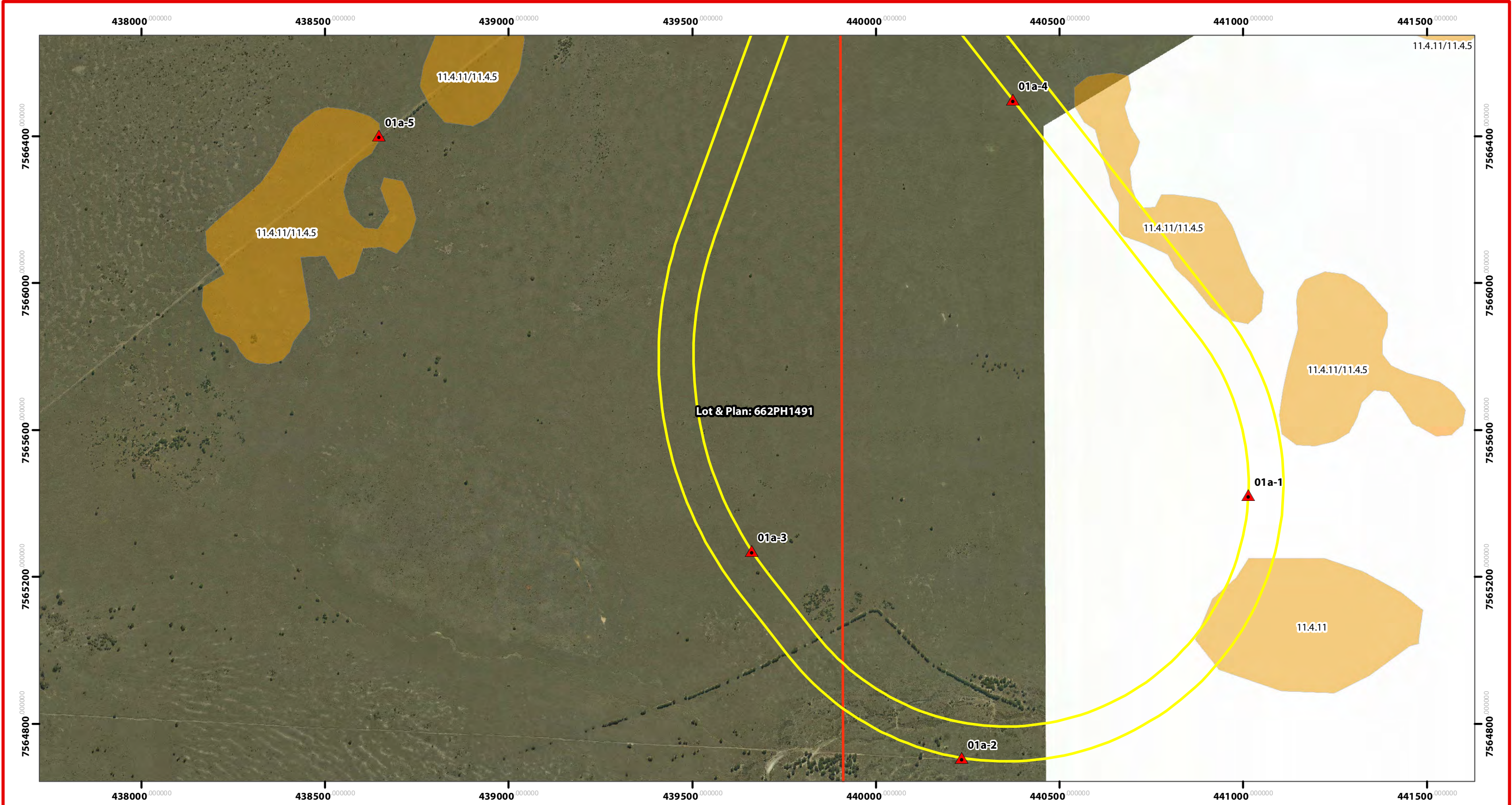
[illegible]





Appendix B

Property Vegetation Management Plans



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

www.saundershavill.com
phone (07) 3251 9444 fax (07) 3251 9455
address 9 Thompson St Bowen Hills Q 4006

■ surveying ■ town planning ■ urban design ■ environmental management ■ landscape architecture

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
1a-1	Clearing boundary	441014.187265	7565422.49811
1a-2	Clearing boundary	440233.566404	7564706.87784
1a-3	Clearing boundary	439661.719224	7565271.05961
1a-4	Clearing boundary	440372.819271	7566500.30107
1a-5	Access track	438647.256045	7566401.41854

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: August 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 1a PVMP A

Legend

PVMP Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

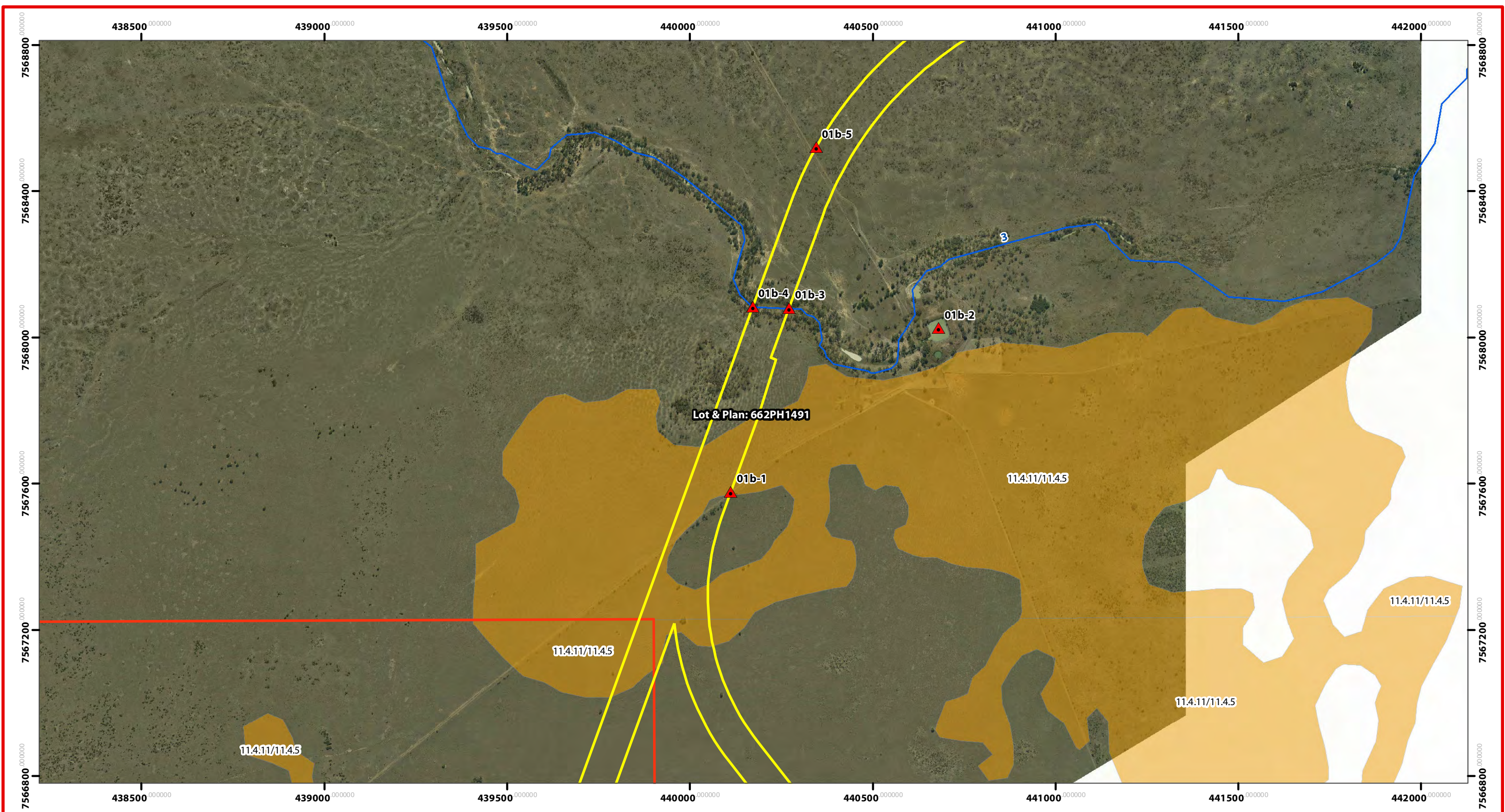
Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE



0 50 100 200 300 400 500 600 700 800 Metres

N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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address 9 Thompson St Bowen Hills Q 4006

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
1a-1	Access track	440111.810965	7567577.42841
1a-2	Dam	440680.230091	7568025.17881
1a-3	Creek intersection	440271.313403	7568080.5938
1a-4	Creek intersection	440171.775551	7568084.69866
1a-5	Access track	440345.449547	7566401.41854

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: August 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

Legend

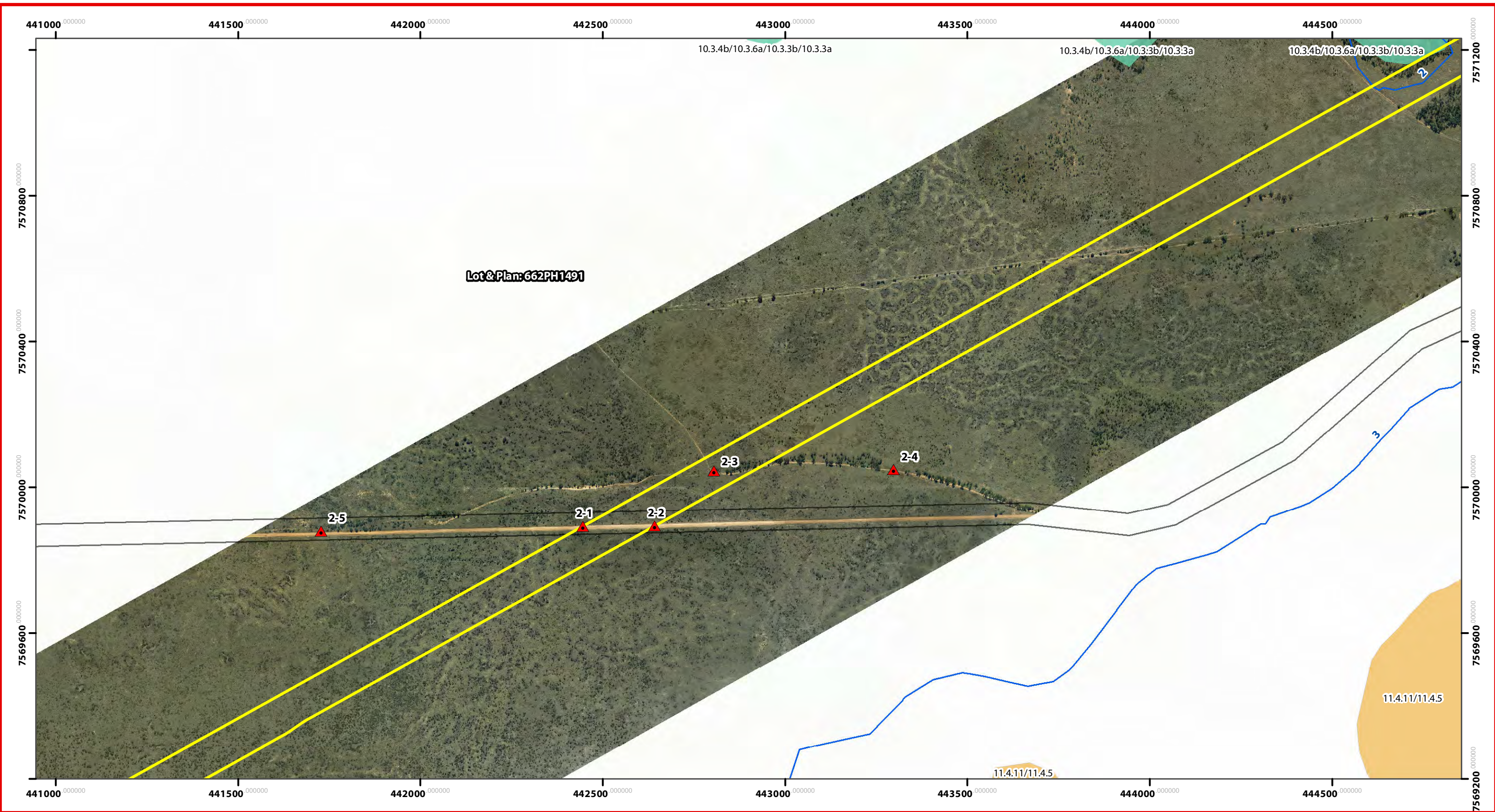
- PVMP Coordinates
- DCDB
- Adani Mine EPC
- 95m Clearing Corridor
- Watercourses

Regional Ecosystem v6.1

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 1b PVMP A



N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
2-1	Unsealed road	442445.37524	7569892.87542
2-2	Unsealed road	442643.13470	7569894.43370
2-5	Unsealed road	441727.81736	7569879.80992
2-3	Access track	442805.52276	7570044.07590
2-4	Access track	443297.91079	7570048.42526

AMENDMENTS:

Issue	Date	Description	Checked
A	17/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

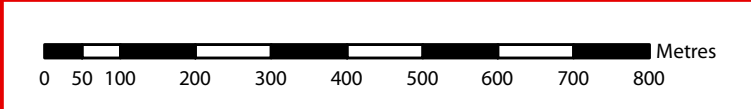
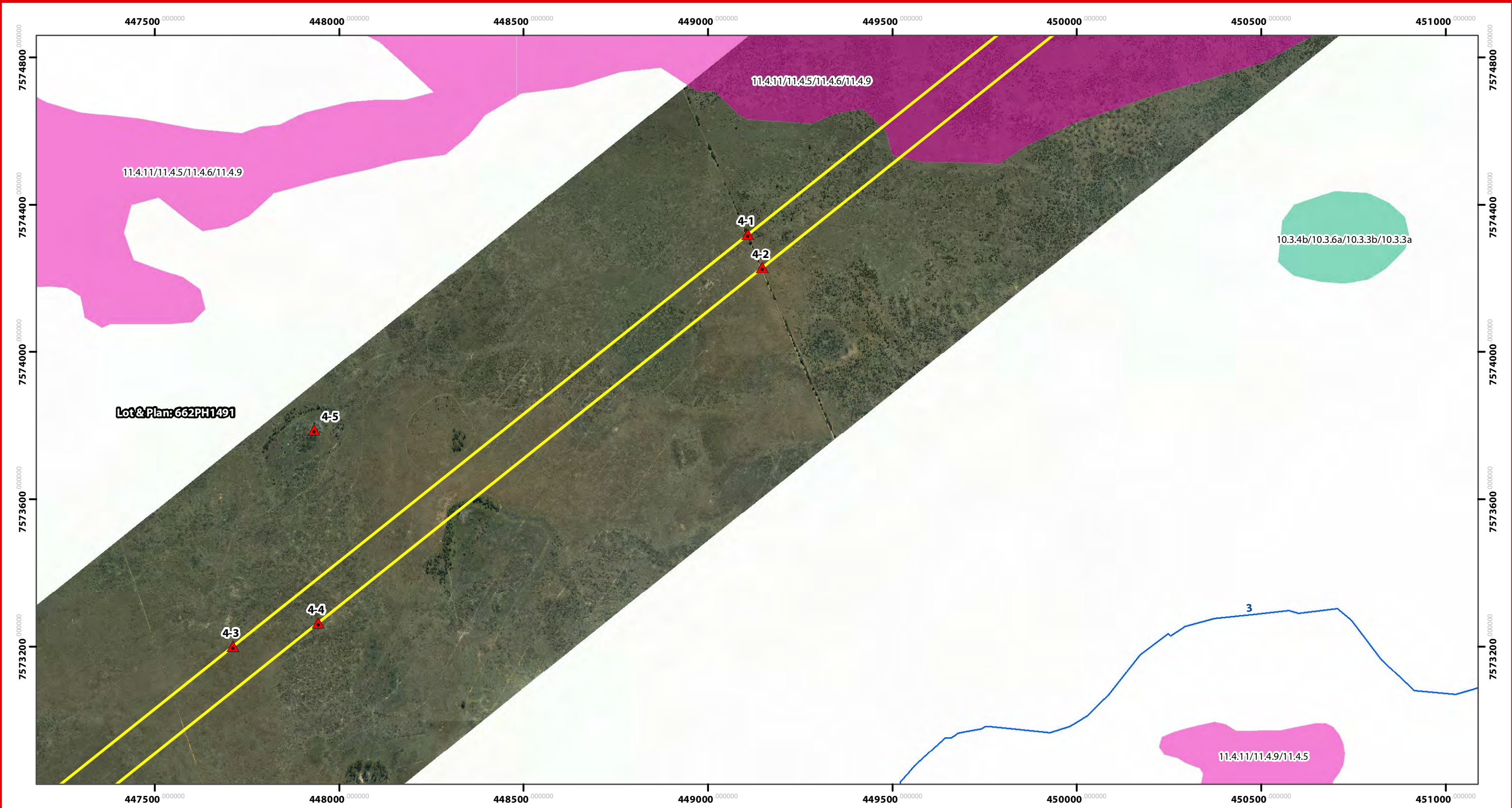
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 2 PVMP A



N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
4-1	Access Track	449108.39528	7574319.13302
4-2	Access Track	449147.78158	7574228.97479
4-3	Clearing Boundary	447711.74913	7573201.26345
4-4	Clearing Boundary	447943.13104	7573264.77769
4-5	Dam	447932.15297	7573789.20039

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AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

6396

DRAWN:

TC

Legend

▲

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

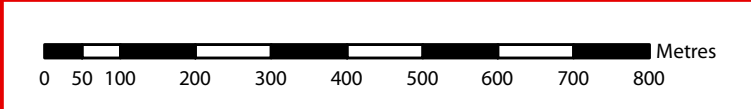
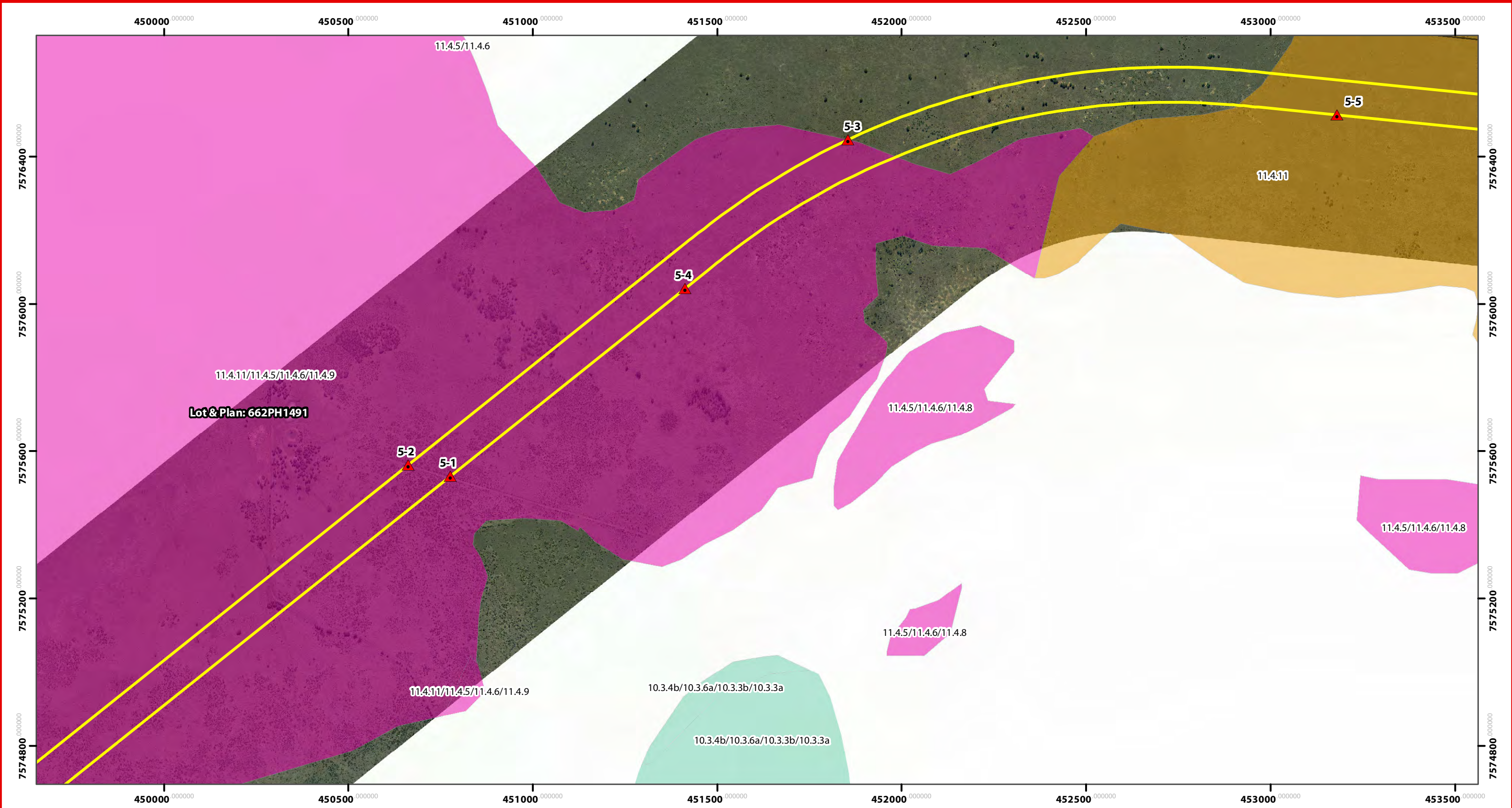
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 4 PVMP A



N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
5-1	Access Track	450775.940830	7575532.146460
5-2	Access Track	450661.908632	7575562.558420
5-3	Clearing Boundary	451855.133944	7576445.760020
5-4	Clearing Boundary	451412.992272	7576042.039690
5-5	Clearing Boundary	453181.177612	7576512.471890

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

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AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:Adani Mining Pty Ltd

PROJECT:Charmichael Coal Rail Project

DATE:October 2012

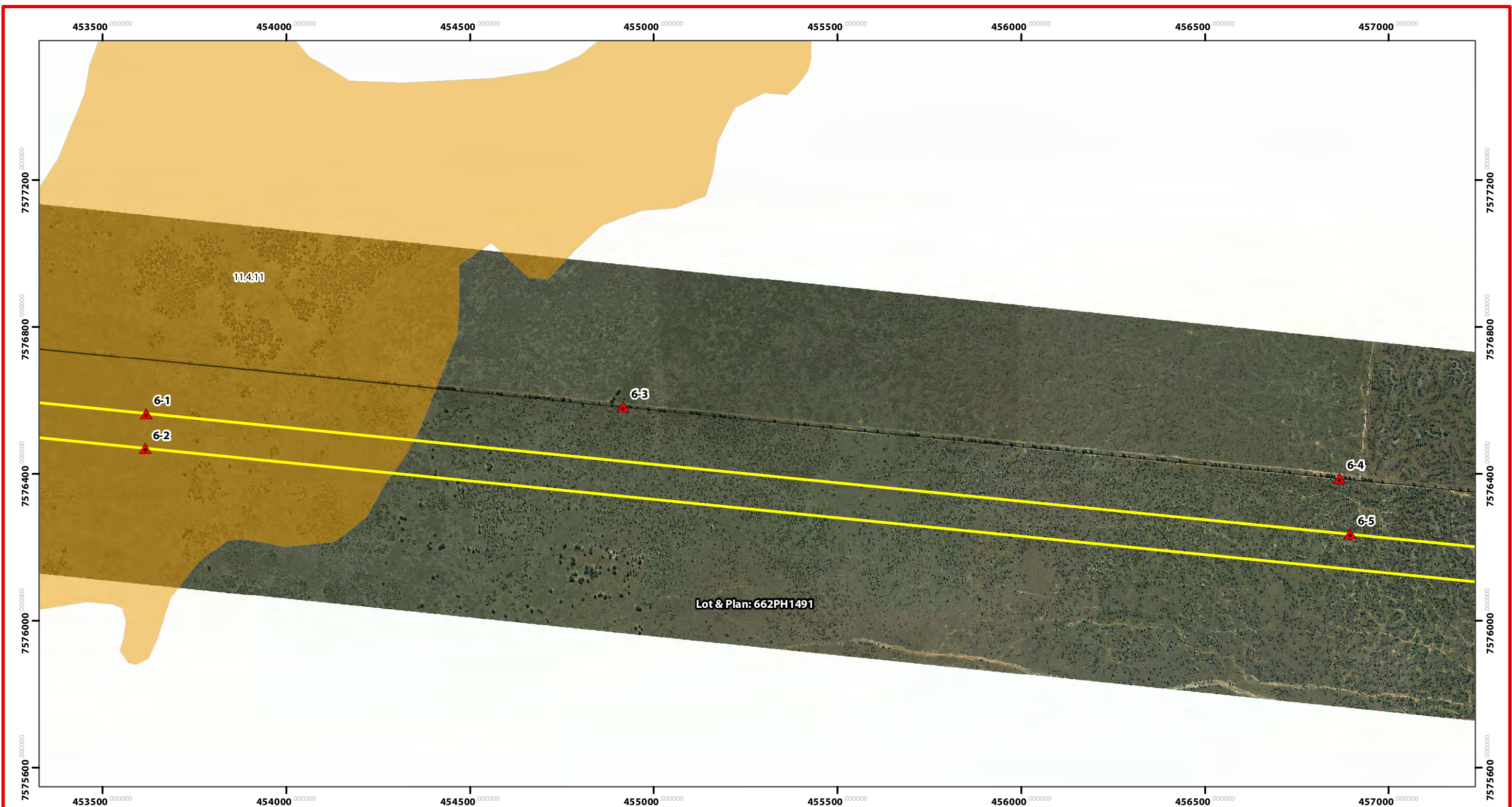
CHECKED:RM

CLIENT REF.:6396

DRAWN:TC

PLAN OF:Property Vegetation Management Plan

PLAN No.:6396 E 5 PVMP A



0 50 100 200 300 400 500 600 700 800 Metres

N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
6-1	Clearing Boundary	453618.792339	7576564.075000
6-2	Clearing Boundary	453615.822683	7576468.896490
6-5	Clearing Boundary	456896.635607	7576235.454370
6-3	Access Track	454917.603131	7576581.735930
6-4	Access Track	456866.629586	7576387.203170

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

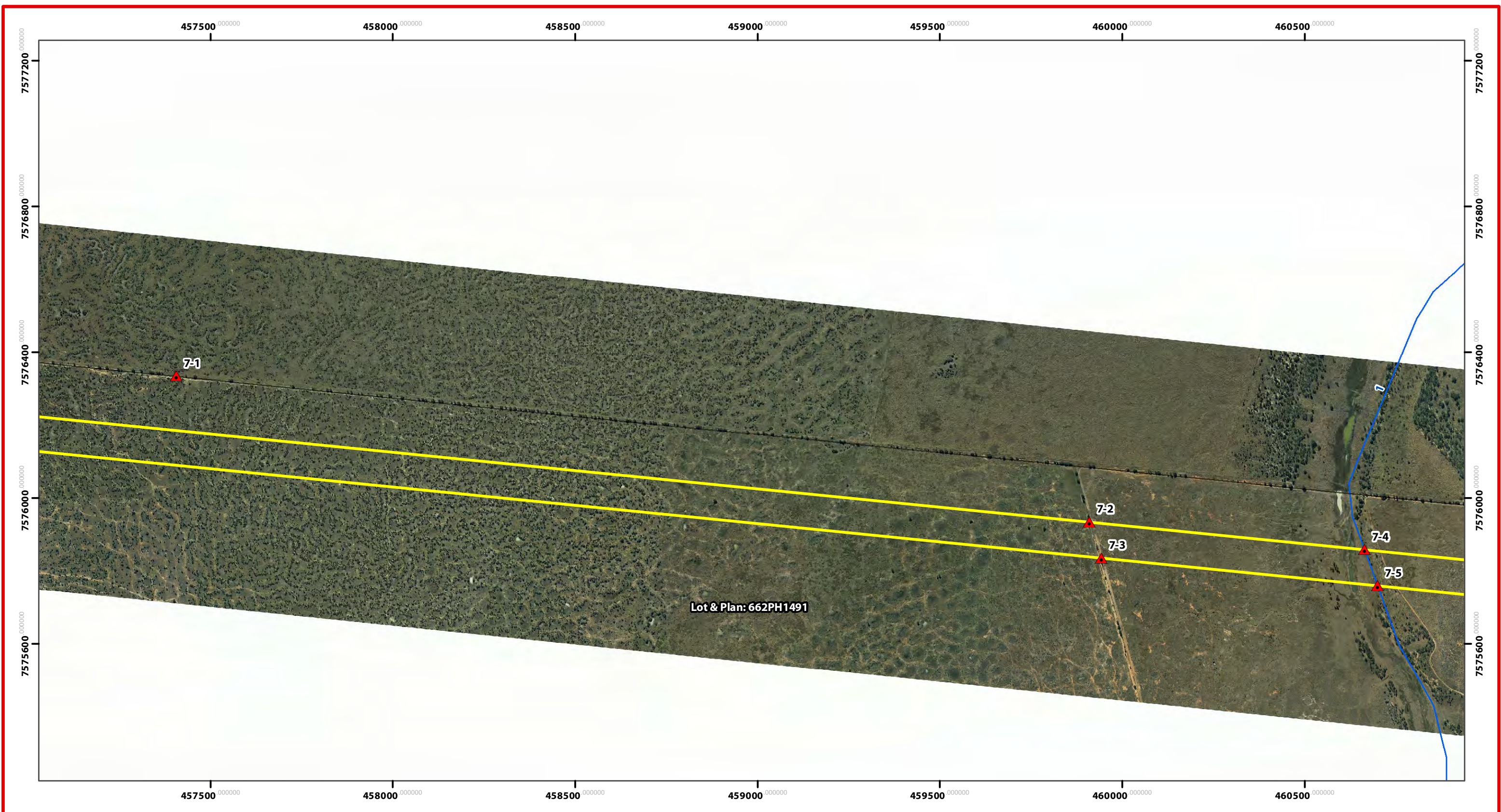
- PMAV Coordinates
- DCDB
- Adani Mine EPC
- 95m Clearing Corridor
- Watercourses

Regional Ecosystem v6.1

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 6 PVMP A



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
7-1	Access Track	457406.640140	7576333.304600
7-2	Access Track	459910.639048	7575933.285050
7-3	Access Track	459943.646798	7575834.499620
7-4	Ogenbeena Creek	460664.325263	7575857.724130
7-5	Ogenbeena Creek	460700.004969	7575758.670830

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

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Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

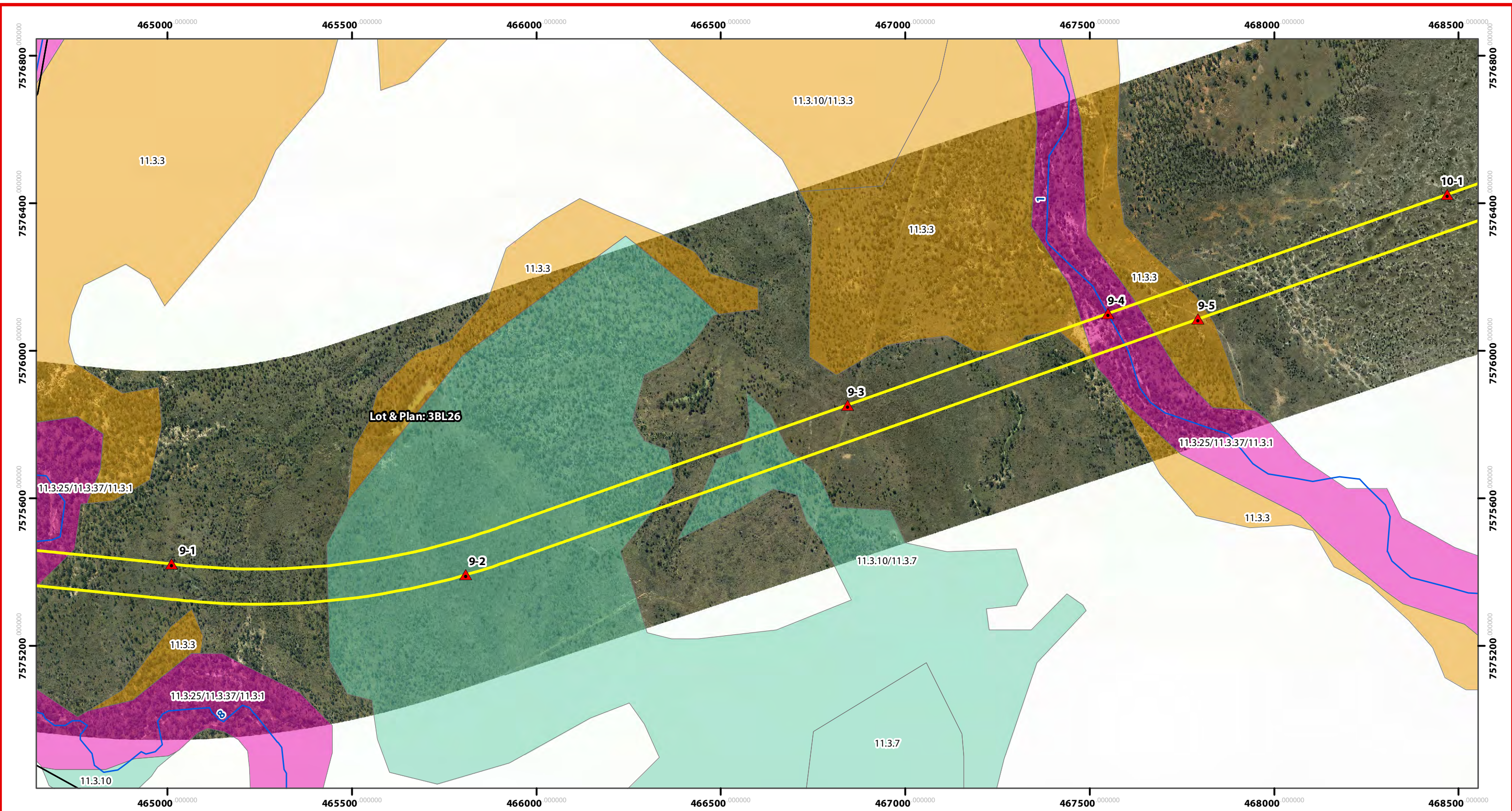
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 7 PVMP A



0 50 100 200 300 400 500 600 700 800 Metres

N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
9-1	Clearing Boundary	465011.037753	7575421.943880
9-2	Clearing Boundary	465808.577759	7575392.811540
9-3	Access Track	466844.533770	7575853.668000
9-4	Unnamed Watercourse	467549.772351	7576101.413930
9-5	Access Track	467794.109838	7576086.556810

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

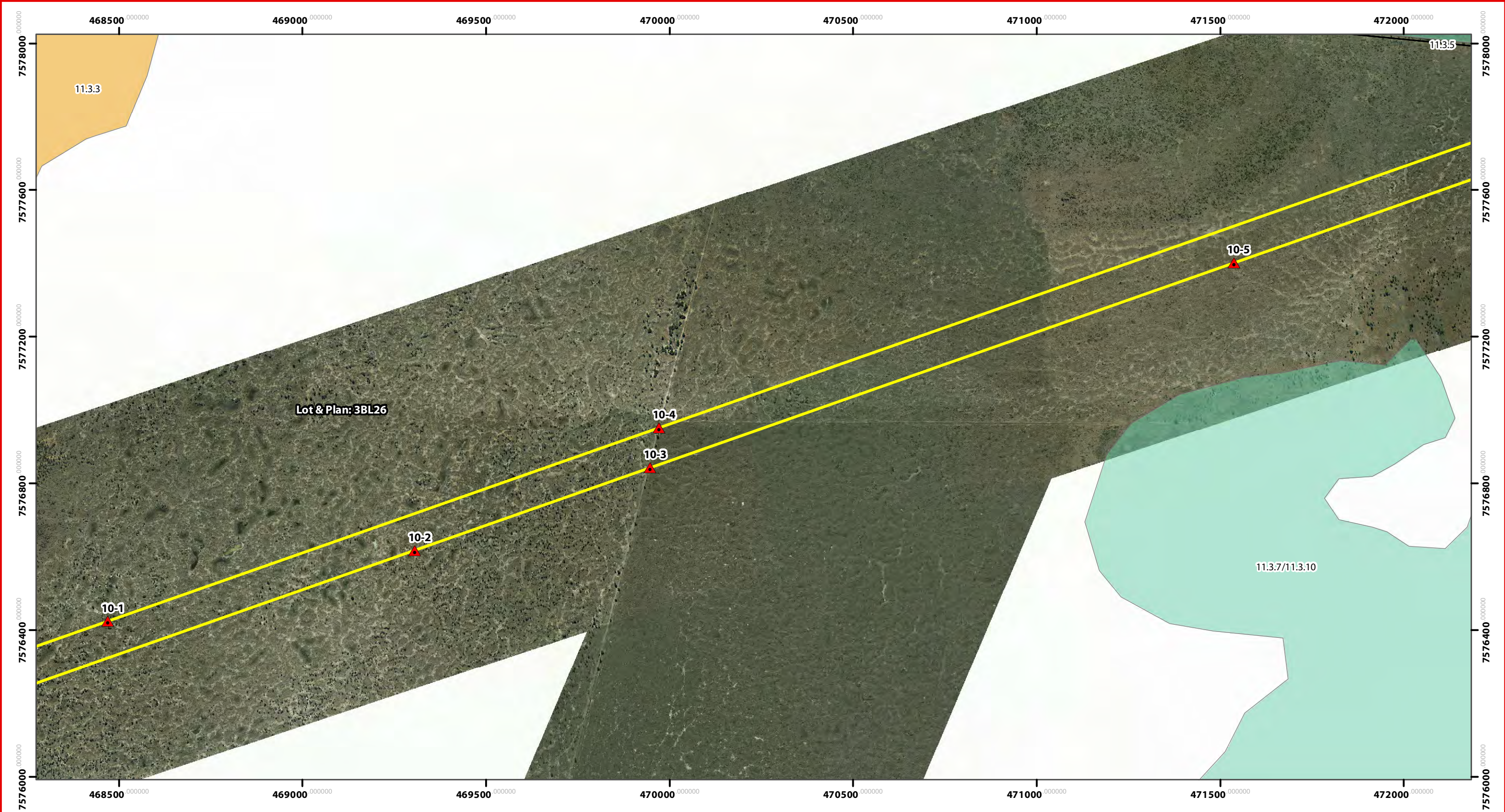
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: **Property Vegetation Management Plan**

PLAN No.: **6396 E 9 PVMP A**



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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
10-1	Property Boundary	468470.343207	7576424.804760
10-2	Property Boundary	469306.187862	7576617.740430
10-5	Property Boundary	471537.395375	7577401.549780
10-3	Access Track	469947.827936	7576843.144610
10-4	Access Track	469971.545850	7576952.167930

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

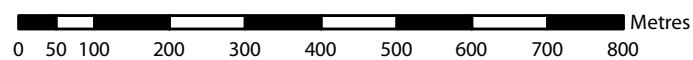
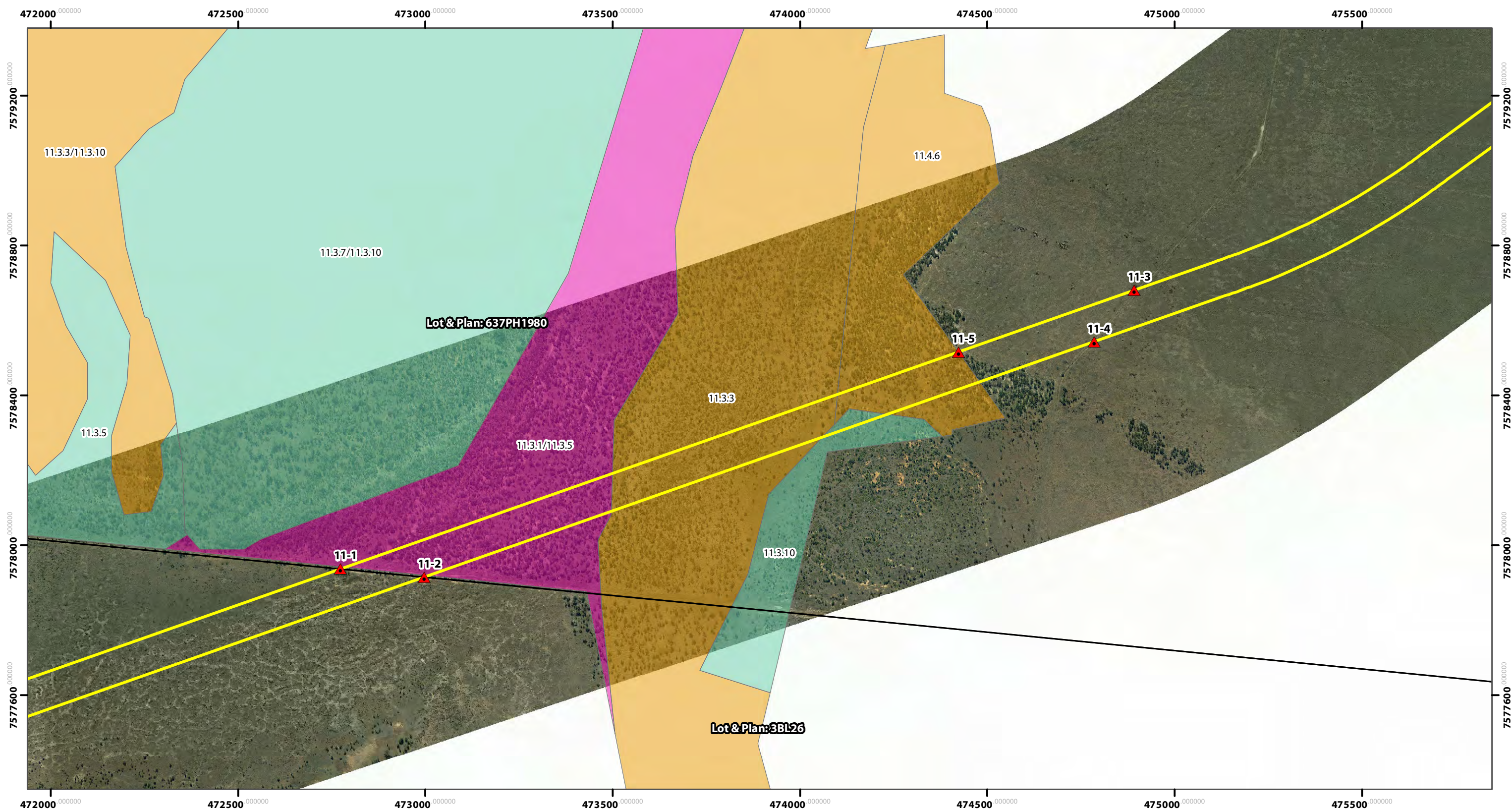
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 10 PVMP A



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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Scale 1:10,000@ A3
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GDA 1994 MGA Zone 55



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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
11-1	Property Boundary	472773.237374	7577936.384760
11-2	Property Boundary	472997.655133	7577914.529960
11-3	Access Track	474892.961570	7578681.030710
11-4	Access Track	474785.287698	7578542.514190
11-5	Clearing Boundary	474423.222379	7578516.014250

Legend



PMAV Coordinates

Regional Ecosystem v6.1



DCDB

Remnant vegetation containing
Endangered REs



- Adani Mine EPC

Remnant vegetation containing
Of Concern REs



05m Clearing Corridor

Remnant vegetation that is a Least Concern RE



- Watercourses

PLAN OF: **Property Vegetation Management Plan**

PLAN No.: 6396 E 11 PVMP A

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

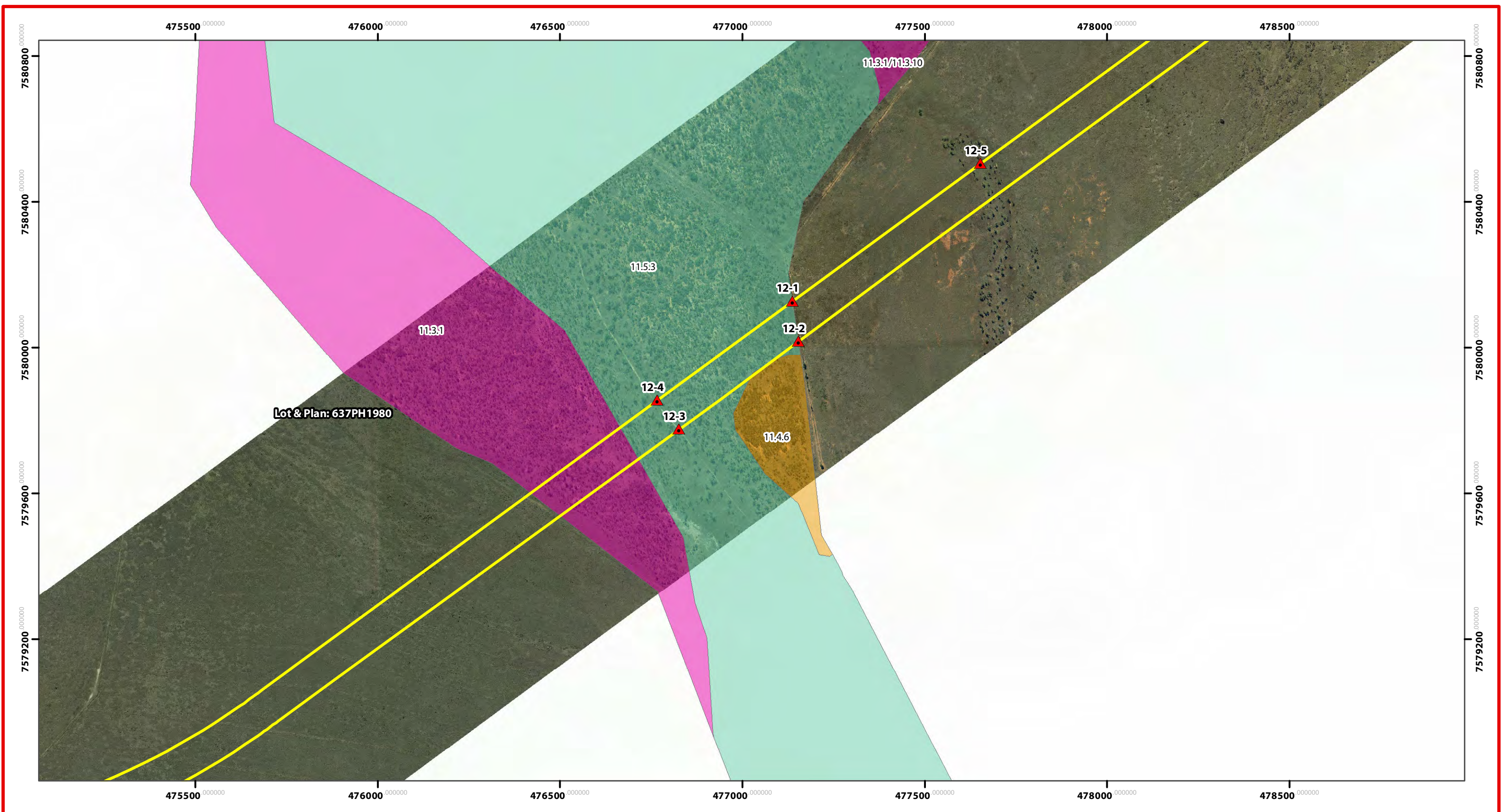
CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE:	October 2012	CHECKED:	RM
CLIENT REF:	6396	DRAWN:	TC

CHECKED: RM

DRAWN: TC





SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
12-1	Access Track	477137.859643	7580126.990510
12-2	Access Track	477153.588638	7580016.887010
12-3	Access Track	476825.789910	7579774.949820
12-4	Access Track	476766.676790	7579854.927950
12-5	Clearing Boundary	477653.288617	7580504.779860

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 12 PVMP A

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

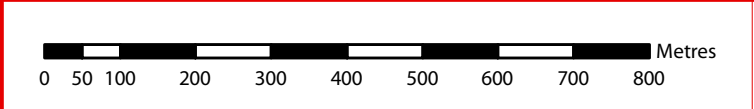
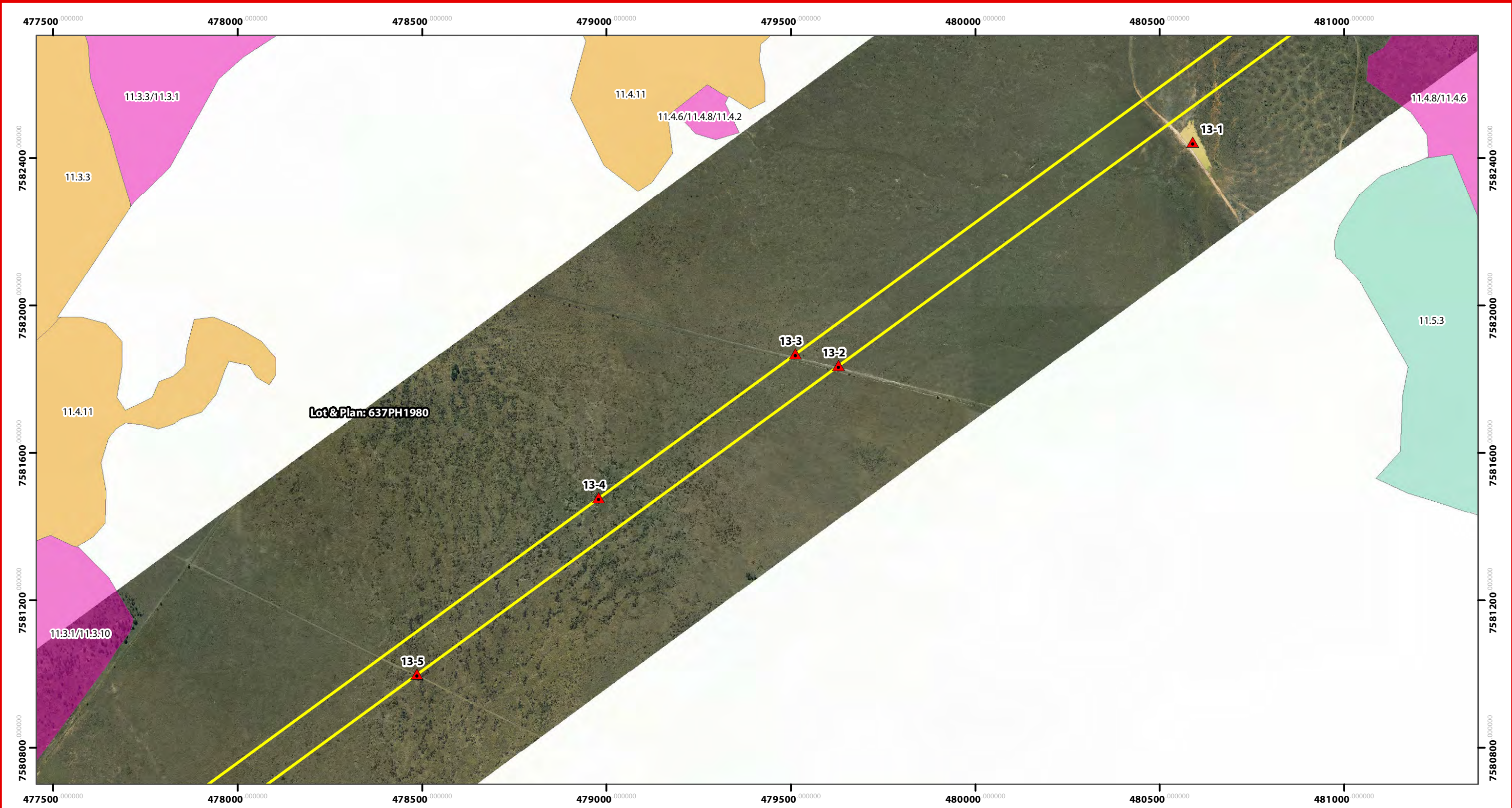
Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
13-1	Dam	480590.686097	7582441.616490
13-2	Access Track	479629.471475	7581835.458970
13-3	Access Track	479512.677166	7581867.639190
13-4	Clearing Boundary	478979.376621	7581476.750680
13-5	Access Track	478486.639726	7580997.807840

Legend

- PMAV Coordinates
- DCDB
- Adani Mine EPC
- 95m Clearing Corridor
- Watercourses
- Regional Ecosystem v6.1
- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE

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AMENDMENTS:			
Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd

PROJECT: Charmichael Coal Rail Project

DATE: October 2012

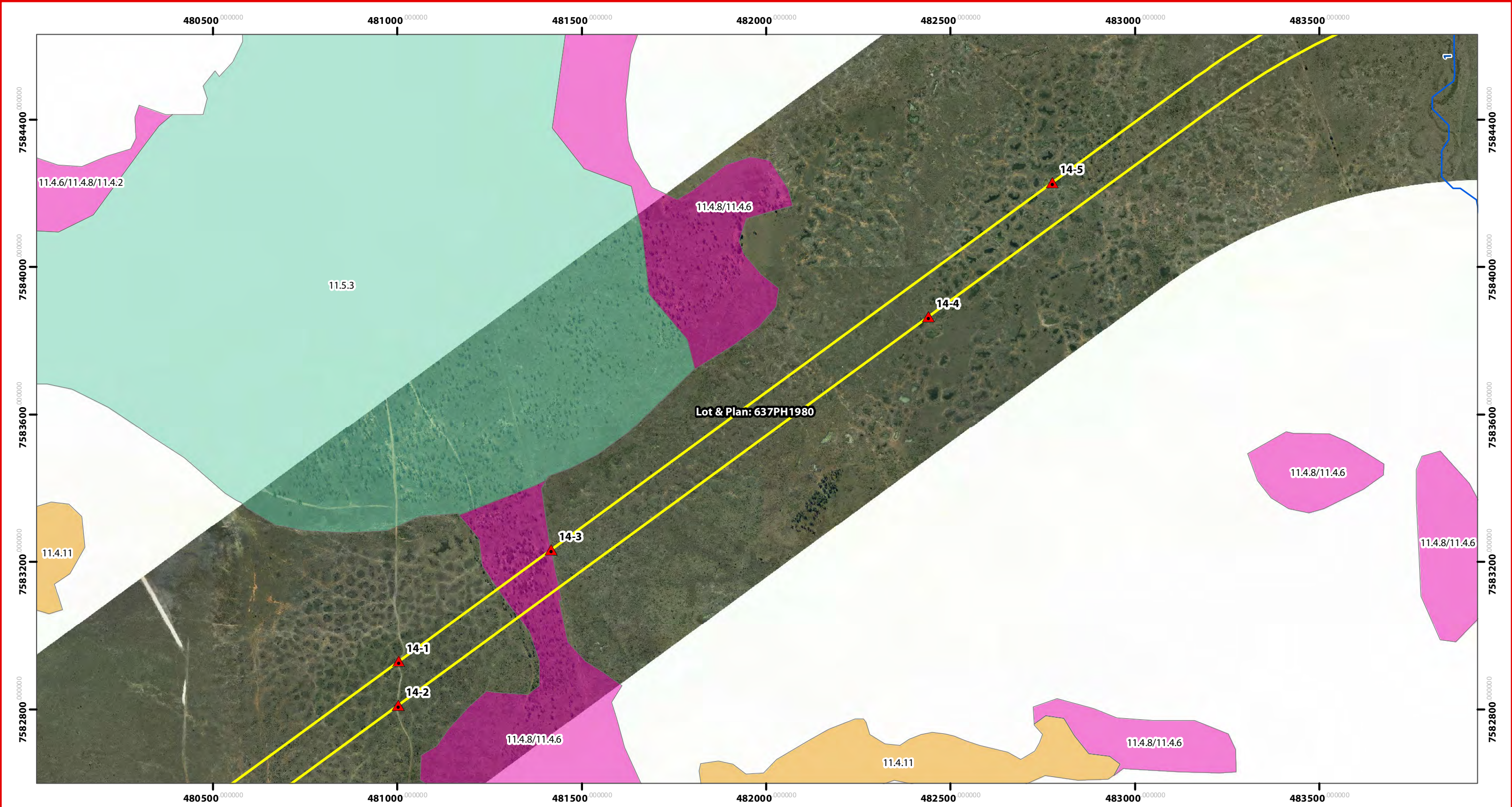
CHECKED: RM

CUSTOMER REF.: 6396

DRAWN: TC

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 13 PVMP A



0 50 100 200 300 400 500 600 700 800 Metres

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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
14-1	Access Track	481004.027961	7582930.37143
14-2	Access Track	481001.762068	7582810.92472
14-3	Clearing Boundary	481416.650107	7583232.80735
14-4	Clearing Boundary	482440.736792	7583865.63702
14-5	Clearing Boundary	482776.792976	7584229.73897

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

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Legend

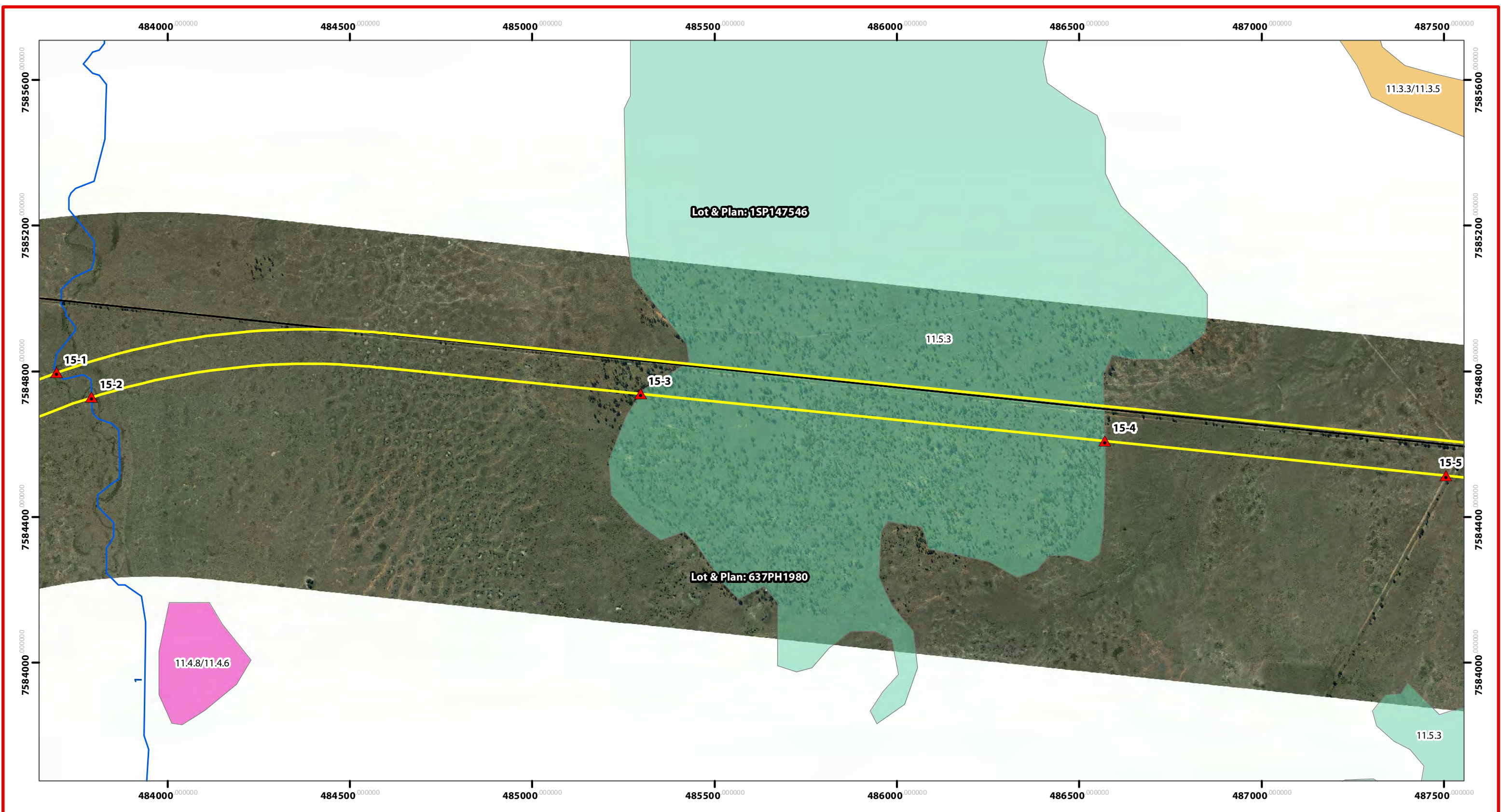
- PMAV Coordinates
- DCDB
- 95m Clearing Corridor
- Watercourses

Regional Ecosystem v6.1

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of concern REs
- Remnant vegetation that is a Least Concern RE

PLAN OF: **Property Vegetation Management Plan**

PLAN No.: **6396 E 14 PVMP A**



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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Scale 1:10,000@ A3
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
15-1	Unnamed Watercourse	483695.268307	7584796.22998
15-2	Unnamed Watercourse	483791.517439	7584728.43518
15-3	Clearing Boundary	485296.625364	7584738.41439
15-4	Clearing Boundary	486570.974672	7584609.21434
15-5	Access Track	487506.870357	7584514.32845

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

Legend

PVMP Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

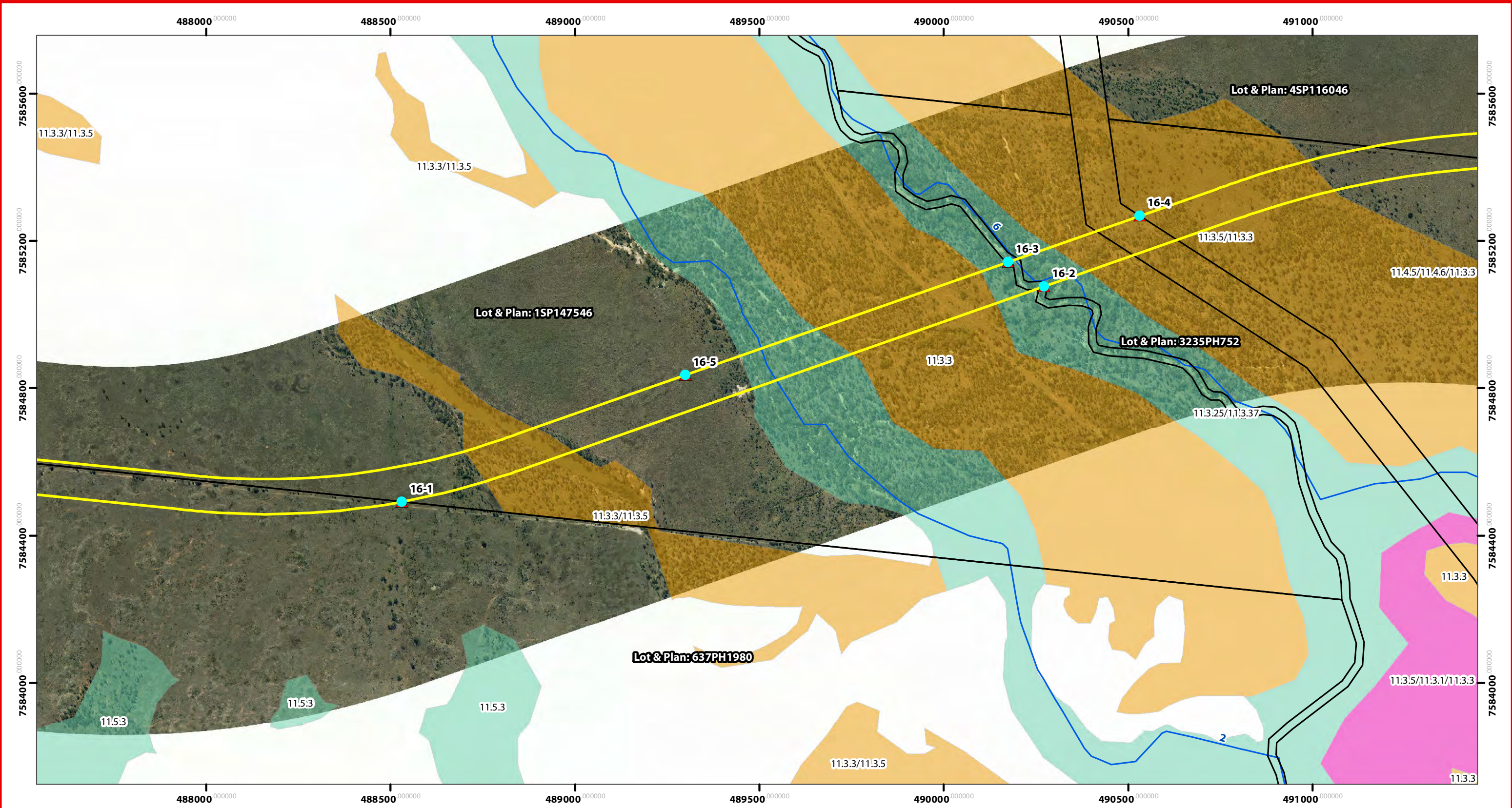
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 15 PVMP A



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Metres

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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
16-1	Property Boundary	488530.880811	7584492.07024
16-2	Mistake Creek	490272.962296	7585076.57941
16-3	Mistake Creek	490174.253358	7585142.63915
16-4	Property Boundary	490532.396708	7585268.21726
16-5	Clearing Boundary	489299.097696	7584835.77766

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF:

6396

DRAWN:

TC

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PVMP Coordinates

□

DCDB

▬

95m Clearing Corridor

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Watercourses

Regional Ecosystem v6.1

■

Remnant vegetation containing
Endangered REs

■

Remnant vegetation containing
Of Concern REs

■

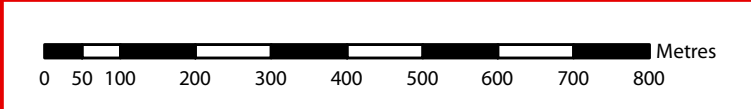
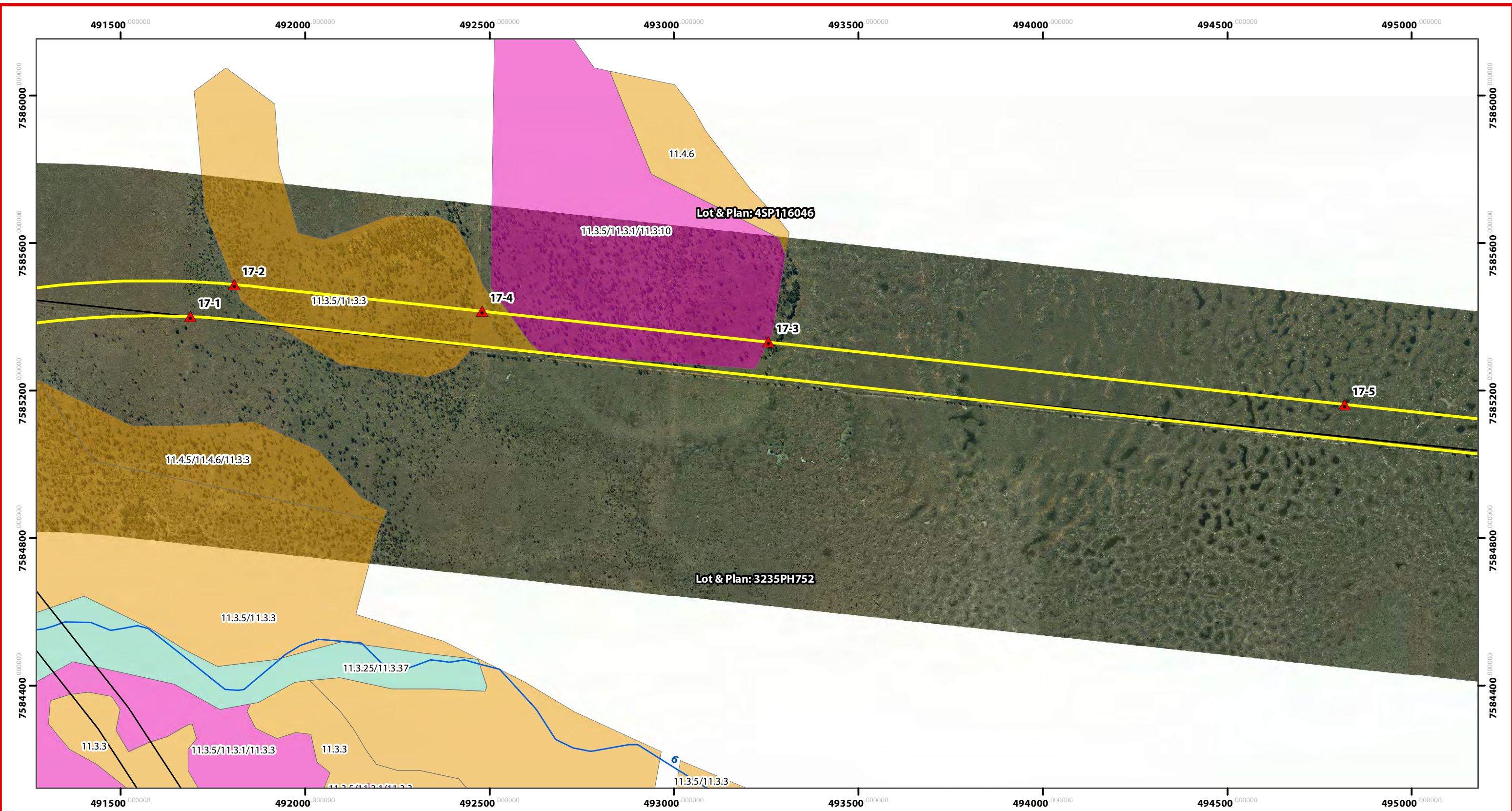
Remnant vegetation that is
a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 16 PVMP A



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SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

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Data Information:

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
17-1	Property Boundary	491689.131294	7585400.181220
17-2	Clearing Boundary	491807.765676	7585487.497060
17-3	Clearing Boundary	493256.099289	7585331.395260
17-5	Clearing Boundary	494818.326175	7585162.358890
17-4	Access Track	492479.501629	7585415.424830

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AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

6396

DRAWN:

TC

Legend

▲

 PMAV Coordinates

□

 DCDB

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 Adani Mine EPC

□

 95m Clearing Corridor

—

 Watercourses

Regional Ecosystem v6.1

■

 Remnant vegetation containing Endangered REs

■

 Remnant vegetation containing Of Concern REs

■

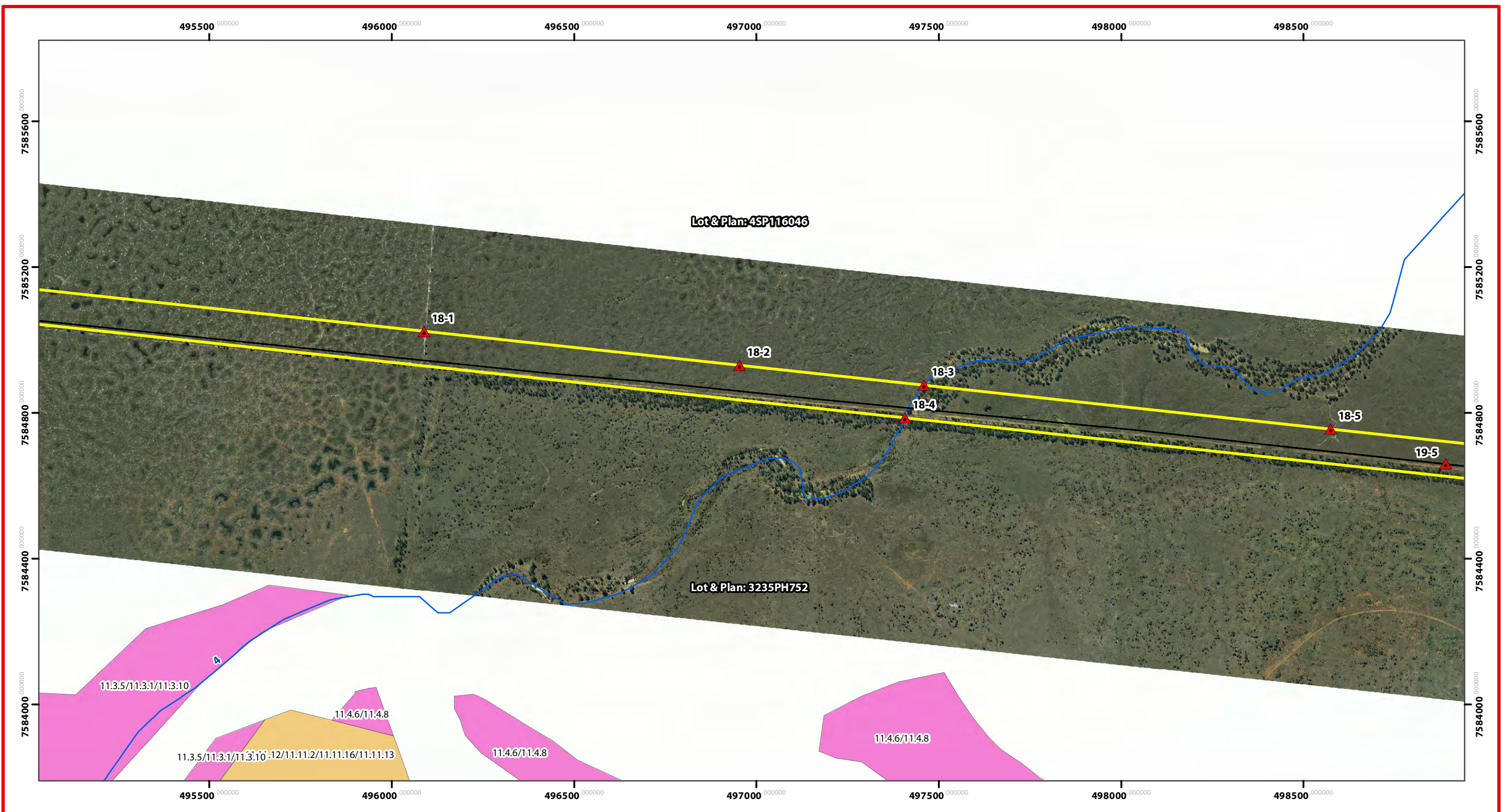
 Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 17 PVMP A



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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
18-1	Clearing Boundary	496089.232132	7585024.844090
18-2	Clearing Boundary	496953.643801	7584931.312850
18-5	Clearing Boundary	498574.984631	7584755.880230
18-3	Gowrie Creek	497459.451590	7584876.583340
18-4	Gowrie Creek	497407.424528	7584786.658290

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF:

6396

DRAWN:

TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

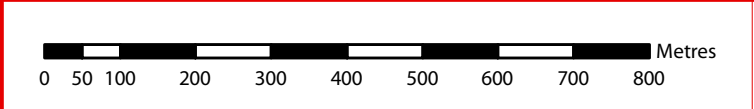
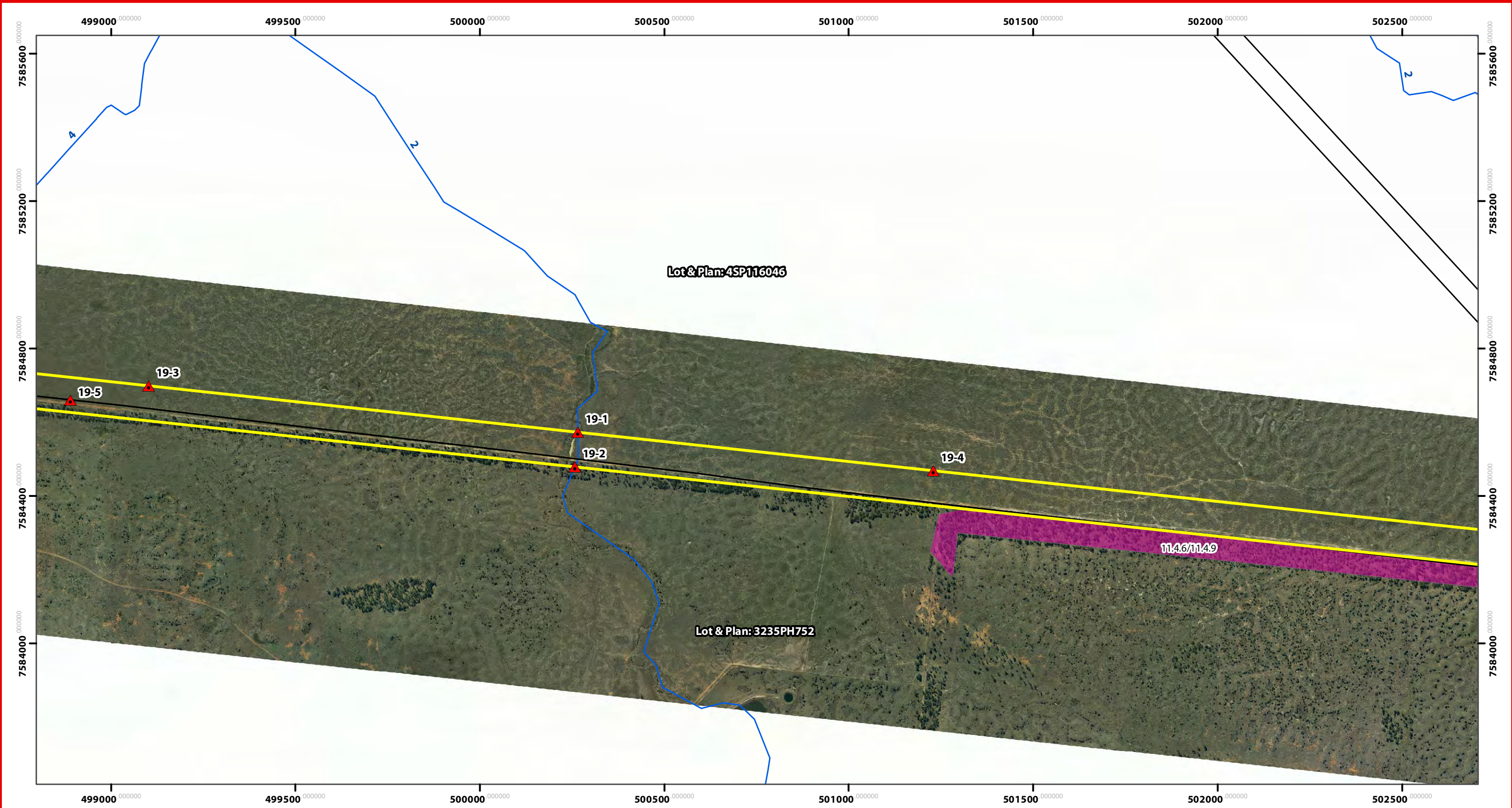
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 18 PVMP A



N

SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
19-1	Unnamed Watercourse	500265.612624	7584572.950580
19-2	Unnamed Watercourse	500257.633178	7584478.259480
19-3	Clearing Boundary	499102.254854	7584698.828440
19-4	Clearing Boundary	501229.700333	7584468.634180
19-5	Access Track	498889.911885	7584660.410820

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AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

6396

DRAWN:

TC

Legend

▲

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

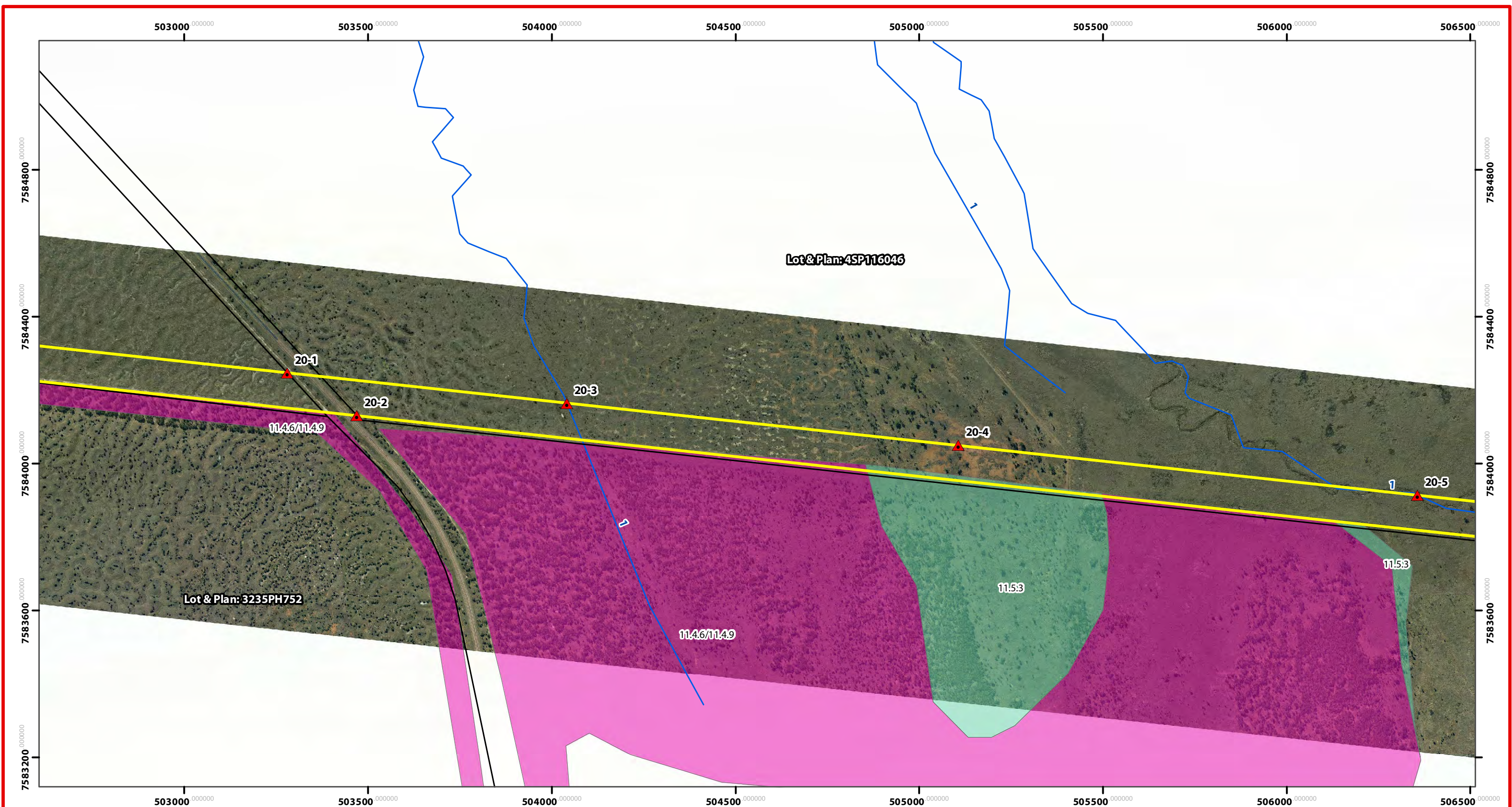
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 19 PVMP A



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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
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GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
20-1	Gregory Development Road	503280.471054	7584246.736300
20-2	Gregory Development Road	503469.983611	7584130.676130
20-3	Unnamed Watercourse	504041.177914	7584164.426160
20-5	Unnamed Watercourse	506357.212342	7583913.826160
20-4	Clearing Boundary	505106.434478	7584049.163060

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF:

6396

DRAWN:

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Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

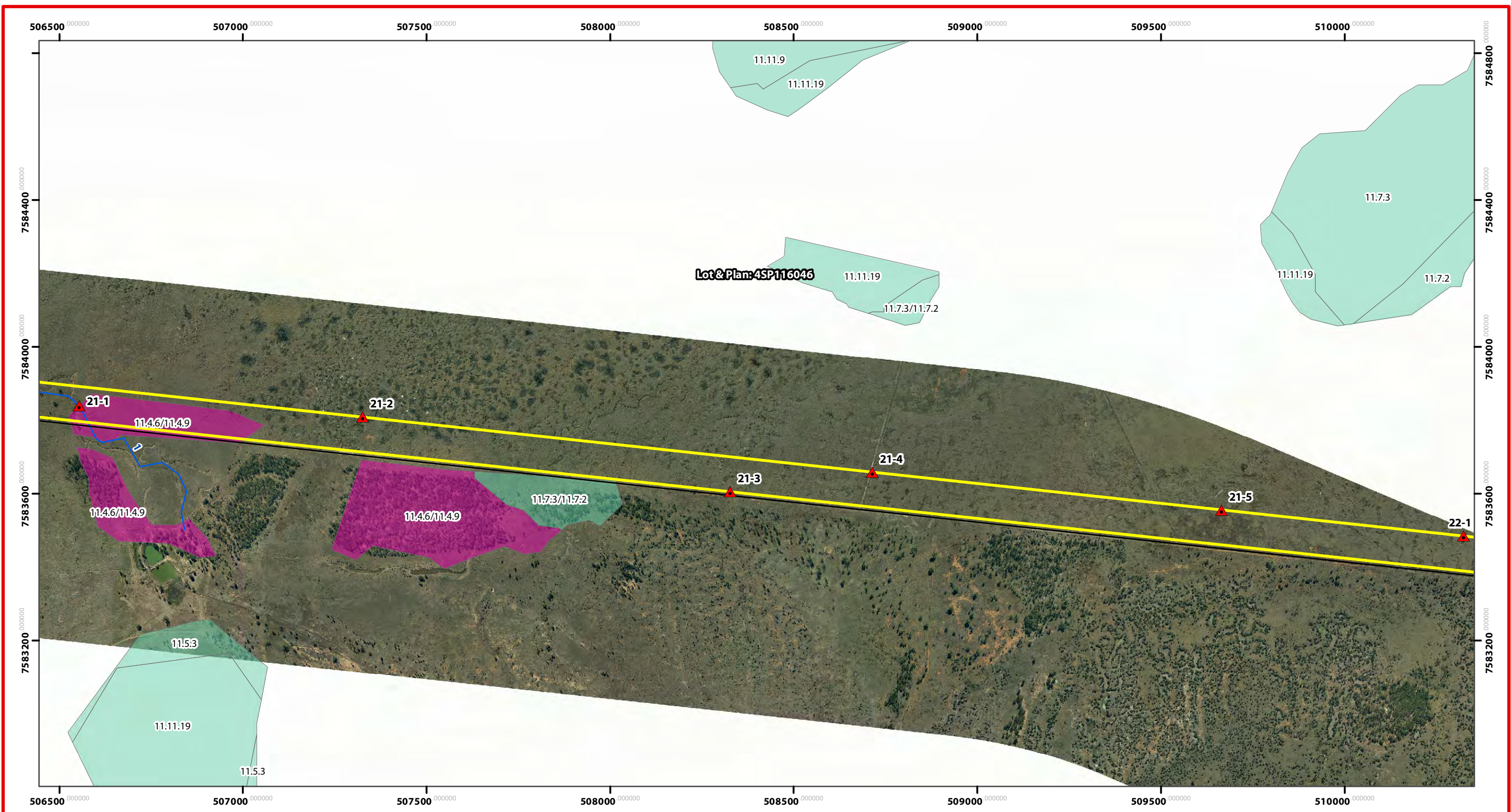
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 20 PVMP A



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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
20-1	Gregory Development Road	503280.471054	7584246.736300
20-2	Gregory Development Road	503469.983611	7584130.676130
20-3	Unnamed Watercourse	504041.177914	7584164.426160
20-5	Unnamed Watercourse	506357.212342	7583913.826160
20-4	Clearing Boundary	505106.434478	7584049.163060

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

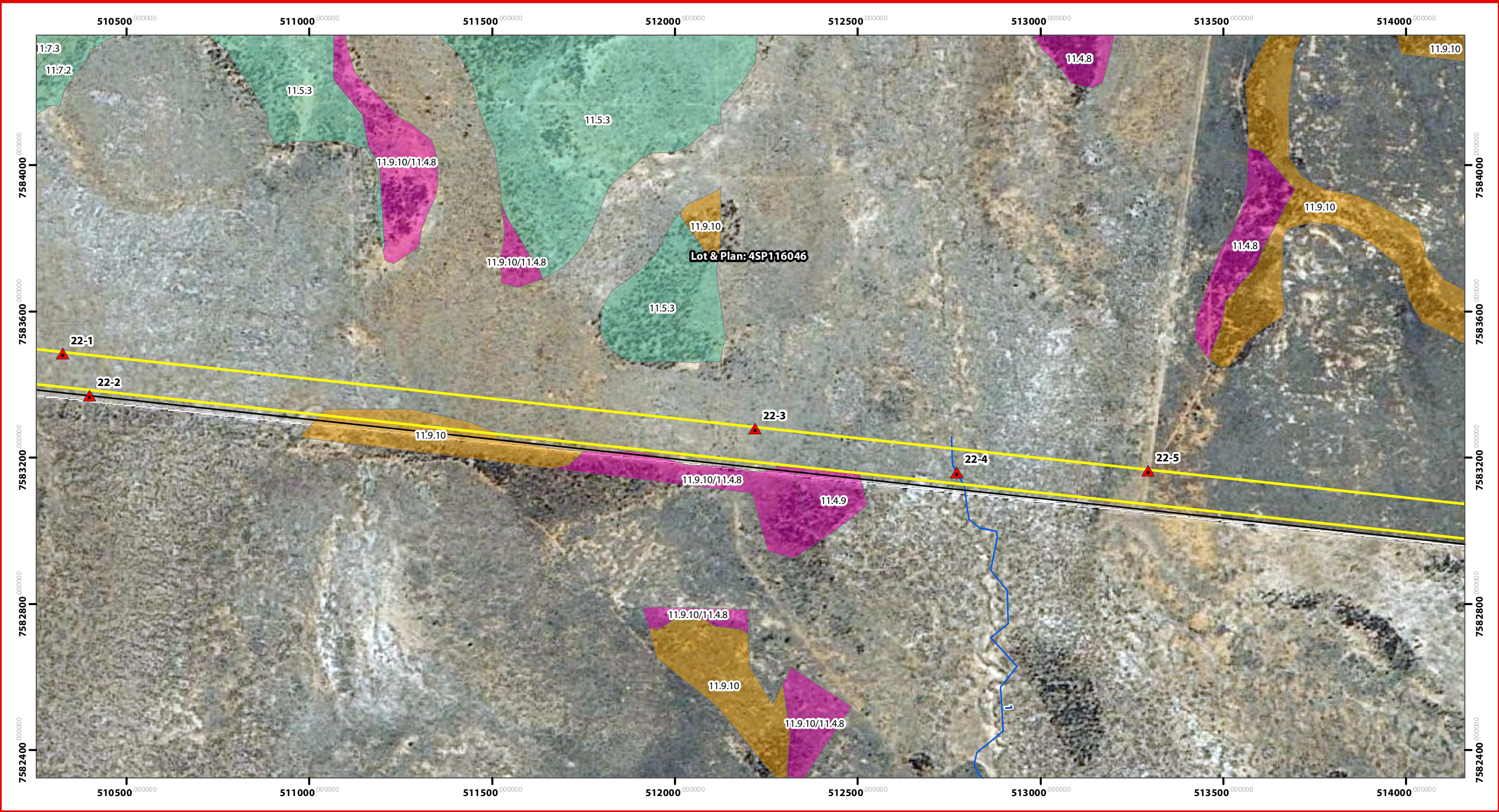
Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 21 PVMP A





SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
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Scale 1:10,000@ A3
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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
22-1	Clearing Boundary	510324.912629	7583484.512310
22-2	Access Track	510397.708560	7583370.552570
22-3	Clearing Boundary	512219.113221	7583279.555660
22-5	Clearing Boundary	513294.469118	7583163.199800
22-4	Unnamed Watercourse	512770.929659	7583160.053600

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

Adani Mine EPC

Watercourses

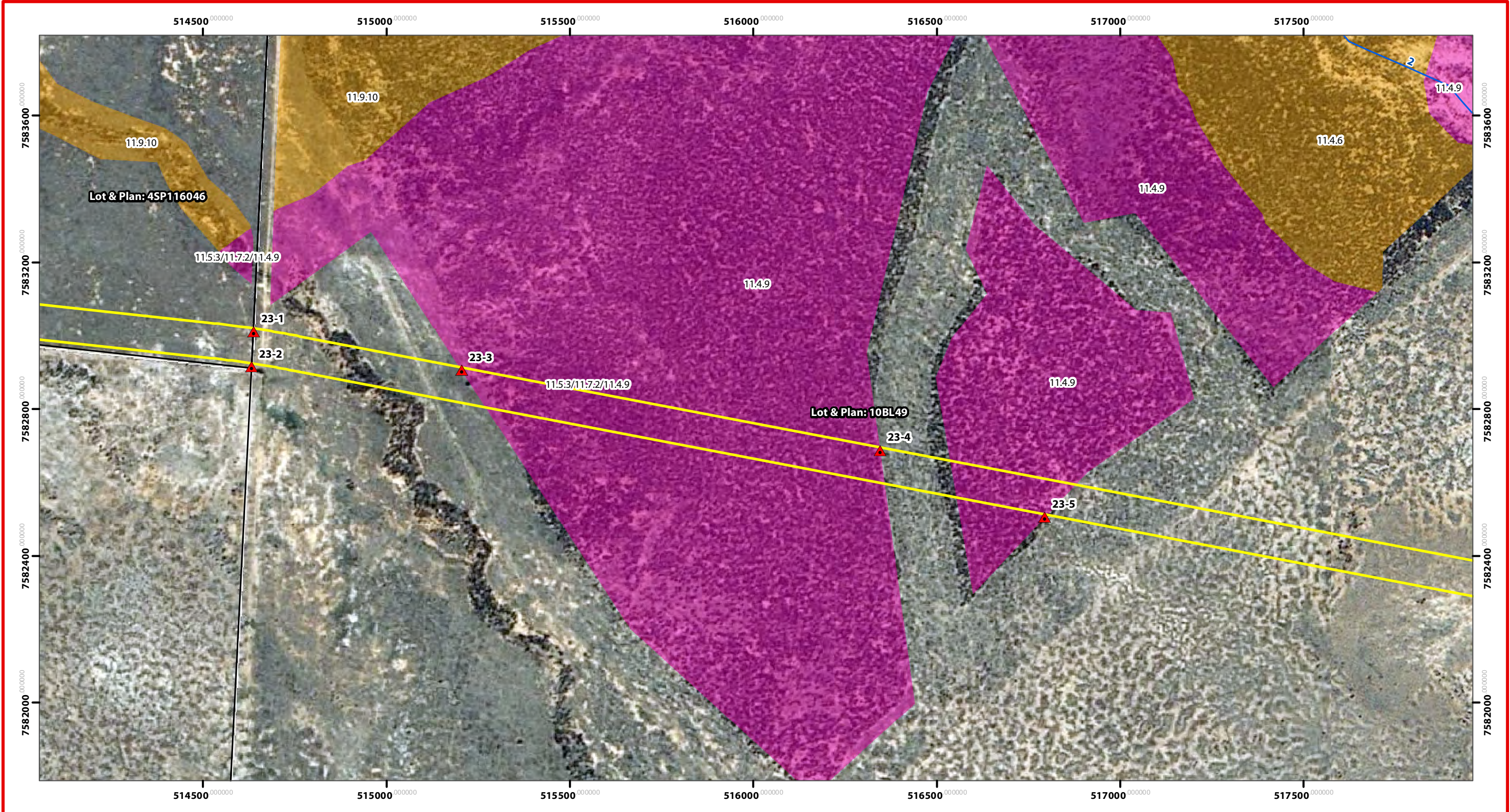
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 22 PVMP A



0 50 100 200 300 400 500 600 700 800 Metres

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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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Data Information:
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GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
23-1	Property Boundary	514636.935451	7583011.417630
23-2	Property Boundary	514632.392717	7582916.094630
23-3	Clearing Boundary	515204.481704	7582906.497680
23-4	Clearing Boundary	516345.521563	7582688.389960
23-5	Clearing Boundary	516794.998744	7582505.753230

AMENDMENTS:

Issue	Date	Description	Checked
A	8/07/2013	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF: 6396

CHECKED: RM
DRAWN: TC

Legend

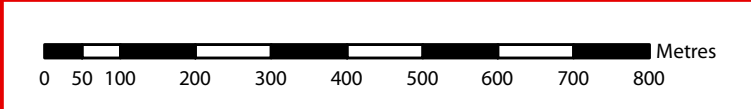
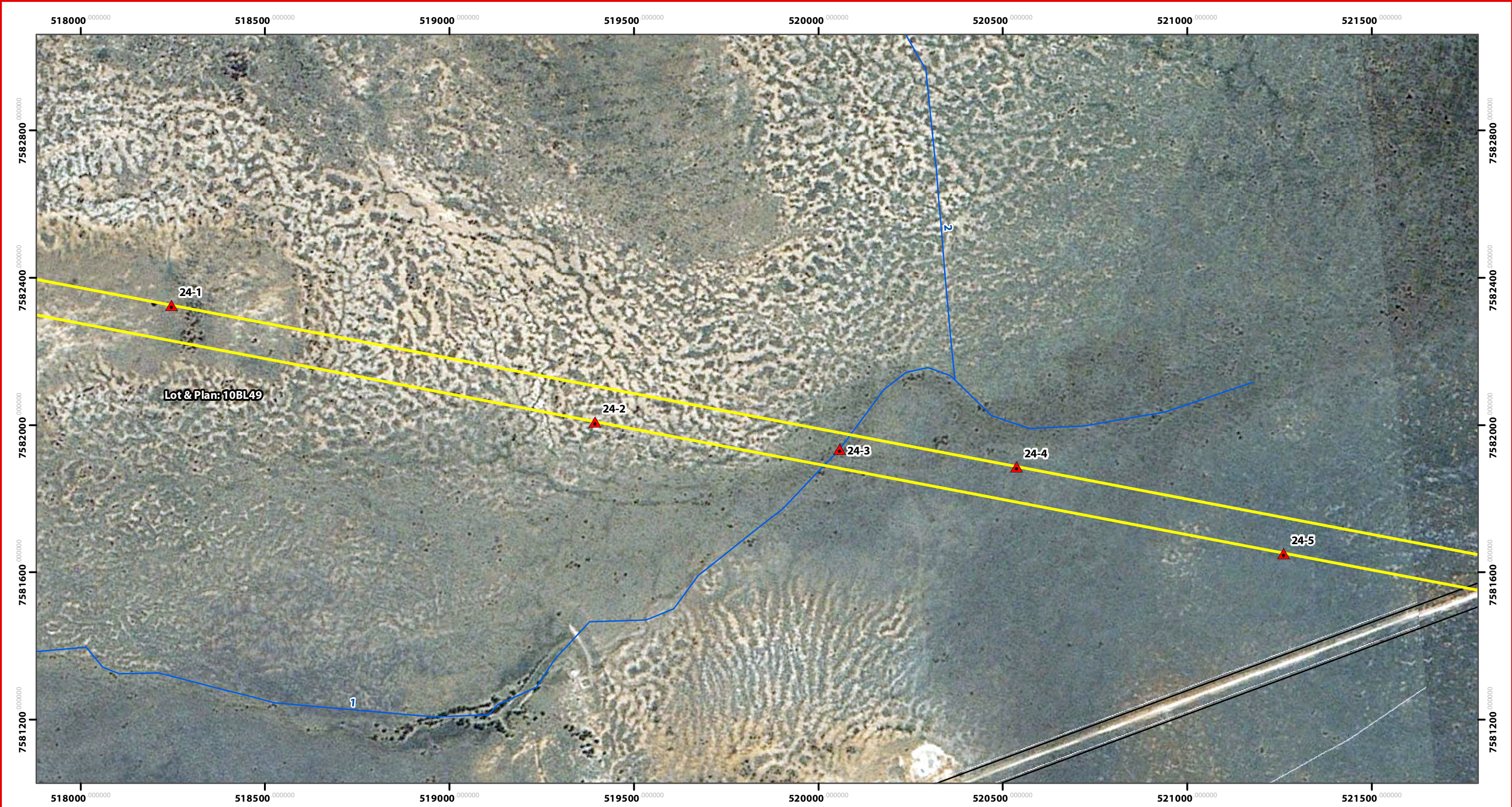
- PMAV Coordinates
- DCDB
- Adani Mine EPC
- 95m Clearing Corridor
- Watercourses

Regional Ecosystem v6.1

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE

PLAN OF: Property Vegetation Management Plan

PLAN No.: 6396 E 23 PVMP A



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SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
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Data Information:
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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
24-1	Clearing Boundary	518246.348363	7582325.050320
24-2	Clearing Boundary	519395.499727	7582008.672130
24-4	Clearing Boundary	520538.063995	7581886.992980
24-5	Clearing Boundary	521262.889228	7581651.723970
24-3	Unnamed Watercourse	520058.077786	7581933.462190

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AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

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PROJECT:

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DATE:

October 2012

CHECKED:

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CLIENT REF.:

6396

DRAWN:

TC

Legend

▲ PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

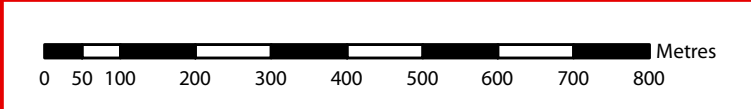
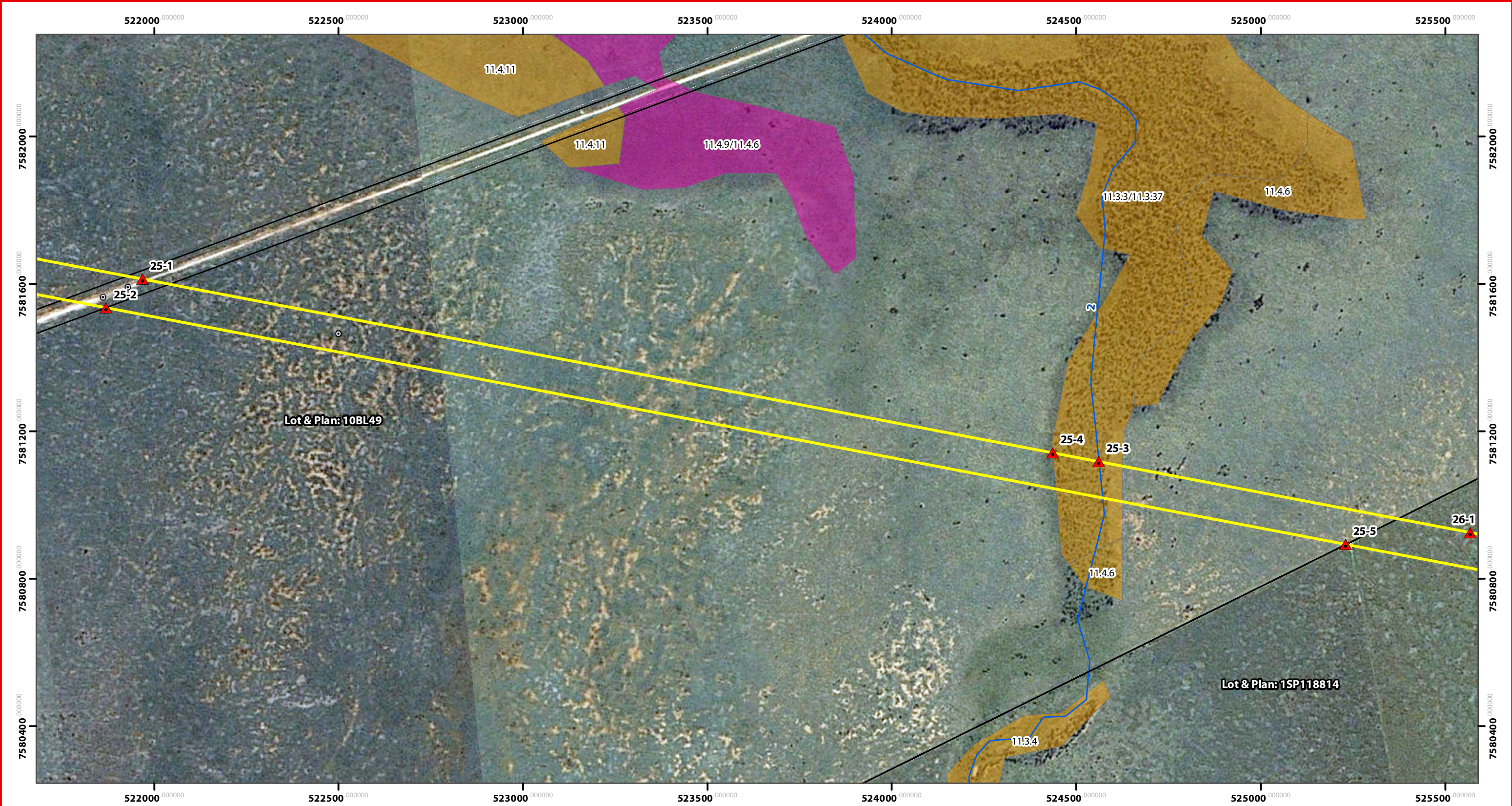
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 24 PVMP A



N

SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
25-1	Avon Road	521968.214546	7581613.622270
25-2	Avon Road	521868.963339	7581535.873990
25-3	Unnamed Watercourse	524561.887489	7581117.846330
25-4	Clearing Boundary	524436.600935	7581141.794630
25-5	Property Boundary	525231.315865	7580893.166330

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

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DRAWN:

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Legend

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PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

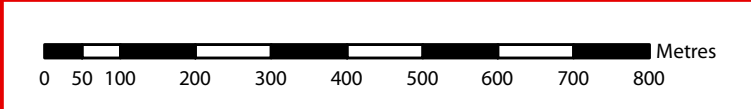
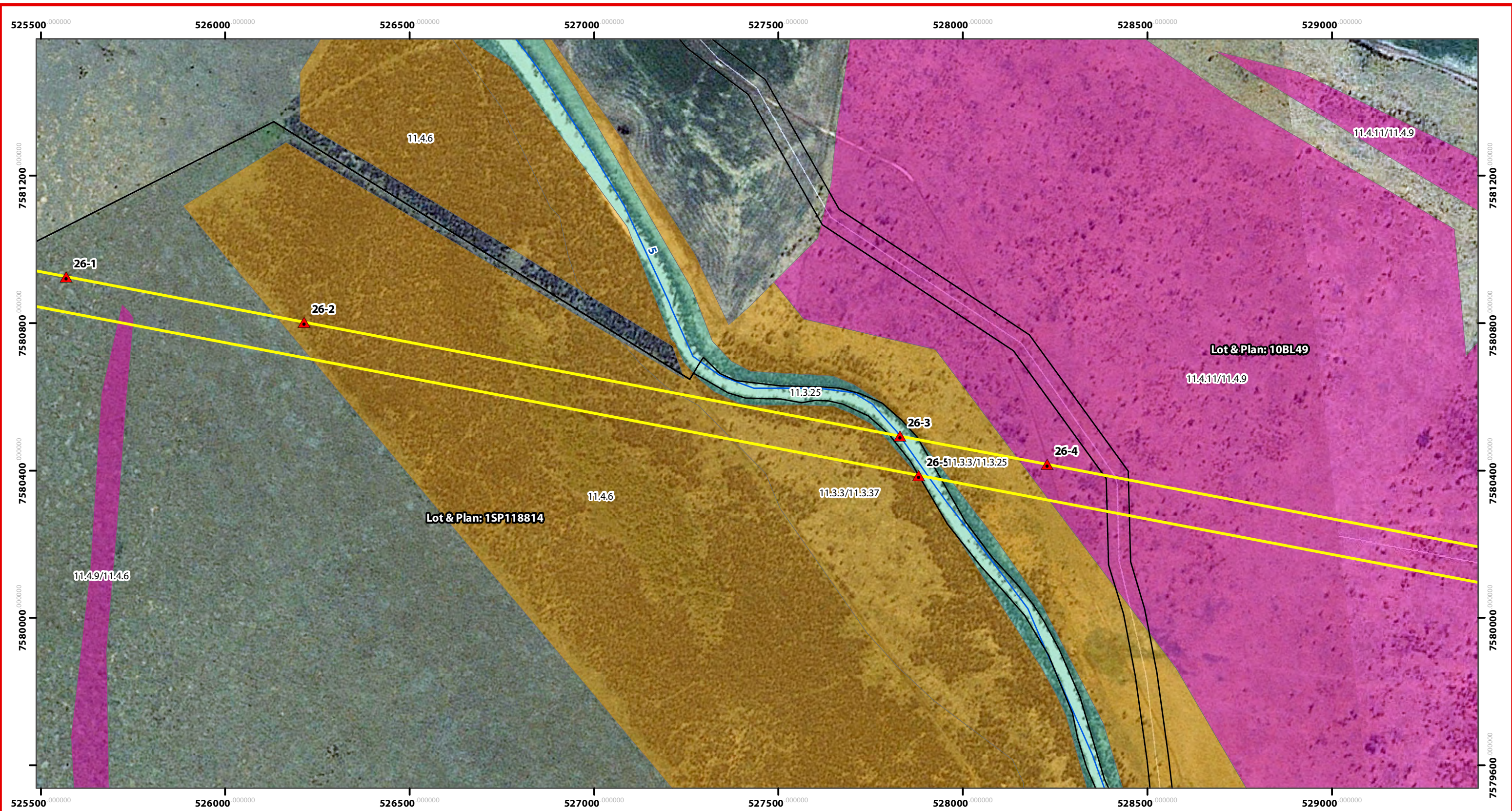
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 25 PVMP A



N

SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

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Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
26-1	Clearing Boundary	525568.673071	7580925.401070
26-2	Clearing Boundary	526213.801540	7580802.085920
26-3	Logan Creek	527830.100545	7580493.133260
26-4	Unsealed Road	528228.608691	7580416.959140
26-5	Logan Creek	527880.469046	7580386.785440

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

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DATE:

October 2012

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RM

CLIENT REF.:

6396

DRAWN:

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PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 26 PVMP A

▲

 PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

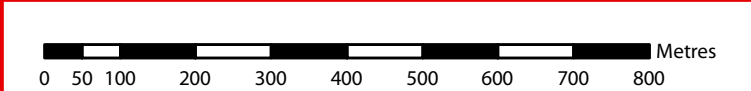
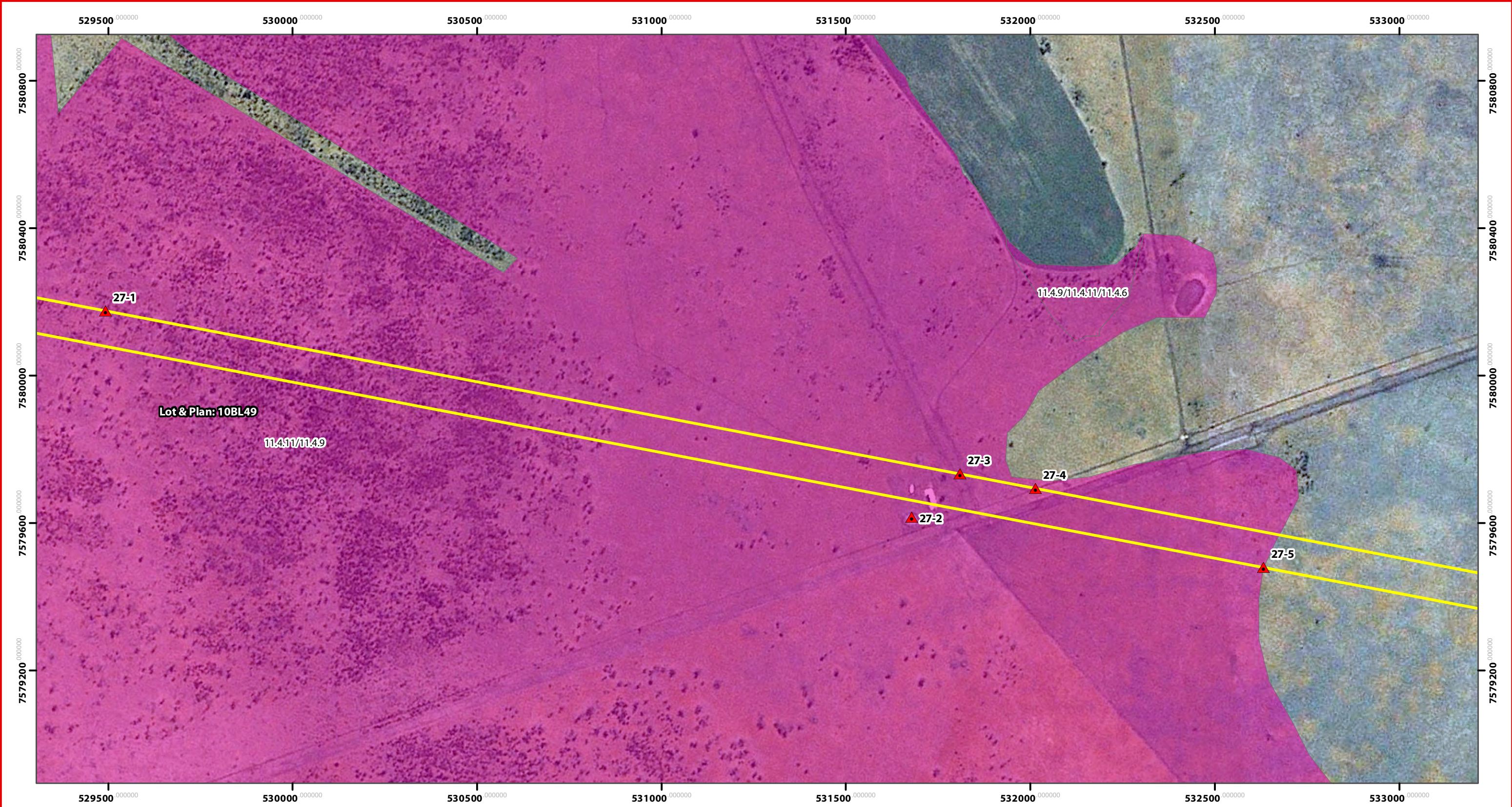
Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE



N

SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

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PVMP Coordinate Table:			
ID	Description	Easting (m)	Northing (m)
27-1	Clearing Boundary	529492.391713	7580175.389280
27-5	Clearing Boundary	532632.525846	7579478.438300
27-3	Access Track	531810.441477	7579732.298220
27-4	Access Track	532014.244838	7579693.341570
27-2	Dam	531678.780124	7579616.504270

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AMENDMENTS:			
Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

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DRAWN:

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PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

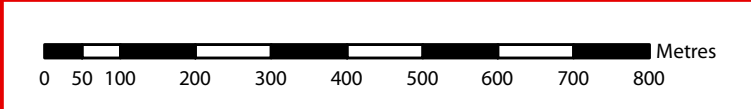
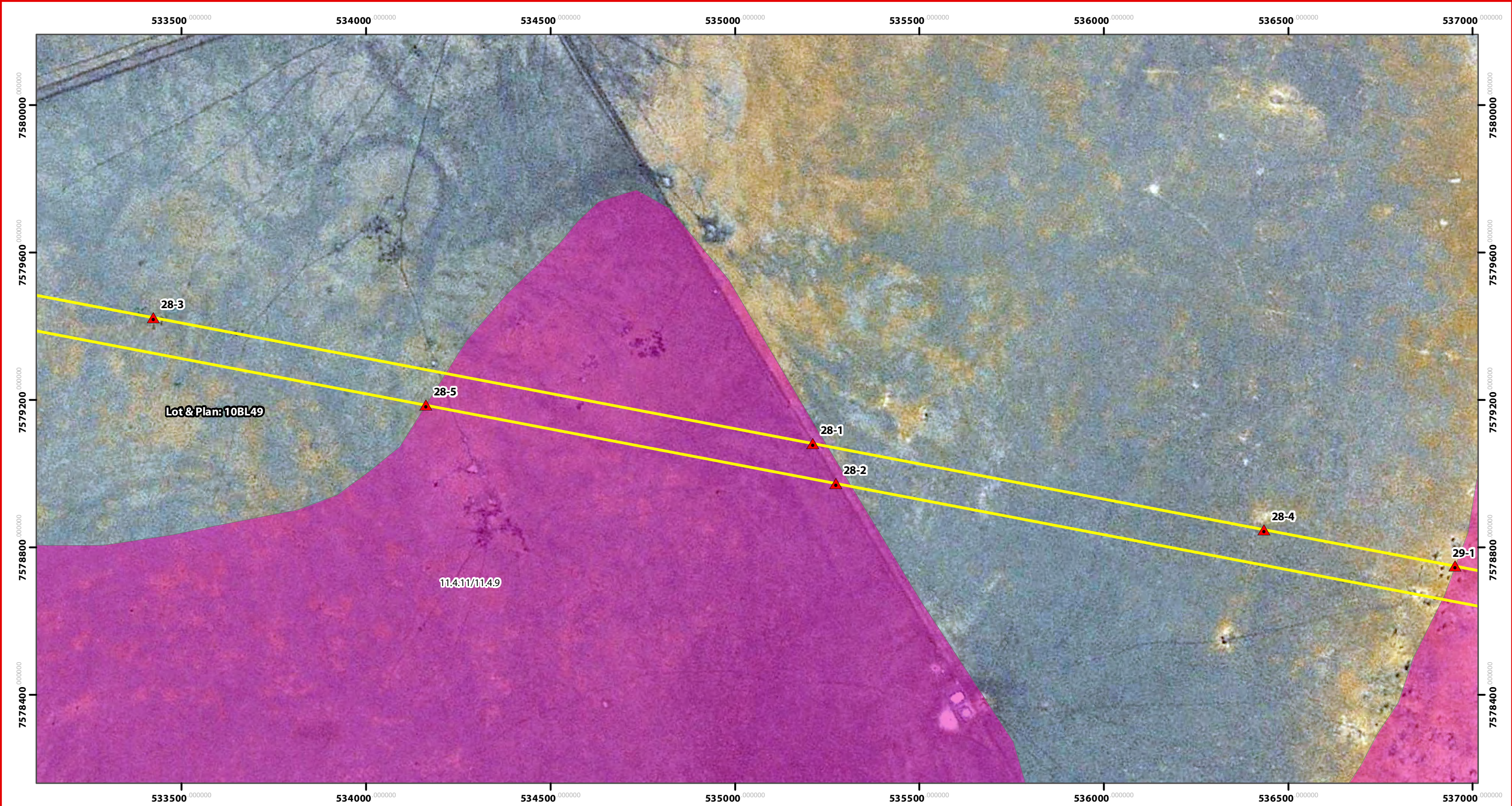
Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 27 PVMP A



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SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
28-1	Access Track	535212.205855	7579082.057050
28-2	Access Track	535273.696230	7578973.583310
28-3	Clearing Boundary	533423.170471	7579424.027960
28-4	Clearing Boundary	536434.930809	7578848.335370
28-5	Clearing Boundary	534162.030206	7579186.076280

Legend

- PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses
- Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

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CLIENT:

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PROJECT:

Charmichael Coal Rail Project

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October 2012

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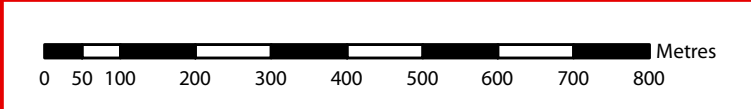
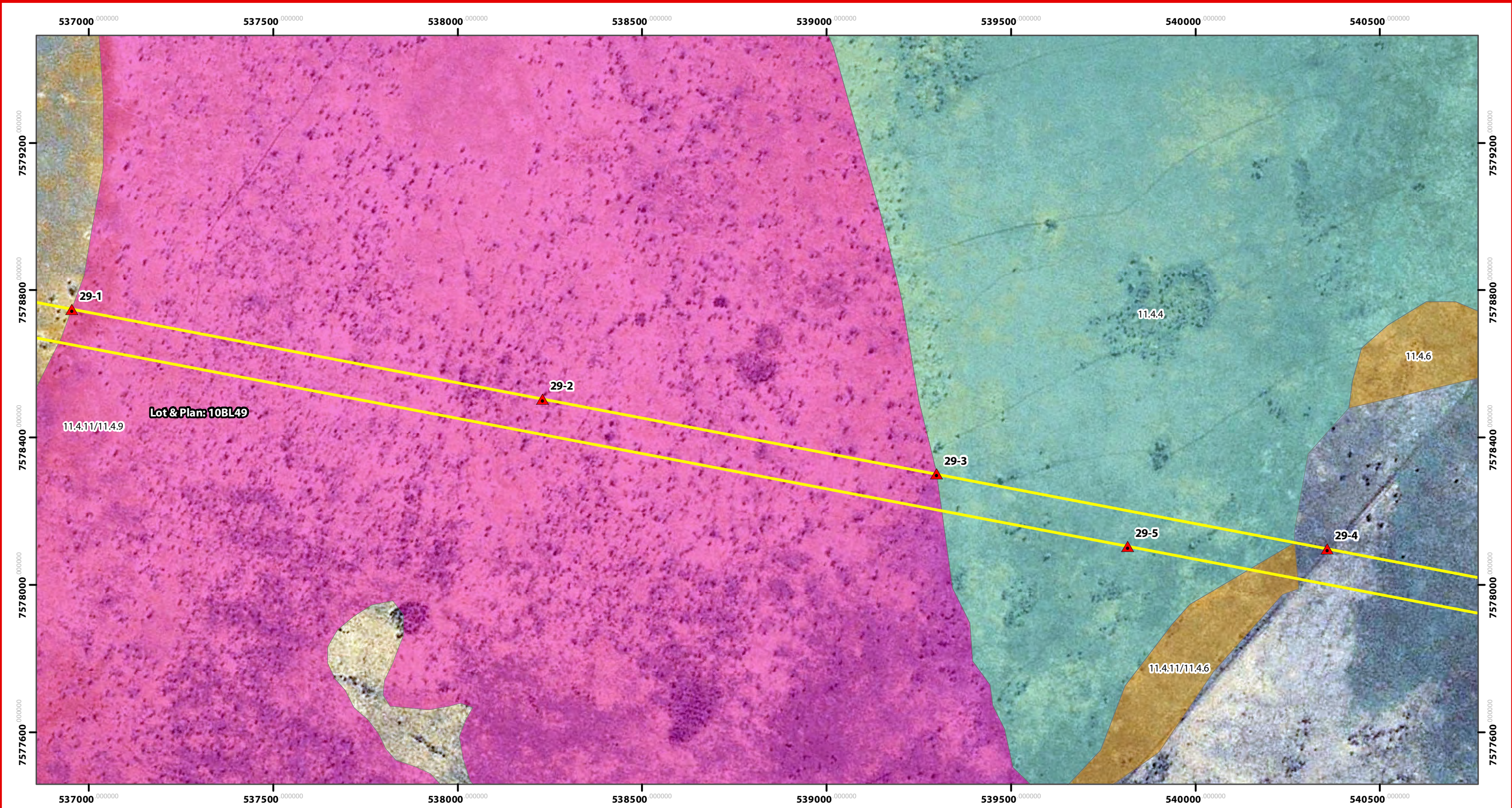
TC

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 28 PVMP A



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SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
29-1	Clearing Boundary	536953.975289	7578749.120940
29-2	Clearing Boundary	538229.818896	7578505.245720
29-3	Clearing Boundary	539298.311001	7578301.005370
29-5	Clearing Boundary	539817.416622	7578105.059290
29-4	Access Track	540358.185529	7578098.412250

Legend

- PMAV Coordinates

DCDB

Adani Mine EPC

95m Clearing Corridor

Watercourses
- Regional Ecosystem v6.1

Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

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CLIENT:

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CLIENT REF.:

6396

DRAWN:

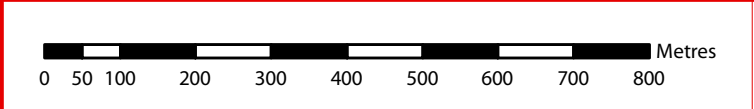
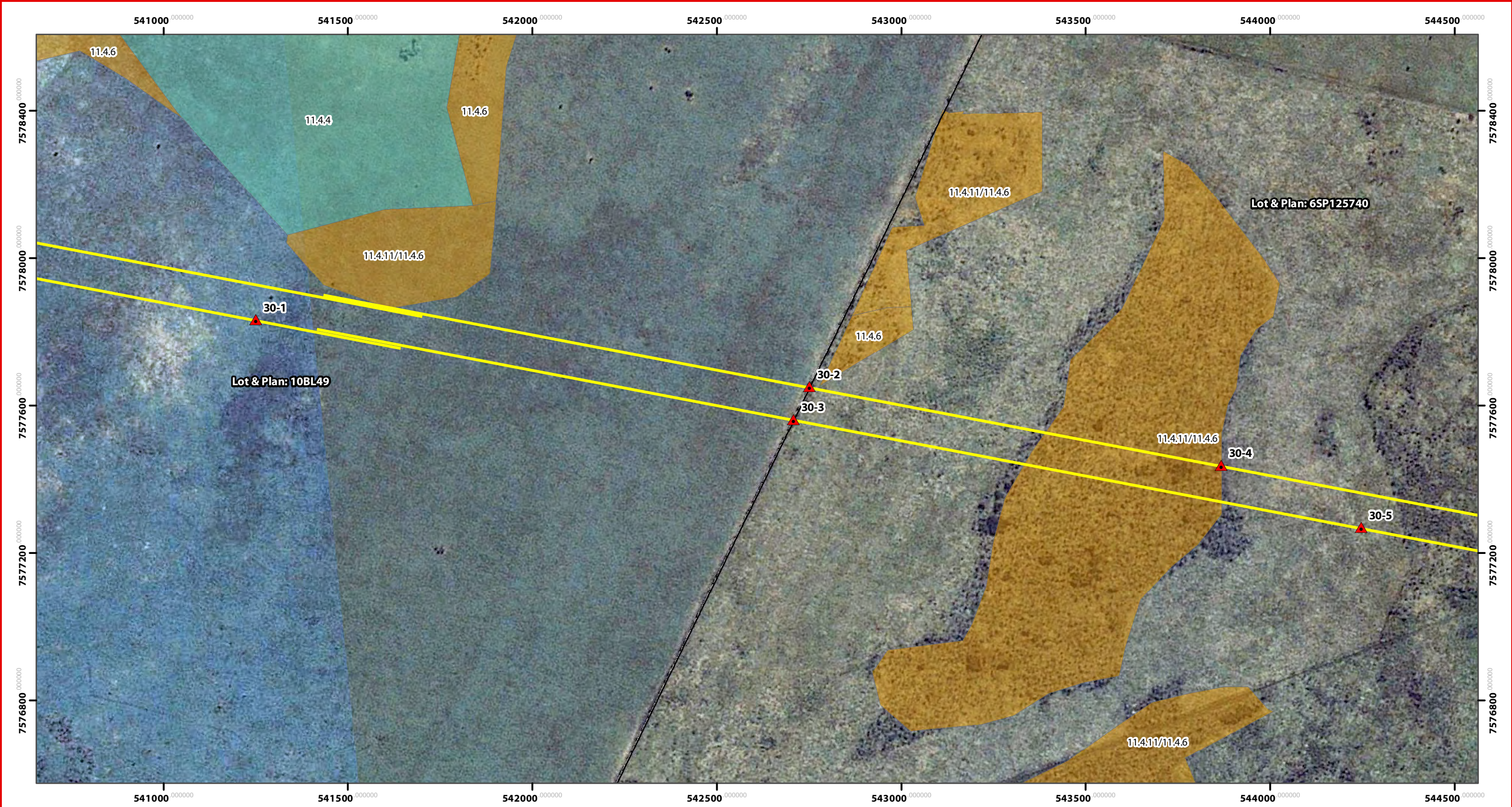
TC

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 29 PVMP A



N

SP1 Corridor - Vekta (2012)

Regional Ecosystem v6.1 - DERM (2011)

DCDB - QLD Gov (2012)

Datum & Map Grid - GDA94 MGA Zone 55

Scale @ A3 1:10,000

Scale 1:10,000@ A3

Data Information:

Universal Transverse Mercator

GDA 1994 MGA Zone 55

SH

saunders
havill
group

web www.saundershavill.com

phone (07) 3251 9444 fax (07) 3251 9455

address 9 Thompson St Bowen Hills Q 4006

■

 surveying

■

 town planning

■

 urban design

■

 environmental management

■

 landscape architecture

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
30-1	Clearing Boundary	541250.261563	7577831.173550
30-4	Clearing Boundary	543869.009259	7577435.244740
30-5	Clearing Boundary	544248.434383	7577265.998340
30-2	Property Boundary	542751.363336	7577648.880750
30-3	Property Boundary	542708.309182	7577560.390510

adani™

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT:

Adani Mining Pty Ltd

PROJECT:

Charmichael Coal Rail Project

DATE:

October 2012

CHECKED:

RM

CLIENT REF.:

6396

DRAWN:

TC

Legend

▲

 PMAV Coordinates

□

 DCDB

▭

 95m Clearing Corridor

—

 Adani Mine EPC

—

 Watercourses

Regional Ecosystem v6.1

■

 Remnant vegetation containing Endangered REs

■

 Remnant vegetation containing Of Concern REs

■

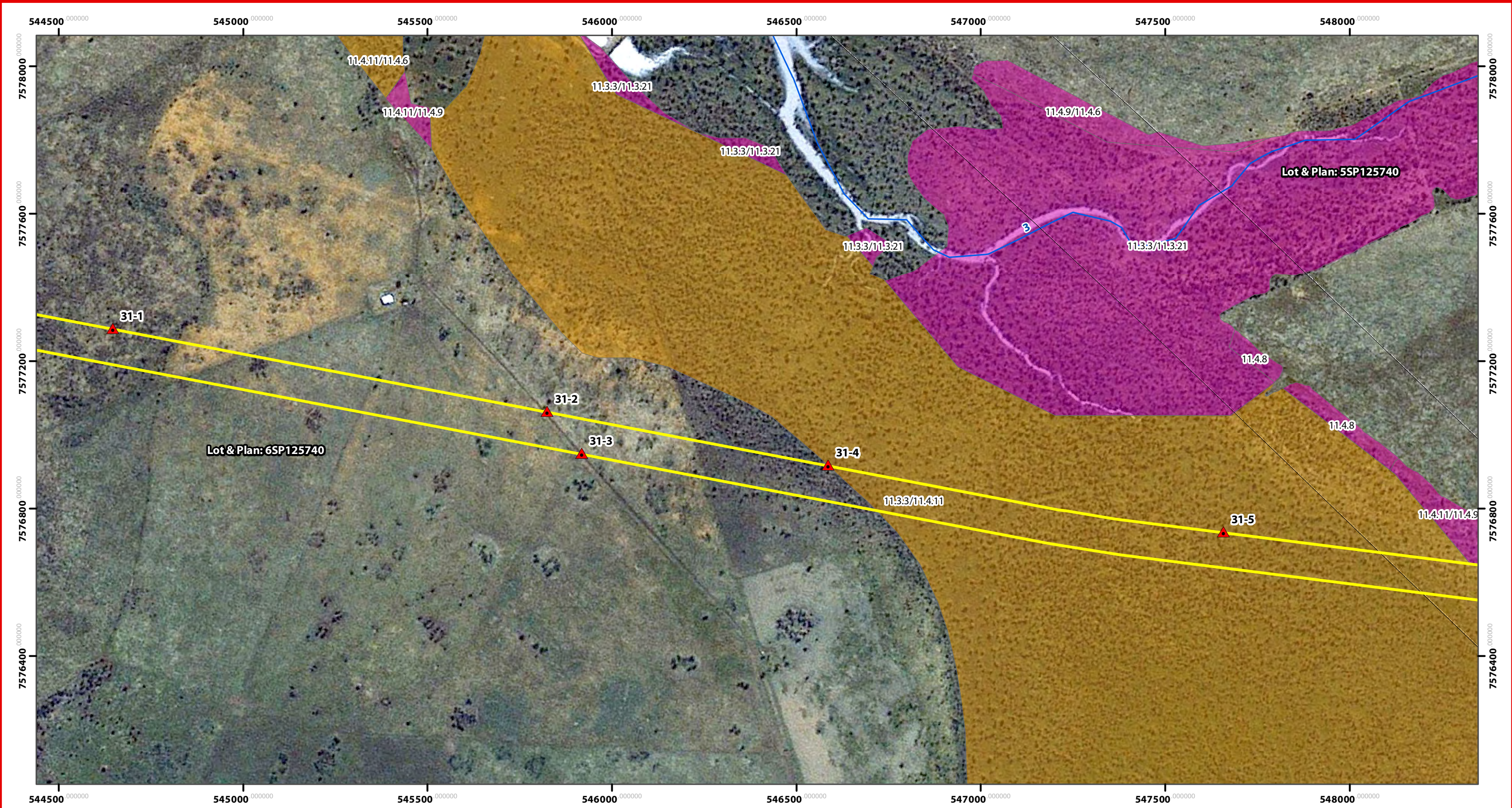
 Remnant vegetation that is a Least Concern RE

PLAN OF:

Property Vegetation Management Plan

PLAN No.:

6396 E 30 PVMP A



SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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address 9 Thompson St Bowen Hills Q 4006
■ surveying ■ town planning ■ urban design ■ environmental management ■ landscape architecture

PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
31-1	Clearing Boundary	544646.894854	7577286.553300
31-4	Clearing Boundary	546587.568784	7576915.596950
31-5	Clearing Boundary	547659.617039	7576734.303170
31-2	Access Track	545825.403427	7577061.283490
31-3	Access Track	545919.080638	7576946.657300

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

95m Clearing Corridor

Adani Mine EPC

Watercourses

Regional Ecosystem v6.1

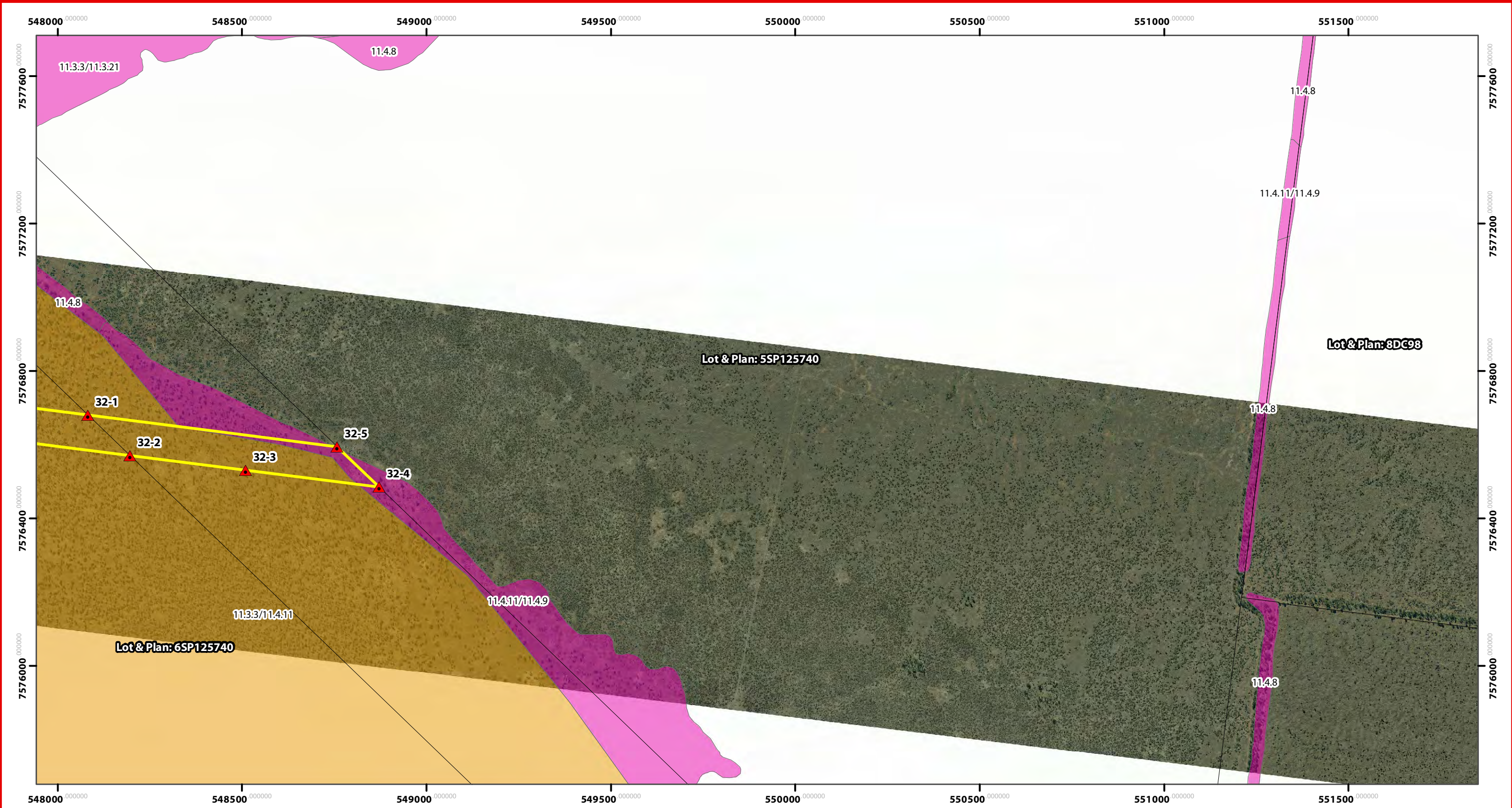
Remnant vegetation containing Endangered REs

Remnant vegetation containing Of Concern REs

Remnant vegetation that is a Least Concern RE

PLAN OF: **Property Vegetation Management Plan**

PLAN No.: **6396 E 31 PVMP A**



0 50 100 200 300 400 500 600 700 800 Metres

N

SP1 Corridor - Vekta (2012)
Regional Ecosystem v6.1 - DERM (2011)
DCDB - QLD Gov (2012)
Datum & Map Grid - GDA94 MGA Zone 55
Scale @ A3 1:10,000

Scale 1:10,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

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PVMP Coordinate Table:

ID	Description	Easting (m)	Northing (m)
31-1	Clearing Boundary	544646.894854	7577286.553300
31-4	Clearing Boundary	546587.568784	7576915.596950
31-5	Clearing Boundary	547659.617039	7576734.303170
31-2	Access Track	545825.403427	7577061.283490
31-3	Access Track	545919.080638	7576946.657300

AMENDMENTS:

Issue	Date	Description	Checked
A	18/10/2012	PVMP	RM

CLIENT: Adani Mining Pty Ltd
PROJECT: Charmichael Coal Rail Project

DATE: October 2012
CLIENT REF.: 6396

CHECKED: RM
DRAWN: TC

Legend

PMAV Coordinates

DCDB

95m Clearing Corridor

Adani Mine EPC

Watercourses

Regional Ecosystem v6.1

Remnant vegetation containing
Endangered REs

Remnant vegetation containing
Of Concern REs

Remnant vegetation that is
a Least Concern RE

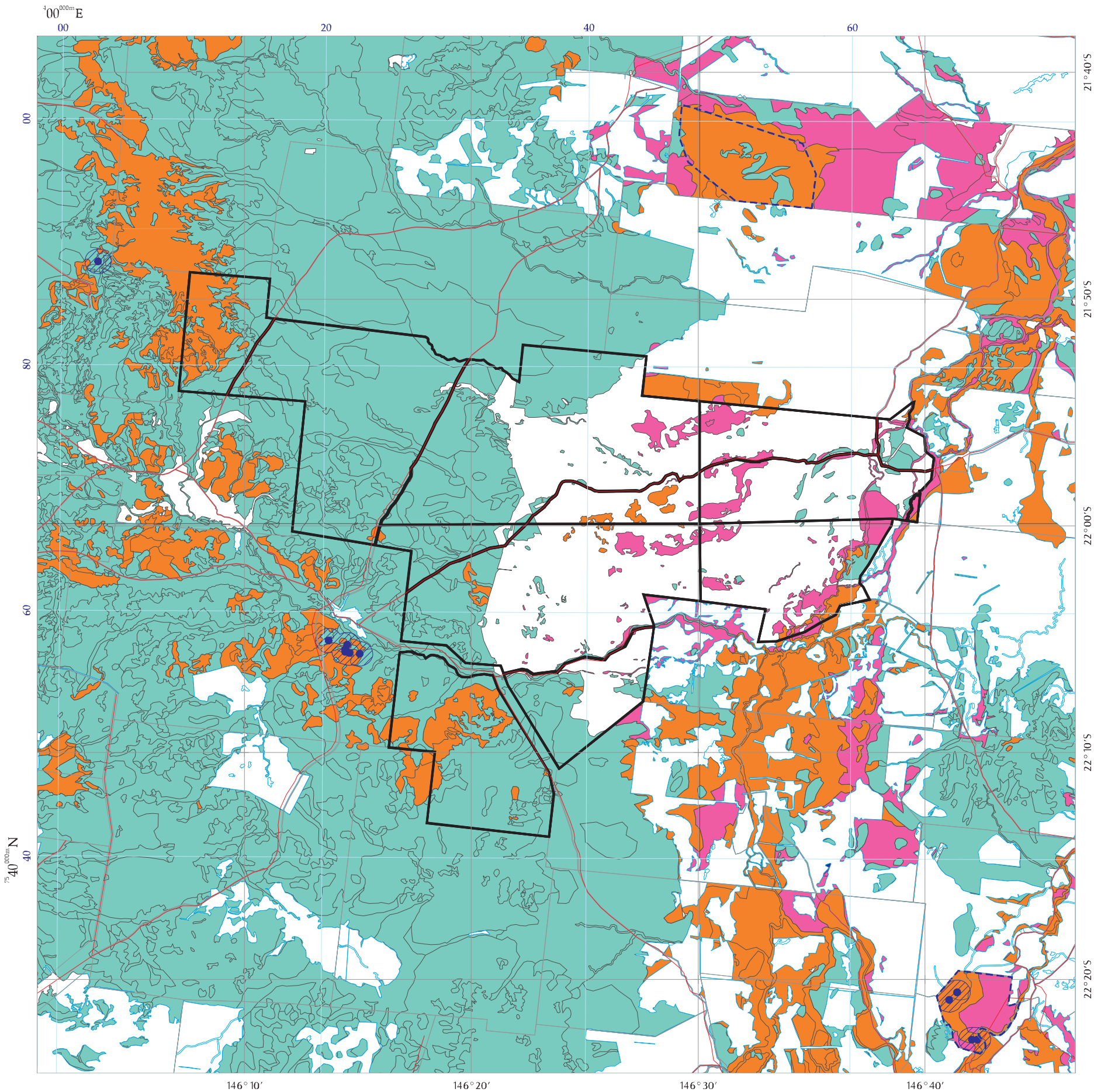
PLAN OF: **Property Vegetation Management Plan**

PLAN No.: **6396 E 32 PVMP A**



Appendix C

Essential Habitat Plans

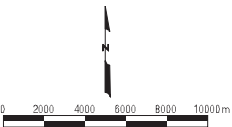
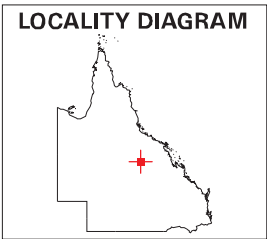


Vegetation Management Act Essential Habitat Map Version 3.1

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
- © Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only.
- Towns

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 12 Oct 12 Time: 10.26.28

Centered on Lot on Plan:
662 PH1491



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

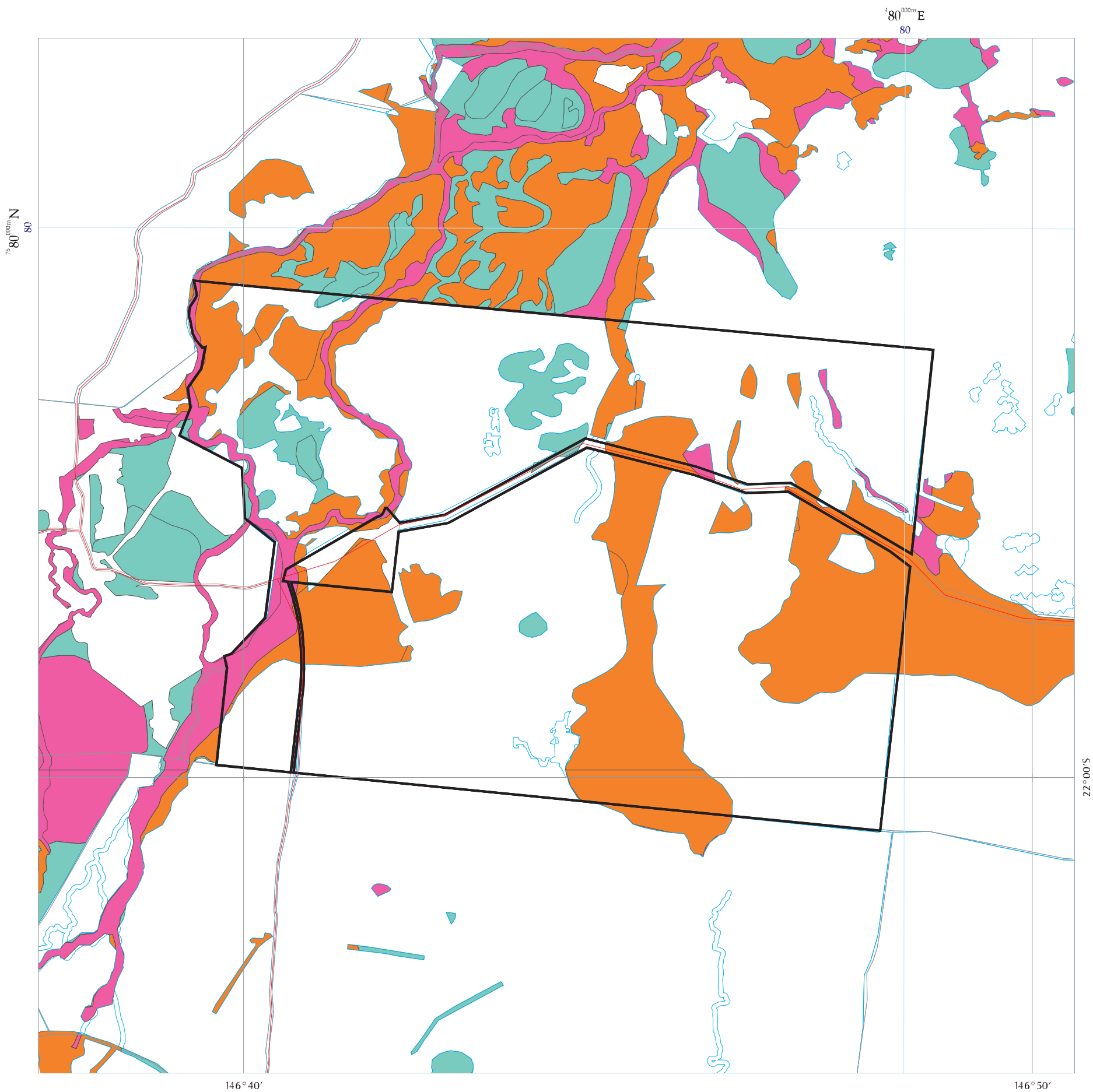
Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

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All datasets are updated as they become available to provide the most current information as of the date shown on this map.

Additional information is required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.derm.qld.gov.au/vegetation or contact the Department of Natural Resources and Mines.

Digital regional ecosystem data is available in shapefile format, for Lot on Plans from www.derm.qld.gov.au/REDATA or from DNRM for larger areas.

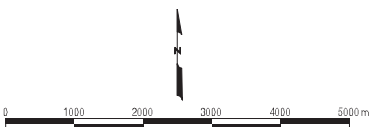
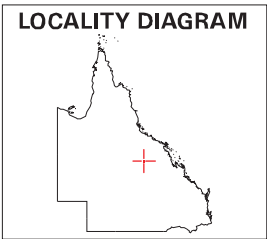


Vegetation Management Act Essential Habitat Map Version 3.1

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
- © Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only.
- Towns

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 12 Oct 12 Time: 11.58.28

Centered on Lot on Plan:
3 BL26



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

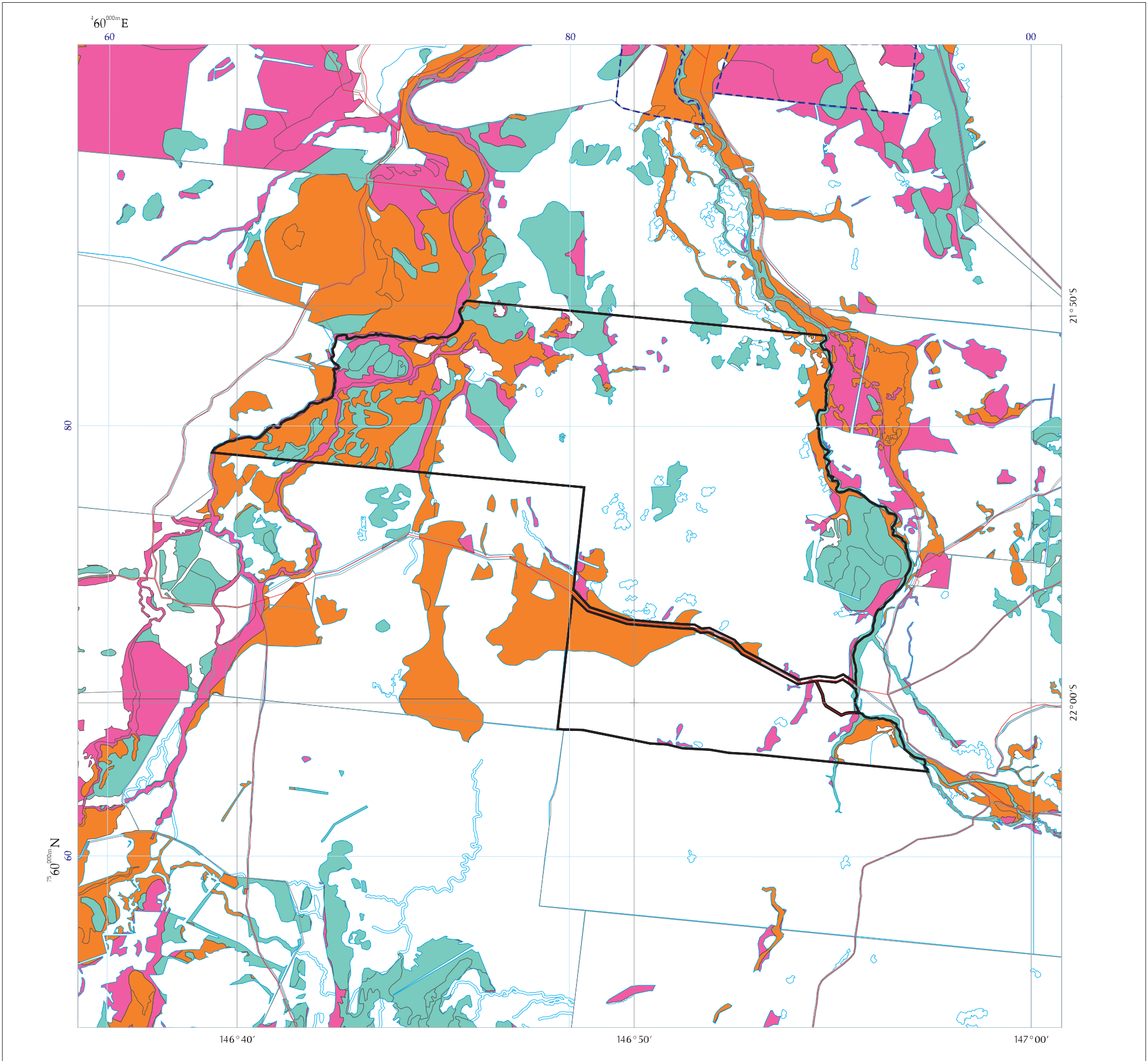
Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

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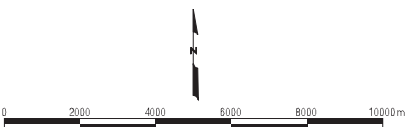


Vegetation Management Act Essential Habitat Map Version 3.1

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 24 Oct 12 Time: 09.25.22

Centered on Lot on Plan:
637 PH1980

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
© Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
Property boundaries shown are provided as a locational aid only.
- Towns



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

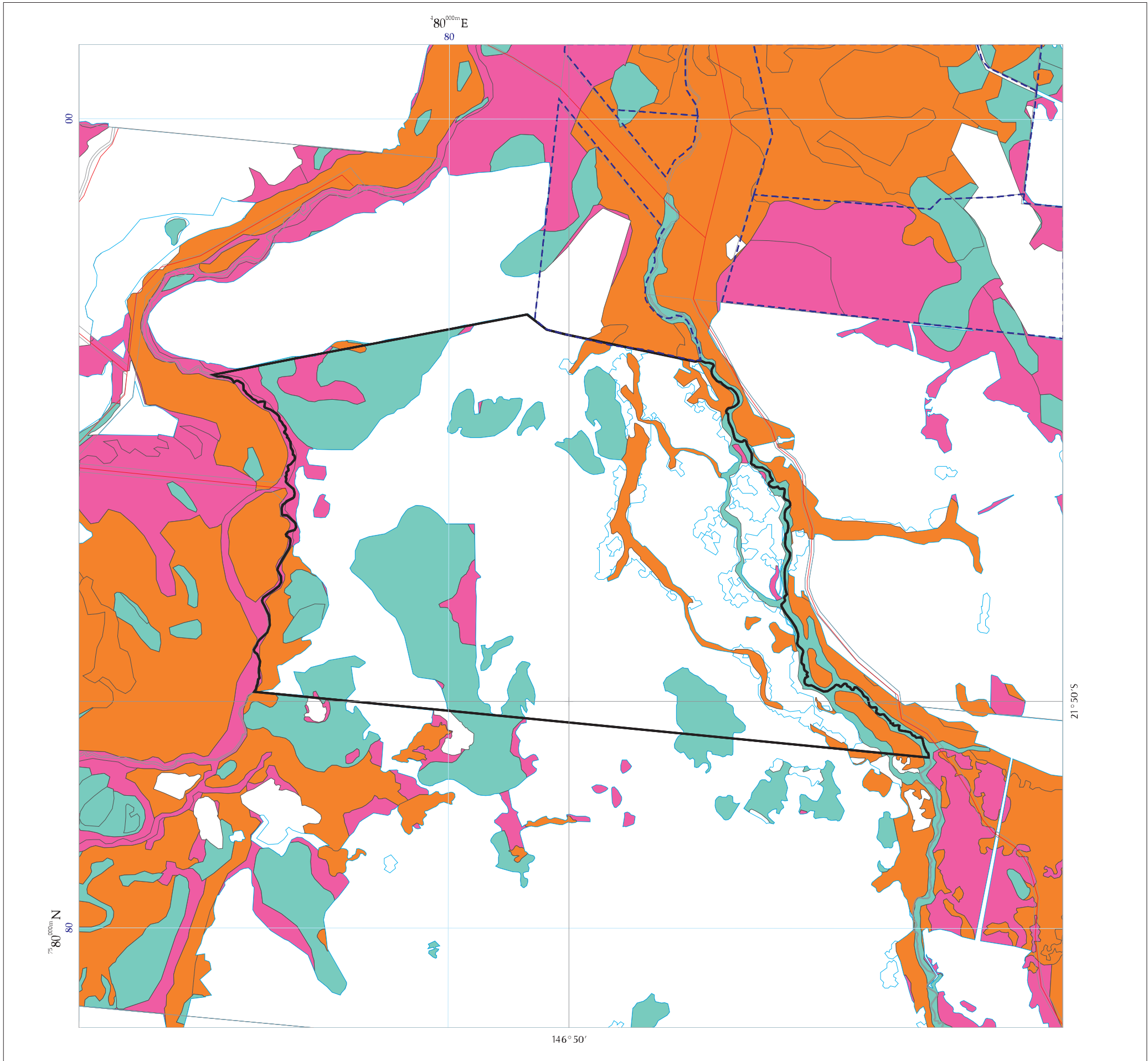
Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

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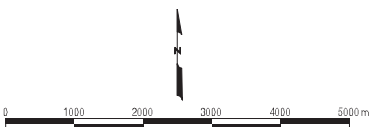
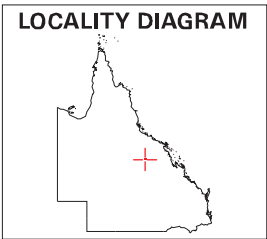


Vegetation Management Act Essential Habitat Map Version 3.1

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 12 Oct 12 Time: 14.45.59

Centered on Lot on Plan:
1 SP147546

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
© Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
Property boundaries shown are provided as a locational aid only.
- Towns



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

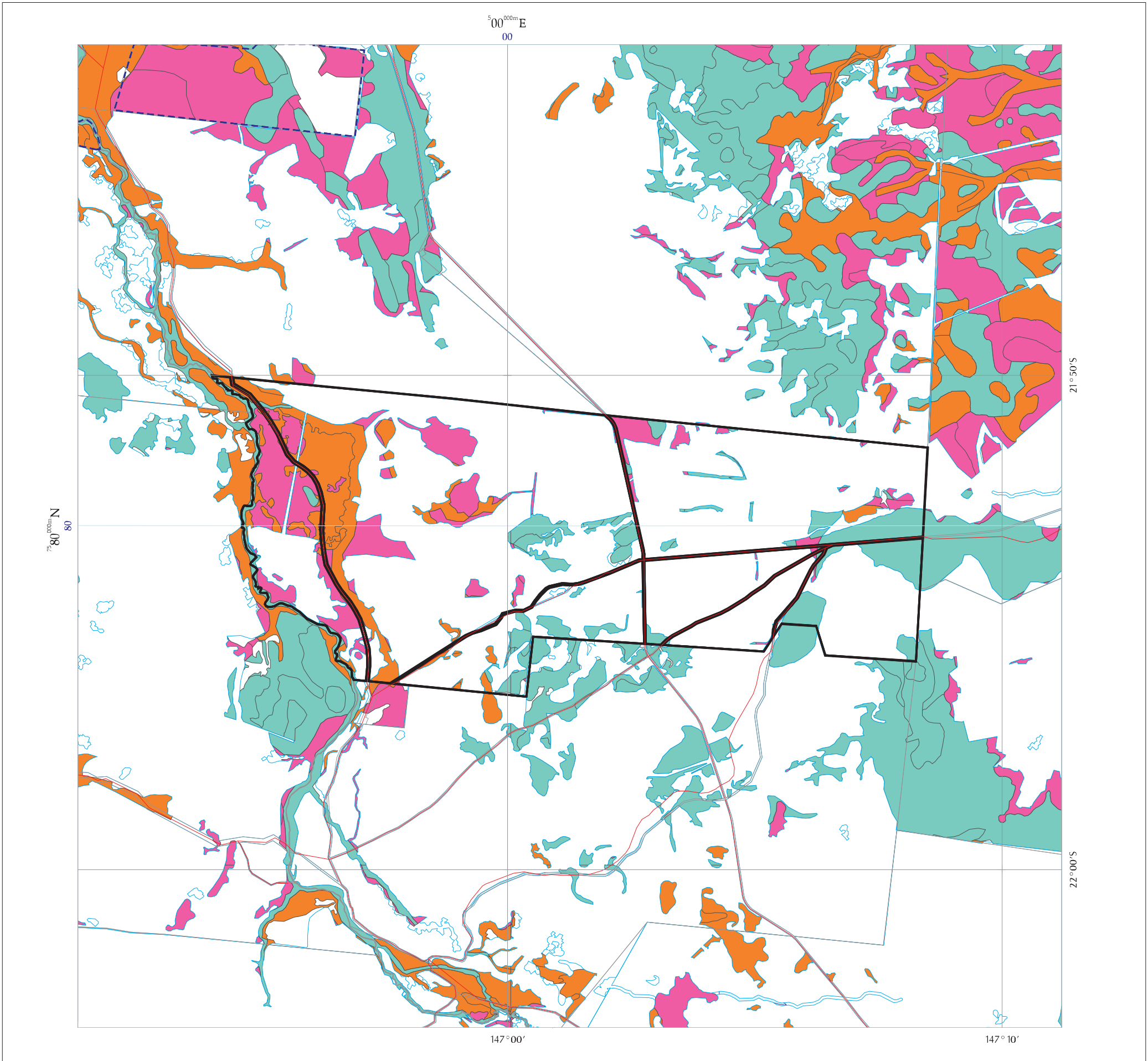
Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

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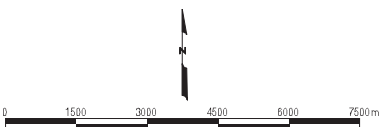
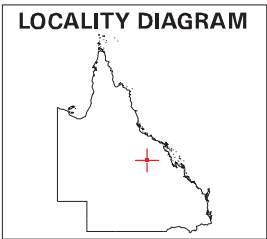


Vegetation Management Act Essential Habitat Map Version 3.1

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 24 Oct 12 Time: 09.26.11

Centered on Lot on Plan:
3235 PH752

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
© Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
Property boundaries shown are provided as a locational aid only.
- Towns



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

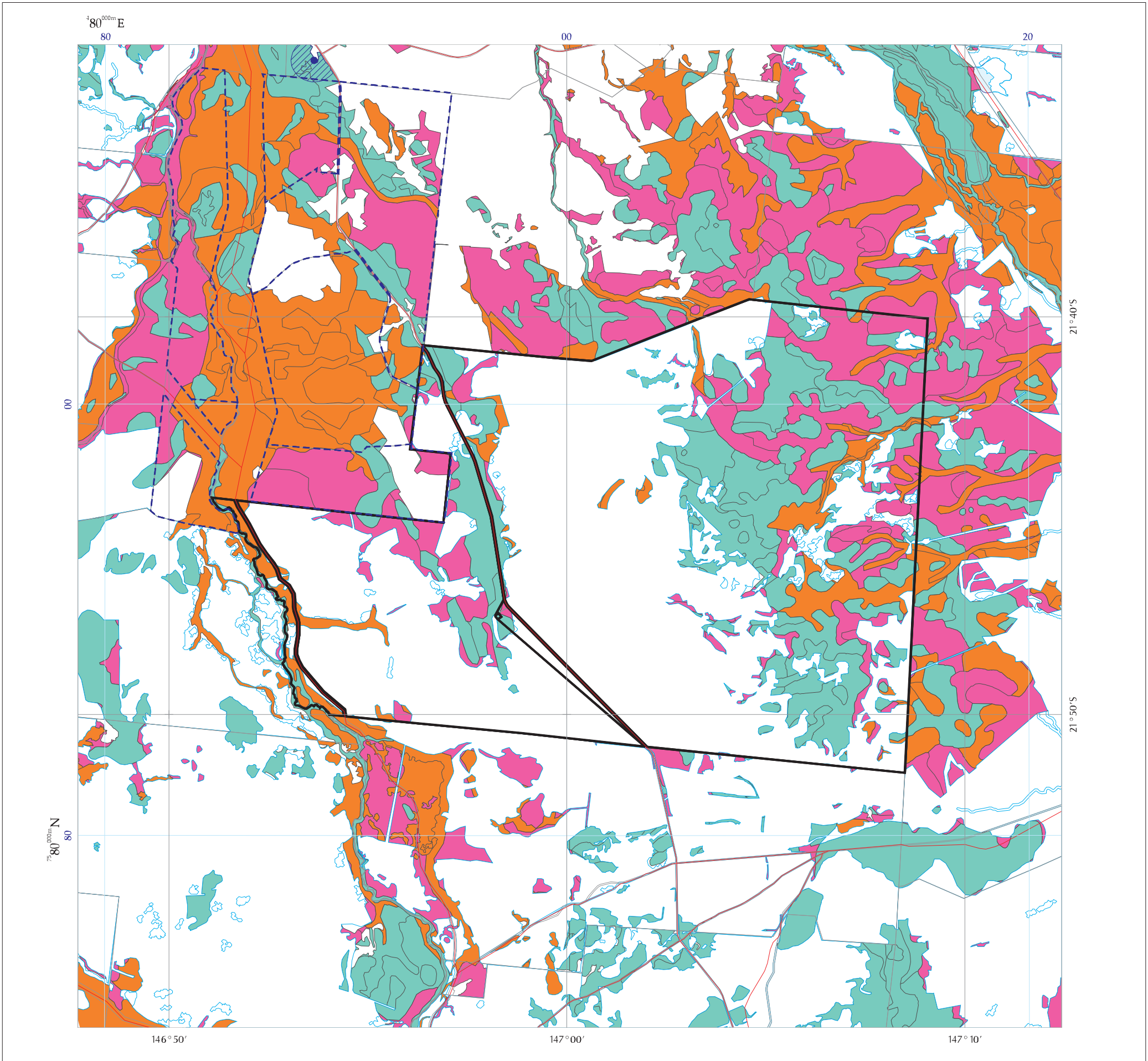
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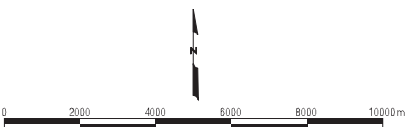
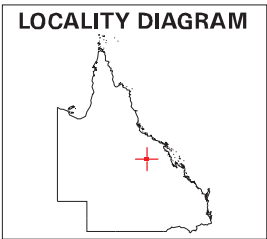


Vegetation Management Act Essential Habitat Map Version 3.1

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 26 Oct 12 Time: 08.57.56

Centered on Lot on Plan:
4 SP116046

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
© Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
Property boundaries shown are provided as a locational aid only.
- Towns



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

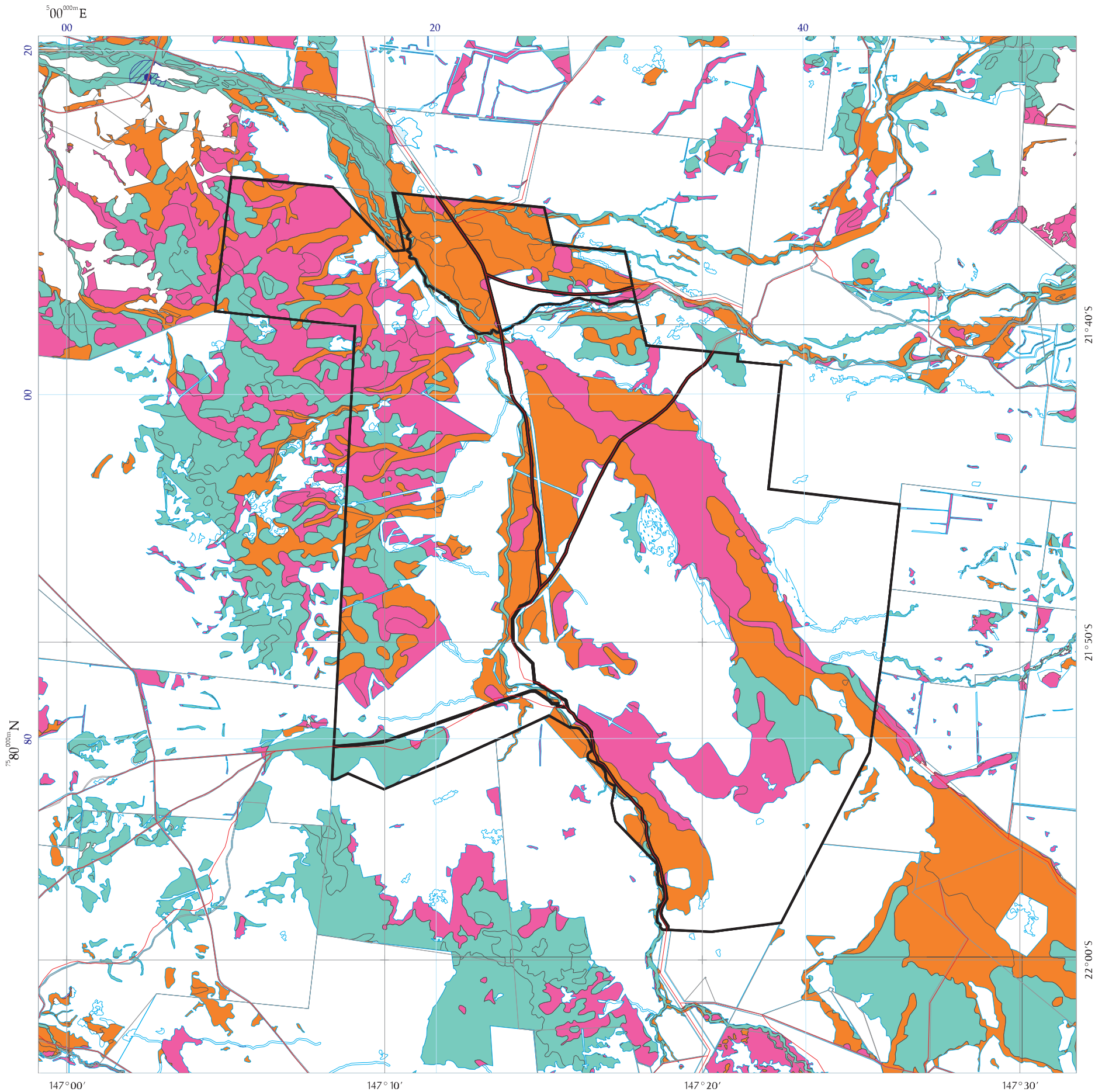
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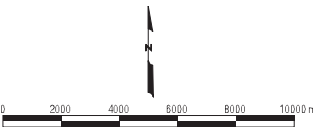


Vegetation Management Act Essential Habitat Map Version 3.1

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
- © Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only.
- Towns

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 12 Oct 12 Time: 16.12.48

Centered on Lot on Plan:
10 BL49



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

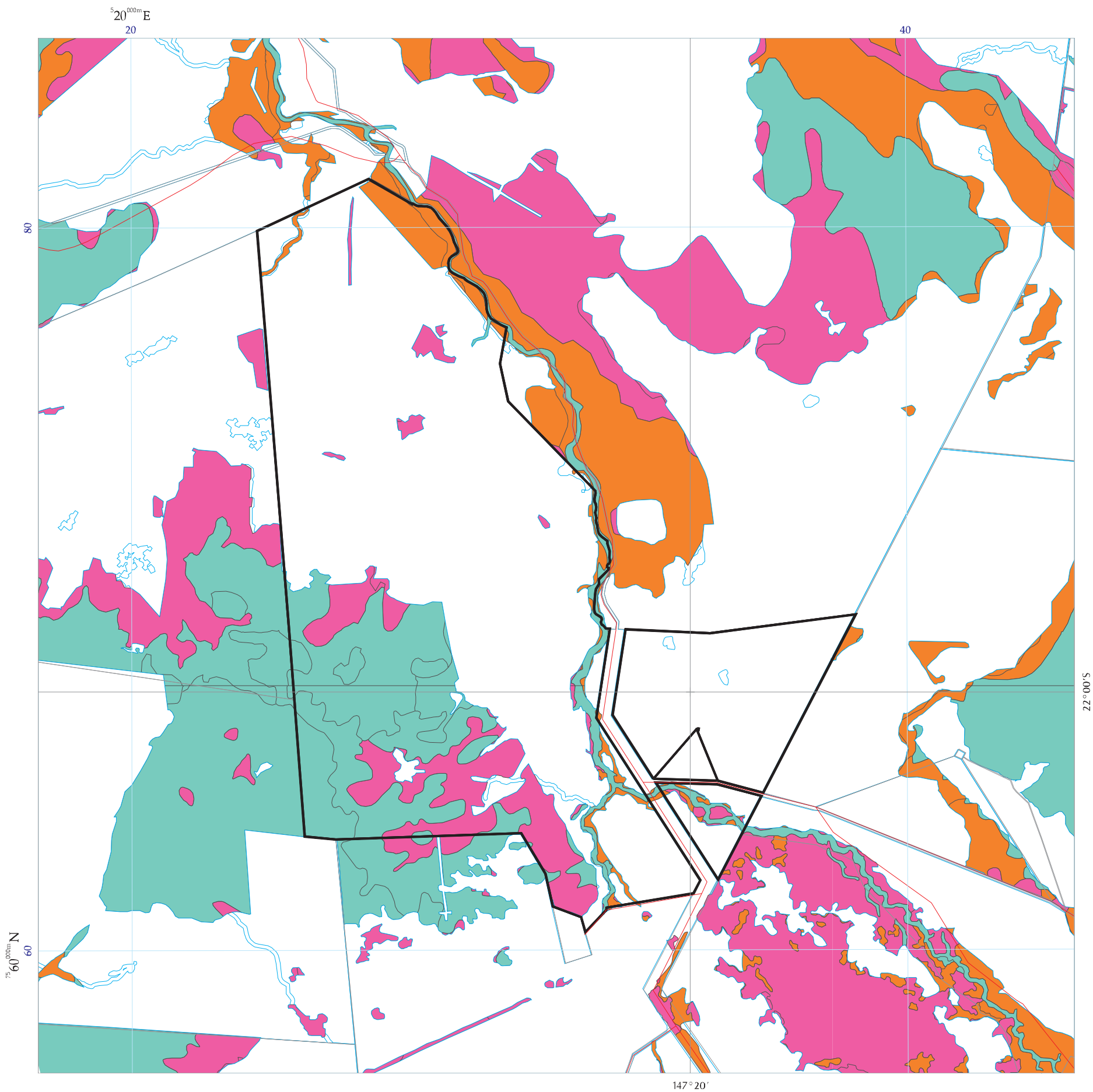
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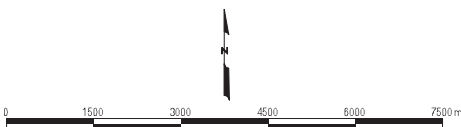
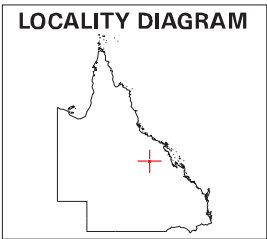


Vegetation Management Act Essential Habitat Map Version 3.1

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
- © Pitney Bowes Software 2012
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only.
- Towns

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 26 Oct 12 Time: 09.01.56

Centered on Lot on Plan:
1 SP118814



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines (DNRM) and Pitney Bowes Software, makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

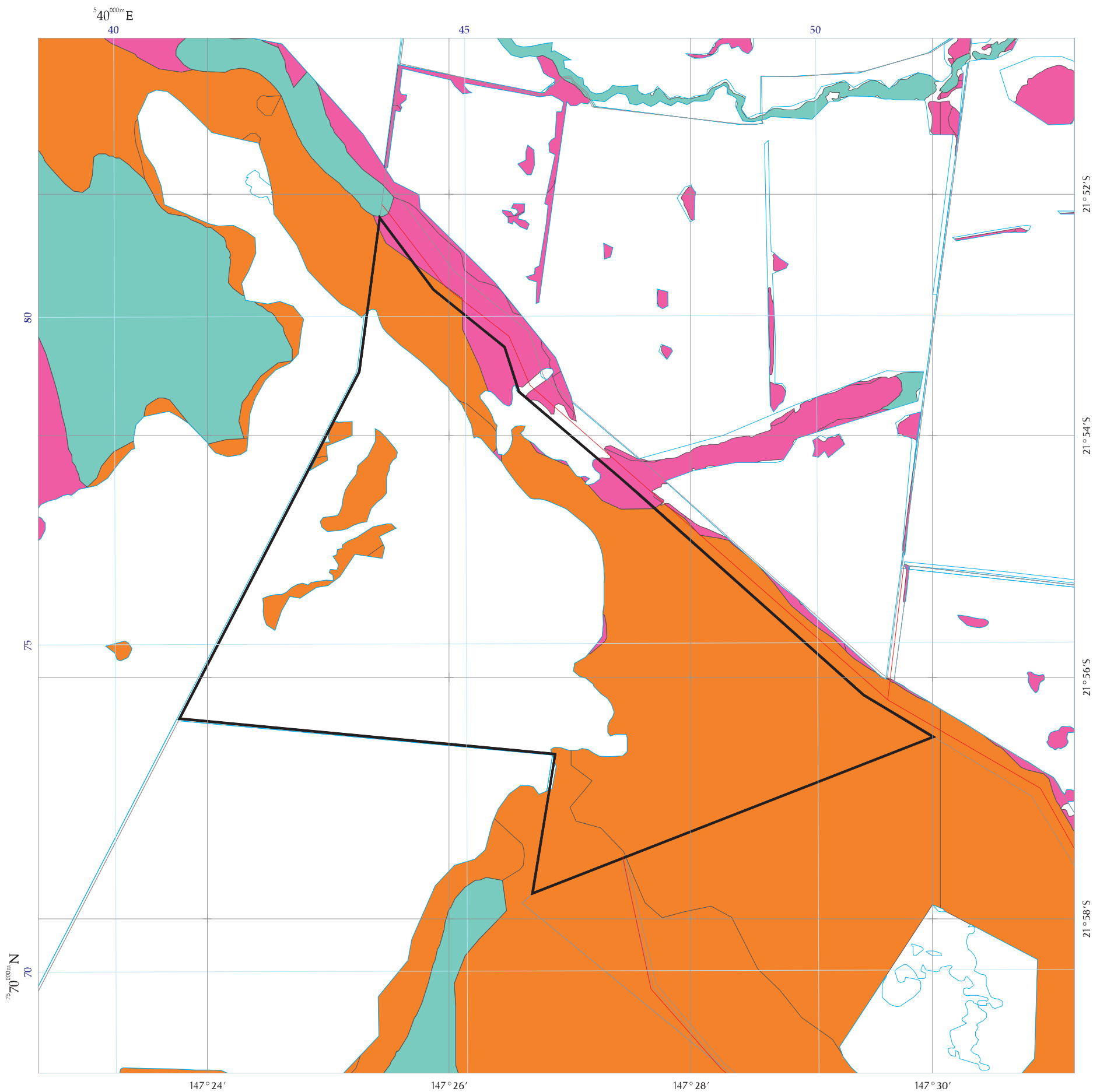
All datasets are updated as they become available to provide the most current information as of the date shown on this map.

Additional information is required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.derm.qld.gov.au/vegetation or contact the Department of Natural Resources and Mines.

Digital regional ecosystem data is available in shapefile format, for Lot on Plans from www.derm.qld.gov.au/REDATA or from DNRM for larger areas.

Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)

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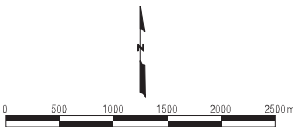
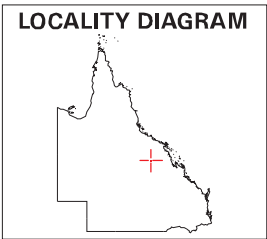


Vegetation Management Act Essential Habitat Map Version 3.1

- Remnant vegetation containing endangered regional ecosystems
- Remnant vegetation containing of concern regional ecosystems
- Remnant vegetation that is a least concern regional ecosystem
- Remnant vegetation under Section 20AH of the VMA
- Non-remnant
- Plantation Forest
- Dam or Reservoir
- Remnant Vegetation
- PMAV Category X area
- Vegetation Management Act Essential Habitat
- Vegetation Management Act Essential Habitat Species Records
- Subject Lot
- Roads
- National Park, Conservation Area State Forest and other reserves
- Cadastral line
- Towns

Requested By: STEVIEARMSTRONG@SAUNDERSHAVILL.COM
Date: 15 Oct 12 Time: 12.33.03

Centered on Lot on Plan:
6 SP125740



Labels for the Vegetation Management Act Essential Habitat are centred on the subject lot (1.1km surrounding and including a Lot on Plan). Labels correlate to the label field in the attached essential habitat database.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2006, depicted on this map is based on rectified 2006 Landsat TM imagery (supplied by SLATS, Queensland Government).

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environmental management



Property Map of Assessable Vegetation

Carmichael Coal Project (Rail)
Separable Portion 1 (SP1)

6867
10 July 2013
Adani Mining Pty Ltd





Document Control

Title	Property Map of Assessable Vegetation – Carmichael Coal Project (Rail) – Separable Portion 1 (SP1)
Job Number	6867
Client	Adani Mining Pty Ltd

Document Issue

Issue	Date	Prepared By	Checked By
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Client Issue	05.09.2012	Andrew Craig	Ross Marshall
Final V1	06.09.2012	Tom Connor	Ross Marshall
Final V2	10.07.2013	Dr Andrew Davies	Murray Saunders

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Reports and/or plans by others may be included within this Environmental Management report to support the document. The Property Map of Assessable Vegetation and associated transect data for the balloon loop area at the SP1 Mine terminus presented herein were produced solely by **GHD** and **Saunders Havill Group** cannot accept responsibility for their accuracy or reliability at the time of reproduction.



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I. Introduction

The **Saunders Havill Group** (SHG) was engaged by **Adani Mining Pty Ltd** (Adani) to prepare Complex Property Maps of Assessable Vegetation (PMAVs) to support requested Regional Ecosystem (RE) mapping changes for the Carmichael Coal Project (Rail) investigation corridor. The Carmichael Coal Project (Rail) has been granted a Rail Feasibility Investigators Authority (RFIA) by the Chief Executive of the Department of Transport and Main Roads who administers the *Transport Infrastructure Act 1994*. The RFIA covers a 500 m wide corridor extending from the proposed mine (EPC 1690) to the existing Aurizon rail infrastructure at Moranbah (Refer to **Plan 1**).

This report has been prepared for Separable Portion 1 (SP1) of the rail corridor and describes field survey effort and site based observations supporting proposed changes to RE mapping. The field results detail information integral to the impact assessment process for the proposed rail corridor. Proposed RE mapping changes detail the vegetation communities present along SP1. In addition, reported transect data incorporates information on the structural composition and condition of vegetation communities. This information is important when considering impact on ecological values and determining the study site's potential to support species of conservation significance.

Field surveys targeted a 95 m wide investigation area along the proposed rail corridor. Access was obtained via mutual agreement between Adani and landholders. Reporting is per the requirements outlined within the Application Kit for a Property Map of Assessable Vegetation (2004) and the *Vegetation Management Act 1999* with reporting separated on a property basis. The following properties make up SP1:

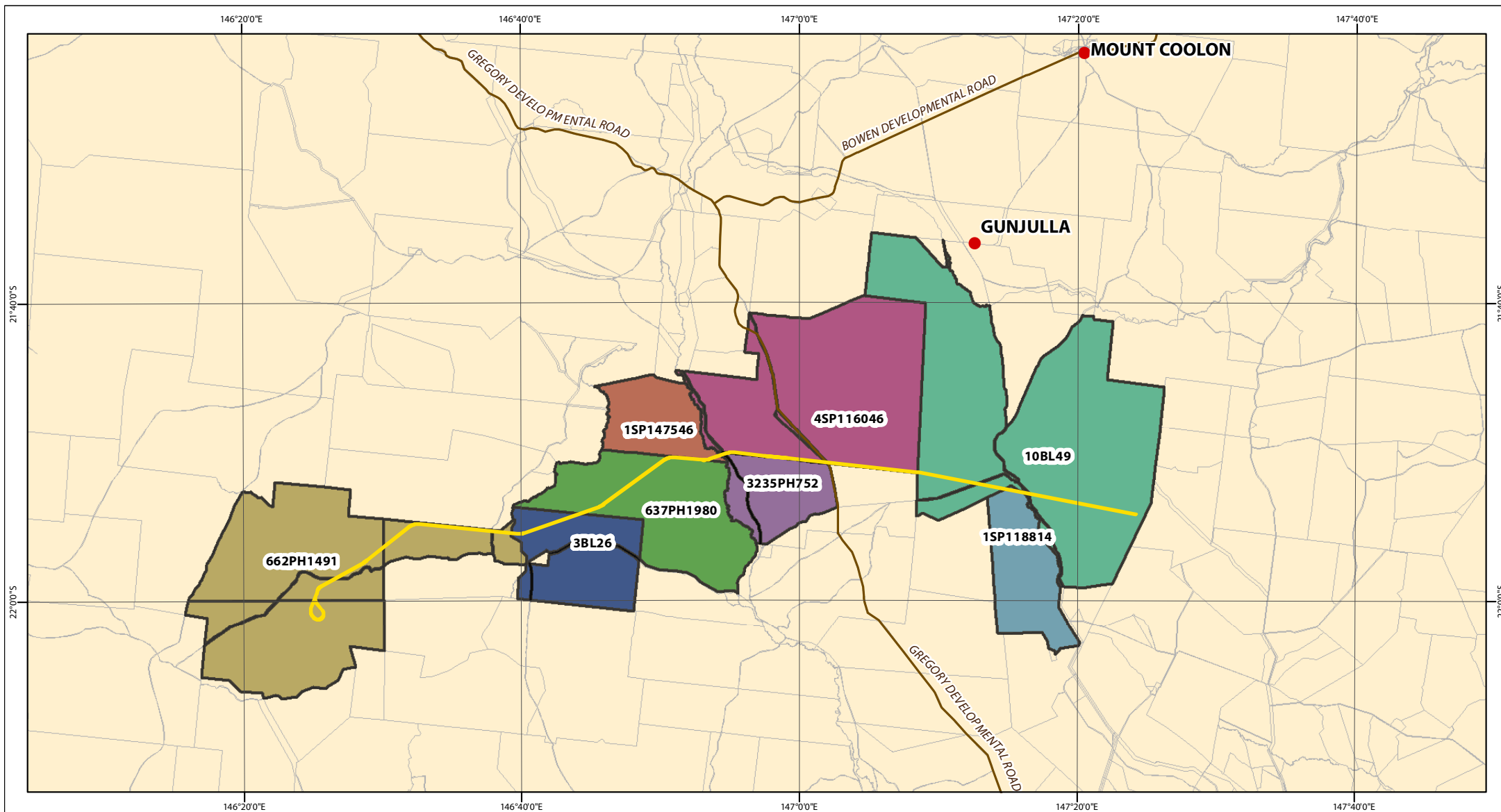
1. Lot 662 on PH1491;
2. Lot 3 on BL26;
3. Lot 637 on PH1980;
4. Lot 1 on SP147546;
5. Lot 3235 on PH752;
6. Lot 4 on SP116046;
7. Lot 10 on BL49; and
8. Lot 1 on SP118814.

Refer to **Plan 1** for a property overview.

Saunders Havill Group SP1 Property Maps of Assessable Vegetation have been incorporated into their respective property sections of this document.

Vegetation surveys incorporating the balloon loop at the Mine terminus of the proposed rail corridor on Lot 662 on PH1491 conducted by **GHD** as part of their *Carmichael Coal Mine and Rail Off-site Infrastructure Property Map of Assessable Vegetation* and associated transect data are presented in **Attachment 1**.

All data shapefiles indicative of proposed mapping changes outlined in this report will be included with the PMAV application at submission.



Legend

- Place Name
- Major Roads
- Rail Alignment Corridor (SP-1)
- QLD DCBD

Plan 1 Rail Project Overview (SP-1)

File ref. 6396 E 01 Rail Project Overview A

Date 9/07/2013

Project Carmichael Coal Rail Project

0 2 4 6 8 10 20 km
Scale (A4): 1:650,000 [GDA 1994 MGA Z55]



adani **SH** **saunders havill group**

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2. Overview

2.1. Bioregions

Queensland is divided into 13 Bioregions based on broad landscape patterns that reflect the major underlying geology, climate patterns and broad groupings of plants and animals. SP1 of the Carmichael Coal Project (Rail) is located within two Bioregions (Refer to **Plan 2**):

1. Dessert Upland Bioregion; and
2. Brigalow Belt Bioregion.

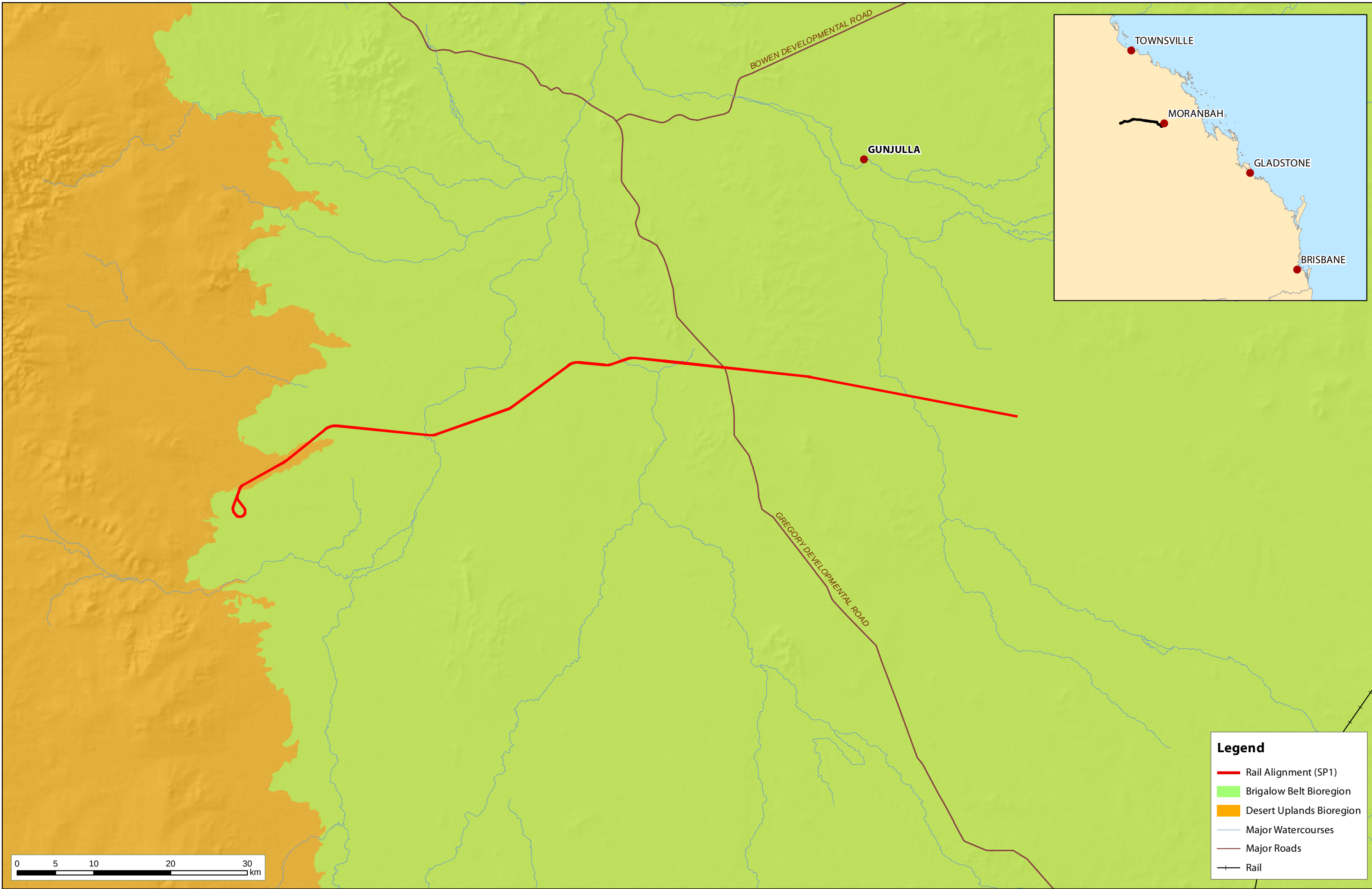
Regional Ecosystem descriptions vary subject to the Bioregion and associated Land Zone and vegetation characteristics. In some instances (particularly in close proximity to Bioregion borders) vegetation communities typically found in a specific bioregion (i.e. Dessert Uplands Bioregion) can also be found in the neighbouring bioregion (i.e. Brigalow Belt Bioregion). These vegetation communities are referred to as “Outliers” within the context of the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.1)*. Due to the alignment spanning two bioregions specific attention was paid to the potential occurrence of RE “Outliers”.

2.2. SPI Summary

Survey effort was completed along the SP1 alignment to describe and characterise the condition of mapped remnant areas. Field surveys noted significant variations in current RE mapping, with the most notable changes associated with mapped composite REs (as typically expected). Single RE codes were assigned to surveyed polygons (where possible). In locations where vegetation communities are mixed, or are not easily discernible, mapping retains a composite RE description.

Significant areas of mapped remnant grassland occur along the rail corridor. These grasslands are highly variable in condition ranging from relatively intact with minor weed invasions to highly disturbed and dominated by Buffel Grass (*Pennisetum ciliare*). Transect assessment methodologies were adapted to describe this change.

The Qld Government does not have a recognised process for the re-mapping of grassland REs at the property scale. However, decision makers should consider levels of weed invasion and overall condition when reviewing these areas.





3. Methodology

A detailed site assessment was conducted to accurately map and define vegetation into categories as defined by the Queensland Herbarium. The methodology is designed to ensure an accurate delineation of the separate polygons and ensure all supporting information responds to the requirements of a properly made Property Map of Assessable Vegetation submission. The following stages were undertaken:

1. Desktop Research;
2. Review of Aerial Imagery;
3. Detailed Vegetation Survey; and
4. GIS Mapping of Vegetation Communities.

3.1. Desktop Research

Prior to the site survey, the following vegetation based information sources were assessed to assist in the final determination of the on-site survey methodology:

- Existing vegetation mapping released under the provisions of the *Vegetation Management Act 1999* and Regional Ecosystem descriptions;
- Queensland Herbarium mapping methodology and procedures outlined in Neldner, V.J, Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland);
- Environmental Database Searches for the *Environmental Protection and Biodiversity Conservation Act 1999*.
- Applicable Schedules of the *Nature Conservation (Wildlife) Regulation 1994*;
- Geology (250K), soils and Topographical Maps (as required); and
- Specific Queensland Herbarium searches for records of unknown or specific vegetation species listed to occur in the region.

3.2. Aerial Imagery Analysis

Adani Mining Pty Ltd provided contemporary aerial imagery for the Carmichael Coal Project (Rail) corridor flown in March 2011. Where the alignment varied from the flown corridor, Google Earth imagery was utilised to supplement information.

Aerial imagery was reviewed prior to field survey analysis to identify potential variations in vegetation community type and structure. Imagery was used to create draft vegetation polygons requiring analysis in the field. Survey effort was targeted to these locations to confirm Regional Ecosystems present.

3.3. Detailed Vegetation Survey

Following the broad delineation of vegetation communities using aerial photography and information obtained in the desktop review, a detailed vegetation survey was conducted to locate, describe and map the regional ecosystem polygons. Methodologies followed the Queensland Herbarium mapping methodology and procedures outlined in Neldner, V.J, Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland – version 3.1).



3.3.1 Mapped Remnant Vegetation

A transect methodology was adopted to gain an accurate representation of the canopy species within each vegetation polygon where the Regional Ecosystem (RE) code is disputed.

The assessment of remnant mapped areas involved a random transect 100 m long and 50 m wide within the mapped remnant polygon. Detailed data sheets and GPS markings were recorded within each site using standard Queensland Herbarium Map Assessment Request forms.

Information on the height and composition of vegetation was recorded at each GPS location with information later analysed to assess the extent of disturbance and accuracy of species canopy mix. All data was collected using a Trimble GEO-XT with sub 1 m accuracy.

3.3.2 Mapped Grassland Communities

Locations containing mapped grassland communities were assessed using a Secondary Transect methodology as detailed within Queensland Herbarium mapping methodology and procedures outlined in Neldner, V.J, Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland – version 3.1).

3.3.3 Outliers

The potential for “Outliers” was considered during field investigations with an area assigned as an outlier if:

- It does not match the description (in terms of dominant species and Land Zone) of an RE from the Bioregion it occurs in, but does match the description from an adjacent bioregion, and
- Occupies an area in the Bioregion of less than 1000 hectares, or if more than 1000 hectares, does not occur more than 50 kilometres from the Bioregion boundary.

If an RE meets these description, area and/or distance requirements, it may be regarded as an Outlier and coded with the Regional Ecosystem from the adjacent Bioregion. The Regional Ecosystem status is calculated across the whole RE, including any occurrence of that RE as outliers in adjacent Bioregions.

3.4. GIS Mapping of Vegetation Communities

Filed survey data was reviewed in combination with aerial imagery to refine mapped vegetation polygons and assign RE codes. Where possible, reference data was obtained either in the field or through discussions with the Qld Herbarium. Where reference data was not available SHG ecologists drew on internal data sources collected during historical surveys within the region. Information was used to compare transect results and final remnant polygons assigned.



4. Lot 662 on PH1491

The proposed rail corridor within Lot 662 on PH1491 commences at the proposed Carmichael Coal Mine and extends East. Contextually, this property is located on the boundary of the Dessert Uplands and Brigalow Belt Bioregions.

The rail corridor is predominantly located within disturbed agricultural paddocks mapped as non-remnant within Version 6.1 of Regional Ecosystem mapping. Vegetation values remaining within the property are largely associated with alluvial plains and watercourses associated with the Belyando River.

Where the balloon loop of the proposed rail line extends beyond the proposed Carmichael Coal Mine, PMAV assessments were conducted by another company (**GHD**) and their Property Map of Assessable Vegetation and associated transect data for this area are presented in **Attachment 1**.

Further along the alignment, native grasslands with associated Brigalow are mapped on undulating plains. No large intact areas of 'Brigalow' were observed along the rail corridor, however, small patches of this Endangered vegetation community were observed in the broader landscape. 'Brigalow' areas on this property have been largely cleared.

Within Lot 662 on PH1491 the remaining mapped remnant grasslands are highly variable in condition with some locations almost devoid of native grasses due to grazing pressures and the dominance of perennial weed species.

The following summarises remnant mapped areas and proposed RE amendments within the property.

Table 1: Lot 662 on PH1491 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 662 on PH1491 Area A – Polygon 1	Endangered RE 11.4.11 / 11.4.5 / 11.4.6 / 11.4.9	29.2 ha	Of Concern RE 11.4.11	29.2 ha
Lot 662 on PH1491 Area B – Polygon 1	Of Concern RE 11.4.11	13 ha	Of Concern RE 11.4.11	13 ha
Lot 662 on PH1491 Area C – Polygon 1	Endangered RE 11.3.5 / 11.3.1 / 11.3.3 / 11.3.10	6 ha	Least Concern RE 11.3.5 / Of Concern RE 11.3.3	11.5 ha
Lot 662 on PH1491 Area C – Polygon 2	Endangered RE 11.3.3 / 11.3.1	5.5 ha	Of Concern RE 11.3.3	Included in above RE area
Lot 662 on PH1491 Area C – Polygon 3	Endangered RE 11.3.25 / 11.3.37 / 11.3.1	1.9 ha	Least Concern RE 11.3.25 / RE 11.3.37	1.9 ha



4.I. Lot 662 on PH1491 Area A – Polygon I

Table 2: Lot 662 on PH1491 Area A - Polygon 1 Summary

Site Description		
Location:	Lot 662 on PH1491	
Site Description:	The site is mapped as a composite vegetation community described as Endangered RE 11.4.11 / 11.4.5 / 11.4.6 / 11.4.9. This community is mapped as approximately 80% Of Concern RE 11.4.11, 10% Of Concern RE 11.4.5, 5% Of Concern RE 11.4.6 and 5% Endangered RE 11.4.9. Refer to Figures 1a & 1b. The location is within an existing agricultural land holding. The area's soil and geological formation appears consistent with Land Zone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. These areas contain mainly Vertosols with gilgai microrelief, but include small areas of thin sandy or loamy surfaced Sodosols and Chromosols. Species observed within the mapped Endangered polygon predominantly represent Regional Ecosystem 11.4.11 described as <i>Dichanthium sericeum</i>, <i>Astrebla</i> spp. and patchy <i>Acacia harpophylla</i>, <i>Eucalyptus coolabah</i> on Cainozoic clay plains. Species present are described in Transects 1, 2 & 3 (Appendix A). Transects indicate areas of <i>Dichanthium sericeum</i> and other native grasses and forbs with patches of <i>Acacia harpophylla</i>. <i>Acacia harpophylla</i> individuals averaged 5 m in height which is consistent with the height expected within examples of Of Concern RE 11.4.11. Remnants described as Endangered RE 11.4.9 should contain <i>Acacia harpophylla</i> forming a distinct canopy 11 – 17 m in height. The examination of aerials shows patches of RE 11.4.9 are easily discernible from RE 11.4.11. Ground proofing confirmed that the patches identified as RE11.4.9 from aerials were present in proximity to the survey area, however, not within the 95 m wide corridor The condition of the grassland areas surveyed showed varying degrees of disturbance with infestation of <i>Pennisetum ciliare</i> (Buffel Grass) ranging from 10% to 90% cover. Refer to Transects 1, 2 and 3 in Appendix A and Figure 2a & 2b for proposed RE mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 55' 33.47"	146° 31' 10.28"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.11 / 11.4.5 / 11.4.6 / 11.4.9	
Regional Ecosystem Observed:	Of Concern RE 11.4.11	
Width of RE:	Not linear (>50Ha)	



Photo: Area A - Polygon 1

*The area mapped as remnant grassland RE 11.4.11 within the investigation area is consistent with *Dichanthium sericeum* grasslands with patchy *Acacia harpophylla*. *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium) were present in variable densities within the polygon.*



Figure 1a: Regional Ecosystem and Survey Effort (Lot 662 on PH1491 Area A – Polygon 1)

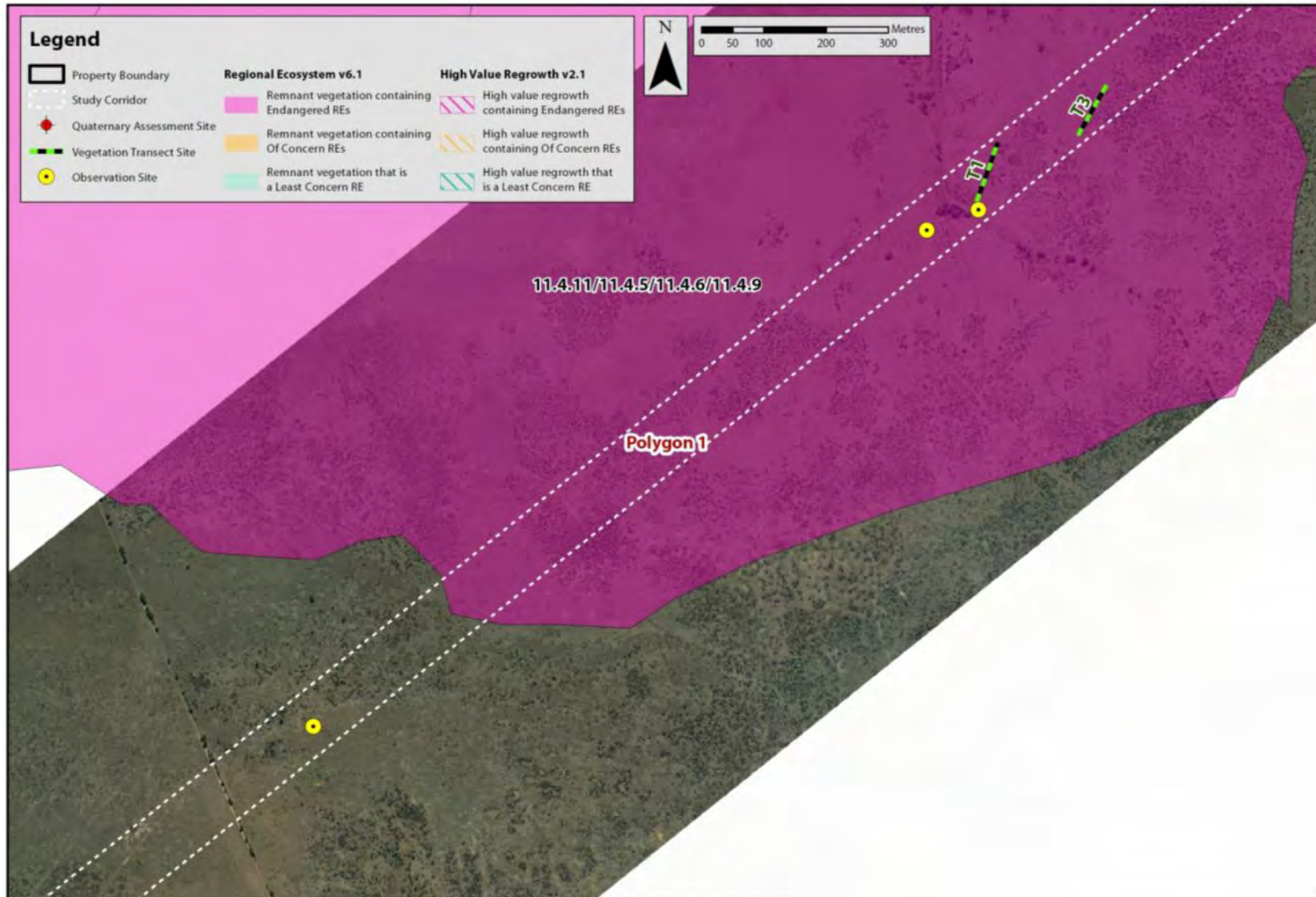




Figure 1b: Regional Ecosystem and Survey Effort (Lot 662 on PH1491 Area A – Polygon 1)

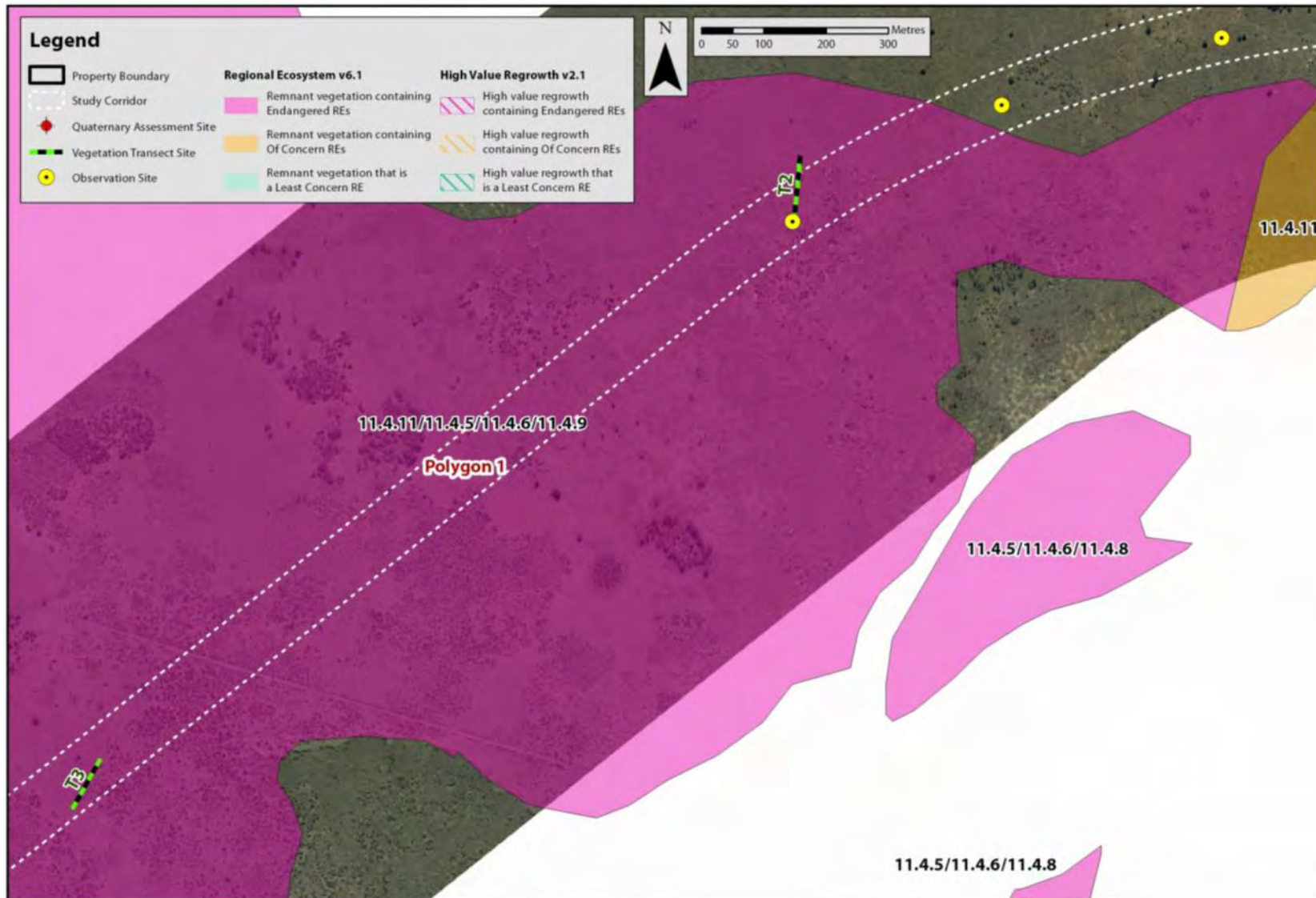




Figure 2a: Regional Ecosystem Changes (Lot 662 on PH1491 Area A – Polygon 1)

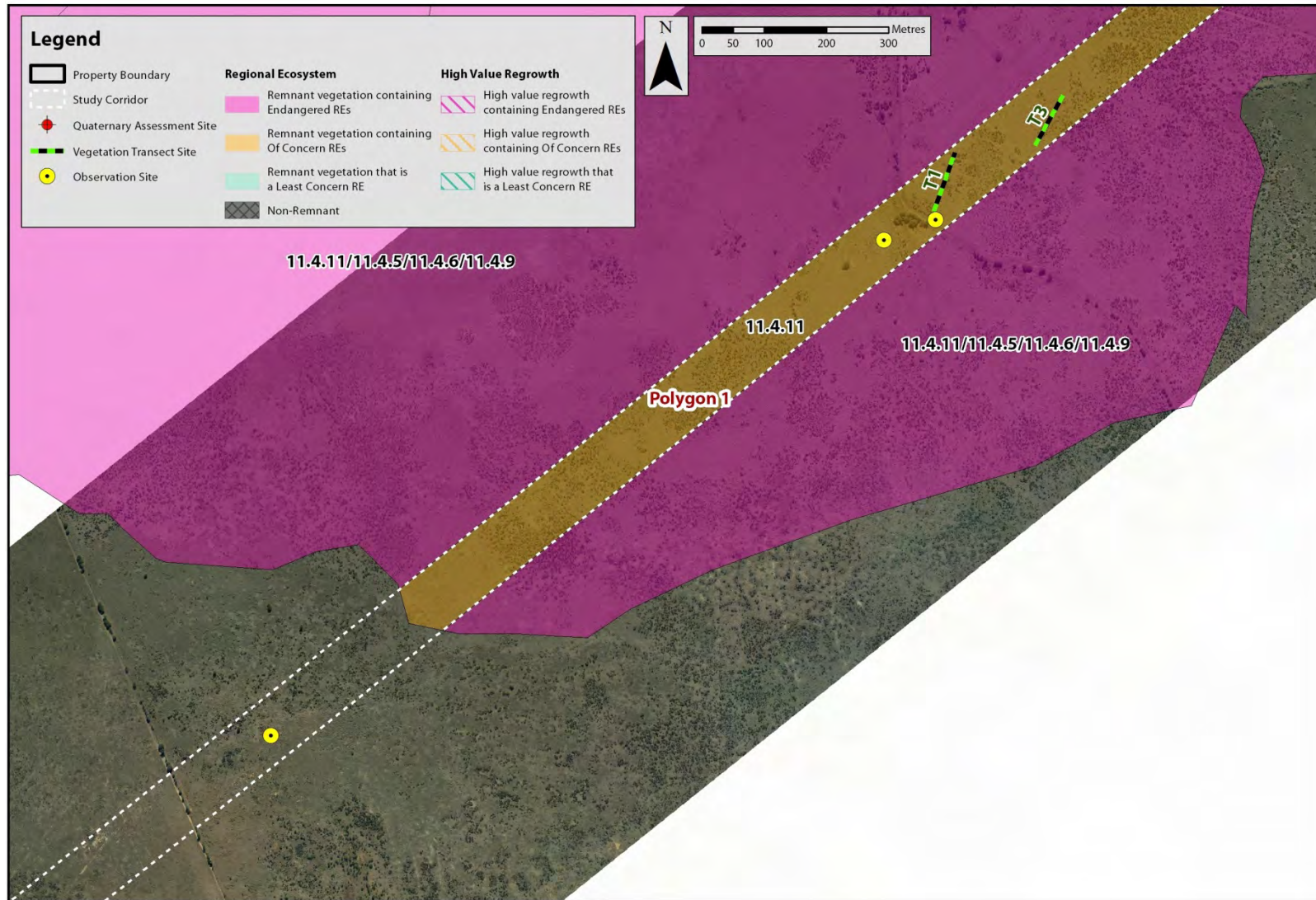
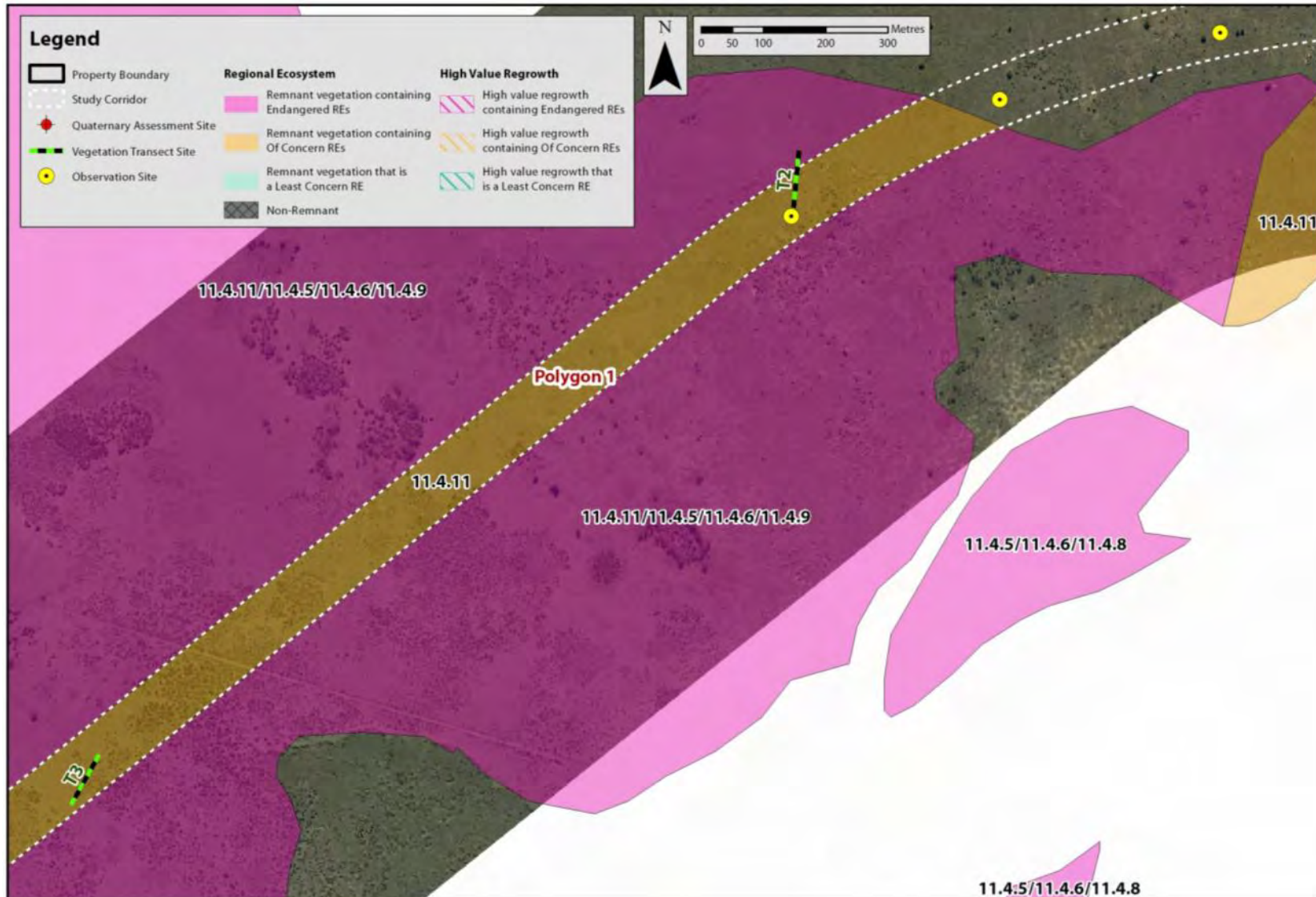




Figure 2b: Regional Ecosystem Changes (Lot 662 on PH1491 Area A – Polygon 1)





4.2. Lot 662 on PH1491 Area B – Polygon 1

Table 3: Lot 662 on PH1491 Area B - Polygon 1 Summary

Site Description		
Location:	Lot 662 on PH1491	
Site Description:	The site is located within a mapped vegetation community described as Of Concern RE 11.4.11 - <i>Dichanthium sericeum</i>, <i>Astrebla</i> spp. and patchy <i>Acacia harpophylla</i>, <i>Eucalyptus coolabah</i> on Cainozoic clay plains (Figure 3). The mapped area is typical of Land Zone 4 which is described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. Species observed are generally consistent with RE mapping, however, it is noted that large portions of the grassland includes introduced species, especially <i>Pennisetum ciliare</i> (Buffel Grass). This is a result of historical agricultural pressures and associated grazing activities. Native grasses only comprise a small proportion of the grasses observed as reflected within Transects 4 & 5 (Appendix A). The area observed is heavily grazed and disturbed through cattle usage. No Mapping amendments are proposed within Area B –Polygon 1. Refer to Transects 4 & 5 in Appendix A and Figure 4.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 54' 54.89"	146° 33' 11.64"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.11	
Regional Ecosystem Observed:	Of Concern RE 11.4.11	
Width of RE:	Not linear (>50Ha)	



Photo: Area B - Polygon 1

*The area mapped as remnant grassland RE11.4.11 within the investigation area is dominated by *Pennisetum ciliare* (Buffel Grass).*



Figure 3: Regional Ecosystem and Survey Effort (Lot 662 on PH1491 Area B – Polygon 1)

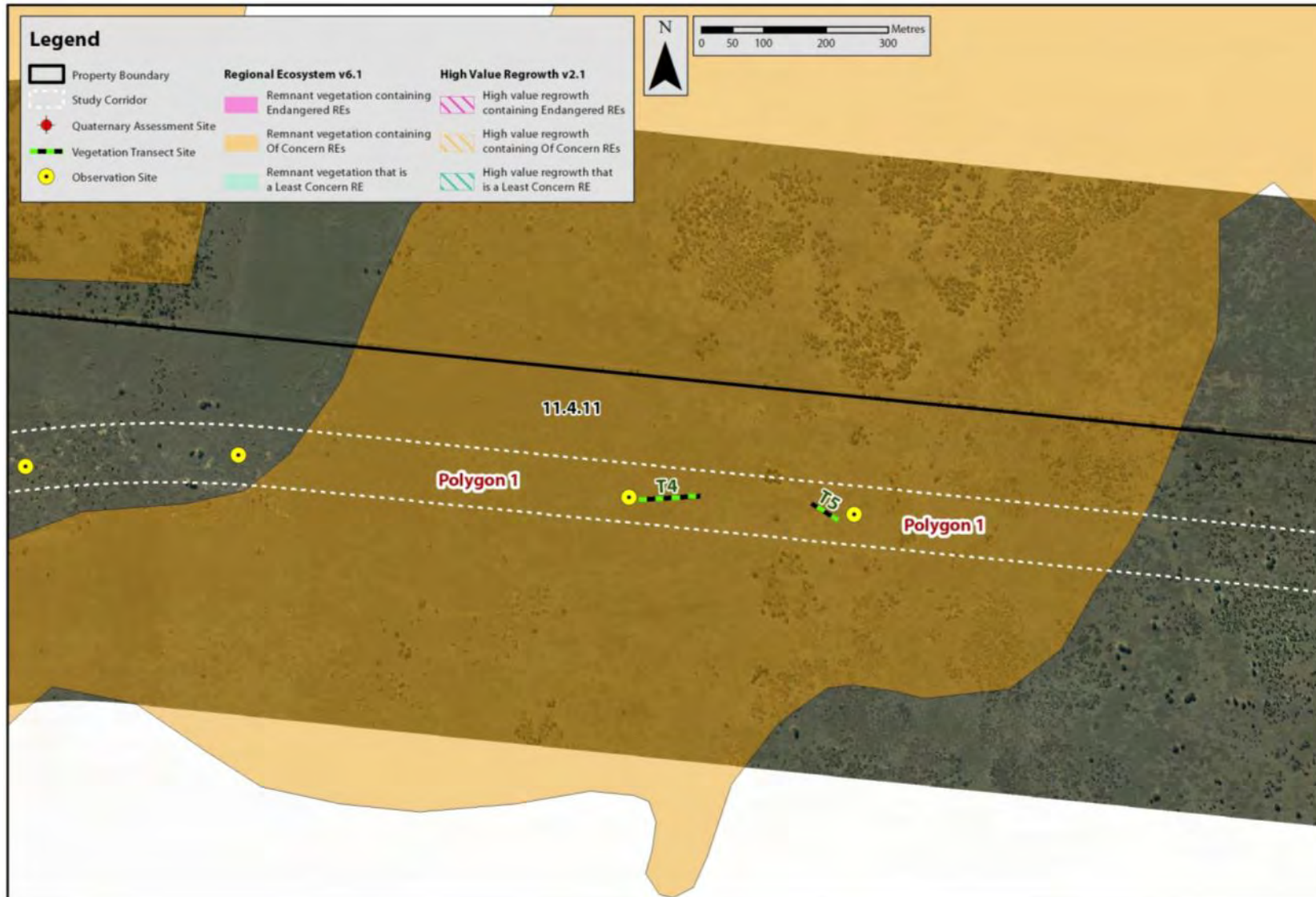
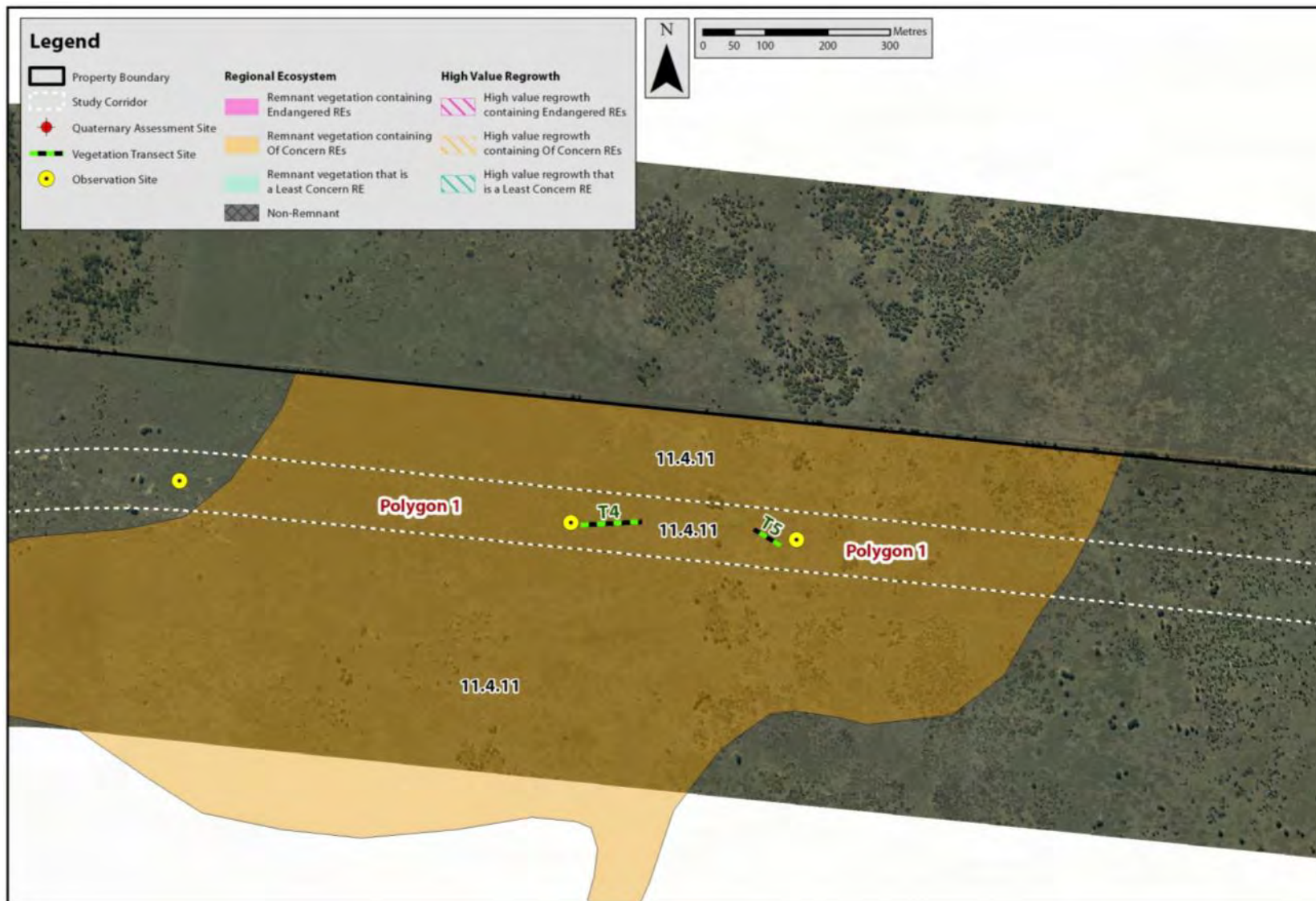




Figure 4: Regional Ecosystem Changes (Lot 662 on PH1491 Area B – Polygon 1)





4.3. Lot 662 on PH1491 Area C – Polygon I

Table 4: Lot 662 on PH1491 Area C – Polygon 1 Summary

Site Description		
Location:	Lot 662 on PH1491	
Site Description:	The site is located within a mapped vegetation community described as Endangered RE 11.3.5 / 11.3.1 / 11.3.3 / 11.3.10. Mapping indicates this broader polygon is comprised of 70% Least Concern RE 11.3.5, 10% Endangered RE 11.3.1, 10% Of Concern RE 11.3.3 and 10% Least Concern RE 11.3.10. The area is associated with a mapped Stream Order 1 waterway (Figure 5) and is consistent with the description of Land Zone 3, which includes quaternary alluvial systems, such as floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. This vegetation Polygon is associated with the Belyando River and associated tributaries. Species observed and vegetation structure demonstrates this area is representative of Of Concern RE 11.3.3 due to the presence of a canopy dominated by <i>Eucalyptus coolabah</i> (Refer to Transect 6, Appendix A). Disturbances associated with grazing and recent flooding were apparent within the survey area. <i>Acacia harpophylla</i> (Brigalow) associated with Endangered RE11.3.1 was not recorded. This was expected given the relative unreliability of RE mapping within the region where 'Brigalow' forms a subdominant component of a composite RE community. Mapping amendments recommend this area is changed to Of Concern RE 11.3.3. Refer to Transect 6 in Appendix A and Figure 6 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 55' 27.00"	146° 38' 47.64"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.5 / 11.3.1 / 11.3.3 / 11.3.10	
Regional Ecosystem Observed:	Of Concern 11.3.3	
Width of RE:	Not linear (>50Ha)	



Photo: Area C - Polygon 1

The area mapped as Eucalyptus coolabah RE11.3.3 within the investigation area.



4.4. Lot 662 on PH1491 Area C – Polygon 2

Table 5: Lot 662 on PH1491 Area C – Polygon 2 Summary

Site Description		
Location:	Lot 662 on PH1491	
Site Description:	The site is located within an Endangered mapped vegetation community described as RE 11.3.3 / 11.3.1. Mapping indicates this area is comprised of 95% Of Concern RE 11.3.3 and 5% Endangered RE 11.3.1 (Figure 5). The vegetation community adjoins Area C – Polygon 1 and includes the mapped Stream Order 1 waterway. Species and vegetation structure observed are consistent across both polygons due to the presence of a canopy dominated by <i>Eucalyptus coolabah</i>. The area is consistent with Of Concern RE 11.3.3. Refer to Transect 7 in Appendix A and Figure 6 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21°55' 26.39"	146° 38' 56.19"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.3 / 11.3.1	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:	Not linear (>50Ha)	



Photo: Area C - Polygon 2

The area mapped as Eucalyptus coolabah RE11.3.3 within the investigation area.



4.5. Lot 662 on PH1491 Area C – Polygon 3

Table 6: Lot 662 on PH1491 Area C – Polygon 3 Summary

Site Description		
Location:	Lot 662 on PH1491	
Site Description:	The site is located within a mapped Endangered vegetation community described as RE 11.3.25 / 11.3.37 / 11.3.1. Mapping indicates the greater polygon is comprised of 80% Least Concern RE 11.3.25, 10% Least Concern RE 11.3.37 and 10% Endangered RE 11.3.1. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. The vegetation polygon is associated with a Stream Order 2 watercourse (Figure 5). Unlike Area C – Polygons 1 & 2, this area includes vegetation consistent with a composite of RE 11.3.25 / 11.3.37. Both RE 11.3.25 and RE 11.3.37 have a similar species composition and structure and are often found fringing watercourses. <i>Eucalyptus coolabah</i> and <i>Eucalyptus camaldulensis</i> are both dominant species within the canopy of RE 11.3.25 and RE 11.3.37 with both species recorded during the field assessment. <i>Acacia harpophylla</i> (Brigalow) was not observed and therefore RE 11.3.1 is not present within the survey area. Refer to Quaternary Site 1 in Appendix A and Figure 6 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 55' 29.08"	146° 39' 7.68"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE11.3.25 / 11.3.37 / 11.3.1	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:	Not linear (>50Ha)	



Photo: Area C – Polygon 3

Watercourse with fringing vegetation consistent with RE 11.3.25 / 11.3.37. Acacia harpophylla was not observed within this remnant vegetation polygon.



Figure 5: Regional Ecosystem and Survey Effort (Lot 662 on PH1491 Area C – Polygon 1-3)

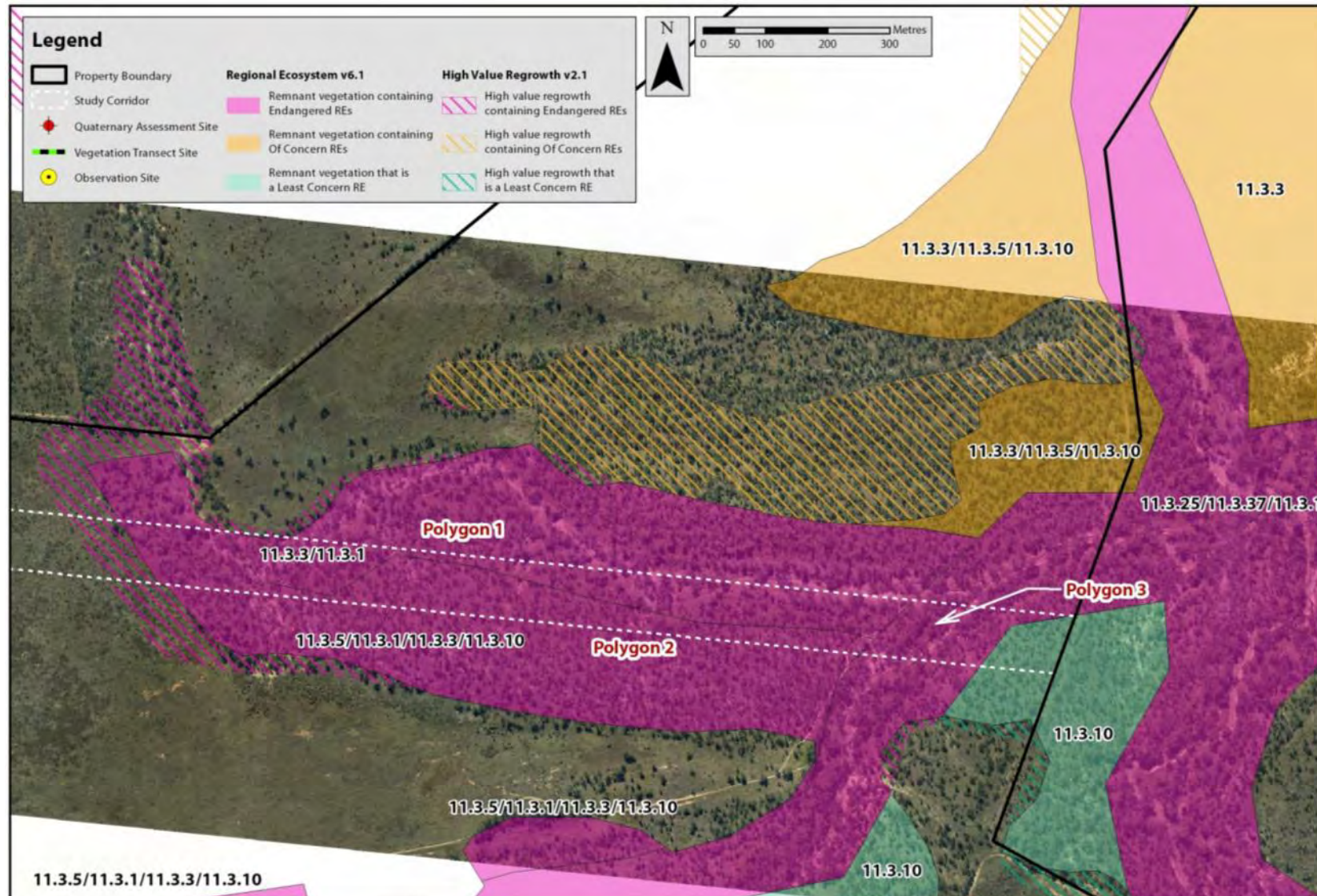
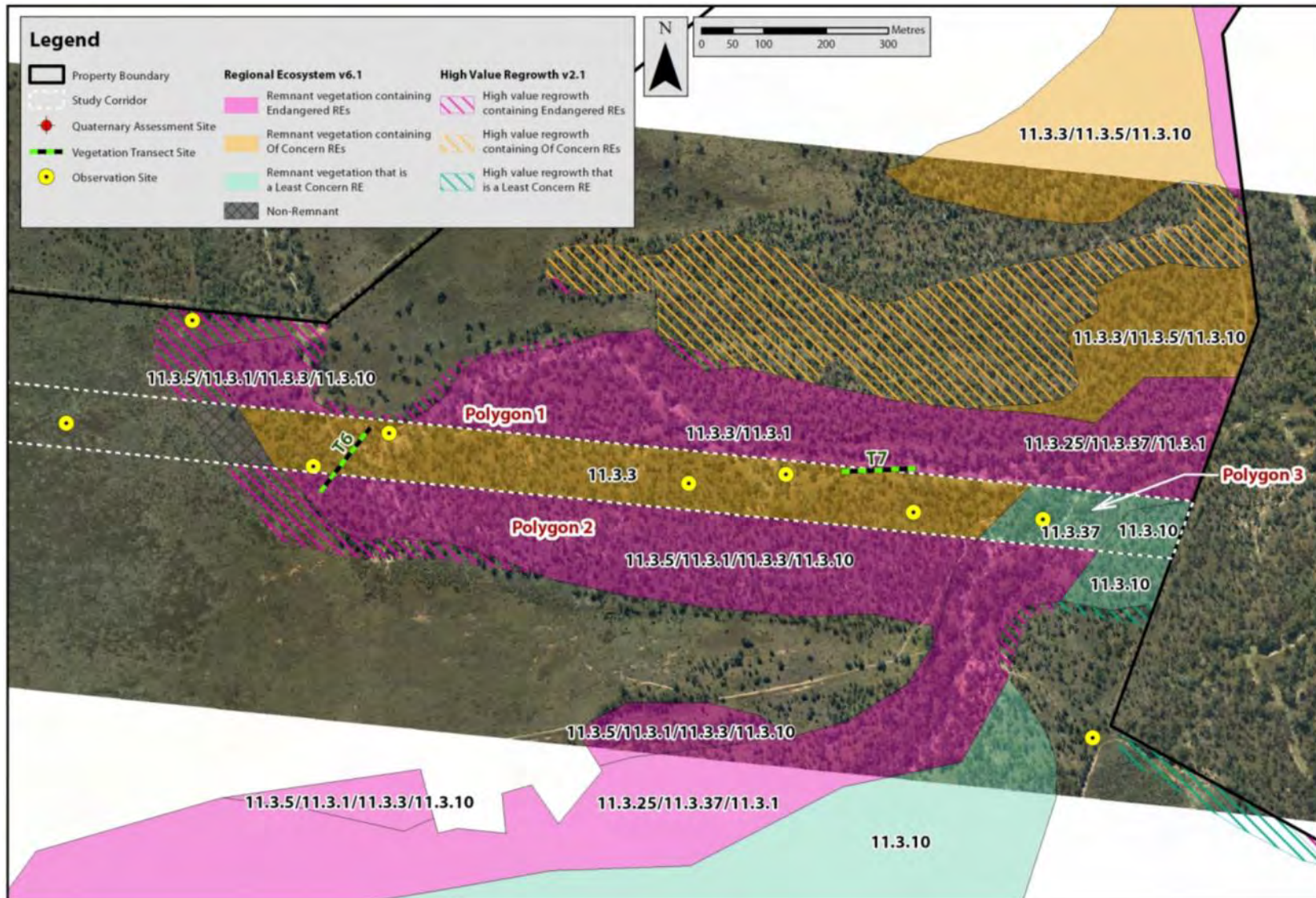


Figure 6: Regional Ecosystem Changes (Lot 662 on PH1491 Area C – Polygon 1-3)





5. Lot 3 on BL26

Lot 3 on BL26 adjoins Lot 662 on PH1491 within the vicinity of the Belyando River. Vegetation remaining within this property is associated with watercourses and broad alluvial plains. Other areas have been largely cleared for agricultural purposes.

Based on detailed field assessment, the application site within Lot 3 on BL26 was divided into three (3) assessment areas based on the location of mapped remnant polygons and status of the Regional Ecosystem community.

The proposed mapping amendments and findings of detailed transect assessments are summarised below.

Table 7: Lot 3 on BL26 Summary

Site	Current RE Mapping Version 6.1	Current RE (Area)	RE Observed	RE Observed (Area)
Lot 3 on BL26 Area A - Polygon 1	Least Concern RE 11.3.10	1.6 ha	Least Concern RE 11.3.10	1.6 ha
Lot 3 on BL26 Area A - Polygon 2	Endangered RE 11.3.25 / 11.3.37 / 11.3.1	2.7 ha	Of Concern RE 11.3.25 / 11.3.37	2.7 ha
Lot 3 on BL26 Area B - Polygon 1	Endangered High Value Regrowth	0.4 ha	Least Concern High Value Regrowth	0.4 ha
Lot 3 on BL26 Area B - Polygon 2	Least Concern High Value Regrowth	0.2 ha	Least Concern High Value Regrowth	0.2 ha
Lot 3 on BL26 Area B - Polygon 3	Least Concern RE 11.3.10 / 11.3.7	11.2 ha	Least Concern RE 11.3.10 / 11.3.7	11.2 ha
Lot 3 on BL26 Area C - Polygon 1	Endangered RE 11.3.25 / 11.3.37 / 11.3.1	1.6 ha	Of Concern RE 11.3.25 / 11.3.37	1.6 ha
Lot 3 on BL26 Area C - Polygon 2	Of Concern RE 11.3.3	1.7 ha	Of Concern RE 11.3.3	1.4 ha



5.1. Lot 3 on BL26 Area A – Polygon 1

Table 8: Lot 3 on BL26 Area A - Polygon 1 Summary

Site Description		
Location:	Lot 3 on BL26	
Site Description:	The site is located within a mapped vegetation community described as Least Concern RE 11.3.10 - <i>Eucalyptus brownii</i> woodland on alluvial plains (Refer to Figure 7). The polygon extends slightly into Lot 662 on PH1491 located to the West. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. The dominance of <i>Eucalyptus brownii</i> within the T1 layer and the presence of a native grass understorey comprised of <i>Aristida latifolia</i>, <i>Bothriochloa bladhii</i>, <i>Chloris truncata</i> and <i>Heteropogon contortus</i> confirms the presence of Least Concern RE 11.3.10 within this location. No Mapping amendments are proposed within Area A –Polygon 1. Refer to Quaternary Site 1 within Appendix B and Figure 8 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	464361.35 m E	7575416.99 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.3.10	
Regional Ecosystem Observed:	Least Concern RE 11.3.10	
Width of RE:	Not linear (<10Ha)	



Photo: Area A - Polygon 1

Eucalyptus brownii dominated woodland with native grass understorey described as Least Concern RE 11.3.10.



5.2. Lot 3 on BL26 Area A – Polygon 2

Table 9: Lot 3 on BL26 Area A - Polygon 2 Summary

Site Description		
Location:	Lot 3 on BL26	
Site Description:	Lot 3 on BL26 Area A – Polygon 2 is associated with a mapped Endangered vegetation community described as RE 11.3.25 / 11.3.37 / 11.3.1 (Figure 7). The polygon is described as containing approximately 80% Least Concern RE 11.3.25, 10% Least Concern RE 11.3.37 and 10% Endangered RE 11.3.1 and is associated with a Stream Order 2 watercourse. Both RE 11.3.25 and RE 11.3.37 have a similar species composition and structure and are typically found fringing watercourse. <i>Eucalyptus coolabah</i> and <i>Eucalyptus camaldulensis</i> were observed as dominant species within the canopy of the surveyed vegetation. The dominance of these two species indicates the presence of a composite RE 11.3.25 / 11.3.37. <i>Acacia harpophylla</i> (Brigalow) was absent from within the investigation area and therefore Regional Ecosystem 11.3.1 was not observed. Refer to Quaternary Site 2 within Appendix B and Figure 8 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Easting/Northings	Easting	Northings
	464517.47 m E	7575411.25 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.25 / 11.3.37 / 11.3.1	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:	Not linear (>50Ha)	



Photo: Area A - Polygon2

Watercourse with fringing vegetation consistent with RE 11.3.25 / 11.3.37. Acacia harpophylla was not observed within this remnant vegetation polygon.

Legend

- Property Boundary
- Study Corridor
- Quaternary Assessment Site
- Vegetation Transect Site
- Observation Site

Regional Ecosystem

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE

High Value Regrowth

- High value regrowth containing Endangered REs
- High value regrowth containing Of Concern REs
- High value regrowth that is a Least Concern RE

0 50 100 200 300 Metres

N

11.3.3

11.3.3/11.3.5/11.3.10

11.3.3/11.3.1

11.3.5/11.3.1/11.3.3/11.3.10

11.3.5/11.3.1/11.3.3/11.3.10

11.3.10

11.3.25/11.3.37/11.3.1

Polygon 1

QAS1

QAS2

Polygon 2

11.3.3

11.3.10/11.3.7

11.3.10

11.3.10

Legend

- Property Boundary
- Study Corridor
- Quaternary Assessment Site
- Vegetation Transect Site
- Observation Site

Regional Ecosystem

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE
- Non remnant

High Value Regrowth

- High value regrowth containing Endangered REs
- High value regrowth containing Of Concern REs
- High value regrowth that is a Least Concern RE

The map shows a large area of forested land with various colored overlays indicating different vegetation types and regrowth areas. A dashed line labeled "Study Corridor" runs horizontally across the middle. Two specific areas are highlighted as "Polygon 1" and "Polygon 2". Several points are marked with red stars (Quaternary Assessment Sites) and yellow dots (Observation Sites). Labels such as "11.3.3", "11.3.10", "11.3.25", "11.3.37", and "11.3.1" are scattered throughout the map, likely referring to specific locations or features.



5.3. Lot 3 on BL26 Area B – Polygon I

Table 10: Lot 3 on BL26 Area B - Polygon 1 Summary

Site Description		
Location:	Lot 3 on BL26	
Site Description:	The site is located within mapped regrowth vegetation described as Endangered High Value Regrowth. Refer to Figure 9. Species observed are consistent with a regrowth example of Least Concern RE 11.3.10 / 11.3.7 and include <i>Corymbia</i>, <i>Acacia</i> and <i>Eremophila</i> species The area is used for cattle grazing and exhibits high levels of disturbance with dense infestations of <i>Pennisetum ciliare</i> (Buffel Grass) and <i>Parthenium hysterophorus</i> (Parthenium) observed within the ground layer. The number of stumps and fallen timber within the ground layer also indicates historical clearing practices. This location was assessed in conjunction with Lot 3 on BL26 Area B - Polygon 2. Refer to Quaternary Site 3 within Appendix B and Figure 10 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	465353.44 m E	7575332.85 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered High Value Regrowth	
Regional Ecosystem Observed:	Least Concern High Value Regrowth	
Width of RE:	Not linear (<5Ha)	



5.4. Lot 3 on BL26 Area B – Polygon 2

Table 11: Lot 3 on BL26 Area B - Polygon 2 Summary

Site Description		
Location:	Lot 3 BL26	
Site Description:	The site is located within mapped regrowth described as Least Concern High Value Regrowth. Refer to Figure 9. Species observed are consistent with Least Concern RE 11.3.10 / 11.3.7 with the vegetation polygon forming part of the broader area of Least Concern High Value Regrowth described in Lot 3 on BL26 Area B – Polygon 1. A number of <i>Corymbia</i>, <i>Acacia</i> and <i>Eremophila</i> species were observed within the regrowth vegetation that is consistent with this composite RE type. As per Area B – Polygon 1 this area shows signs of historical thinning and disturbance and retains a weedy understory. Refer to Quaternary Site 3 within Appendix B and Figure 10 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	465443.35 m E	7575328.84 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern High Value Regrowth	
Regional Ecosystem Observed:	Least Concern High Value Regrowth	
Width of RE:	Not linear (<10Ha)	



Photo: Area B – Polygons 1 & 2

Area mapped as Endangered and Least Concern High value regrowth. Observed species consistent with RE 11.3.10 / 11.3.7



5.5. Lot 3 on BL26 Area B – Polygon 3

Table 12: Lot 3 on BL26 Area B - Polygon 3 Summary

Site Description		
Location:	Lot 3 BL26	
Site Description:	The site is located within a mapped Least Concern vegetation community described as RE 11.3.10 / 11.3.7. The broader polygon is described as containing approximately 50% Least Concern RE 11.3.10 and 50% Least Concern RE 11.3.7. Refer to Figure 9. Species composition and vegetation structure are consistent with a composite vegetation community of RE 11.3.10 / 11.3.7. The presence of <i>Corymbia dallachiana</i>, <i>Corymbia clarksoniana</i> and <i>Eucalyptus brownii</i> within the T1 and T2 layers and <i>Acacia salicina</i>, <i>Acacia excelsa</i>, <i>Eremophila mitchellii</i> and <i>Carissa ovata</i> within the shrub layer is consistent with species associated with both Least Concern RE 11.3.10 and RE 11.3.7. The area is highly disturbed and is in relatively poor condition with a large quantity of dead standing timber and dense weed infestations. <i>Pennisetum ciliare</i> and <i>Parthenium hysterophorus</i> are dominant within the ground layer. Heavy grazing pressure was also observed within the area. Refer to Quaternary Site 4 within Appendix B and Figure 10 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	466077.08 m E	7575514.21 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.3.10 / 11.3.7	
Regional Ecosystem Observed:	Least Concern RE 11.3.10 / 11.3.7	
Width of RE:	Not linear (>50Ha)	



Photo: Area B – Polygon 3

View toward area mapped as Least Concern RE 11.3.10 / 11.3.7



Figure 9 Regional Ecosystem and Survey Effort (Lot 3 on BL26 Area B – Polygon 1-3)

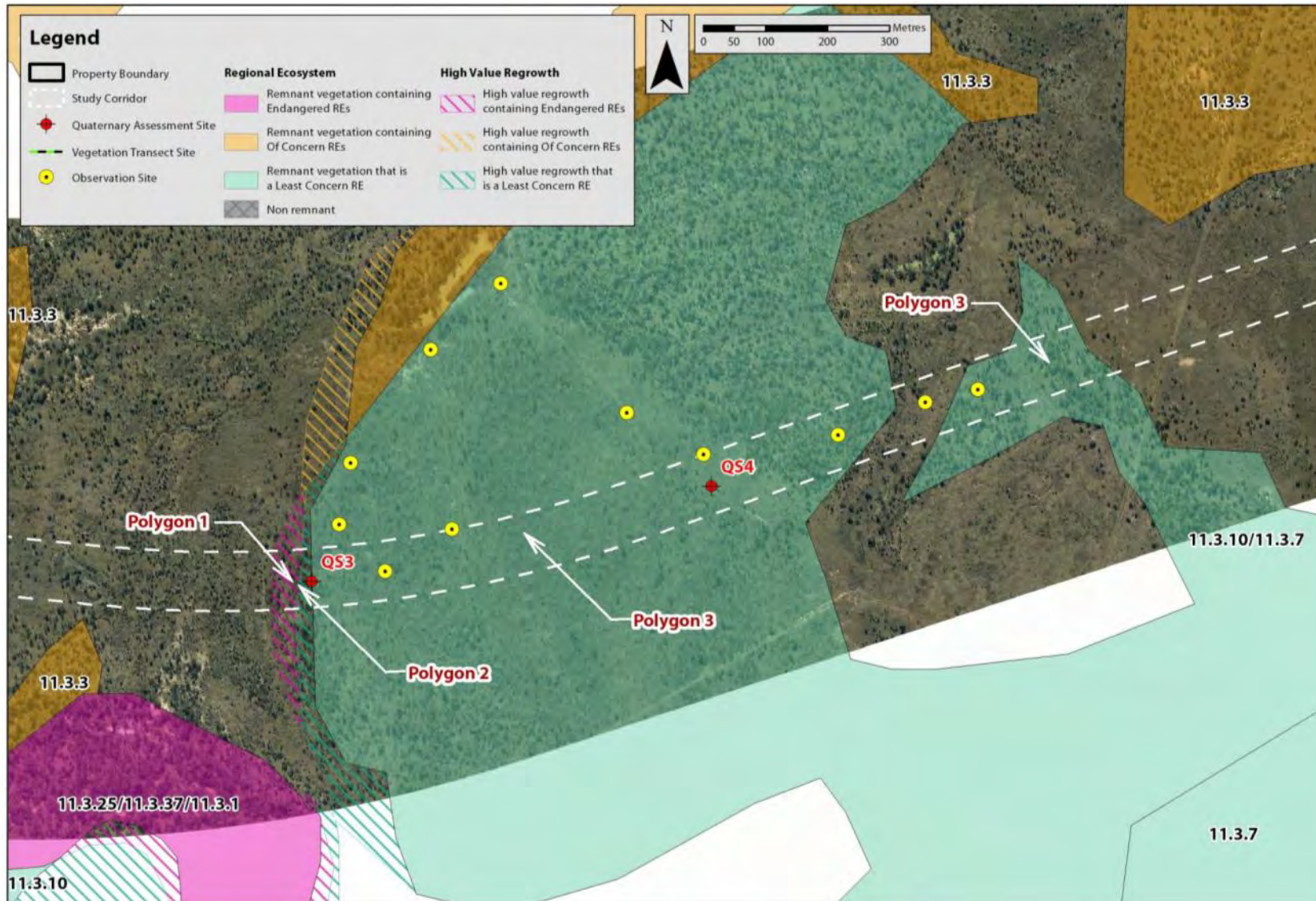
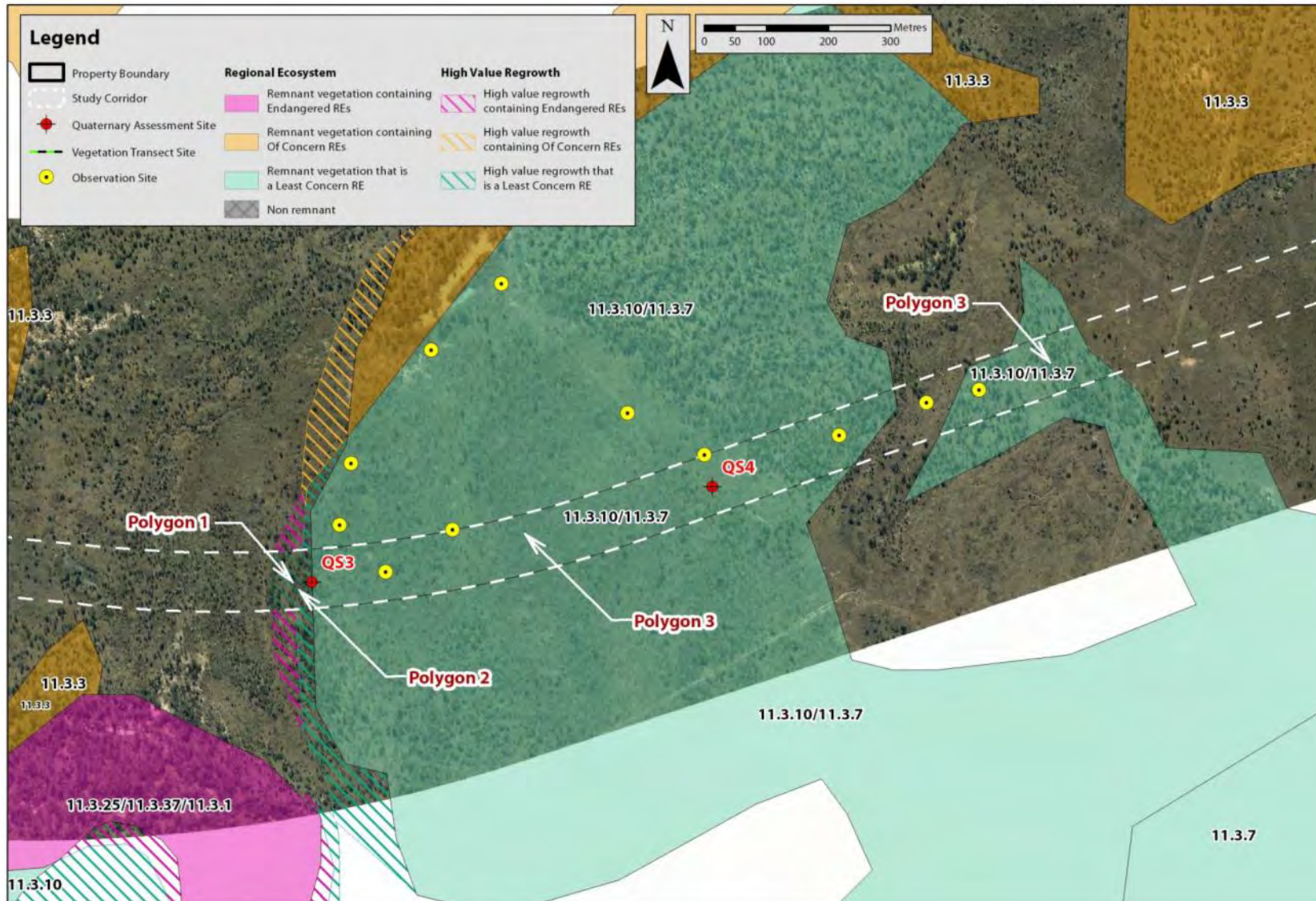




Figure 10 Regional Ecosystem Changes (Lot 3 on BL26 Area B – Polygon 1-3)





5.6. Lot 3 on BL26 Area C – Polygon 1 & 3

Table 13: Lot 3 on BL26 Area C - Polygons 1 & 3 Summary

Site Description		
Location:	Lot 3 BL26	
Site Description:	The site is located within a mapped vegetation community of RE 11.3.3. Refer to Figure 11. Species composition and structure are consistent with Regional Ecosystem 11.3.3. <i>Eucalyptus coolabah</i> is the dominant canopy species with a mix of <i>Acacia salicina</i>, <i>Eremophila mitchellii</i>, <i>Muehlenbeckia florulenta</i> and <i>Terminalia oblongata</i> within the shrub layer. This eastern portion of Polygon 3 was observed as non-remnant. This is clearly demonstrated via aerial imagery. Refer to Transect 2 within Appendix B and Figure 12 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	467756.52 m E	7576114.31 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:	Not Linear (>20Ha)	



Photo: Area C - Polygon2

Area mapped as RE11.3.3. Canopy, shrub and ground layer species are consistent with RE 11.3.3.



5.7. Lot 3 on BL26 Area C – Polygon 2

Table 14: Lot 3 on BL26 Area C - Polygon 2 Summary

Site Description		
Location:	Lot 3 BL26	
Site Description:	The site is located within a mapped Endangered vegetation community described as RE 11.3.25 / 11.3.37 / 11.3.1. The polygon is described as 80% Least Concern RE 11.3.25, 10% Least Concern RE 11.3.37 and 10% Endangered RE 11.3.1. Refer to Figure 11. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. The vegetation polygon is associated with a Stream Order 1 watercourse. No <i>Acacia harpophylla</i> (Brigalow) specimens were observed within the investigation area indicating that Endangered RE 11.3.1 is not present within the site. <i>Eucalyptus coolabah</i> and <i>Eucalyptus camaldulensis</i> were observed as dominant species within the canopy. The dominance of these two species and the proximity to watercourse and alluvial flats indicate the presence of RE 11.3.25 and RE 11.3.37. Both RE 11.3.25 and RE 11.3.37 have a similar species composition and structure and are associated with watercourse vegetation. These communities were typically observed and associated with watercourses along the study area. Disturbance from grazing and flood damage were apparent within the survey area. Refer to Transect 1 within Appendix B and Figure 12 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	467677.52 m E	7576051.60 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.25 / 11.3.37 / 11.3.1	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:	Not linear (>50Ha)	

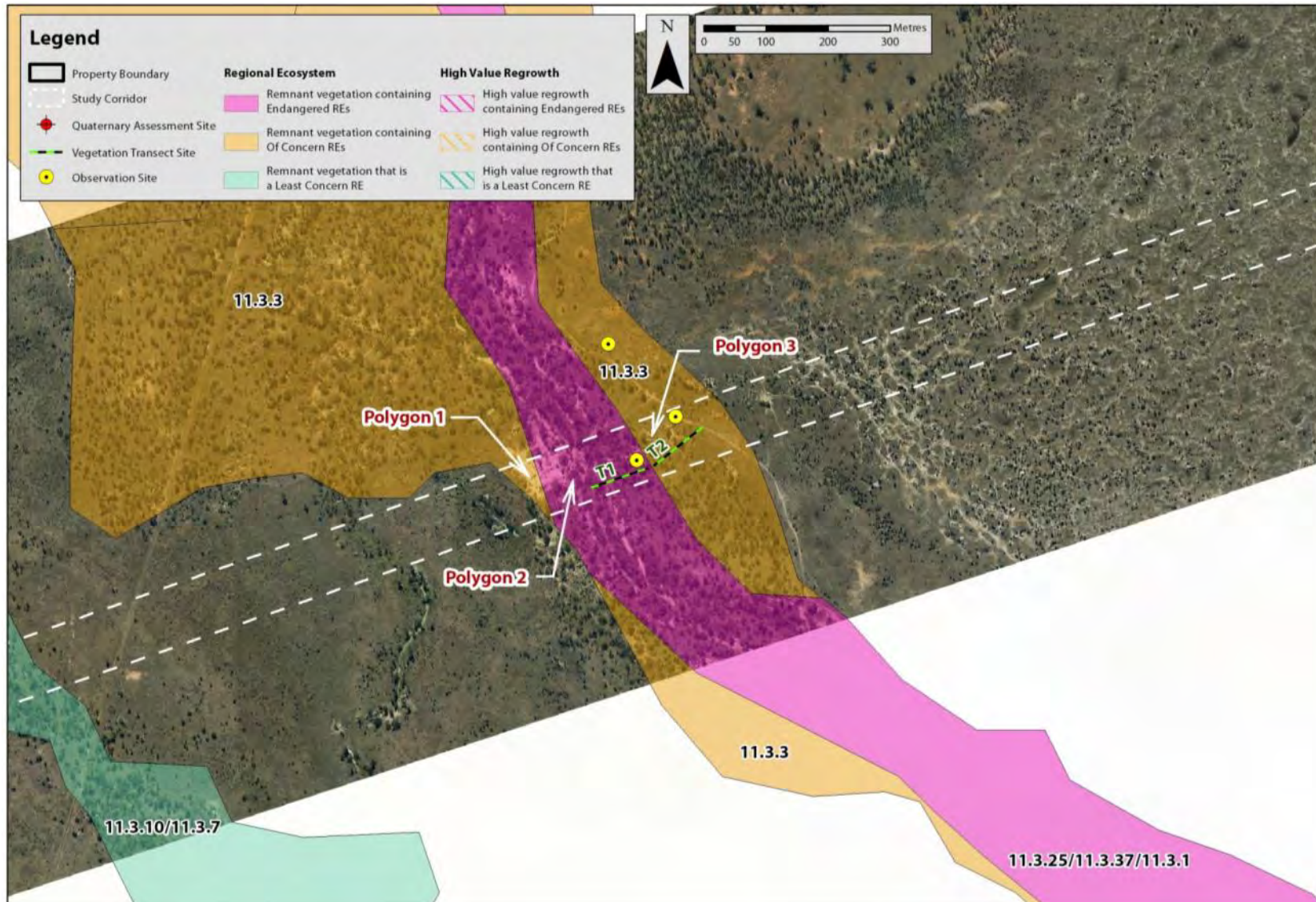


Photo: Area C - Polygon1

Area mapped as RE11.3.25 / 11.3.37 / 11.3.1. Canopy, shrub and ground layer species consistent with RE 11.3.25 / 11.3.37. Acacia harpophylla (Brigalow) was absent from the survey area.



Figure 11: Regional Ecosystem and Survey Effort (Lot 3 on BL26 Area C – Polygons 1, 2 & 3)



Legend

- Property Boundary
- Study Corridor
- Quaternary Assessment Site
- Vegetation Transect Site
- Observation Site

Regional Ecosystem

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE
- Non remnant

High Value Regrowth

- High value regrowth containing Endangered REs
- High value regrowth containing Of Concern REs
- High value regrowth that is a Least Concern RE

The map displays a study area with various vegetation types and regrowth areas. Key features include:

- Polygon 1**: A central area labeled 11.3.37/11.3.25, containing observation sites T1 and T2.
- Polygon 2**: An area to the south of Polygon 1, also labeled 11.3.37/11.3.25.
- Polygon 3**: An area to the east of Polygon 1, labeled 11.3.3.
- Vegetation Types**: Labeled areas include 11.3.3, 11.3.25/11.3.37/11.3.1, 11.3.10/11.3.7, and 11.3.3.
- Transect Sites**: T1 and T2 are marked within Polygon 1.
- Observation Sites**: Yellow dots are marked within the study area.



6. Lot 637 on PH1980

Lot 637 on PH1980 represents one of the more vegetated properties along the SP 1 alignment with large areas of woodland retained on alluvial plains. Mapped vegetation polygons display a range of disturbance typically observed across SP1 and as expected within agricultural settings.

In the majority of locations current RE mapping was found to be correct with only minor amendments to boundaries at the property scale. The most significant change is associated with Area C – Polygon 1, which is proposed to change from an Endangered to an Of Concern community. A summary of proposed mapping changes is presented in **Table 15**, below.

Table 15: Lot 637 on PH1980 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 637 on PH1980 Area A - Polygon 1	Endangered RE 11.3.1 / 11.3.5	6.7 ha	Endangered RE 11.3.1 / 11.3.5	4.9 ha
Lot 637 on PH1980 Area A - Polygon 2	Of Concern RE 11.3.3	5.7 ha	Of Concern RE 11.3.3	4.6 ha
Lot 637 on PH1980 Area A - Polygon 3	Least Concern RE 11.3.10	0.7 ha	Of Concern RE 11.4.6	< 0.5 ha
Lot 637 on PH1980 Area A - Polygon 4	Of Concern RE 11.4.6	3.0 ha	Of Concern RE 11.4.6	3.5 ha
Lot 637 on PH1980 Area B - Polygon 1	Endangered RE 11.3.1	2.7 ha	Endangered RE 11.3.1	2.4 ha
Lot 637 on PH1980 Area B - Polygon 2	Least Concern RE 11.5.3	5.1 ha	Least Concern RE 11.5.3	5.2 ha
Lot 637 on PH1980 Area B - Polygon 3	Of Concern RE 11.4.6	< 0.5 ha	Least Concern RE 11.5.3	Included in above RE area
Lot 637 on PH1980 Area C - Polygon 1	Endangered RE 11.4.8 / 11.4.6	1.5 ha	Of Concern RE 11.4.6	1.5 ha
Lot 637 on PH1980 Area D - Polygon 1	Least Concern 11.5.3	10.8 ha	Least Concern 11.5.3	10.8 ha



6.I. Lot 637 on PH1980 Area A – Polygon I

Table 16: Lot 637 on PH1980 Area A - Polygon 1 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Endangered RE 11.3.1 / 11.3.5. Refer to Figure 13a. The mapped composite Regional Ecosystem is described as containing 80% Endangered RE 11.3.1 and 20% Least Concern RE 11.3.5. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. The vegetation community observed is consistent with Endangered RE 11.3.1 based on the occurrence of emergent <i>Eucalyptus coolabah</i> and a T1 layer dominated by <i>Acacia harpophylla</i> and <i>Acacia cambagei</i>. Some clearing has occurred along the southern property boundary resulting in this part of the polygon being mapped as non-remnant. No other mapping amendments are proposed within Area A –Polygon 1. Refer to Transect 1 within Appendix C and Figure 14a for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	473,185.98 m E	7,578,018.9 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.1/11.3.5	
Regional Ecosystem Observed:	Endangered RE 11.3.1/11.3.5	
Width of RE:		



Photo: Area A Polygon 1

Example of Endangered RE 11.3.1 dominated by Acacia harpophylla.



6.2. Lot 637 on PH1980 Area A – Polygon 2

Table 17: Lot 637 on PH1980 Area A - Polygon 2 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.3.3. Refer to Figure 13a. The site is representative of Land Zone 3 and is associated with an alluvial plain. Vegetation present is dominated by a canopy <i>Eucalyptus coolabah</i> confirming the presence of RE 11.3.3. The area forms part of a relatively intact polygon of vegetation. Fewer signs of disturbance were observed from agricultural activities in this location. No mapping amendments are proposed within Area A –Polygon 2. Refer to Quaternary Site 1 within Appendix C and Figure 14a for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	473185.98 m E	7578018.9 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:		



Photo: Area A - Polygon 2

Eucalyptus coolabah dominated vegetation consistent with Of Concern RE 11.3.3.



6.3. Lot 637 on PH1980 Area A – Polygon 3

Table 18: Lot 637 on PH1980 Area A - Polygon 3 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.3.10 adjoining an area mapped as Of Concern RE 11.4.6. Refer to Figure 13b. The assessment identified that this polygon has been historically cleared and retains limited vegetation values. Species remaining include scattered shrubs representative of the surrounding regional ecosystems (Refer to Transect 2, Appendix C). This area is proposed as non-remnant within revised RE mapping. Refer to Transect 2 within Appendix C and Figure 14b for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	474175.36 m E	7578376.47 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.4.6	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:		



6.4. Lot 637 on PH1980 Area A – Polygon 4

Table 19: Lot 637 on PH1980 Area A – Polygon 4 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.4.6. Refer to Figure 13b. The areas soil and geological formation appears consistent with Land Zone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. The survey identified <i>Acacia cambagei</i> as the dominate species with scattered occurrences of <i>Acacia harpophylla</i> and <i>Terminalia oblongata</i> throughout the assessment area. This species mix is consistent with Of Concern RE 11.4.6. Vegetation Transect 2 was established between Area A-Polygon 3 and Area A-Polygon 4. Some slight changes are identified to RE mapping within Area A –Polygon 4. These changes propose that a small area mapped as Least Concern RE 11.3.10 is changed to Of Concern RE 11.4.6. Refer to Transect 2 within Appendix C and Figure 14b for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	474,371 m E	7,578,376 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.6	
Width of RE:		



Photo: Area A Polygon 4

An example of species representing RE 11.4.6



Figure 13a: Regional Ecosystem and Survey Effort (Lot 637 on PH1980 Area A – Polygon 1-4)

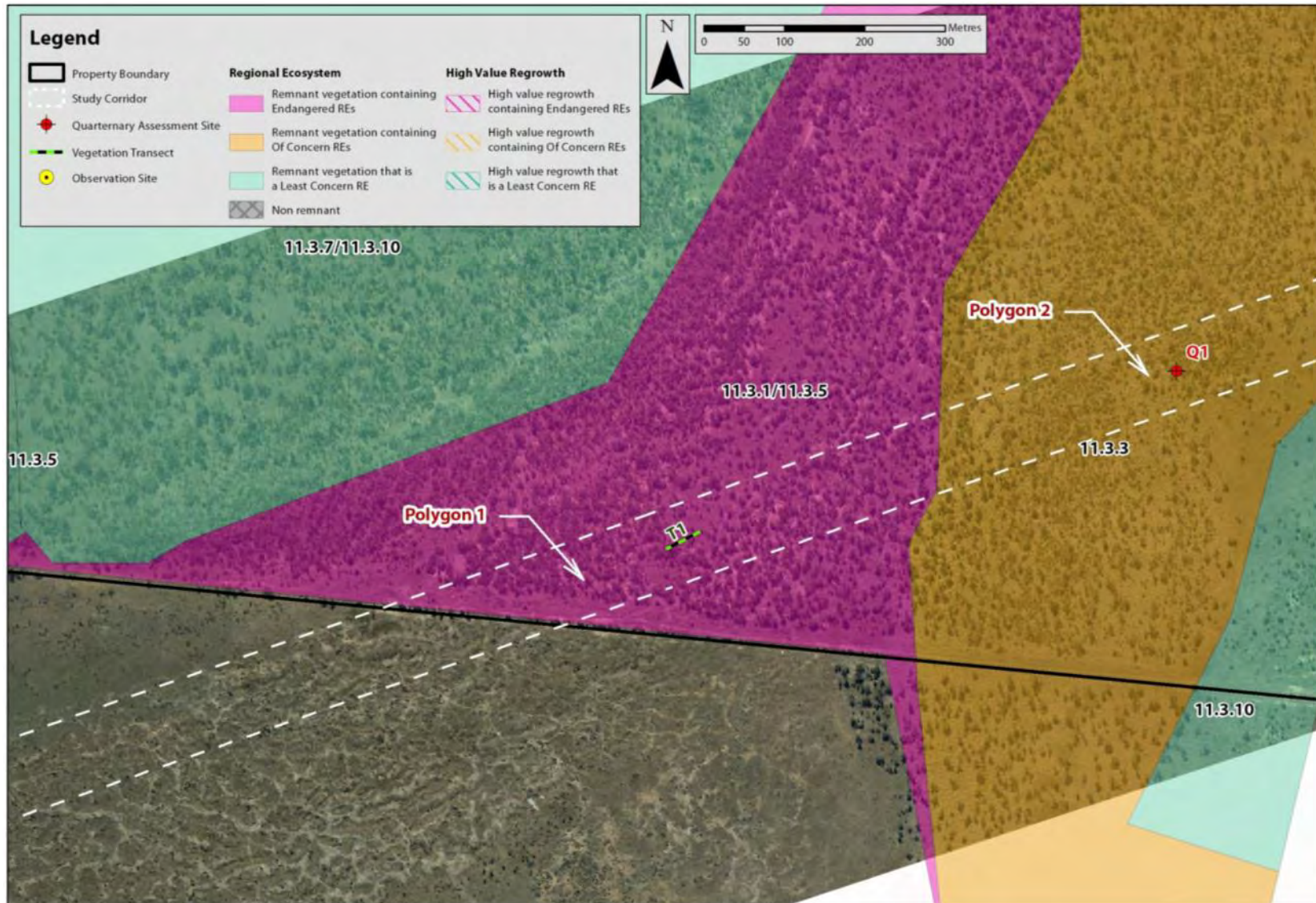




Figure 13b Regional Ecosystem and Survey Effort (Lot 637 on PH1980 Area A – Polygon 1-4)

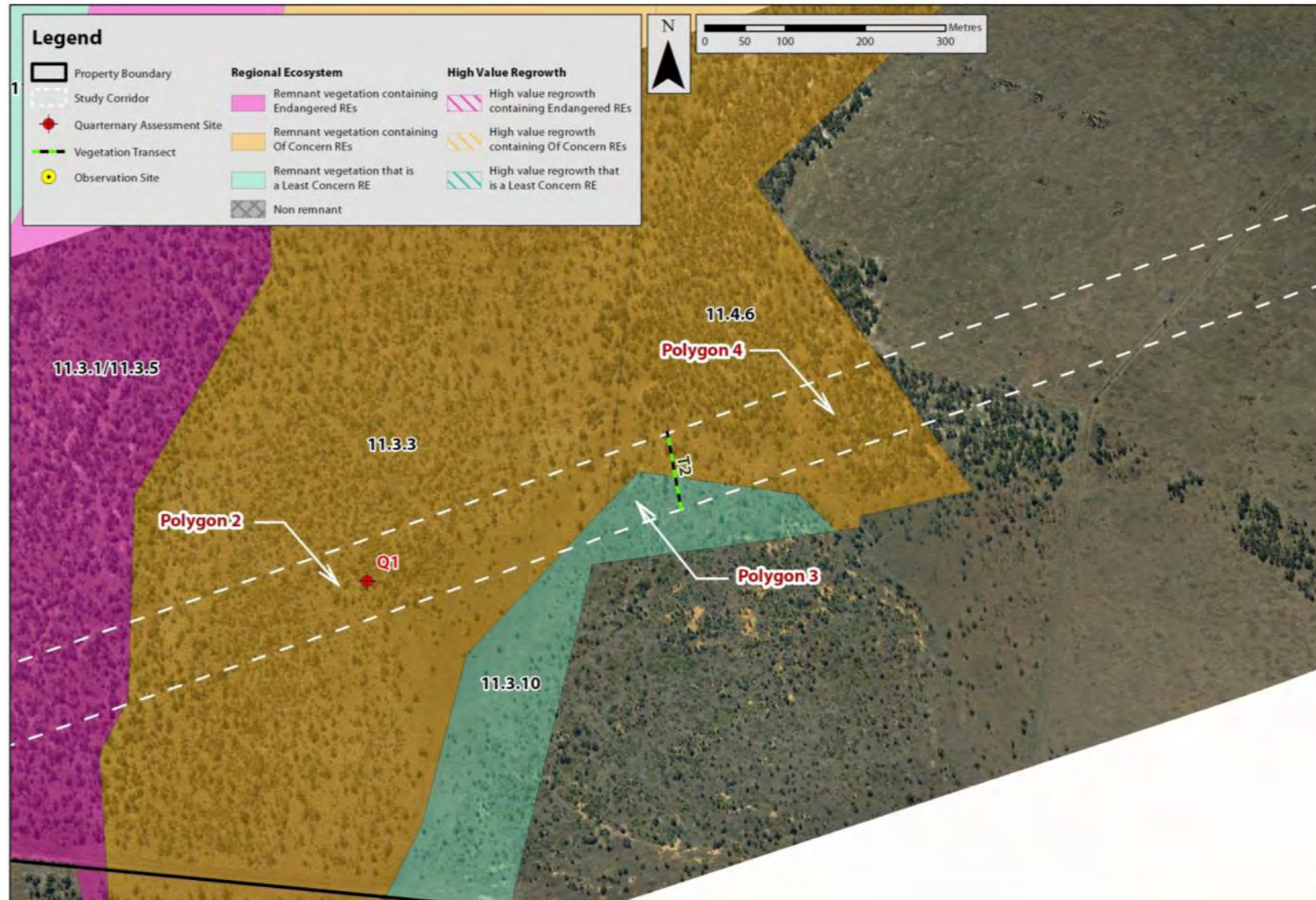




Figure 14a: Regional Ecosystem Changes (Lot 637 on PH1980 Area A – Polygon 1-4)

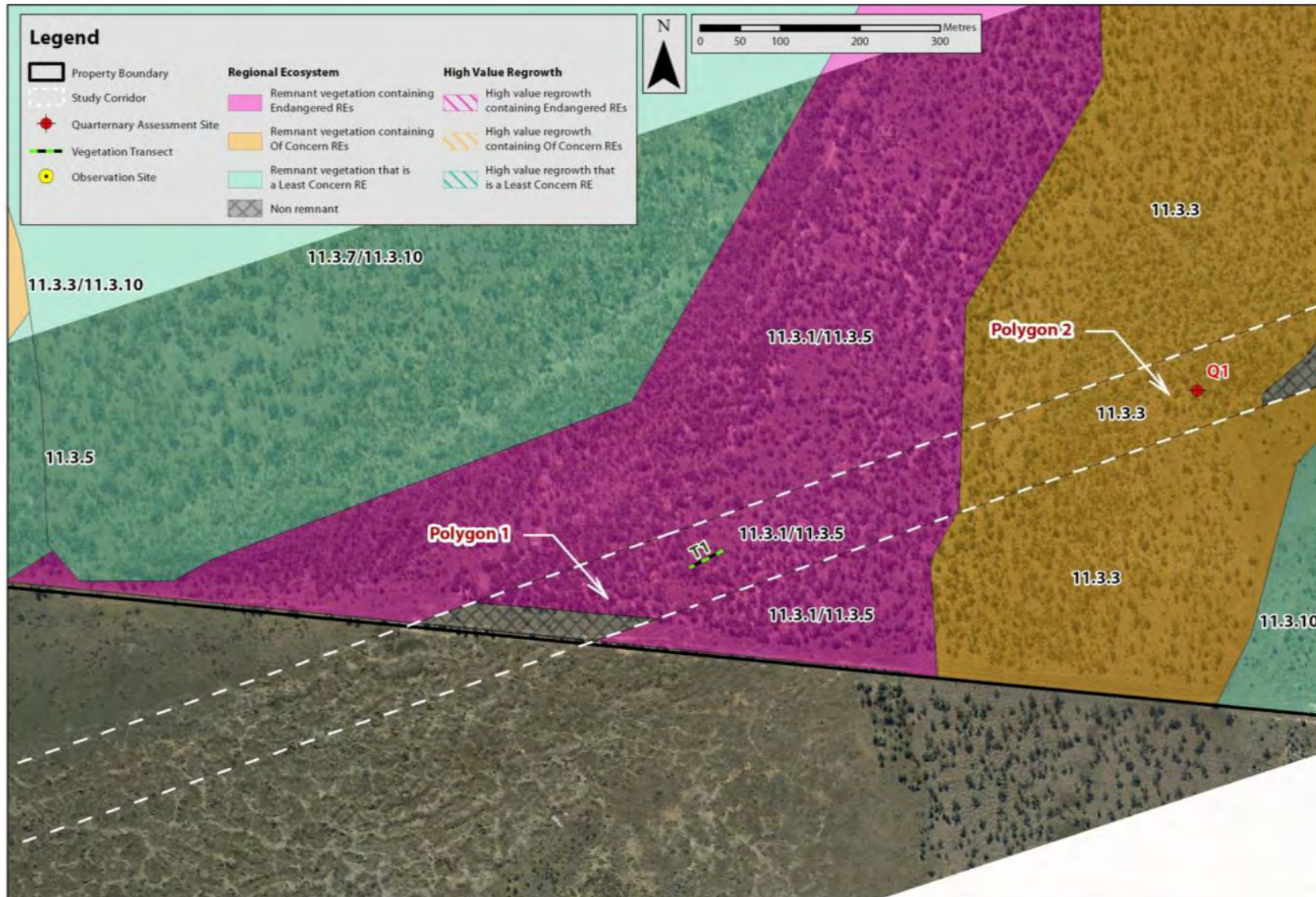
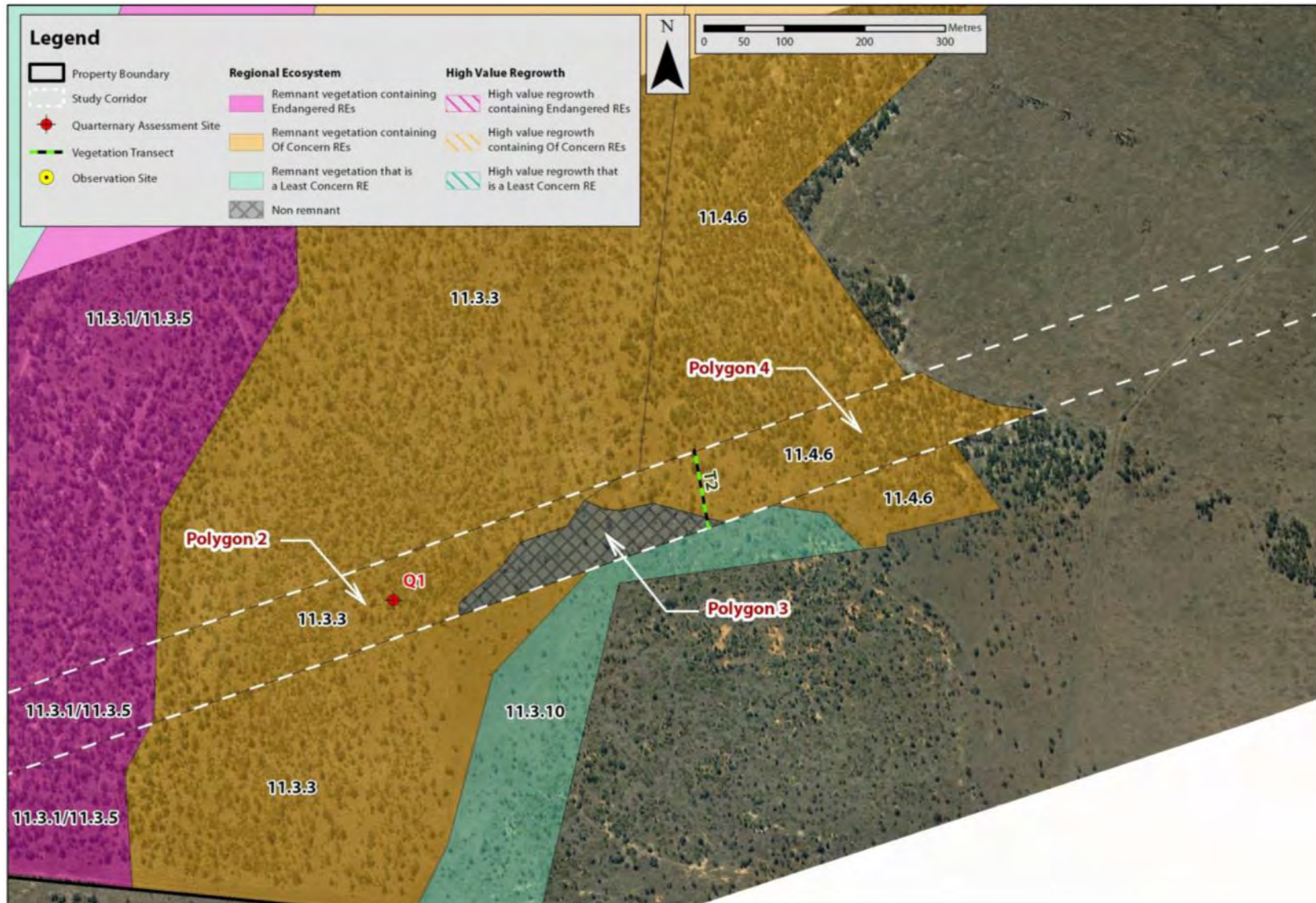




Figure 14b: Regional Ecosystem Changes (Lot 637 on PH1980 Area A – Polygon 1-4)





6.5. Lot 637 on PH1980 Area B – Polygon I

Table 20: Lot 637 on PH1980 Area B - Polygon 1 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Endangered RE 11.3.1. Refer to Figure 15. Field surveys confirmed the presence of an intact community dominated by <i>Acacia harpophylla</i> (Brigalow) consistent with Endangered RE 11.3.1. Some minor amendments are proposed to Area B–Polygon 1 due to mapping errors or fence line clearing. Refer to Quaternary Site 2 within Appendix C and Figure 16 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	474175.36 m E	7578376.47 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.3.1	
Regional Ecosystem Observed:	Endangered RE 11.3.1	
Width of RE:	2.4 ha	



Photo: Area B - Polygon 1
Area described as Endangered RE 11.3.1



6.6. Lot 637 on PH1980 Area B – Polygon 2

Table 21: Lot 637 on PH1980 Area B - Polygon 2 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.5.3 - <i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surfaces. Refer to Figure 15. Land Zone 5 is described as extensive, uniform near level or gently undulating Cainozoic plains with sandy or loamy soils. Includes dissected remnants of these surfaces. Also includes plains with sandy or loamy soils of uncertain origin, and plateau remnants with deep soils usually overlying duricrust. Species observed include <i>Corymbia clarksoniana</i> with scattered occurrence of <i>Corymbia dallachiana</i> and <i>Eucalyptus brownii</i>. The understorey was dominated by <i>Petalostigma pubescens</i>. These species are consistent with Least Concern RE 11.5.3 Some minor mapping amendments are proposed within Area B-Polygon 2. Refer to Quaternary Site 3 within Appendix C and Figure 16 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	474175.36 m E	7578376.47 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.5.3	
Regional Ecosystem Observed:	Least Concern RE 11.5.3	
Polygon size:	2.4 ha	



Photo: Area B Polygon 2

Example of Least Concern RE 11.5.3 containing Corymbia clarksoniana with scattered occurrence of Corymbia dallachiana and Eucalyptus brownii.



6.7. Lot 637 on PH1980 Area B – Polygon 3

Table 22: Lot 637 on PH1980 Area B - Polygon 3 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.4.6 described as <i>Acacia cambagei</i> woodland on Cainozoic clay plains. Refer to Figure 15. The species mix was dominated by <i>Acacia cambagei</i> and <i>Acacia harpophylla</i> consistent with the description of Of Concern RE 11.4.6. A minor amendment was identified to the northern boundary of this polygon due to the presence of the above species. A small area along the polygons eastern boundary is proposed as non-remnant due to fence line clearing. Refer to Quaternary Site 4 within Appendix C and Figure 16 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	474175.36 m E	7578376.47 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.6	
Width of RE:		



Photo: Area A - Polygon 3
Non remnant area with RE 11.4.6 in the background.



Figure 15: Regional Ecosystem and Survey Effort (Lot 637 on PH1980 Area B – Polygon 1-3)

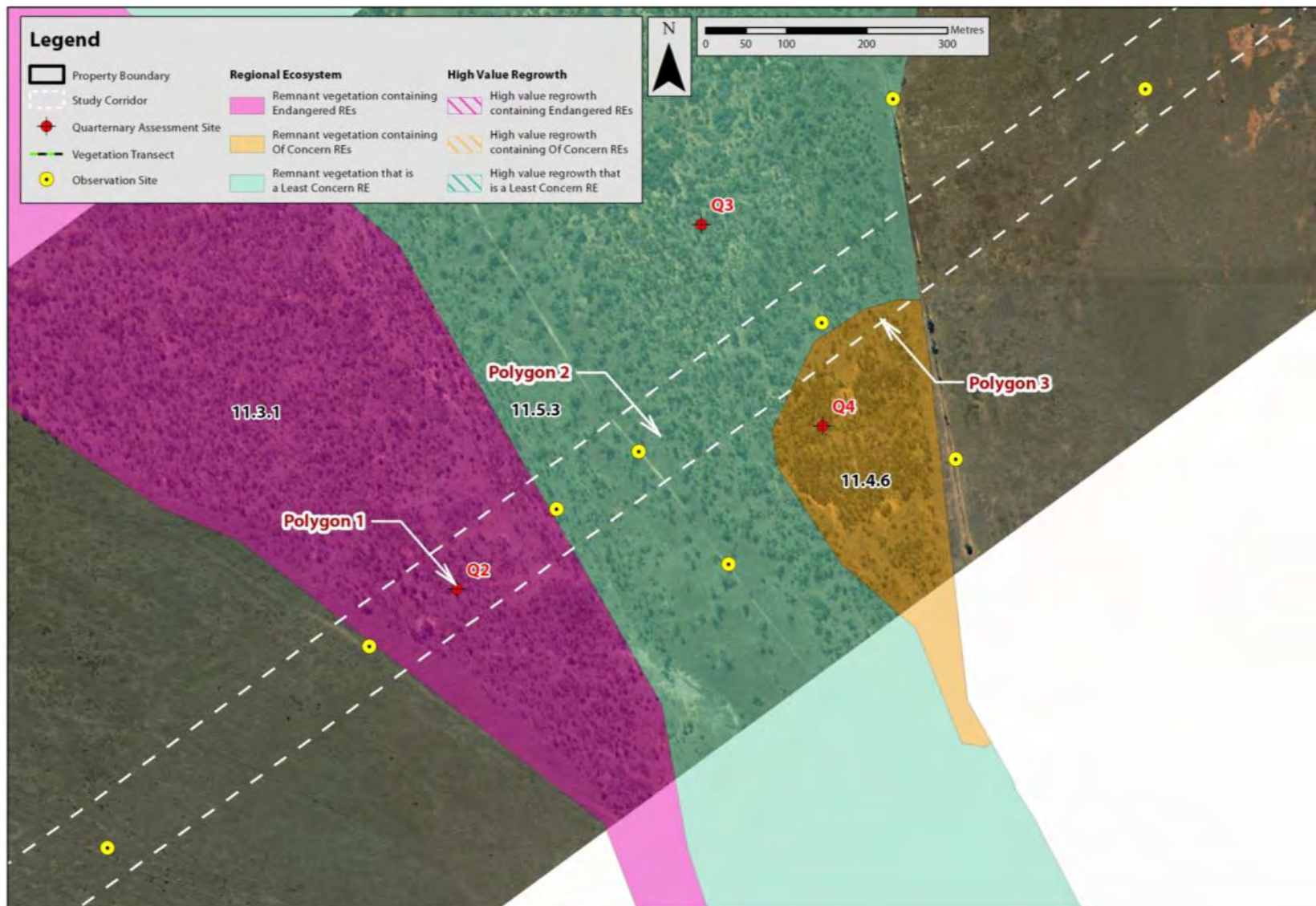
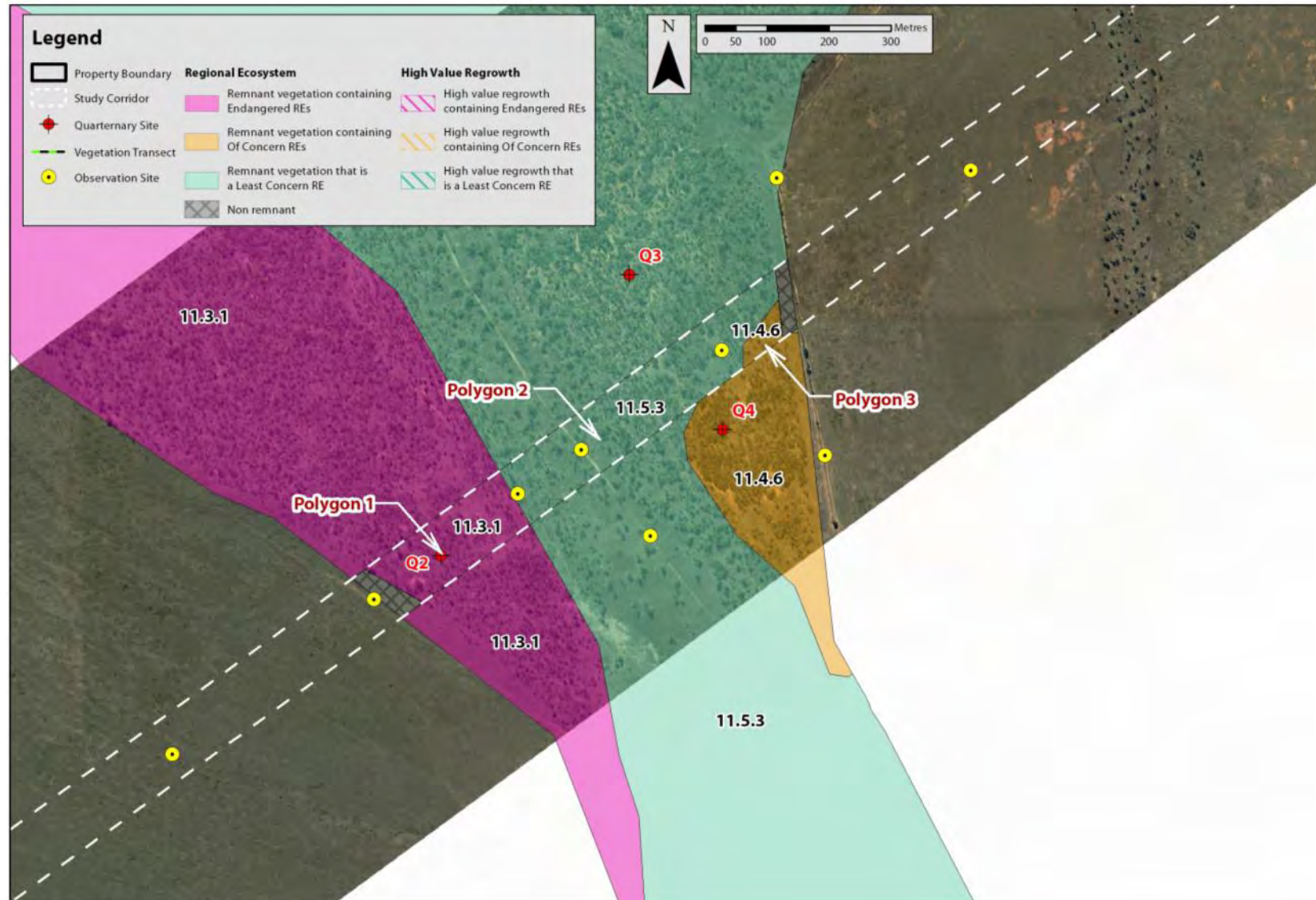




Figure 16: Regional Ecosystem Changes (Lot 637 on PH1980 Area B – Polygon 1-3)





6.8. Lot 637 on PH1980 Area C – Polygon I

Table 23: Lot 637 on PH1980 Area C - Polygon 1 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Endangered RE 11.4.8 / 11.4.6. Refer to Figure 17. The mapped composite Regional Ecosystem is described as containing 80%Endangeredd RE 11.4.8 and 20% Of Concern RE 11.4.6. The areas soil and geological formation appears consistent with Land Zone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. Canopy species recorded in this location are dominated by <i>Acacia cambagei</i> and <i>Acacia harpophylla</i>. No <i>Eucalyptus cambageana</i> (that indicate RE 11.4.8) were observed during the field assessment. The species mix within this area appears consistent with Of Concern RE 11.4.6. Area C–Polygon 1 is proposed to be mapped as Of Concern RE 11.4.6. Refer to Transect 3 within Appendix C and Figure 18 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	481361 m E	7583139 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.8 / 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.6	
Width of RE:		



Photo: Area C –Polygon 1

Example of Of Concern RE 11.4.6 containing Acacia harpophylla and Acacia cambagei



Figure 17: Regional Ecosystem and Survey Effort (Lot 637 on PH1980 Area C – Polygon 1)

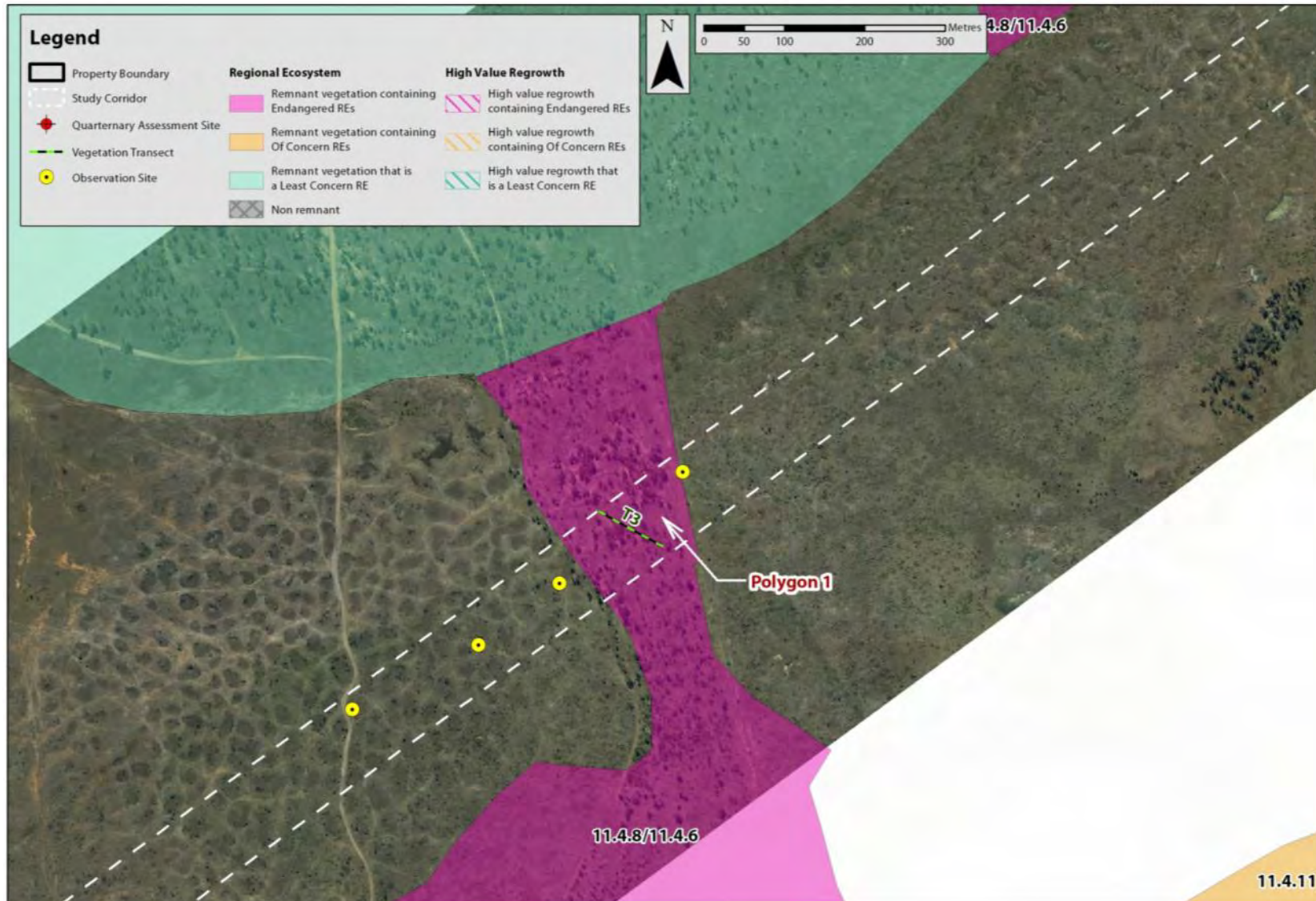
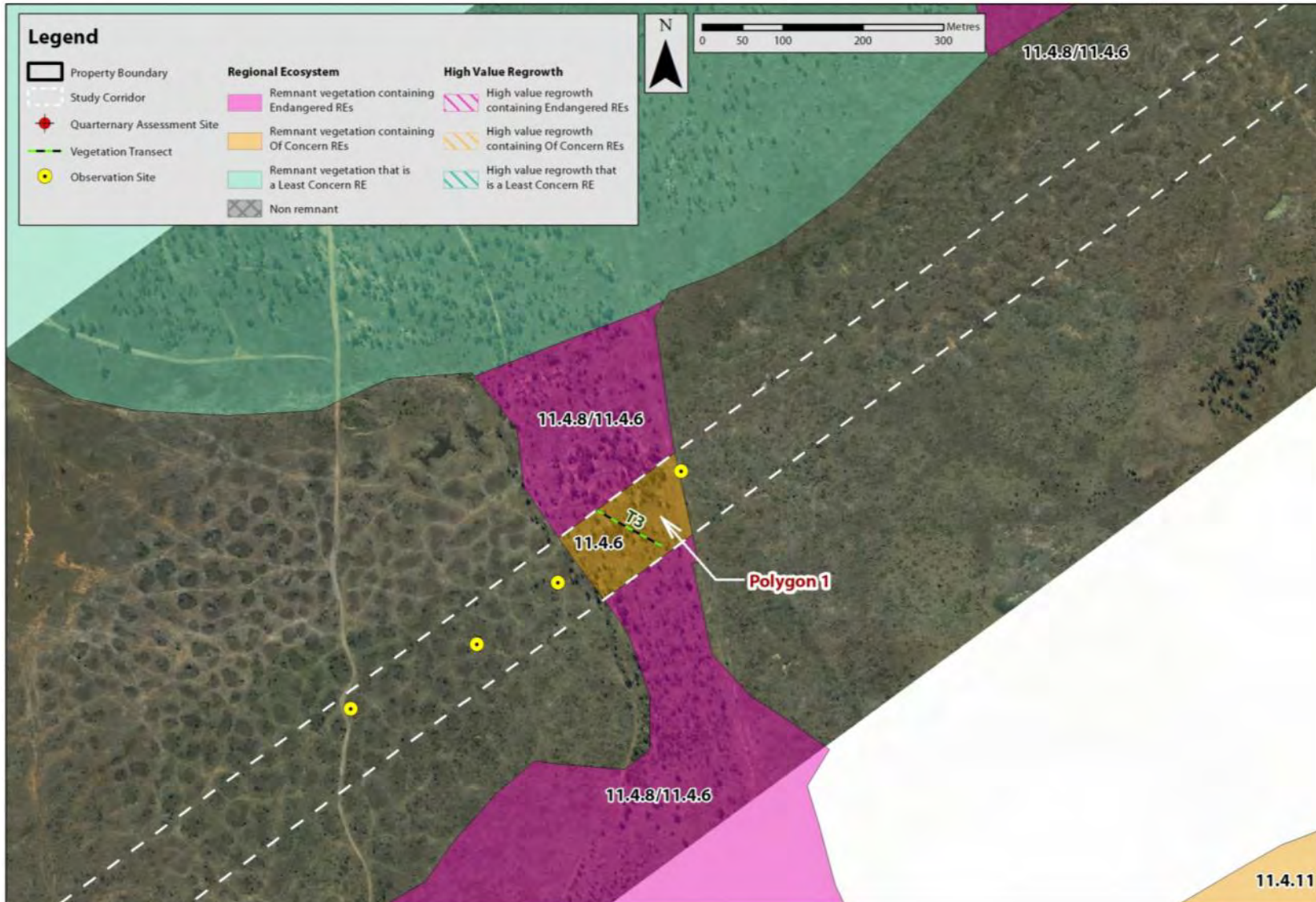


Figure 18: Regional Ecosystem Changes (Lot 637 on PH1980 Area C – Polygon 1)





6.9. Lot 637 on PH1980 Area D – Polygon 1

Table 24: Lot 637 on PH1980 Area D - Polygon 1 Summary

Site Description		
Location:	637 PH1980	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.5.3 - <i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surfaces. Refer to Figure 19. Land Zone 5 is described as extensive, uniform near level or gently undulating Cainozoic plains with sandy or loamy soils. Canopy species in this location were dominated by <i>Corymbia clarksoniana</i>, <i>Corymbia dallachiana</i> and <i>Eucalyptus brownii</i>. The understory is highly disturbed due to cattle grazing, however, species observed are consistent with RE 11.5.3. No mapping amendments are proposed within Area D –Polygon 1. Refer to Quaternary Site 5 within Appendix C and Figure 20 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	486013 m E	7584721 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.5.3	
Regional Ecosystem Observed:	Least Concern RE 11.5.3	
Width of RE:		



Photo: Area D – Polygon 1

Canopy demonstrating Least Concern RE 11.5.3.



Figure 19: Regional Ecosystem and Survey Effort (Lot 637 on PH1980 Area D – Polygon 1)

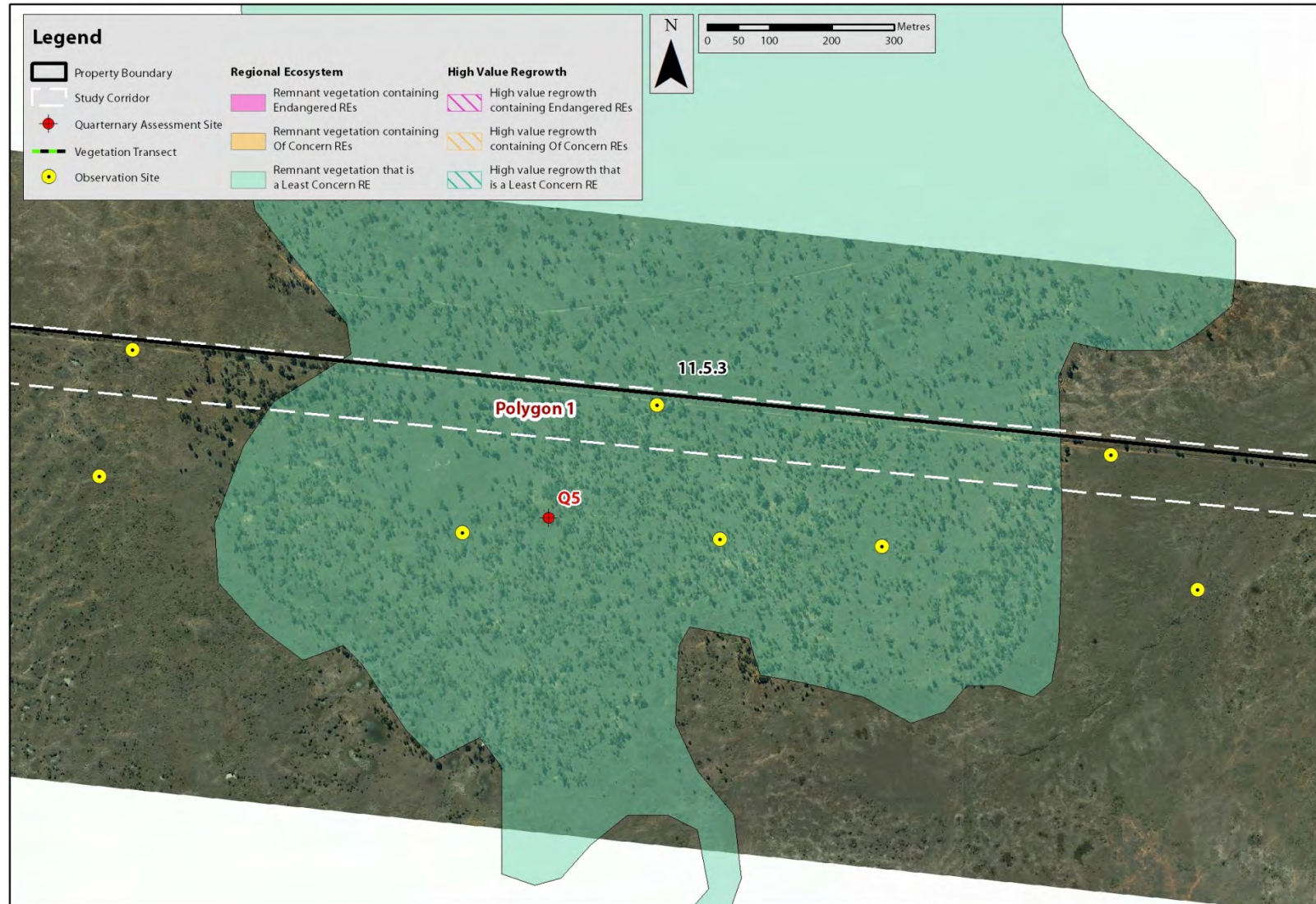
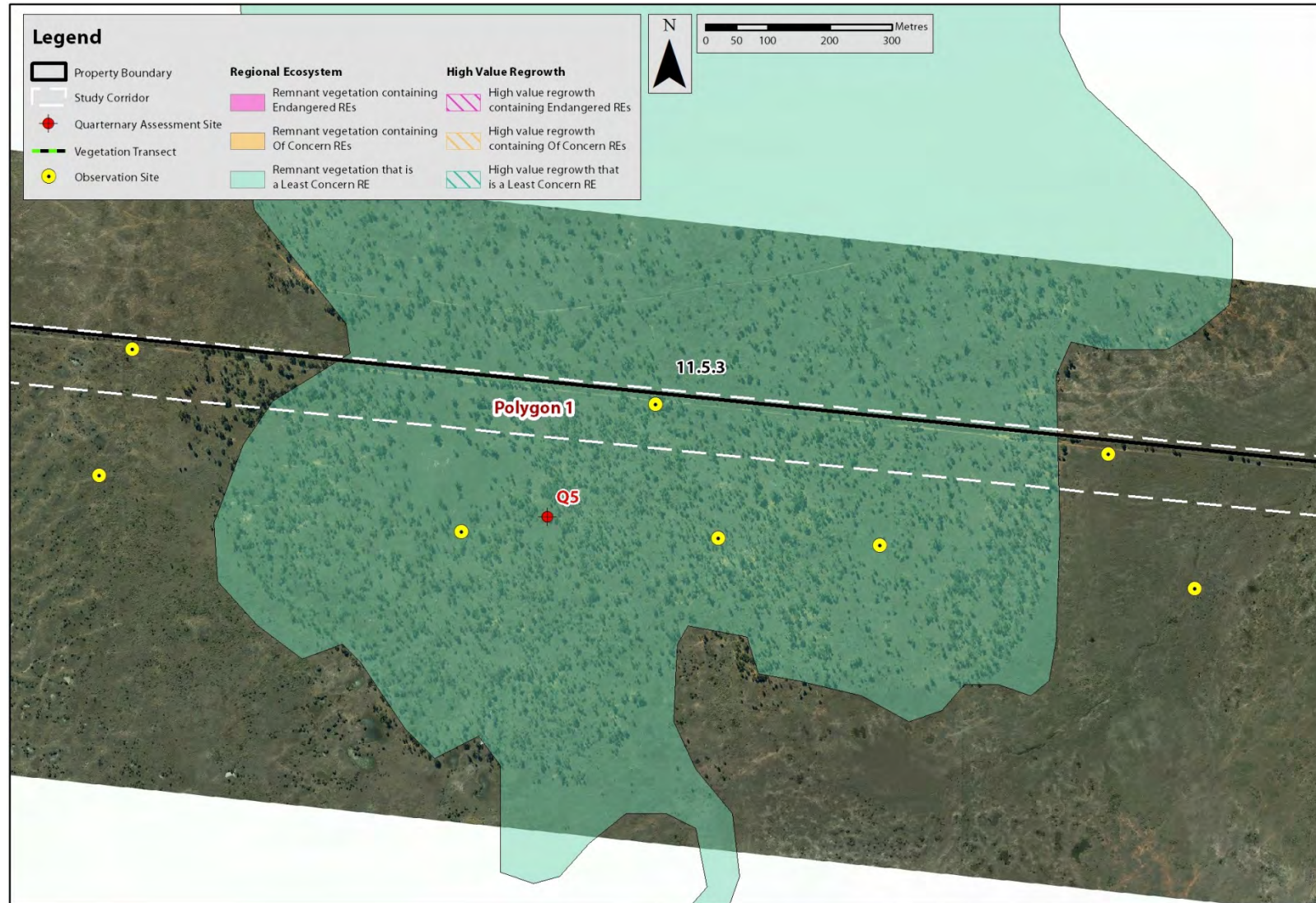




Figure 20: Regional Ecosystem (Lot 637 on PH1980 Area D – Polygon 1 {No Changes Proposed})





7. Lot 1 on SPI47546

The SP1 alignment traverses the South-East corner of Lot 1 on SP147546. This location includes a series of tributaries associated with Mistake Creek. Vegetation within this location is mapped as a series of Least Concern and Of Concern REs which occur within the broader alluvial plain.

Current RE mapping is relatively accurate within this location with mapped communities commonly observed within alluvial plains and fringing watercourses across the landscape. The only major changes to mapping include the reclassification of areas of High Value Regrowth to non-remnant.

Table 25: Lot 1 on SP147546 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 1 on SPI47546 Area A - Polygon 1	Least Concern High Value Regrowth	1.1 ha	Least Concern High Value Regrowth	0.6 ha
Lot 1 on SPI47546 Area A - Polygon 2	Of Concern RE 11.3.3 / 11.3.25	2.2 ha	Of Concern RE 11.3.3 / 11.3.25	2.2 ha
Lot 1 on SPI47546 Area A - Polygon 3	Of Concern High Value Regrowth	1.0 ha	Non-remnant	1.0 ha
Lot 1 on SPI47546 Area B - Polygon 1	Of Concern High Value Regrowth	< 0.5 ha	Least Concern High Value Regrowth	< 0.5 ha
Lot 1 on SPI47546 Area B - Polygon 2	Least Concern High Value Regrowth	< 0.5 ha	Least Concern High Value Regrowth	Included in above Regrowth area
Lot 1 on SPI47546 Area B - Polygon 3	Least Concern RE 11.3.25 / 11.3.37	2.4 ha	Least Concern RE 11.3.25 / 11.3.37	2.4 ha
Lot 1 on SPI47546 Area B - Polygon 4	Of Concern RE 11.3.3	4.2 ha	Of Concern RE 11.3.3	4.2 ha
Lot 1 on SPI47546 Area B - Polygon 5	Least Concern RE 11.3.25 / 11.3.37	0.7 ha	Least Concern RE 11.3.25 / 11.3.37	0.7 ha



7.1. Lot 1 on SPI47546 Area A – Polygon 1

Table 26: Lot 1 on SP147546 Area A - Polygon 1 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern High Value Regrowth. Refer to Figure 21. The majority of this area is devoid of vegetation values and is considered non-remnant. This is clearly indicated within aerial imagery, Refer to Figure 22.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	488736 m E	7584583 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern High Value Regrowth	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:		



Photo: Area A - Polygon 1

Area proposed as non-remnant within RE mapping amendments.



7.2. Lot 1 on SPI47546 Area A – Polygon 2

Table 27: Lot 1 on SP147546 Area A - Polygon 2 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.3.3 / 11.3.25. Refer to Figure 21. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. The field survey noted a large lagoon within the north eastern side of this vegetation polygon. Vegetation surrounding the lagoon is representative of Of Concern RE 11.3.3 due to a canopy dominated by <i>Eucalyptus coolabah</i>. Areas located further West within this polygon are dominated by <i>Acacia cambagei</i> and <i>Acacia harpophylla</i>, and more representative of Least Concern RE 11.3.5. No mapping amendments are proposed within Area A –Polygon 1. Refer to Transect 1 within Appendix D and Figure 22.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	488736 m E	7584583 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3 / 11.3.25	
Regional Ecosystem Observed:	Of Concern RE 11.3.3 / 11.3.25	
Width of RE:		



Photo: Area A - Polygon 1

Edge of lagoon dominated by Eucalyptus coolabah and other species consistent with RE 11.3.3 / 11.3.5



7.3. Lot 1 on SPI47546 Area A – Polygon 3

Table 28: Lot 1 on SP147546 Area A - Polygon 3 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern High Value Regrowth. Refer to Figure 21. This area is heavily grazed and contains very little vegetation as demonstrated by aerial photography. The site is dominated by introduced pastoral grasses and assessed as non-remnant. Refer to Figure 22.	
Datum:	GDA94 (MGA55)	
Easting/Northings	Easting	Northings
	489073 m E	7584708 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3 / 11.3.25	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:		



Photo: Area A - Polygon 3
Area proposed as non-remnant



Figure 21: Regional Ecosystem (Lot 1 on SP147546 Area A – Polygon 1-3)

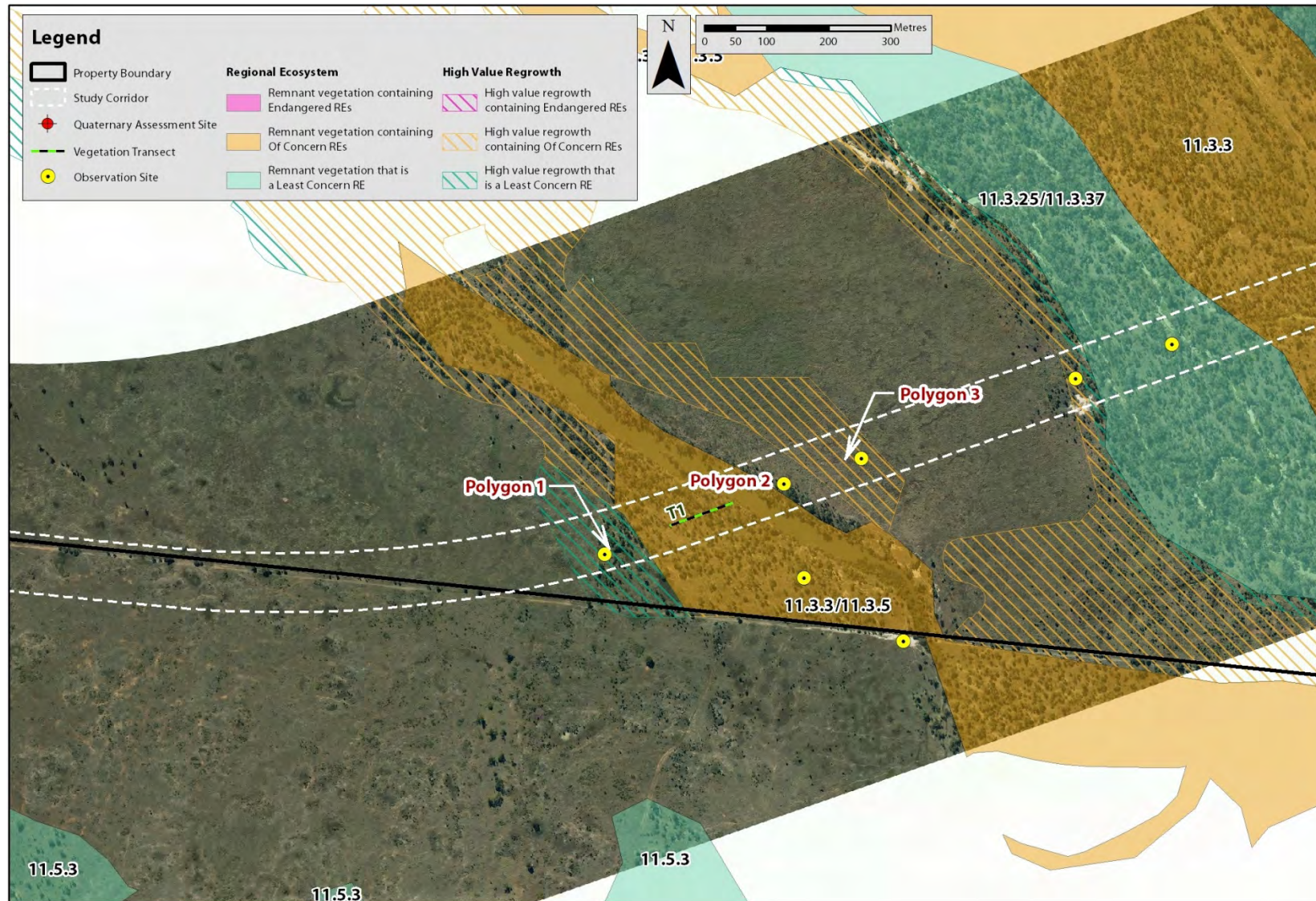
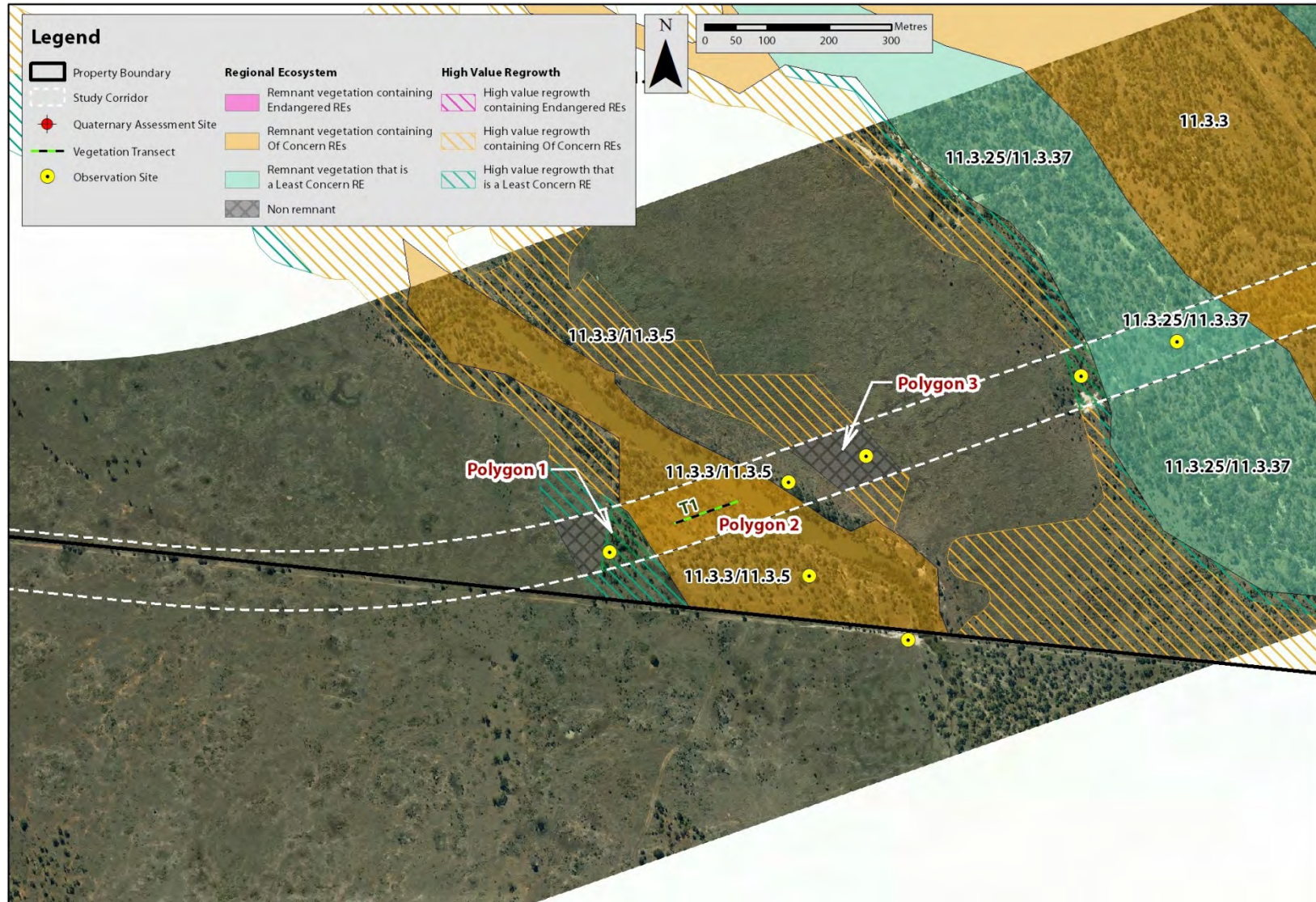




Figure 22: Regional Ecosystem Changes (Lot 1 on SP147546 Area A – Polygon 1-3)





7.4. Lot 1 on SPI47546 Area B – Polygon 1

Table 29: Lot 1 on SP147546 Area B - Polygon 1 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern High Value Regrowth. Refer to Figure 23. Field surveys indicate this area is consistent with a regrowth Least Concern community described as RE 11.3.37. Refer to Figure 24.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	489073 m E	7584708 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern High Value Regrowth	
Regional Ecosystem Observed:	Least Concern High Value Regrowth	
Polygon size:	0.5 ha	



7.5. Lot 1 on SPI47546 Area B – Polygon 2

Table 30: Lot 1 on SP147546 Area B - Polygon 2 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern High Value Regrowth. Refer to Figure 23. Field surveys indicate this area is consistent with a regrowth Least Concern community described as RE 11.3.37. Refer Figure 24.	
Datum:	GDA94 (MGA55)	
Easting/Northings	Easting	Northings
	489073 m E	7584708 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern High Value Regrowth	
Regional Ecosystem Observed:	Least Concern High Value Regrowth	
Width of RE:	0.5 ha	



Photo: Area A - Polygon 1
Example of Least Concern Regrowth



7.6. Lot 1 on SPI47546 Area B – Polygon 3

Table 31: Lot 1 on SP147546 Area B - Polygon 3 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.3.25 / 11.3.37. Refer to Figure 23. The site is representative of quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. <i>Eucalyptus coolabah</i> dominated the T1 layer with <i>Eucalyptus camaldulensis</i> found fringing the mapped watercourse. <i>Melaleuca bracteata</i> dominated the edge of the drainage lines. This area was found to be consistent with current RE mapping comprised of Least Concern RE 11.3.25 / 11.3.37. No Mapping amendments are proposed within Area B –Polygon 3. Refer to Figure 24.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	489637 m E	7584916 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.3.25 / 11.3.37	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:		



Photo: Area A - Polygon 3

Area consistent with Least Concern drainage line and represents a mix of RE11.3.25 / 11.3.37.



7.7. Lot 1 on SPI47546 Area B – Polygon 4

Table 32: Lot 1 on SP147546 Area B - Polygon 4 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.3.3. Refer to Figure 23. The site is associated with a floodplain between two watercourses. Canopy species were dominated by <i>Eucalyptus coolabah</i> with a T2 layer dominated by <i>Acacia cambagei</i> and <i>Terminalia oblongata</i>. This species mix is consistent with current RE mapping including Of Concern RE 11.3.3. No Mapping amendments are proposed within Area B –Polygon 4. Refer to Quaternary Site 1 within Appendix D and Figure 24 for the location of the quaternary site.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	489073 m E	7584708 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:		



Photo: Area A - Polygon 4

Vegetation represents Of Concern RE11.3.3



7.8. Lot 1 on SP147546 Area B – Polygon 5

Table 33: Lot 1 on SP147546 Area B - Polygon 5 Summary

Site Description		
Location:	Lot 1 on SP147546	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.3.25 / 11.3.37. Refer to Figure 23. <i>Eucalyptus coolabah</i> dominated the T1 layer with <i>Eucalyptus camaldulensis</i> found fringing the mapped watercourse. <i>Melaleuca bracteata</i> dominated the edge of the drainage lines. This area was found to be consistent with current RE mapping comprised of Least Concern RE 11.3.25 / 11.3.37. No Mapping amendments are proposed within Area B –Polygon 5. Refer to Figure 24.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	489073 m E	7584708 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.3.25 / 11.3.37	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:		

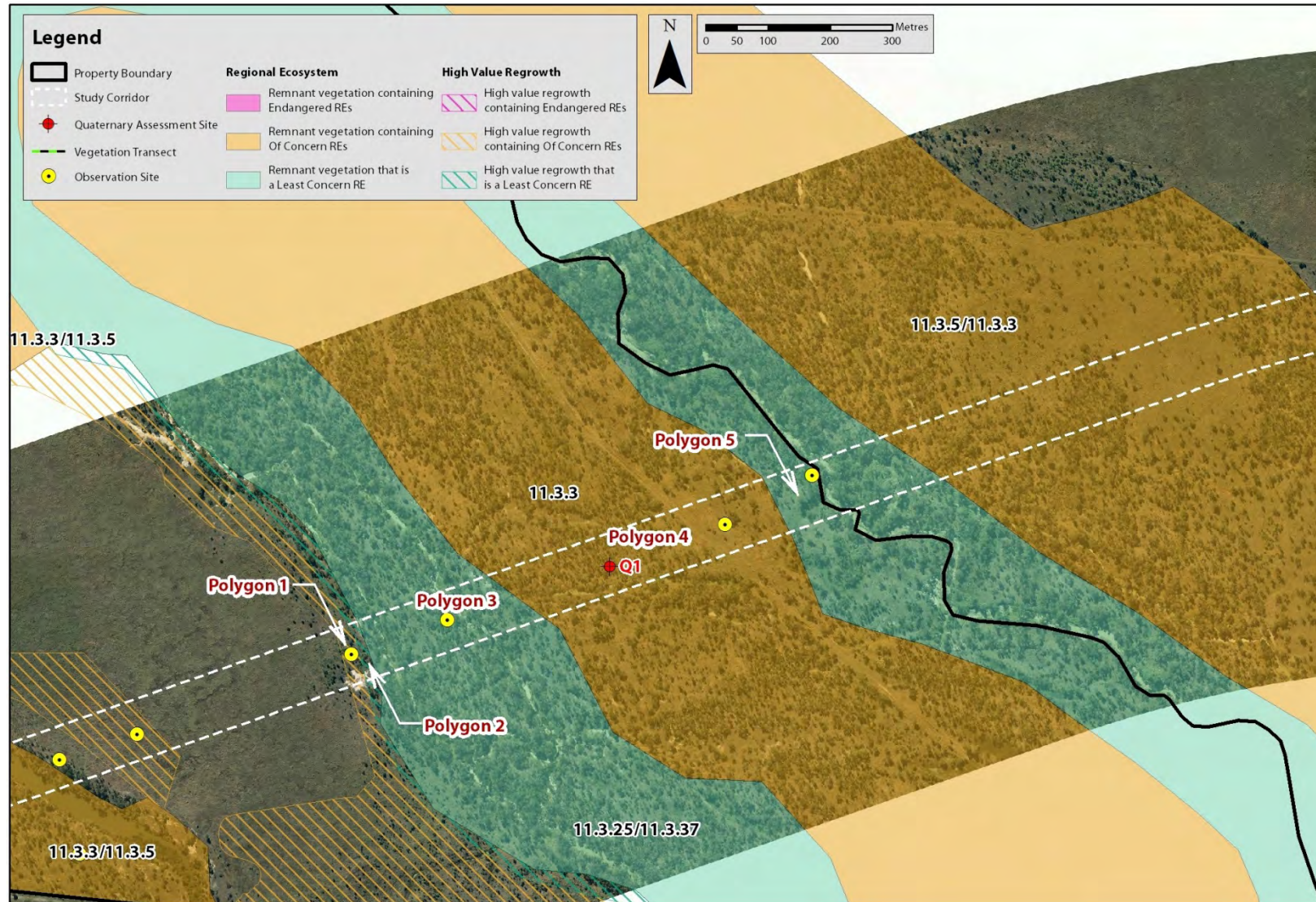


Photo: Area A - Polygon 5

Species observed consistent with Least Concern Regional Ecosystem.



Figure 23: Regional Ecosystem and Survey Effort (Lot 1 on SP147546 Area B – Polygon 1-5)



Legend

- Property Boundary
- Study Corridor
- Quaternary Assessment Site
- Vegetation Transect
- Observation Site

Regional Ecosystem

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE
- Non remnant

High Value Regrowth

- High value regrowth containing Endangered REs
- High value regrowth containing Of Concern REs
- High value regrowth that is a Least Concern RE

Map labels: 11.3.3, 11.3.3/11.3.5, 11.3.25/11.3.37, Polygon 1, Polygon 2, Polygon 3, Polygon 4, Polygon 5, Q1, 11.3.3, 11.3.25/11.3.37, 11.3.5, 11.3.3/11.3.5, 11.3.25/11.3.37, 11.3.3, 11.3.25/11.3.37.



8. Lot 3235 on PH752

Lot 3235 on PH752 site adjoins Lot 1 on SP147546 within the SP1 alignment passing through the North-West corner of this property. This area is mostly vegetated and includes a tributary and alluvial plain associated with Mistake Creek. Vegetation present in this location is consistent with both RE mapping and what was observed within Lot 1 on SP147546. Only minor mapping amendments are proposed within this location.

Table 34: Lot 3235 on PH752

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 3235 on PH752 Area A – Polygon 1	Least Concern RE 11.3.25 / 11.3.37	1.2 ha	Least Concern RE 11.3.25 / 11.3.37	1.2 ha
Lot 3235 on PH752 Area A – Polygon 2	Of Concern RE 11.3.5/ 11.3.3	7.2 ha	Of Concern RE 11.3.5/ 11.3.3	5.0 ha



8.I. Lot 3235 on PH752 Area A – Polygon I

Table 35: Lot 3235 on PH752 Area A - Polygon 1 Summary

Site Description		
Location:	Lot 3235 on PH752	
Site Description:	The site is located within a mapped vegetation community comprised of Least Concern RE 11.3.25 / 11.3.37. Refer to Figure 25. This area adjoins Lot 1 on SP147546 Area B - Polygon 5. The vegetation present is consistent with RE 11.3.25 / 11.3.37. No mapping amendments are proposed within Area A –Polygon 1. Refer to Figure 26.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	490283 m E	7585157 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.3.25 / 11.3.37	
Regional Ecosystem Observed:	Least Concern RE 11.3.25 / 11.3.37	
Width of RE:		



Photo: Area A - Polygon 1

Fringing Vegetation dominated by Eucalyptus camaldulensis associated with Mistake Creek



8.2. Lot 3235 on PH752 Area A – Polygon 2

Table 36: Lot 3235 on PH752 Area A - Polygon 2 Summary

Site Description		
Location:	Lot 3235 on PH752	
Site Description:	The site is located within a mapped vegetation community comprised of Of Concern RE 11.3.5 / 11.3.3. Refer to Figure 25. No changes to Regional Ecosystem mapping are proposed within this location due to the presence of both RE 11.3.5 and 11.3.3. These communities have been recorded along the alluvial plains associated with Mistake Creek. A polygon in the centre of this mapped area is proposed as non-remnant due to the past removal of vegetation for grazing purposes. Minor mapping amendments are proposed within Area A –Polygon 2. Refer to Quaternary Site 1 within Appendix E and Figure 26.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	490283 m E	7585157 m N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.5 / 11.3.3	
Regional Ecosystem Observed:	Of Concern RE 11.3.5 / 11.3.3	
Width of RE:		



Photo: Area A - Polygon 3

Species mix consistent with current Regional Ecosystem mapping. Some areas incorrectly mapped containing no vegetation and proposed as non-remnant.



Figure 25: Regional Ecosystem and Survey Effort (Lot 3235 on PH752 Area A – Polygon 1 & 2)

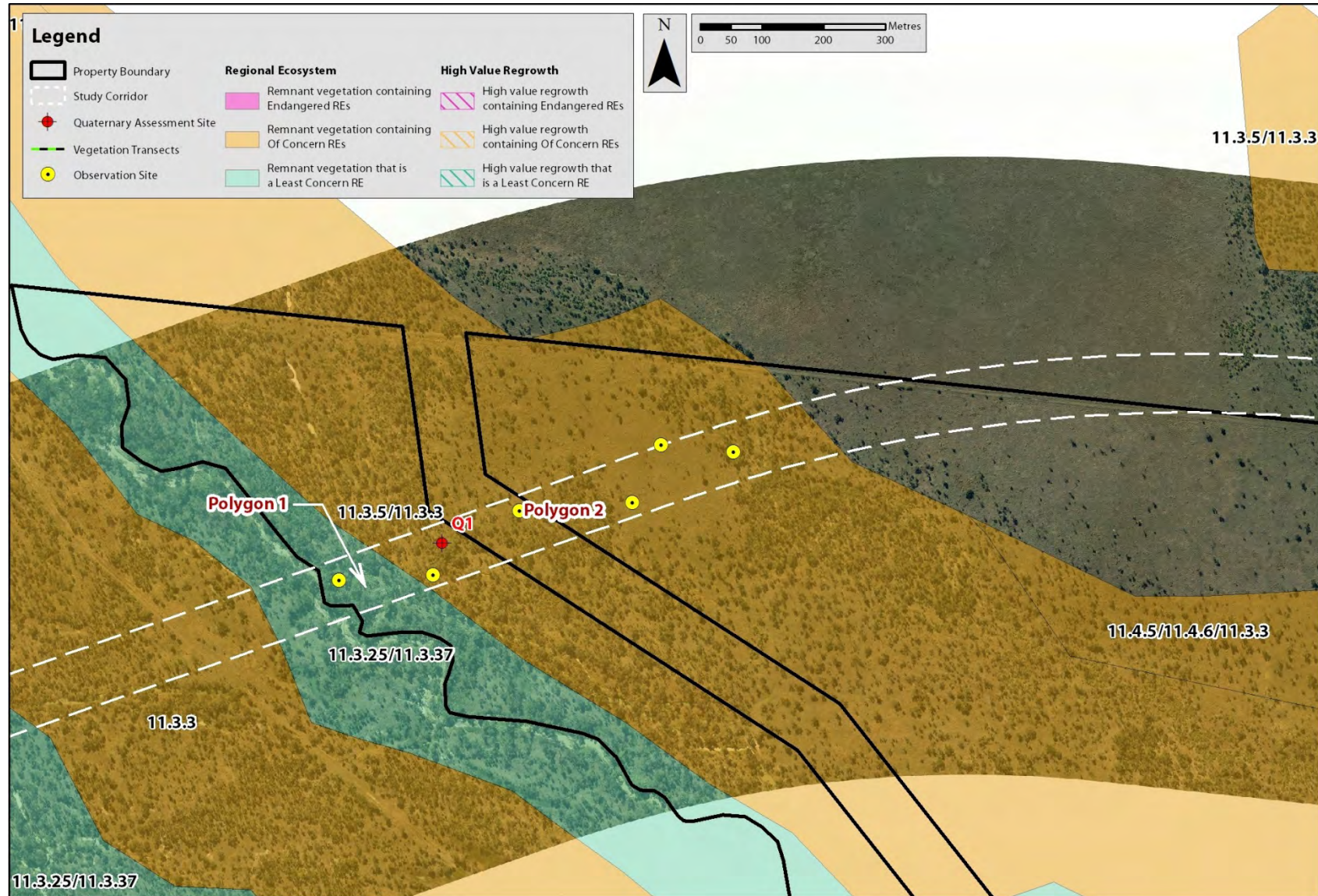
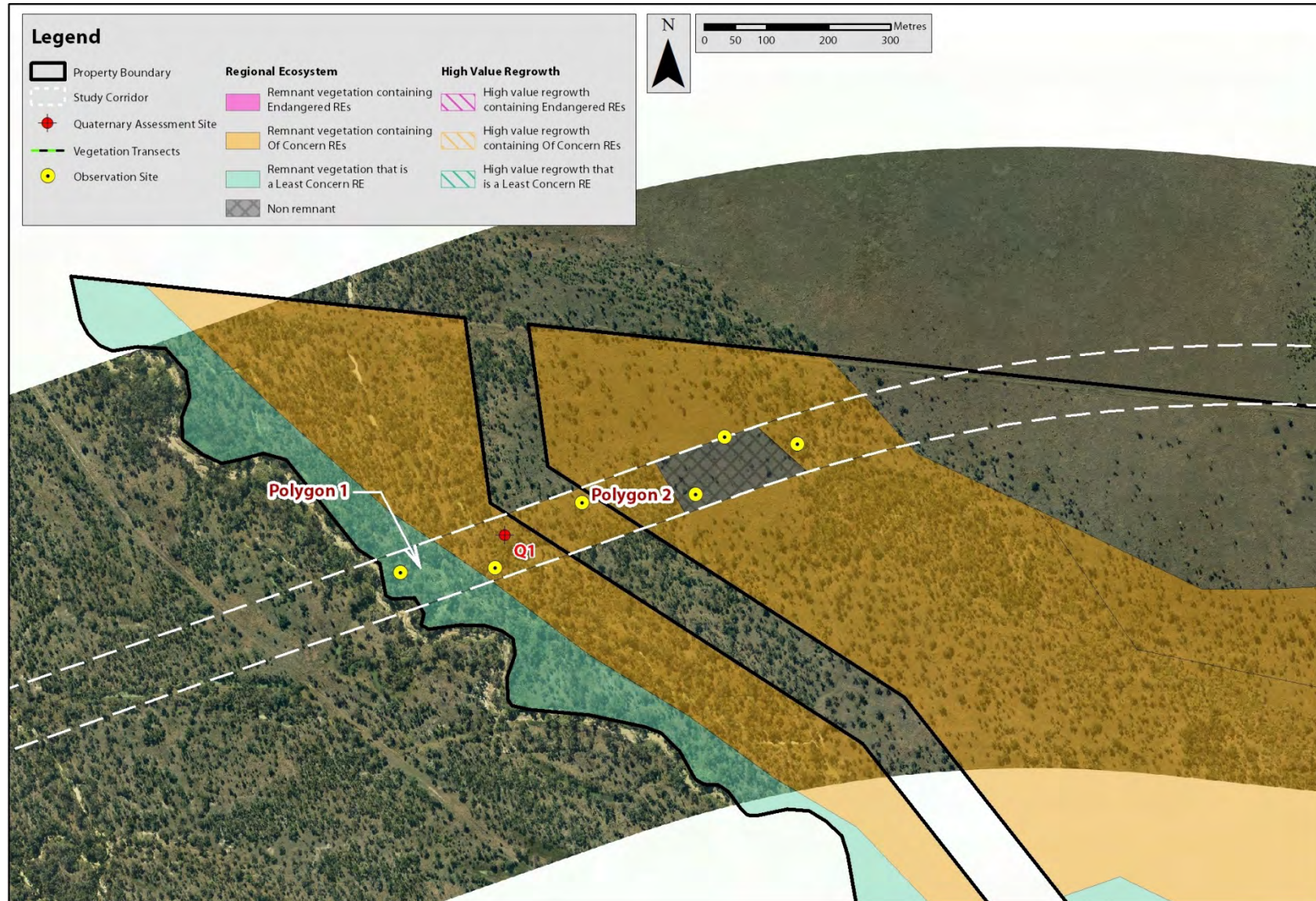




Figure 26: Regional Ecosystem Changes (Lot 3235 on PH752 Area A – Polygon 1&2)





9. Lot 4 on SP116046

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* maps eleven Regional Ecosystem communities across five Land Zones within the application area on the property.

Only one intact area of vegetation is associated with Lot 4 on SP116046 within the rail corridor. This area of vegetation is located to the West of the property and is described within Area A field results. The remainder of the property includes small areas of RE mapping located along the southern property boundary. Each RE area is incorrectly mapped and clearly non-remnant as detailed via aerial imagery. The majority of mapping errors are a result of the scale of current RE mapping. Field investigations and aerial imagery were used to refine mapped boundaries at the property scale.

Based on the detailed field assessment, the application site within the property has been divided into five (5) assessment areas based on the location of the mapped remnant polygons and status of the Regional Ecosystem communities.

Table 37: Lot 4 on SP116046 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 4 on SP116046 Area A – Polygon 1	Of Concern RE 11.3.5 / 11.3.3	7.1 ha	Of Concern RE 11.3.3	6.5 ha
Lot 4 on SP116046 Area A – Polygon 2	Endangered RE 11.3.5 / 11.3.1 / 11.3.10	5.7 ha	Least Concern RE 11.3.5 / 11.3.10	5.4 ha
Lot 4 on SP116046 Area B – Polygon 1	Non-remnant	-	Non-remnant	-
Lot 4 on SP116046 Area C – Polygon 1	Endangered RE 11.4.6 / 11.4.9	< 1 ha	Non-remnant	-
Lot 4 on SP116046 Area C – Polygon 2	Least Concern RE 11.5.3	< 1 ha	Non-remnant	-
Lot 4 on SP116046 Area D – Polygon 1	Endangered RE 11.4.6 / 11.4.9	3.4 ha	Non-remnant	-
Lot 4 on SP116046 Area D – Polygon 2	Least Concern RE 11.7.3 / 11.7.2	< 1 ha	Non-remnant	-
Lot 4 on SP116046 Area E – Polygon 1	Of Concern RE 11.9.10	1.4 ha	Non-remnant	-
Lot 4 on SP116046 Area E – Polygon 2	Endangered RE 11.9.10 / 11.4.8	< 1 ha	Non-remnant	-
Lot 4 on SP116046 Area E – Polygon 3	Endangered RE 11.4.9	< 1 ha	Non-remnant	-



9.1. Lot 4 on SP116046 Area A – Polygon 1

Table 38: Lot 4 on SP116046 Area A – Polygon 1 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is mapped as a composite vegetation community described as Of Concern RE 11.3.5 / 11.3.3 comprised of approximately 70% Least Concern RE 11.3.5 and 30% Of Concern RE 11.3.3 (Figure 27). The mapped remnant polygon is located towards the South-West corner of the property within an extensive alluvial plain. The site is located adjacent to cleared open paddocks managed for cattle and representative of Land Zone 3 described as quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits. Species observed throughout the mapped Of Concern polygon represent a composite Regional Ecosystem 11.3.5 / 11.3.3. Recent flood damage is evident throughout the area. No mapping amendments are proposed within Area A –Polygon 1. Refer to Transect 1 and Quaternary sites 1 in Appendix F and Figure 28 for the location of transects and quaternary sites.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 06.10"	146° 55' 18.21
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1):	Of Concern RE 11.3.5 / 11.3.3	
Regional Ecosystem Observed:	Of Concern RE 11.3.5 / 11.3.3	
Width of RE:	Not linear (<10Ha)	



Photo: Area A - Polygon 1

The area mapped as composite RE 11.3.5 / 11.3.3 within the investigation area.



9.2. Lot 4 on SP116046 Area A – Polygon 2

Table 39: Lot 4 on SP116046 Area A – Polygon 2 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is mapped as a composite vegetation community described as Endangered RE 11.3.5 / 11.3.1 / 11.3.10 (Figure 27). The site is located within a mapped composite vegetation community comprised of approximately 80% Least Concern 11.3.5 with the remaining two Regional Ecosystems mapped as 10% each. The site adjoins Lot 4 on SP116046 Area A – Polygon 1 and is situated within an alluvial plain. No <i>Acacia harpophylla</i> was observed; hence Regional Ecosystem 11.3.1 is not present within this portion of the property. Species observed represent Least Concern Regional Ecosystems 11.3.10 and 11.3.5. These two Least Concern communities together form a composite Regional Ecosystem. Refer to Transects 2 & 3 and Quaternary site 2 in Appendix F and Figure 28 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 07.59"	146° 55' 49.13"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1):	Endangered RE 11.3.5 / 11.3.1 / 11.3.10	
Regional Ecosystem observed:	Least Concern RE 11.3.5/11.3.10	
Width of RE:	Not linear (<10Ha)	

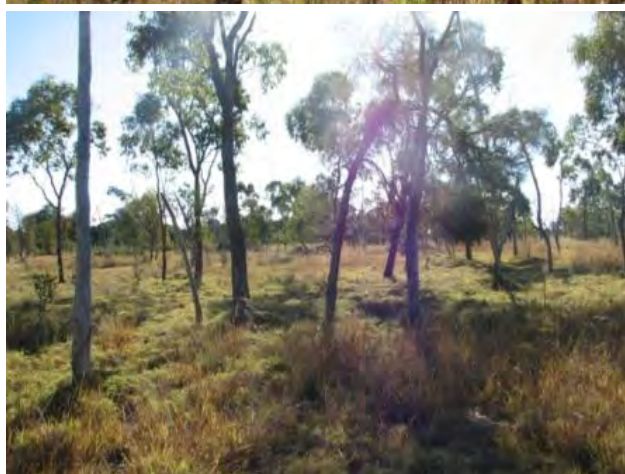


Photo: Lot 4 on SP116046 Area A – Polygon 2

Woodland areas displaying characteristics of Least Concern Regional Ecosystems 11.3.10 / 11.3.5



Figure 27: Regional Ecosystem and Survey Effort (Lot 4 on SP116046 Area A – Polygon 1 & 2)

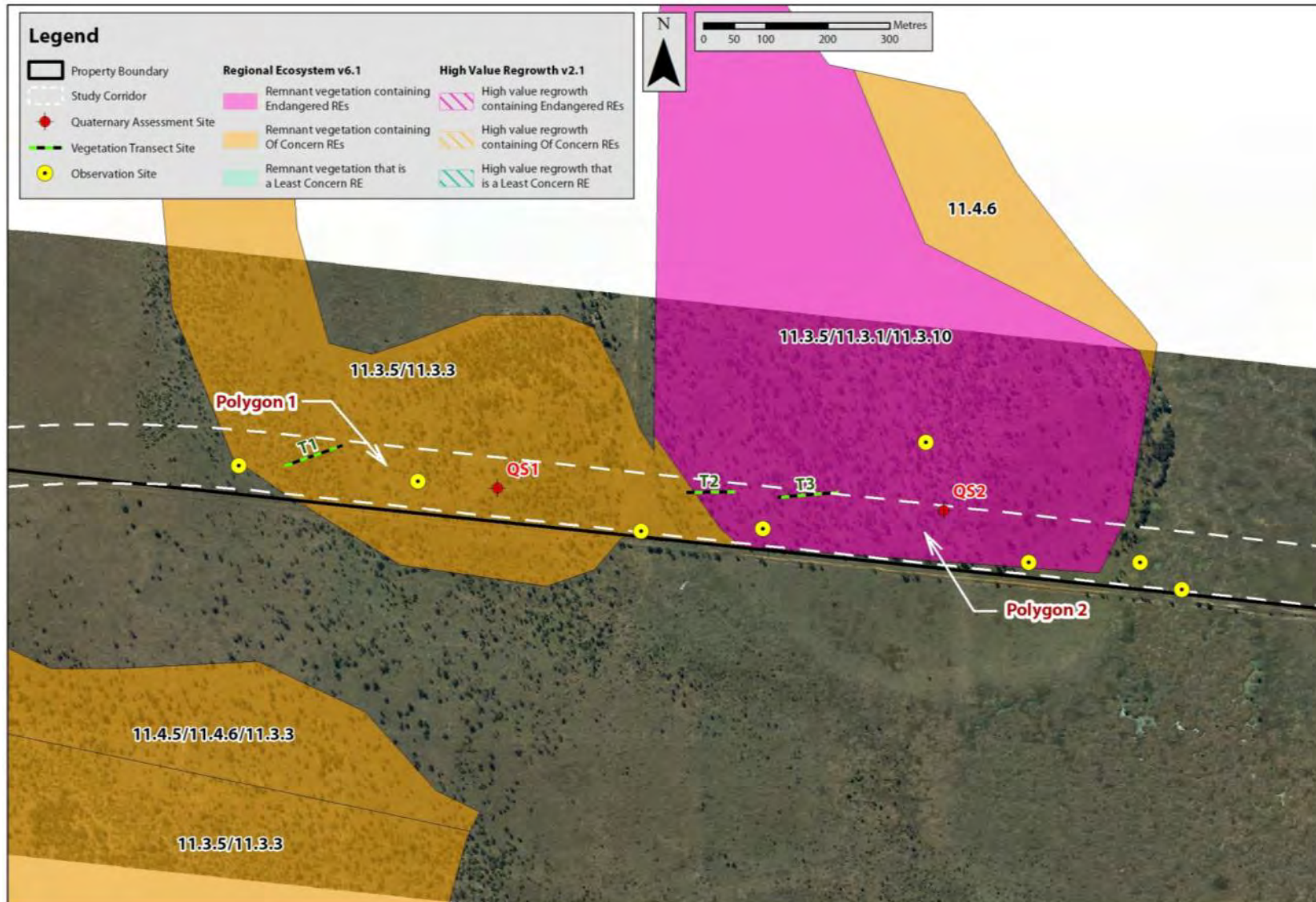
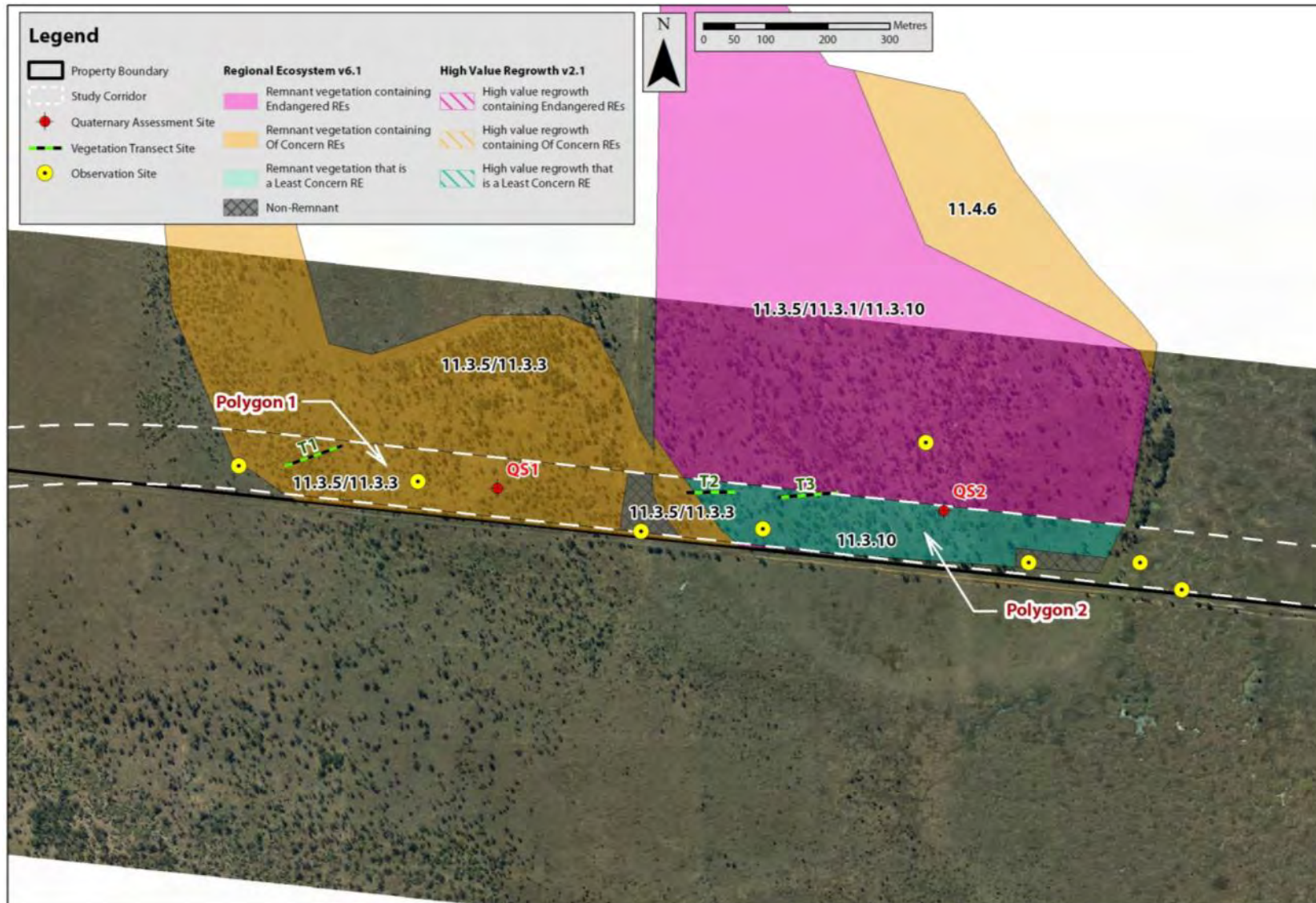




Figure 28: Regional Ecosystem Changes (Lot 4 on SP116046 Area A – Polygon 1 & 2)





9.3. Lot 4 on SP116046 Area B – Polygon 1

Table 40: Lot 4 on SP116046 Area B – Polygon 1 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is near a mapped composite vegetation community described as Endangered RE 11.4.6 / 11.4.9 described as approximately 90% Of Concern RE 11.4.6 and 10% Endangered RE 11.4.9 (Figure 29). This vegetation polygon is largely mapped to the south of the property with only a thin area extending into Lot 4 on SP116046. This lineal patch is approximately 100 m in width and follows the southern property boundary of Lot 4 on SP116046 for approximately 2 km. The site assessment confirmed aerial imagery which demonstrates that no remnant vegetation occurs within the investigation area. The only native vegetation present is associated with a very sparse shrub layer containing <i>Acacia harpophylla</i>, <i>Terminalia oblongata</i> and <i>Carissa ovata</i> all of which are less than 1 m in height. A dense ground layer was observed that contained a mix of native and exotic grass species including <i>Pennisetum ciliare</i>, <i>Parthenium hysterophorus</i>, <i>Heteropogon contortus</i>, <i>Panicum decompositum</i>, <i>Leptochloa digitata</i> and <i>Chrysopogon fallax</i>. Refer to Quaternary Site 3 in Appendix F and Figure 30.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 46.78"	147° 01' 43.35
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Non-remnant	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Linear	



Photo: Lot 4 on SP116046 Area B – Polygon 1

Non-remnant area near mapped Endangered RE11.4.6 / 11.4.9.



Figure 29: Regional Ecosystem and Survey Effort (Lot 4 on SP116046 Area B – Polygon 1)

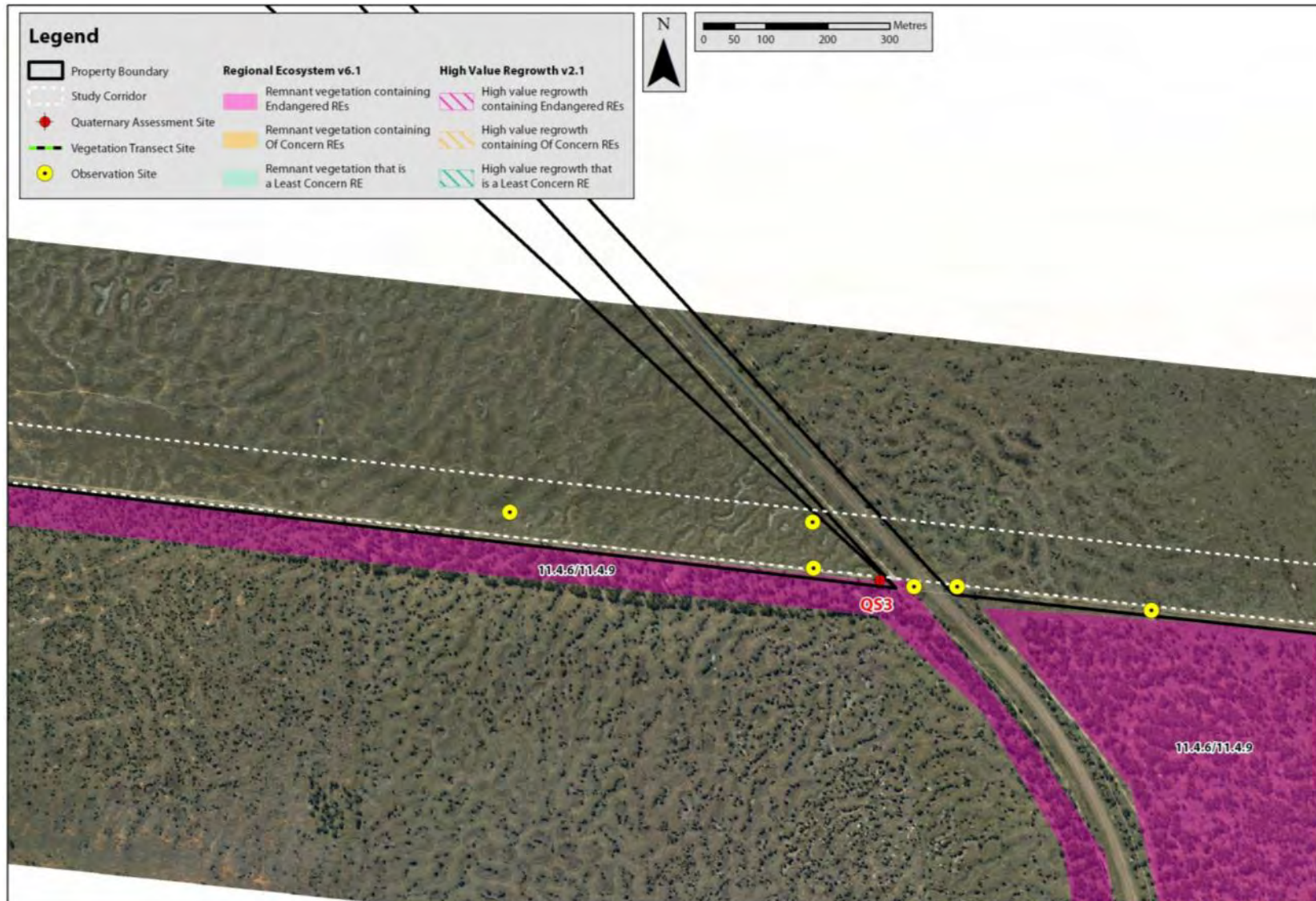
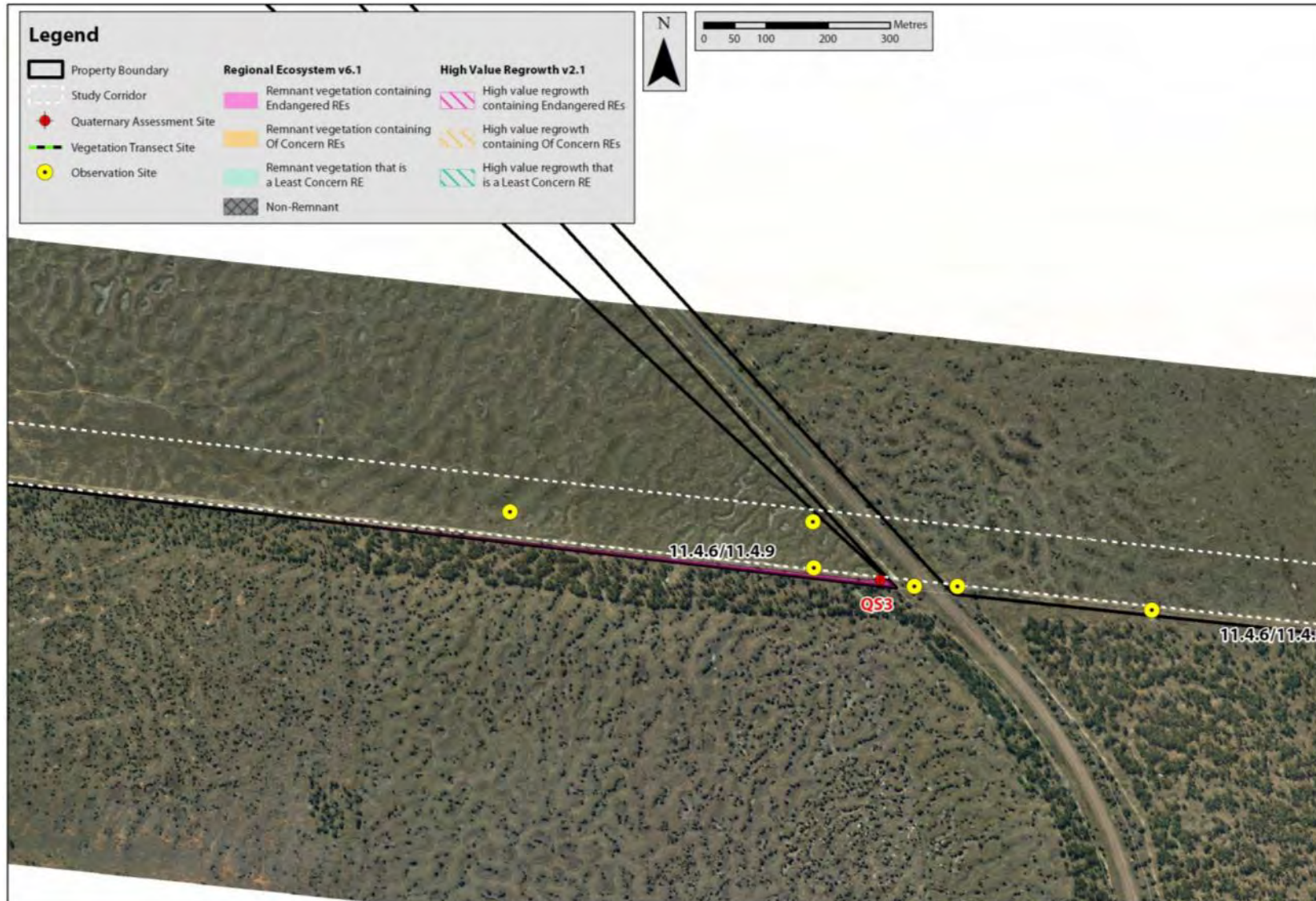




Figure 30: Regional Ecosystem Changes (Lot 4 on SP116046 Area B – Polygon 1)





9.4. Lot 4 on SP116046 Area C – Polygon I

Table 41: Lot 4 on SP116046 Area C – Polygon 1 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is mapped as a composite vegetation community described as Endangered RE 11.4.6/11.4.9 including approximately 90% Of Concern RE 11.4.6 and 10% Endangered RE11.4.9 (Figure 31). No remnant vegetation was observed within the investigation area that would satisfy the remnant vegetation criteria of 70% height and 50% crown cover for examples of RE 11.4.6 or 11.4.9. A very sparse shrub layer containing <i>Acacia harpophylla</i>, <i>Terminalia oblongata</i> and <i>Carissa ovata</i> less than 1 m in height was observed in the area. A dense ground layer dominated by the exotic grass <i>Pennisetum ciliare</i> was also observed. Some native grasses including <i>Dichanthium sericeum</i> and <i>Panicum decompositum</i> are present at very low densities. The current errors associated with the line work of the mapped polygon are a result of scaling issues associated with RE map production. Refer to Quaternary sites 4 & 6 in Appendix F and Figure 32 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 52.47"	147° 02' 33.02"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.6 / 11.4.9	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:		



Photo: Lot 4 on SP116046 Area C – Polygon 1

Mapped remnant polygon of Endangered RE 11.4 6 /11.4.9. The investigation area is dominated by Pennisetum ciliare (Buffel Grass).



9.5. Lot 4 on SP116046 Area C – Polygon 2

Table 42: Lot 4 on SP116046 Area C – Polygon 2 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The polygon is mapped as containing a patch of Least Concern RE11.5.3 (Figure 31). The area is clearly non-remnant due to mapping errors associated with the scale of RE map production. However, the mapped remnant polygon was observed within the adjoining property. Refer to Quaternary Site 5 in Appendix F and Figure 32 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 52.47"	147° 02' 33.02"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.2)	Least Concern RE11.5.3	
Regional Ecosystem Observed	Non-remnant	
Width of RE:	Not linear (20<50Ha)	



Photo: Lot 4 on SP116046 Area C – Polygon 2

Remnant mapped polygon described as Least Concern RE11.5.3. The area is clearly non-remnant



Figure 31: Regional Ecosystem Changes (Lot 4 on SP116046 Area C – Polygon 1 & 2)

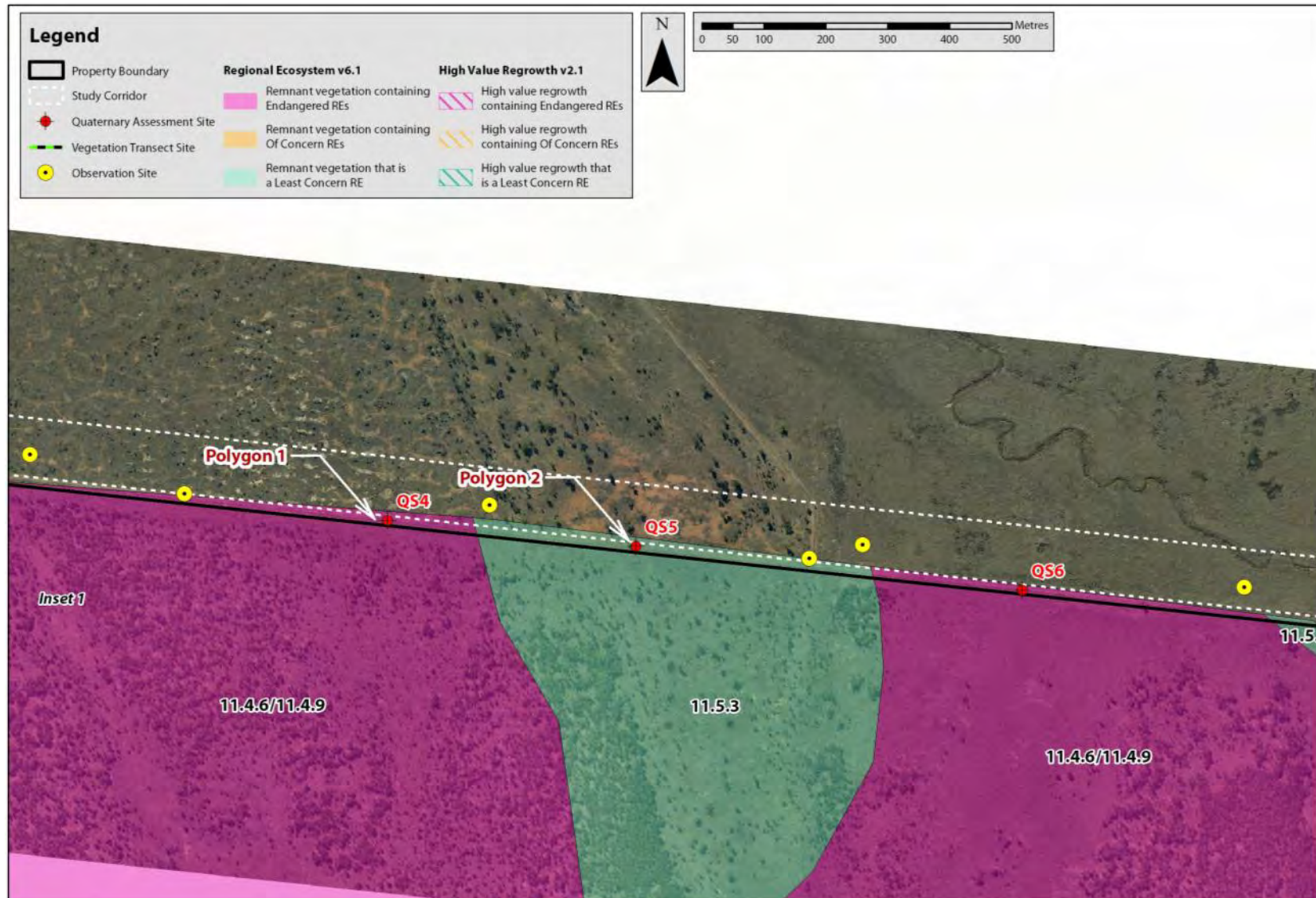
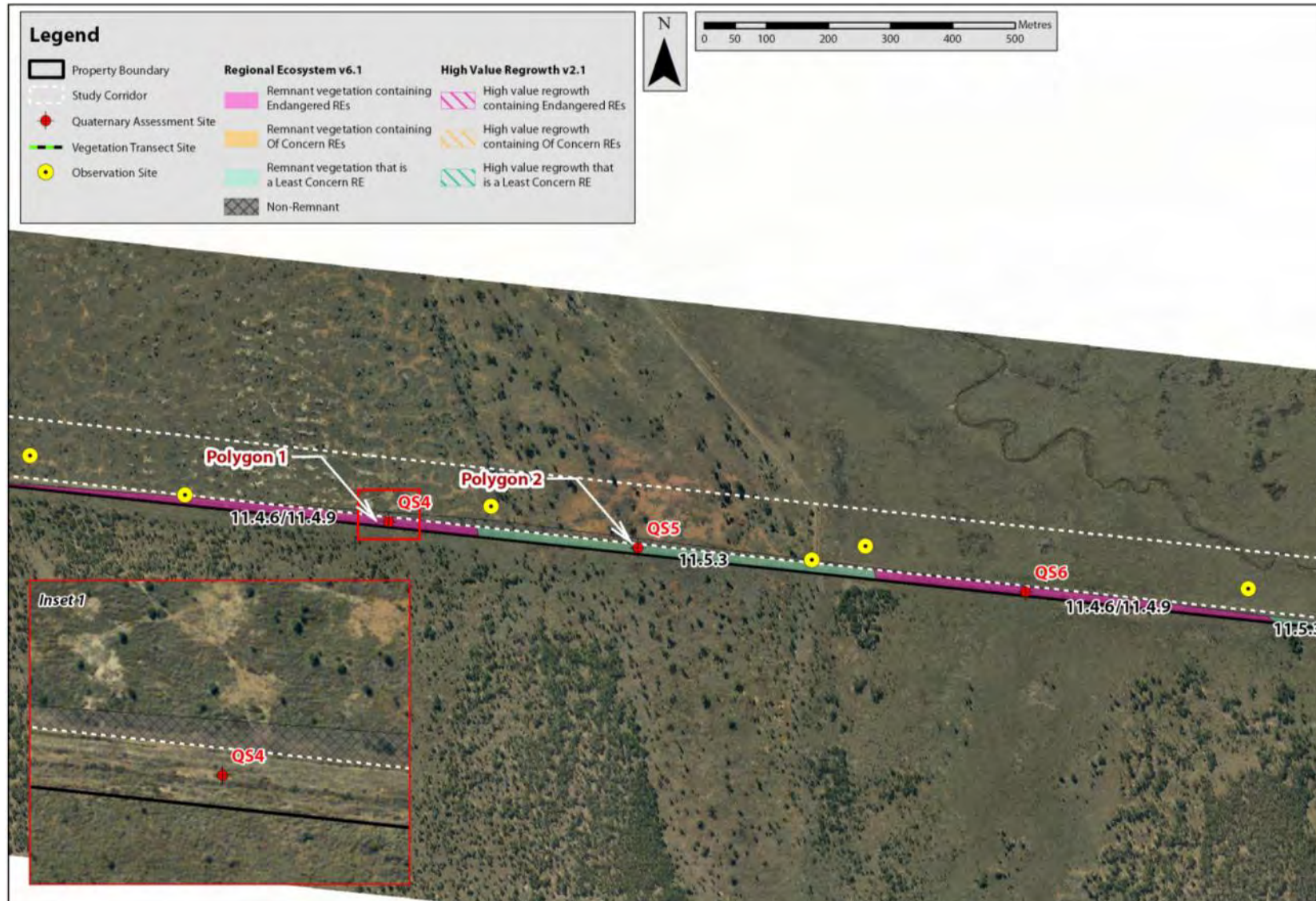




Figure 32: Regional Ecosystem Changes (Lot 4 on SP116046 Area C – Polygon 1 & 2)





9.6. Lot 4 on SP116046 Area D – Polygon I

Table 43: Lot 4 on SP116046 Area C – Polygon 1 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is mapped as a composite vegetation community described as Endangered RE11.4.6 /11.4.9 (Figure 33). The site has been extensively cleared and is currently dominated by <i>Pennisetum ciliare</i> (Buffel Grass). A very sparse shrub layer was observed in the area that contained <i>Acacia harpophylla</i> and <i>Petalostigma pubescens</i> less than 1 m in height. A dense ground layer was observed that was dominated by the exotic grass <i>Pennisetum ciliare</i>. Some native grasses including <i>Dichanthium sericeum</i> and <i>Aristida latifolia</i> were observed at very low densities. The area shows high levels of disturbance from grazing and historical vegetation clearing. Refer to Quaternary Site 7 in Appendix F and Figure 34 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 59.27"	147° 03' 55.45"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.6 / 11.4.9	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (< 5ha)	



Photo: Lot 4 on SP116046 Area C – Polygon 1

Mapped Remnant area dominated with Pennisetum ciliare (Buffel Grass). The area is clearly non-remnant.



9.7. Lot 4 on SP116046 Area D – Polygon 2

Table 44: Lot 4 on SP116046 Area D – Polygon 2 Summary

Site Description		
Location:	Lot 4 on SP116046(East side of Gregory Development Road)	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.7.3 / 11.7.2 (Figure 33). A very sparse shrub layer was observed in the area that contained <i>Acacia harpophylla</i> and <i>Petalostigma pubescens</i> less than 1 m in height. A dense ground layer dominated by the exotic grass <i>Pennisetum ciliare</i> was observed with occasional native grasses including <i>Dichanthium sericeum</i>, <i>Leptochloa digitata</i> and <i>Aristida latifolia</i>. The area shows high levels of disturbance from grazing and historical vegetation clearing. Vegetation would not satisfy the Vegetation Management Act remnant vegetation criteria of 70% height and 50% crown cover. Refer to Quaternary Site 8 in Appendix F and Figure 34 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 51' 05.53"	147° 04' 33.41"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.7.3 / 11.7.2	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (< 5ha)	



Photo: Lot 4 on SP116046 Area D – Polygon 2

Non-remnant area currently mapped as Least Concern RE11.7.3 /11.7.2.



Figure 33: Regional Ecosystem and Survey Effort (Lot 4 on SP116046 Area D – Polygon 1 & 2)

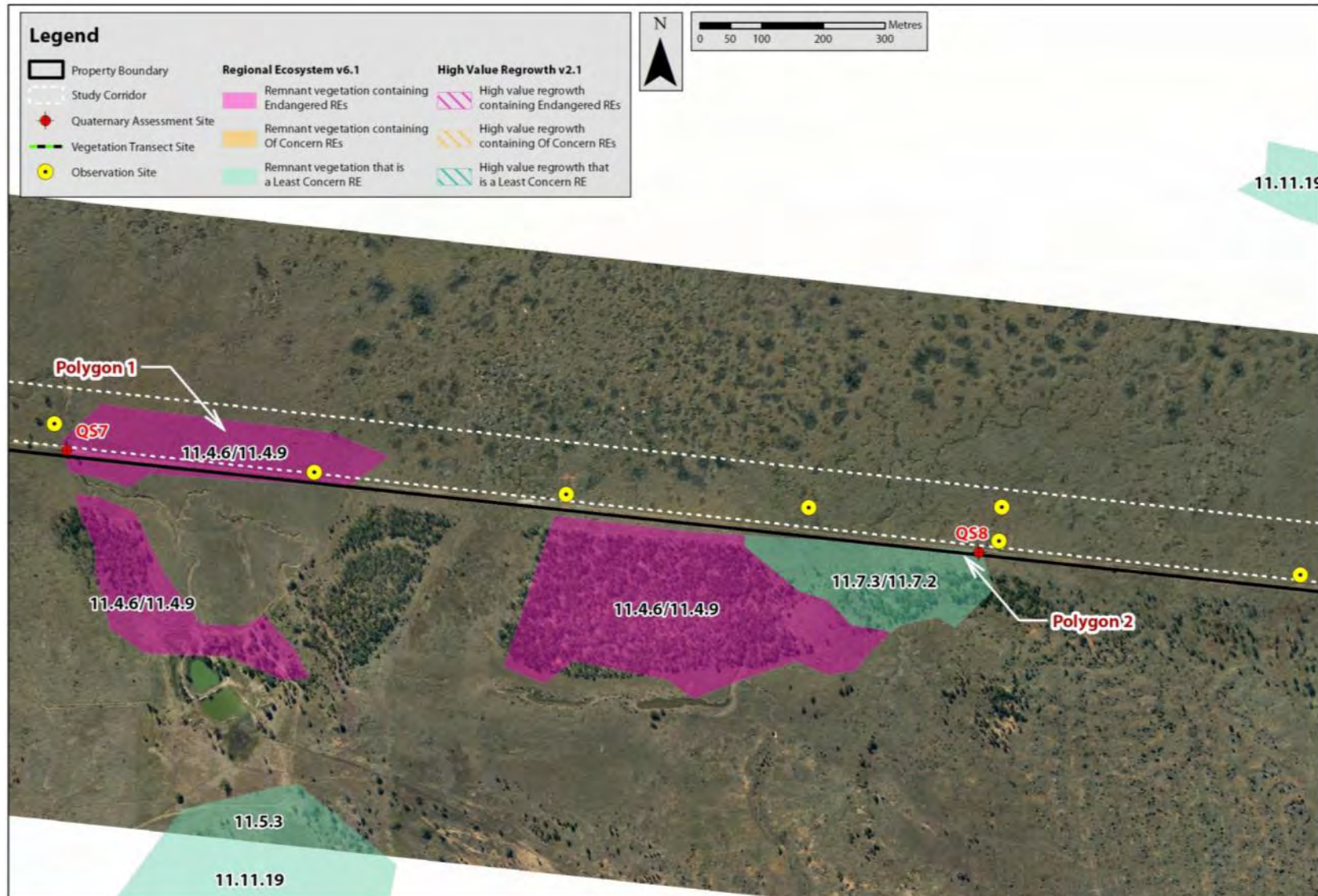
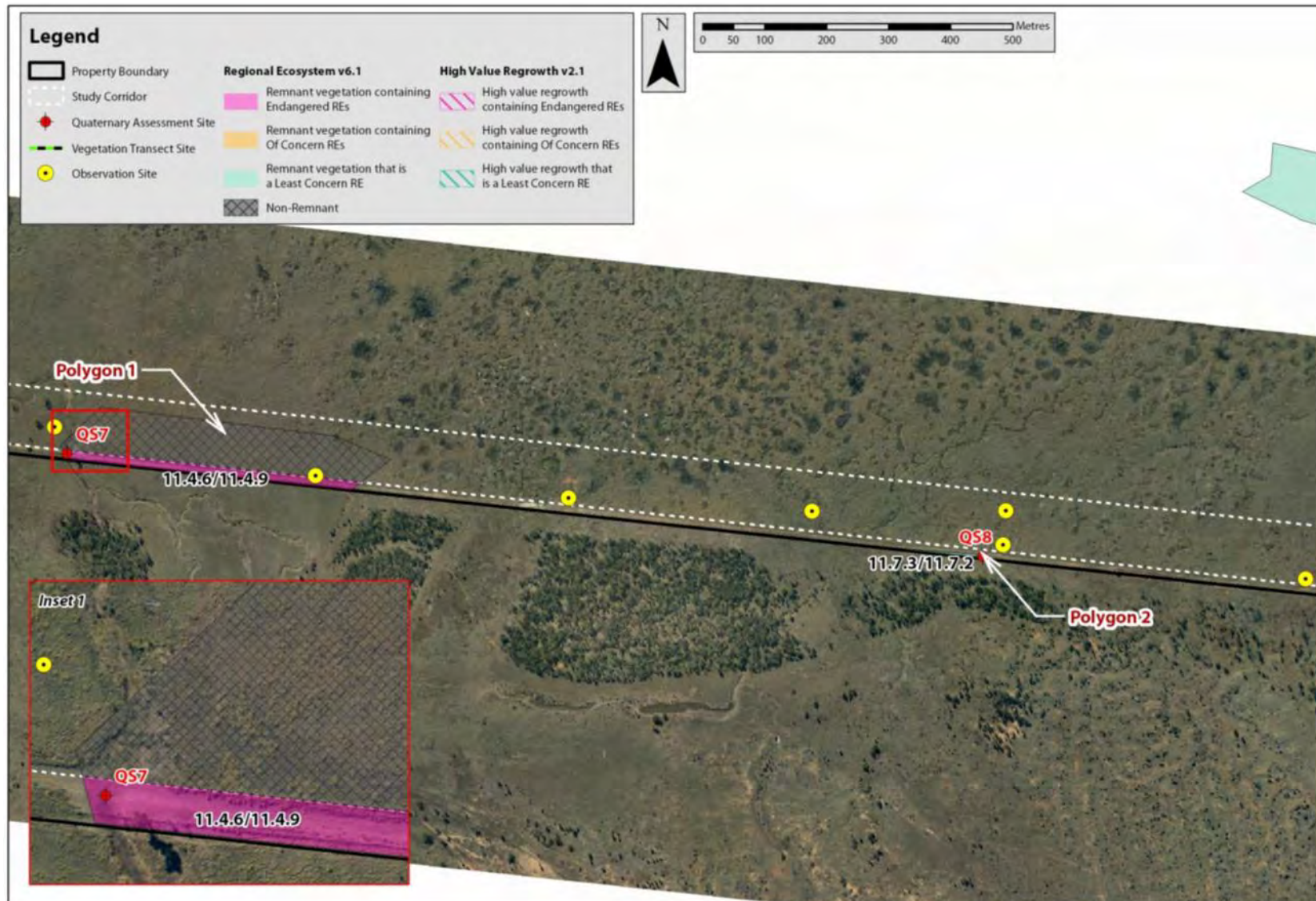




Figure 34: Regional Ecosystem Changes (Lot 4 on SP116046 Area D – Polygon 1 & 2)





9.8. Lot 4 on SP116046 Area E – Polygon I

Table 45: Lot 4 on SP116046 Area E – Polygon 1 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is mapped as Of Concern RE 11.9.10 (Figure 35). The area is clearly non-remnant and incorrectly mapped. The site has been extensively cleared of the majority of vegetation values with a very sparse shrub layer containing <i>Acacia harpophylla</i> less than 1 m in height observed. A dense ground layer dominated by exotic grass <i>Pennisetum ciliare</i> was observed with occasional native grasses including <i>Dichanthium sericeum</i>, <i>Leptochloa digitata</i> and <i>Aristida latifolia</i>. Refer to Quaternary site 11 in Appendix F and Figure 36 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 50' 59.27"	147° 03' 55.45"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.9.10	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (< 5ha)	



9.9. Lot 4 on SP116046 Area E – Polygon 2

Table 46: Lot 4 on SP116046 Area E – Polygon 2 Summary

Site Description		
Location:	Lot 4 on SP116046	
Site Description:	The site is located within a mapped composite vegetation community comprised of approximately 60% Of Concern RE 11.9.10 and 40% Endangered RE11.4.8 (Figure 35). Approximately 700 square metres of the polygon is mapped within the application area. Vegetation clearing along the property boundary has resulted in the vegetation polygon located outside of the investigation area. A very sparse shrub layer was observed in the area less than 1 m in height. A dense ground layer was observed that was dominated by the exotic grass <i>Pennisetum ciliare</i>. Some native grasses including <i>Dichanthium sericeum</i> and <i>Aristida latifolia</i> were observed at very low densities. The area shows high levels of disturbance from grazing and historical vegetation clearing. Refer to Quaternary site 9 in Appendix F and Figure 36 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 51' 19.53"	147° 07' 08.65"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.9.10 / 11.4.8	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (< 5ha)	



Photo: Lot 4 on SP116046 Area E – Polygon 2

The area mapped as remnant within the investigation area is dominated with Pennisetum ciliare (Buffel Grass). Vegetation clearing has occurred within the adjacent property along the existing boundary which has resulted in the removal of the remnant mapped polygon.



9.10. Lot 4 on SP116046 Area E – Polygon 3

Table 47: Lot 4 on SP116046 Area E – Polygon 3 Summary

Site Description		
Location:	Lot 4 on SP116046(East side of Gregory Development Road)	
Site Description:	The site is located within a mapped Endangered RE 11.4.9 (Figure 35). The site has been extensively cleared of almost all vegetation values and is currently dominated by <i>Pennisetum ciliare</i> (Buffel Grass). Some native grasses including <i>Dichanthium sericeum</i>, <i>Leptochloa digitata</i> and <i>Aristida latifolia</i> were observed at very low densities. A very sparse shrub layer was observed in the area that contained <i>Acacia harpophylla</i> and <i>Petalostigma pubescens</i> less than 1 m in height. Refer to Quaternary site 10 in Appendix F and Figure 36 for proposed mapping changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	21° 51' 19.93"	147° 07' 13.60"
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.9	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (< 5ha)	



Photo: Lot 4 on SP116046 Area E – Polygon 3

The area mapped as remnant is dominated by Pennisetum ciliare (Buffel Grass). The area is clearly non-remnant.



Figure 35: Regional Ecosystem and Survey Effort (Lot 4 on SP116046 Area E – Polygon 1 -3)

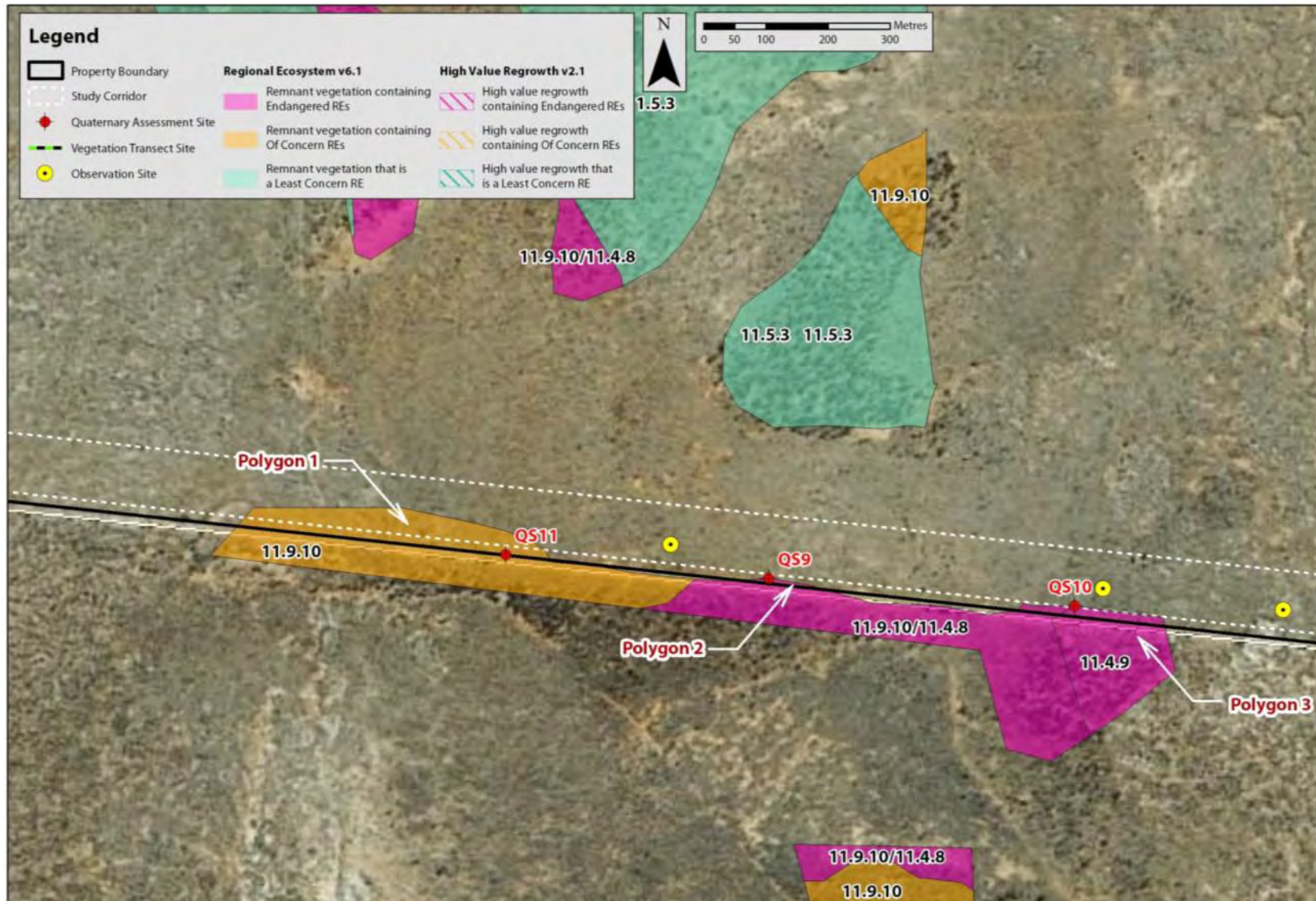
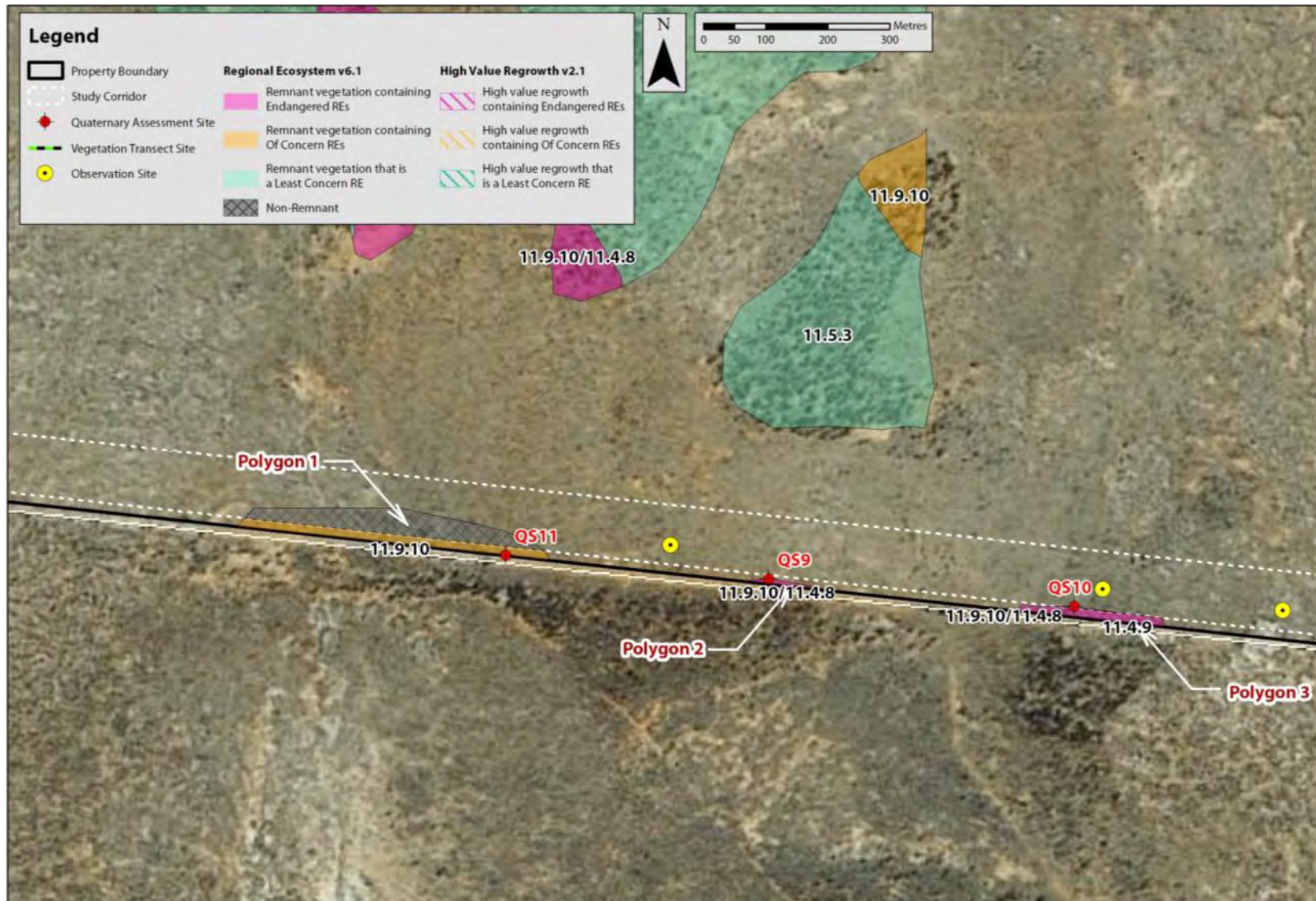




Figure 36: Regional Ecosystem Changes (Lot 4 on SP116046 Area E – Polygon 1 -3)





IO. Lot IO on BL49

Lot 10 on BL49 is a relatively large landholding and the last property making up the SP1 rail corridor. The rail corridor extends through another property (Lot 1 on SP118814) midway through Lot 10 on BL49.

The western half of Lot 10 on BL49 is mostly clear of vegetation beyond a patch of confirmed Endangered RE 11.4.9 which forms part of a large patch of vegetation connected to the North. This Endangered vegetation and associated aerial imagery provides a good example of RE 11.4.9 when compared to other mapped areas on-site.

The eastern half of the property is affected by a range of RE mapping associated with tributaries of Logan Creek and extensive Cainozoic plains mapped as Endangered RE 11.4.11 / 11.4.9. The Endangered mapping is incorrect in the vicinity of the rail corridor and is easily discernible from the mapped polygon of RE 11.4.9 to the West. Based on the detailed field assessment, the application site within the property has been divided into three (3) assessment areas based on the location of the mapped remnant polygons and status of the Regional Ecosystem communities.

Table 48: Lot 10 on BL49 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 10 on BL49 Area A – Polygon 1	Endangered RE 11.5.3 / 11.7.2 / 11.4.9	7.2 ha	Endangered RE 11.4.9	6.7 ha
Lot 10 on BL49 Area A – Polygon 2	Endangered RE 11.4.9	3.2 ha	Endangered RE 11.4.9	3.2 ha
Lot 10 on BL49 Area A – Polygon 3	Endangered Regrowth of 11.4.9	0.9 ha	Endangered RE 11.4.9	0.9 ha
Lot 10 on BL49 Area A – Polygon 4	Endangered RE 11.4.9	2.9 ha	Endangered RE 11.4.9	2.9 ha
Lot 10 on BL49 Area B – Polygon 1	Of Concern RE 11.3.3 / 11.3.37	1.8 ha	Of Concern RE11.3.3	1.4 ha
Lot 10 on BL49 Area C – Polygon 1	Of Concern RE 11.3.3 / 11.3.25	2.6 ha	Of Concern RE11.3.3	2.6 ha
Lot 10 on BL49 Area C – Polygon 2	Endangered RE 11.4.9 / 11.4.11	74.6 ha	Of Concern RE11.4.11	74.6 ha
Lot 10 on BL49 Area C – Polygon 3	Least Concern RE 11.4.4	8.8 ha	Least Concern RE 11.4.4	8.8 ha
Lot 10 on BL49 Area C – Polygon 4	Of Concern RE 11.4.11 / 11.4.6	0.5 ha	Of Concern RE 11.4.11 / 11.4.6	0.5 ha



IO.I. Lot 10 on BL49 Area A – Polygon 1

Table 49: Lot 10 on BL49 Area A – Polygon 1 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Endangered vegetation community described as RE 11.5.3 / 11.7.2 / 11.4.9 (Figure 37). The broader composite vegetation community is described as comprising 60% RE 11.5.3, 20% RE 11.7.2 and 20% RE 11.4.9 which includes three different Land Zones. The mapped remnant polygon is located centrally on the western side of the application area. The vegetation community observed is dominated by <i>Acacia harpophylla</i> (Brigalow) and consistent with Endangered RE 11.4.9. Species consistent with RE11.7.2 were also observed, but species associated with RE 11.5.3 were not. The presence of species from RE 11.7.2 is potentially a result of smaller scale Land Zone variations. The site is relatively vegetated but is currently heavily grazed and contains <i>Pennisetum ciliare</i> (Buffel Grass) within the ground layer greater than 50%. Refer to Figure 38. Refer to Transect 1 and Quaternary sites 1, 2 and 3 within Appendix G and Figure 38 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	515608.08 m E	7582812.07 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.5.3 /11.7.2 /11.4.9	
Regional Ecosystem Observed:	Endangered RE 11.4.9	
Width of RE:	Not linear (>20ha)	



Photo: Lot 10 on BL49 Area A – Polygon 1

Mapped remnant polygon of Endangered RE 11.4.9.



IO.2. Lot 10 on BL49 Area A – Polygon 2

Table 50: Lot 10 on BL49 Area A – Polygon 2 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Endangered vegetation community dominated by <i>Acacia harpophylla</i>, RE 11.4.9. Refer to Figure 37. Vegetation structure and species composition confirm the presence of RE 11.4.9. The remnant polygon adjoins a heterogeneous polygon to the West. The site is heavily vegetated but is also heavily grazed and contains <i>Pennisetum ciliare</i> (Buffel Grass) within the ground layer. Refer to Transect 2 and Quaternary site 4 in Appendix G and Figure 38 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	7582044.23N	516143.74E
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.9	
Regional Ecosystem Observed:	Endangered RE 11.4.9	
Width of RE:	Not linear (>20ha)	



Photo: Lot 10 on BL49 Area A – Polygon 2
Mapped remnant polygon of Endangered RE 11.4.9.



10.3. Lot 10 on BL49 Area A – Polygon 3

Table 51: Lot 10 on BL49 Area A – Polygon 3 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Endangered High Value Regrowth vegetation community dominated by <i>Acacia harpophylla</i>. Refer to Figure 37. The regrowth polygon adjoins a remnant patch of RE 11.4.9. The regrowth observed had a species composition consistent with a regrowth community of RE11.4.9. The site is currently highly disturbed and shows signs of previous historical clearing and heavy grazing. The exotic/introduced grass, <i>Pennisetum ciliare</i> (Buffel Grass), was identified within the ground layer in densities greater than 50% cover. Species are consistent with those expected for High Value Regrowth of RE 11.4.9 and are as described in species list for Transect 3. Refer to species list for Transect 3 in Appendix G and Figure 38 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	516687.69 m E	7582577.99 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered HVR RE 11.4.9	
Regional Ecosystem Observed:	Endangered HVR RE 11.4.9	
Width of RE:	Not linear (>20ha)	



Photo: Lot 10 on BL49 Area A – Polygon 3

Mapped High Value Regrowth polygon of Endangered RE 11.4.9.



IO.4. Lot 10 on BL49 Area A – Polygon 4

Table 52: Lot 10 on BL49 Area A – Polygon 4 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Endangered vegetation community dominated by <i>Acacia harpophylla</i> and currently mapped as Endangered RE 11.4.9. Refer to Figure 37. The site is located towards the North-West boundary of the property. Species recorded and Land Zone observed are consistent with Endangered RE 11.4.9. The site has undergone various degrees of disturbances due to cattle grazing. Vegetation clearing adjacent to the mapped polygon has also resulted in the invasion of weed species throughout the ground layer. Refer to Transect 3 in Appendix G and Figure 38 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	516687.69 m E	7582577.99 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.9	
Regional Ecosystem Observed:	Endangered RE 11.4.9	
Width of RE:	Not linear (20<50ha)	



Photo: Lot 10 on BL49 Area A – Polygon 4

Mapped remnant polygon of Endangered RE 11.4.9.



Figure 37: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area A – Polygon 1-4)

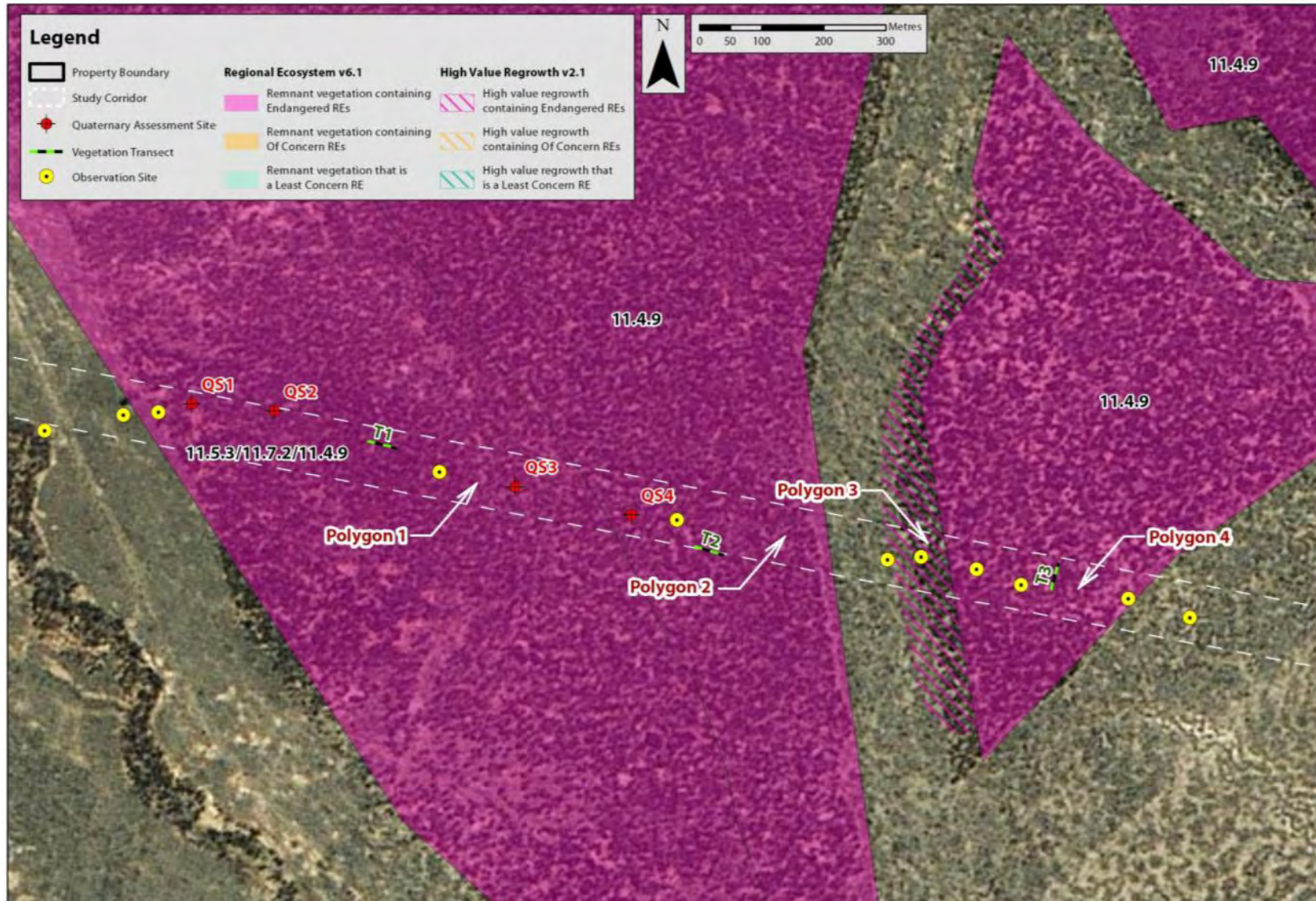
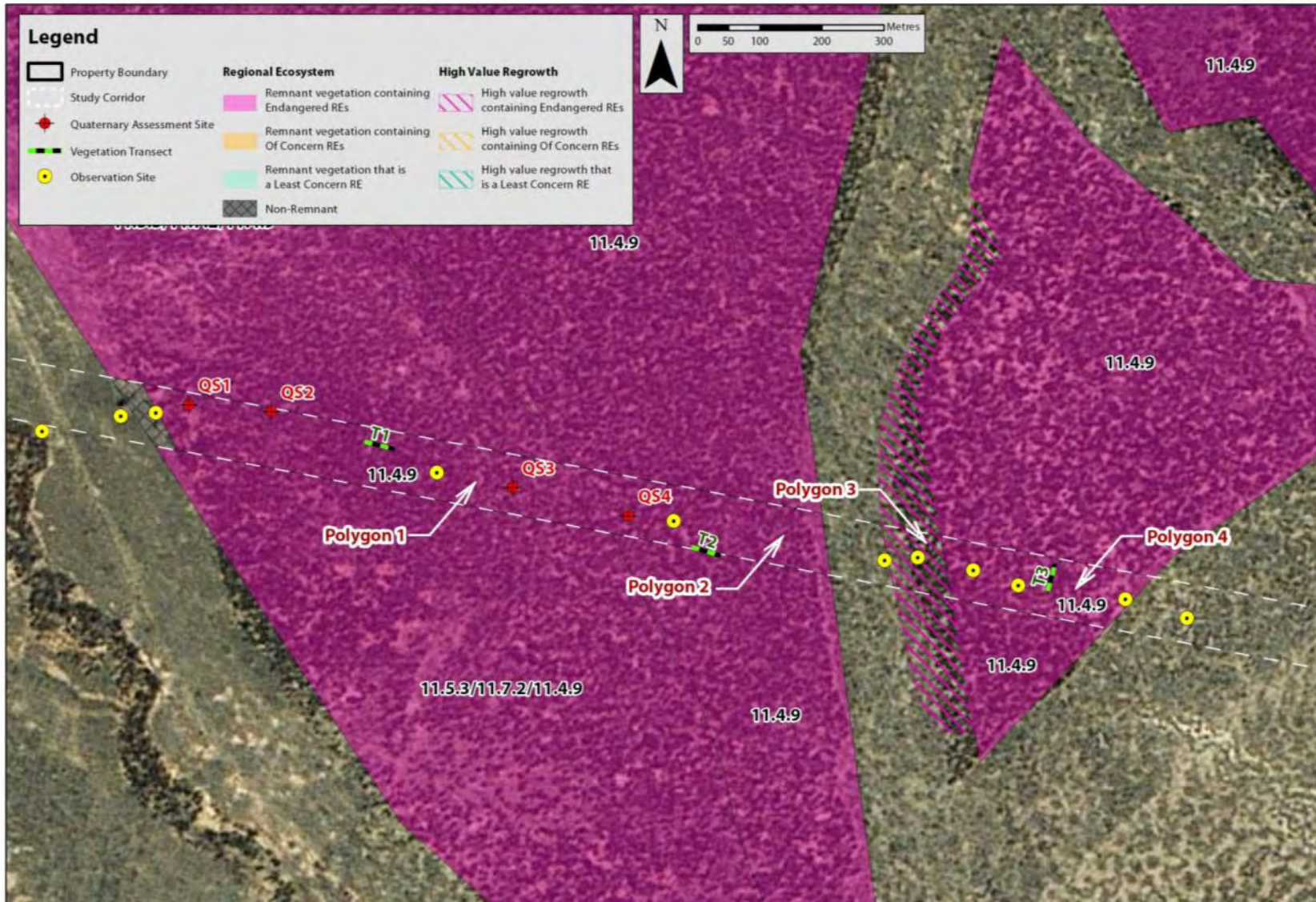


Figure 38: Regional Ecosystem Changes (Lot 10 on BL49 Area A – Polygon 1-4)





IO.5.Lot IO on BL49 Area B – Polygon I

Table 53: Lot 10 on BL49 Area B – Polygon 1 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within an Of Concern mapped vegetation community described as RE 11.3.3 / 11.3.37. The mapped composite Regional Ecosystem is described as containing 90% Of Concern RE11.3.3 and 10% Least Concern RE11.3.37. The site is located within vegetation situated on an alluvial plain on the western side of Logan Creek (Refer to Figure 39). <i>Eucalyptus coolabah</i> dominates the T1 layer within this area and the vegetation structure is consistent with RE 11.3.3. The mapped remnant polygon has very little weed invasion with the ground layer is dominated by native grass and forb species. The eastern edge of this polygon has been historically cleared and is non-remnant as demonstrated by aerial imagery. The mapping error is likely a result of scaling issues associated with RE map production. Refer to Transect 4 in Appendix G and Figure 40 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	524535.00 m E	7581085.00 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3 / 11.3.37	
Regional Ecosystem Observed:	Of Concern RE11.3.3	
Width of RE:	Not linear (20<50ha)	



Photo: Lot 10 on BL49 Area B – Polygon 1

Mapped remnant polygon of Of Concern RE 11.3.3 described as Eucalyptus coolabah woodland on alluvial plain. Note lack of fringing watercourse vegetation.



Figure 39: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area B – Polygon 1)

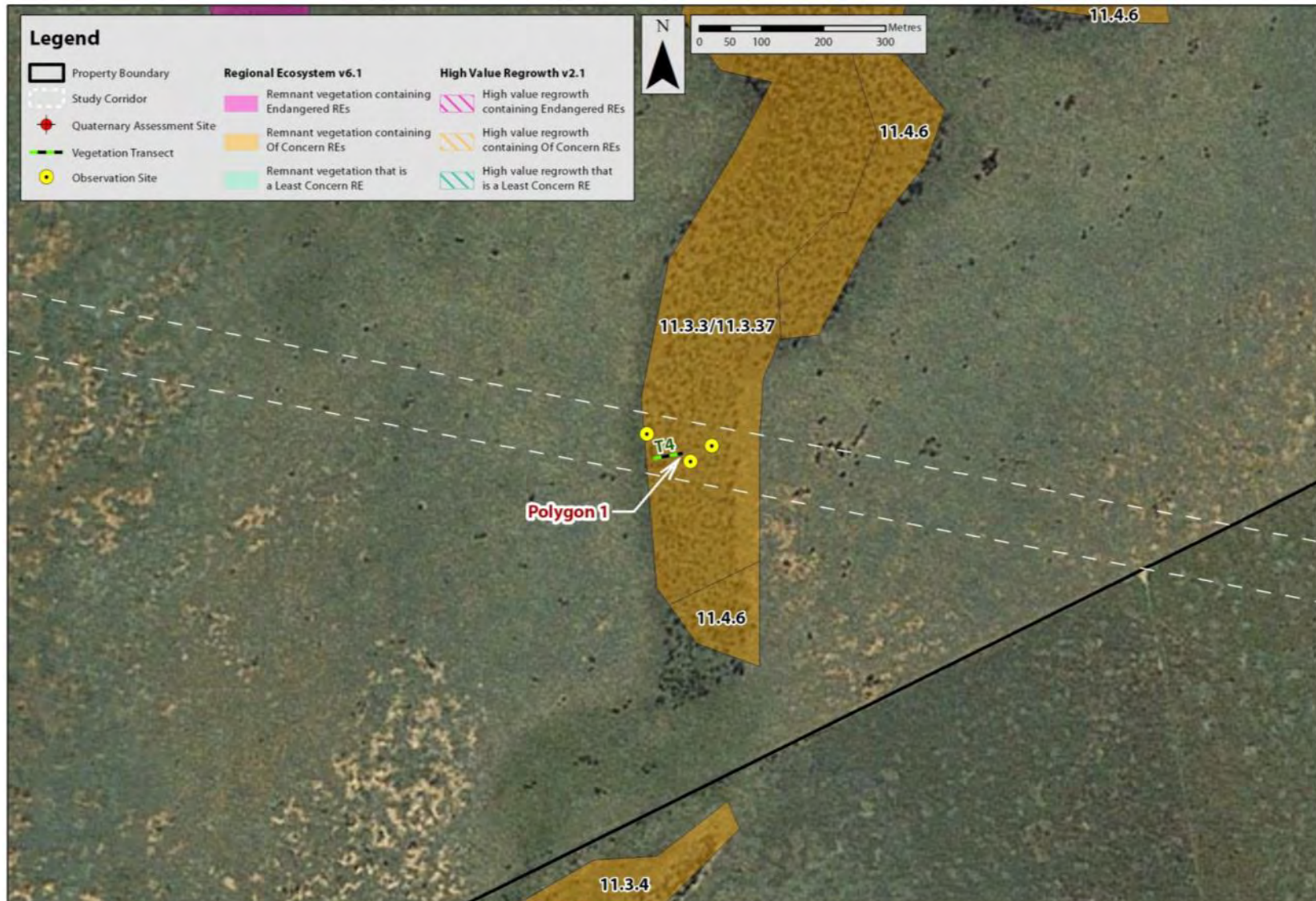
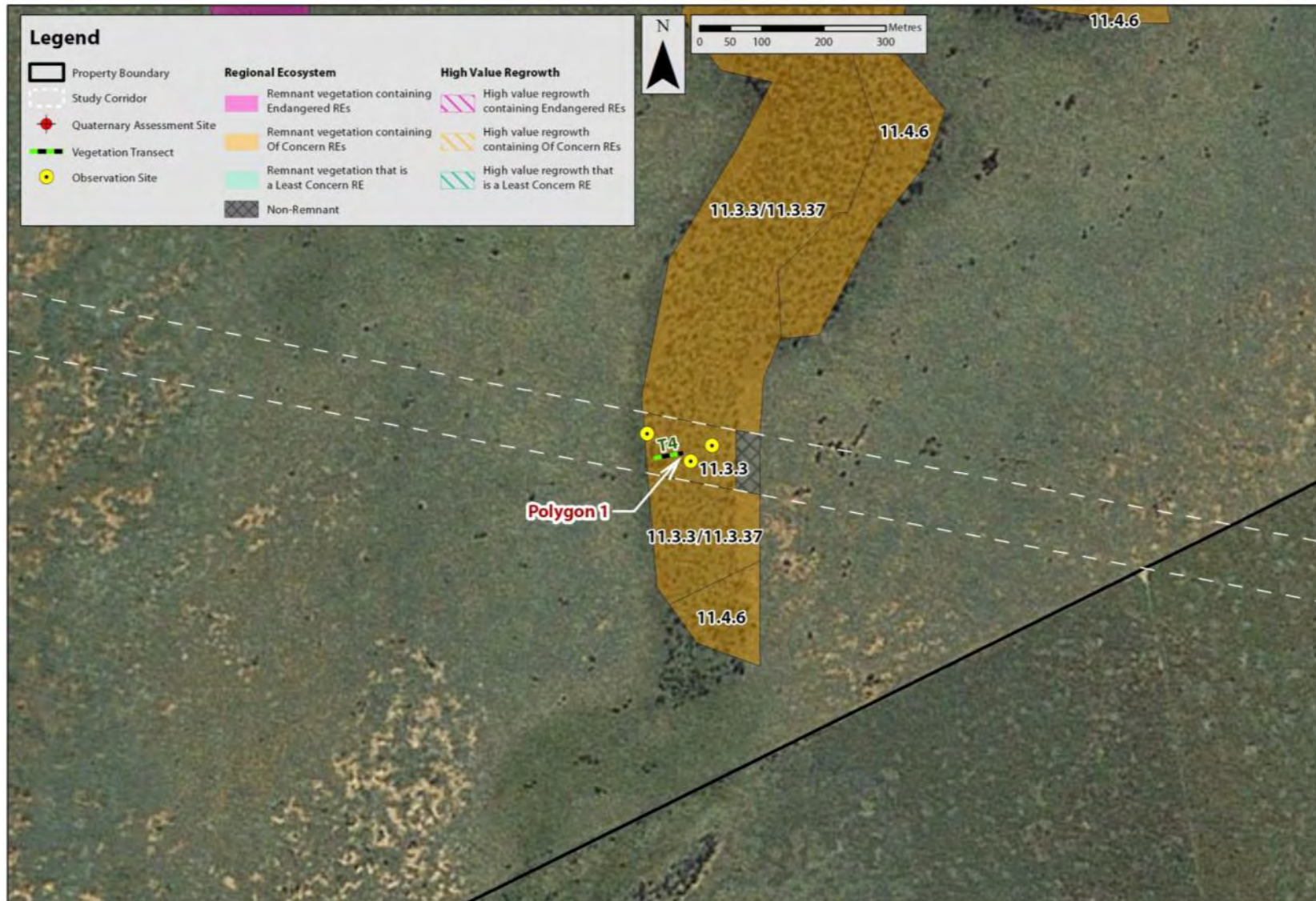




Figure 40: Regional Ecosystem Changes (Lot 10 on BL49 Area A – Polygon 1)





IO.6. Lot IO on BL49 Area C – Polygon I

Table 54: Lot 10 on BL49 Area C – Polygon 1 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a Least Concern mapped vegetation community described as RE 11.3.3 / 11.3.25. The site includes vegetation situated on an alluvial plain associated with the Eastern side of Logan Creek. Refer to Figure 41a. Vegetation structure and species composition are consistent with RE 11.3.3 <i>Eucalyptus coolabah</i> woodland on alluvial plains. The mapped remnant polygon has very little weed invasion with the ground layer dominated by native grass and forb species. Refer to Transect 4 in Appendix G and Figure 42a.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	527927.55 m E	7580435.23 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3 / 11.3.25	
Regional Ecosystem Observed:	Of Concern RE11.3.3	
Width of RE:	Not linear (20<50ha)	



Photo: Lot 10 on BL49 Area C – Polygon 1
Mapped remnant polygon of Endangered RE 11.3.3



IO.7. Lot IO on BL49 Area C – Polygon 2

Table 55: Lot 10 on BL49 Area C – Polygon 2 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Endangered vegetation community described as RE 11.4.11 / 11.4.9 (Figure 41a-e). The species composition and vegetation structure is consistent with RE 11.4.11. <i>Acacia harpophylla</i> was observed within the remnant vegetation polygon consistent with RE 11.4.11 but not 11.4.9. The height of the <i>Acacia harpophylla</i> recorded (5 - 11m) and the clumping nature of its distribution indicates vegetation consistent with RE 11.4.11. <i>Acacia harpophylla</i> identified were of poor condition and exhibited signs of senescence. Numerous dead <i>Acacia harpophylla</i> were observed in a number of areas particularly to the western end of the polygon. <i>Acacia harpophylla</i> associated with RE 11.4.9 should form a distinct canopy 11 – 17 m in height as observed to the West and clearly identifiable by aerial imagery. Species observed within the investigation area throughout the mapped Endangered polygon predominantly represent Regional Ecosystem 11.4.11 described as <i>Dichanthium sericeum</i>, <i>Astrebla</i> spp. and patchy <i>Acacia harpophylla</i>, <i>Eucalyptus coolabah</i> on Cainozoic clay plains. Species present are described via Transects 5, 6, 7 and 8 (Appendix F). The mapped polygon contains both areas of intact native grasslands and also highly disturbed areas containing numerous weedy ground layer species including <i>Pennisetum ciliare</i> (Buffel Grass) and <i>Parthenium hysterophorus</i> (Parthenium). The area is utilised for cattle grazing and is therefore highly disturbed. The condition of the grassland areas surveyed showed varying degrees of disturbance with infestation of <i>Pennisetum ciliare</i> (Buffel Grass) ranging from 10%-90% cover. Refer to Transect 5, 6, 7 and 8 and Quaternary sites 5, 6, 7, 8 and 9 in Appendix G and Figure 42a-e for the proposed changes.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	-21.874240	147.236967
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.11 / 11.4.9	
Regional Ecosystem Observed:	Of Concern RE11.4.11	
Width of RE:	Not linear (20<50ha)	



Photo: Lot 10 on BL49 Area C – Polygon 2

Mapped remnant polygon of Of Concern RE 11.4.11. Note patchy Acacia harpophylla less than 11 m in height indicating signs of senescence.

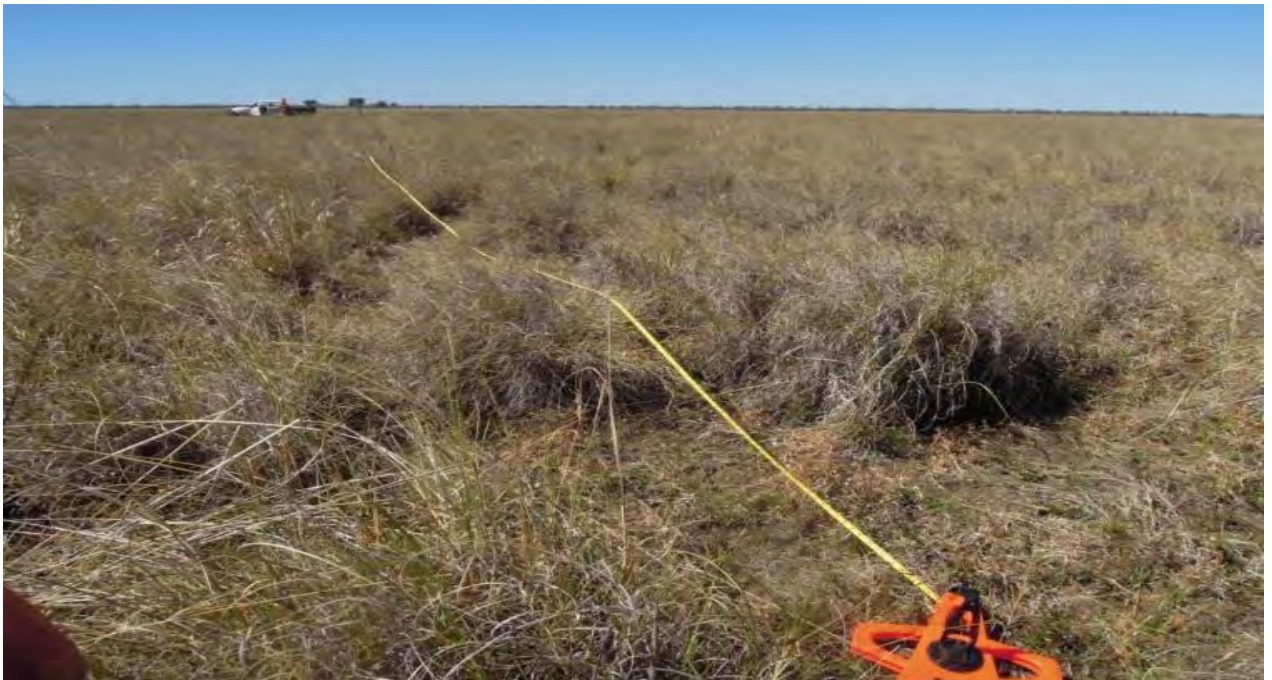


Photo: Lot 10 on BL49 Area C – Polygon 2

Mapped remnant polygon of Of Concern RE 11.4.11. Note absence of T1 and T2 layer.



Photo: Lot 10 on BL49 Area C – Polygon 2

Mapped remnant polygon of Of Concern RE 11.4.11. Note scattered Eucalyptus coolabah individuals to 12 m in height with native grass and forb ground layer.



Photo: Lot 10 on BL49 Area C – Polygon 2

Mapped remnant polygon of Of Concern RE 11.4.11. Note scattered Eucalyptus coolabah individuals to 12 m in height with native grass and forb ground layer.



IO.8. Lot 10 on BL49 Area C – Polygon 3

Table 56: Lot 10 on BL49 Area C – Polygon 3 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within mapped Least Concern RE 11.4.4. Refer to Figure 41f. The mapped remnant polygon has species composition and structure consistent with RE 11.4.4 which include <i>Panicum decompositum</i>, <i>Astrebla lappacea</i> and <i>Astrebla pectinata</i>. Some weed invasion by <i>Pennisetum ciliare</i> and <i>Parthenium hysterophorus</i> observed within the area subject to regular grazing by cattle. Refer to Quaternary Site 10 in Appendix G and Figure 42f. No mapping changes required.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	539744.31 m E	7578158.44 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.4.4	
Regional Ecosystem Observed:	Least Concern RE 11.4.4	
Width of RE:	Not linear (>50ha)	



Photo: Lot 10 on BL49 Area C – Polygon 3

Mapped remnant polygon of Of Concern RE 11.4.4. Note occasional scattered Acacia and eucalypt trees with native grass and forb ground layer.



IO.9. Lot IO on BL49 Area C – Polygon 4

Table 57: Lot 10 on BL49 Area C – Polygon 4 Summary

Site Description		
Location:	Lot 10 on BL49	
Site Description:	The site is located within a mapped Of Concern vegetation community described as RE 11.4.11 / 11.4.6 containing 80% RE 11.4.11 and 20% RE11.4.6. Refer to Figure 41f. The mapped remnant polygon has very little weed invasion within the ground layer dominated by a native grass understorey consistent with RE 11.4.11 and RE 11.4.6. Refer to Quaternary Site 11 in Appendix G and Figure 42f. No mapping changes are proposed for this area.	
Datum:	GDA94 (MGA55)	
Latitude / Longitude	Latitude	Longitude
	540238.10 m E	7578076.43 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.11 / 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.11 / 11.4.6	
Width of RE:	Not linear (10<20ha)	



Photo: Lot 10 on BL49 Area C – Polygon 4

Mapped remnant polygon of Of Concern RE 11.4.11 / 11.4.6. Note occasional scattered Acacia cambagei with dense native grass ground layer.



Figure 41a: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)

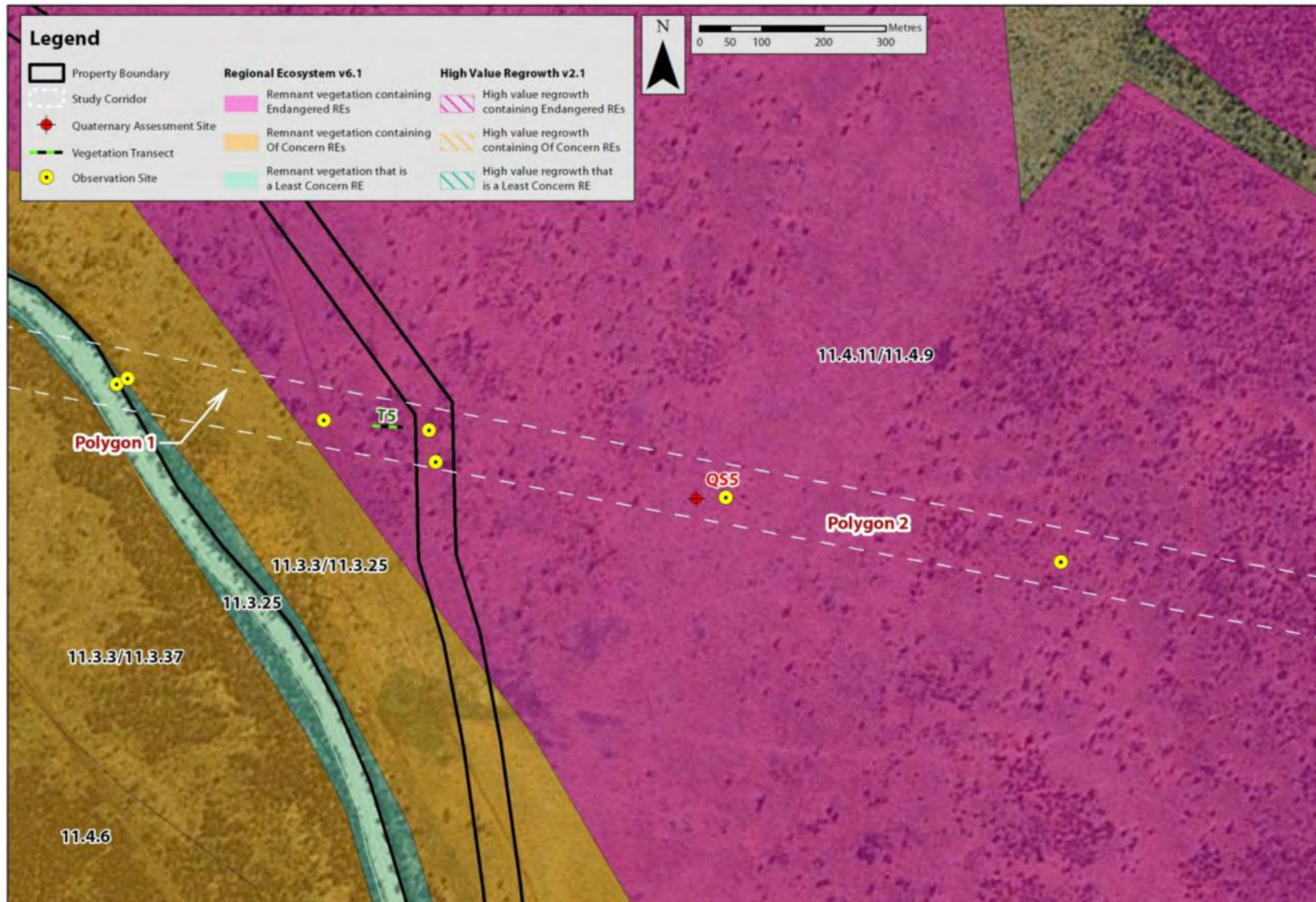




Figure 41b: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)

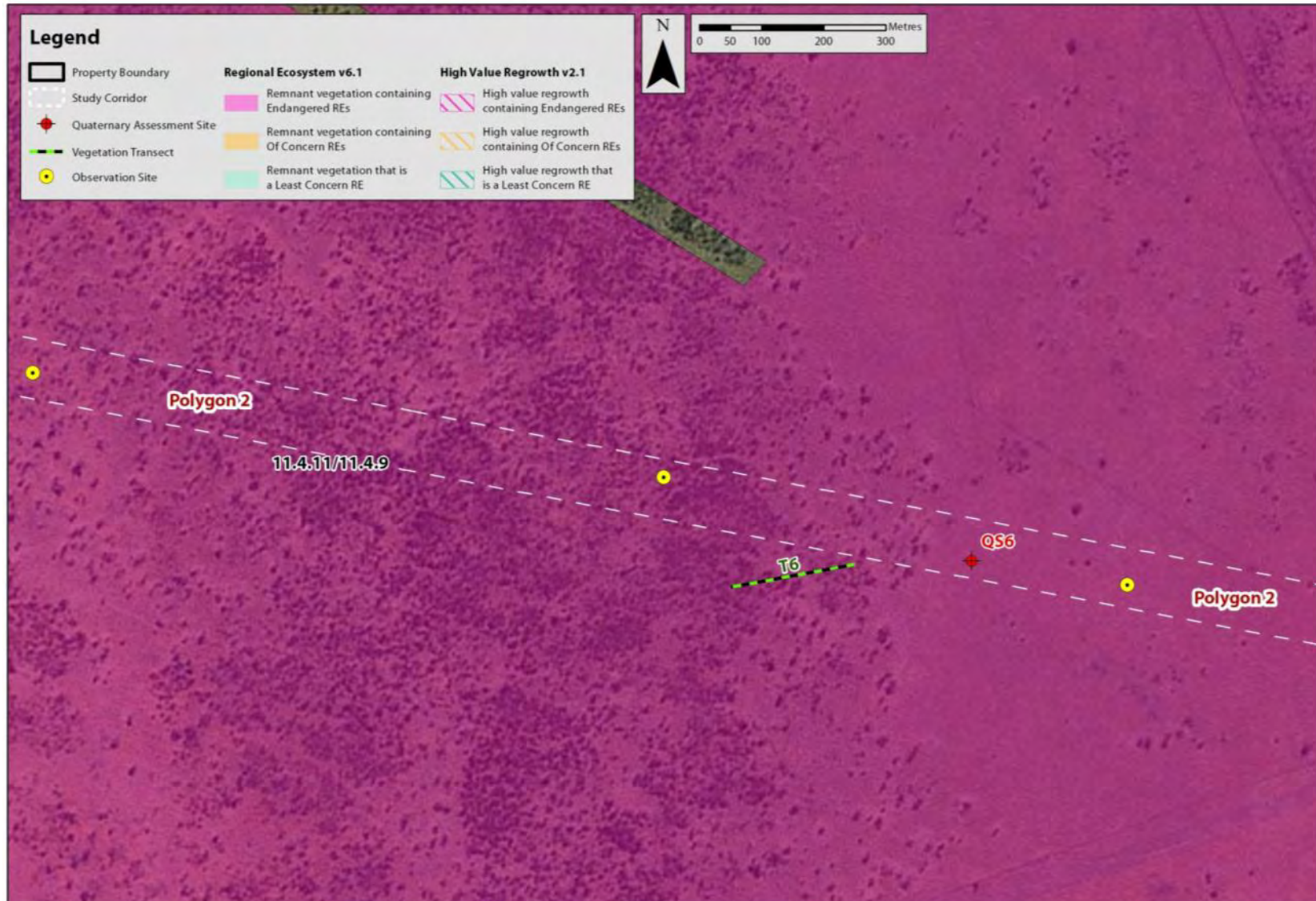




Figure 41c: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)

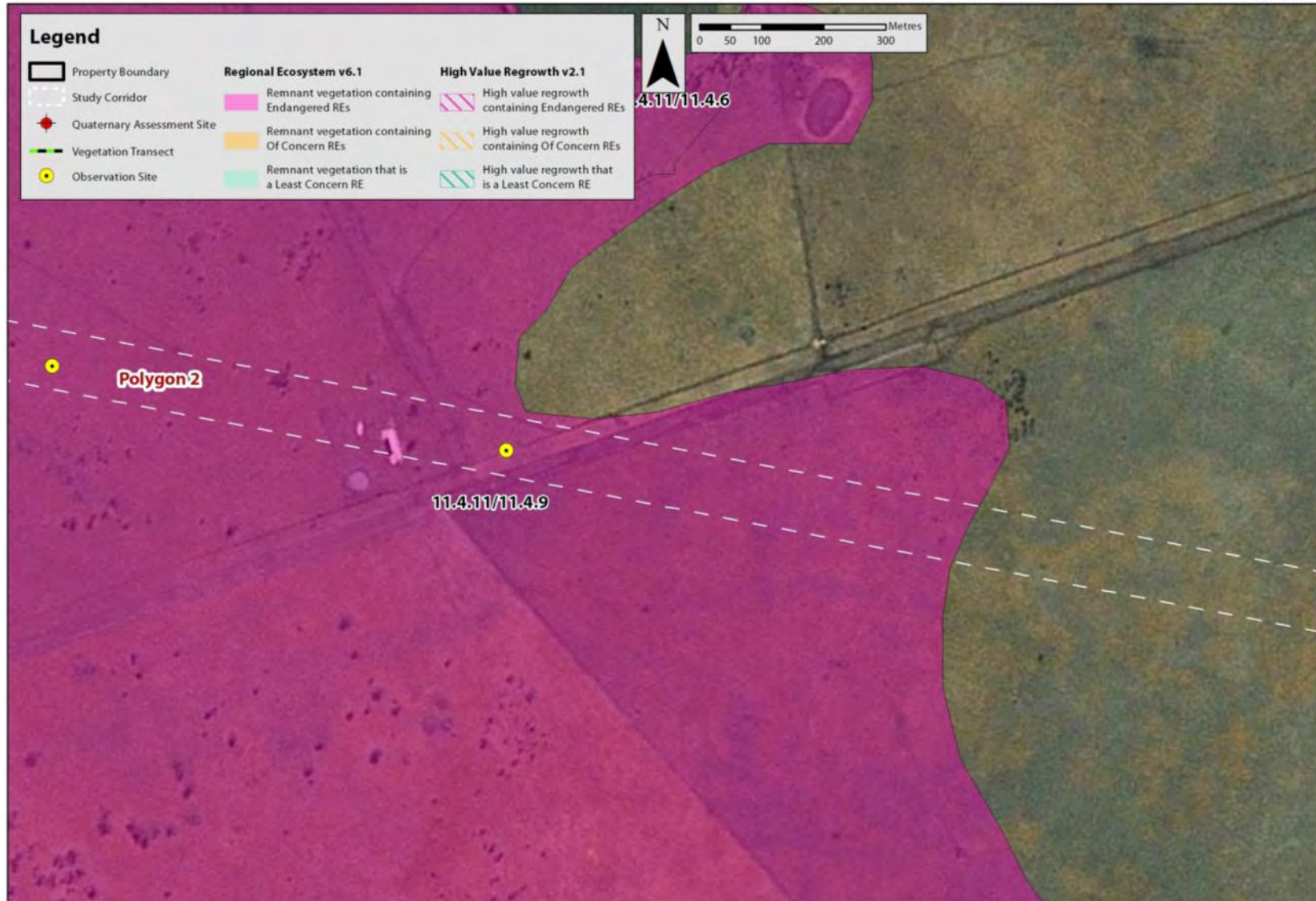




Figure 41d: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)

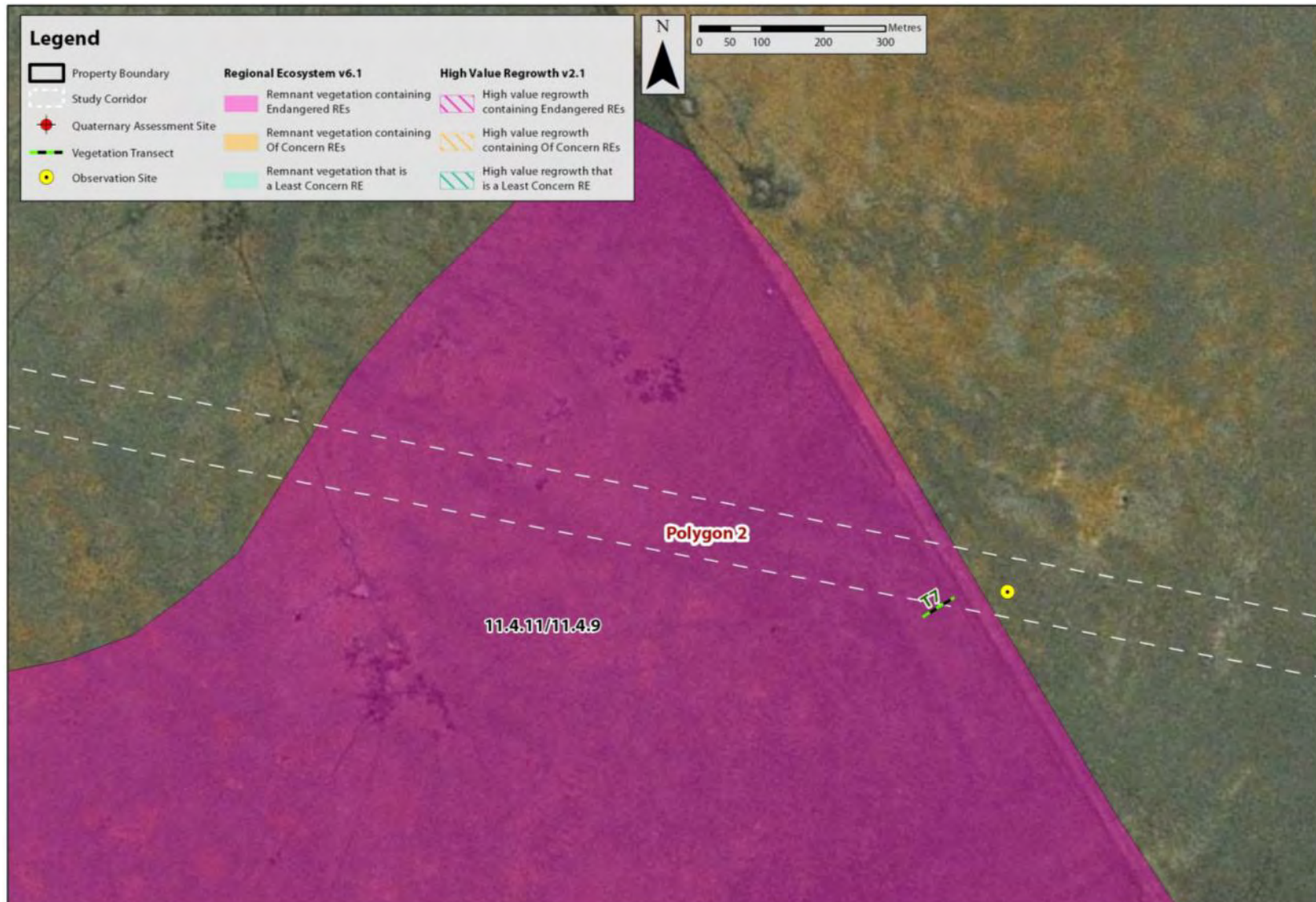




Figure 41e: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)





Figure 41f: Regional Ecosystem and Survey Effort (Lot 10 on BL49 Area C – Polygon 1-4)

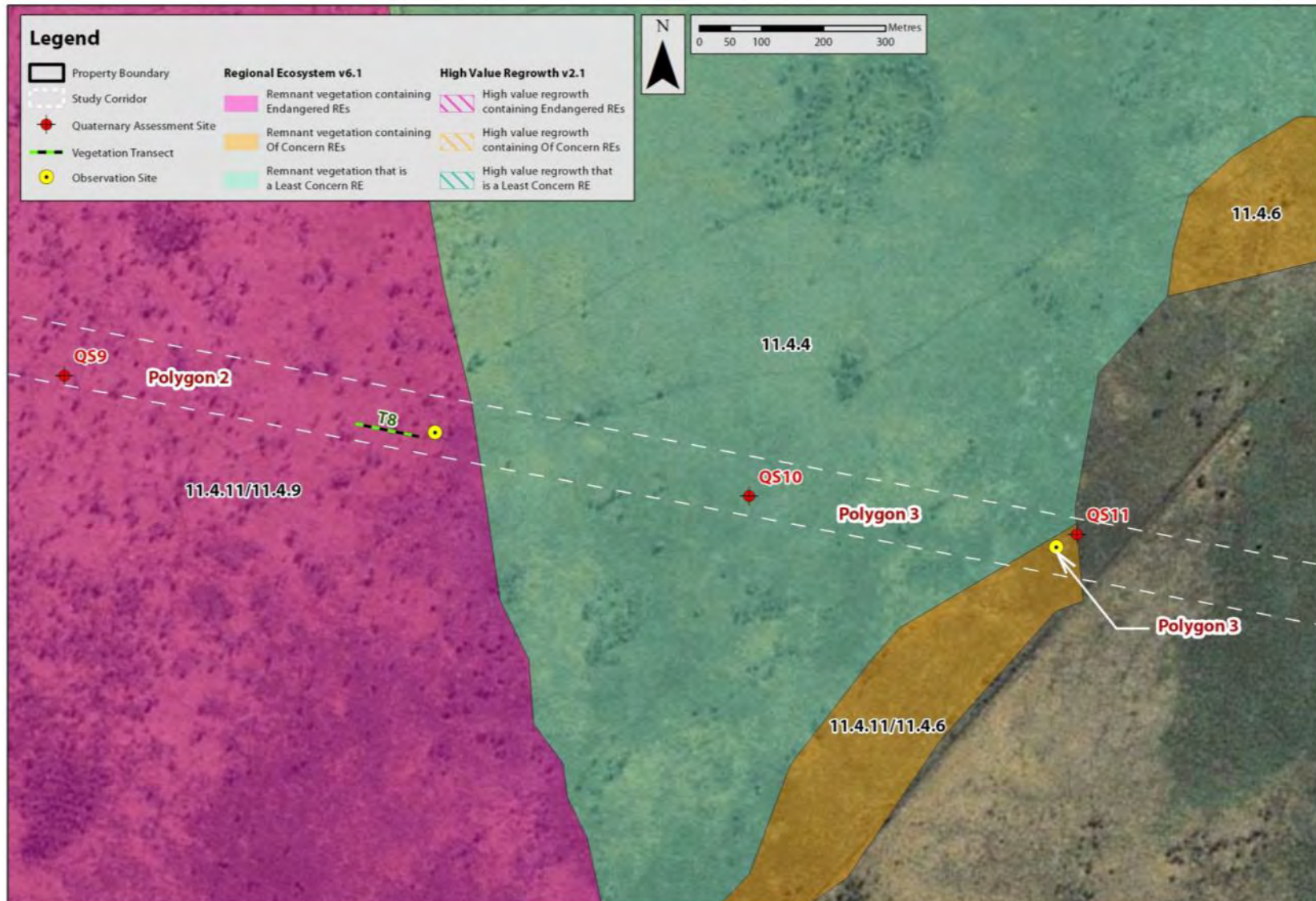




Figure 42a: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)

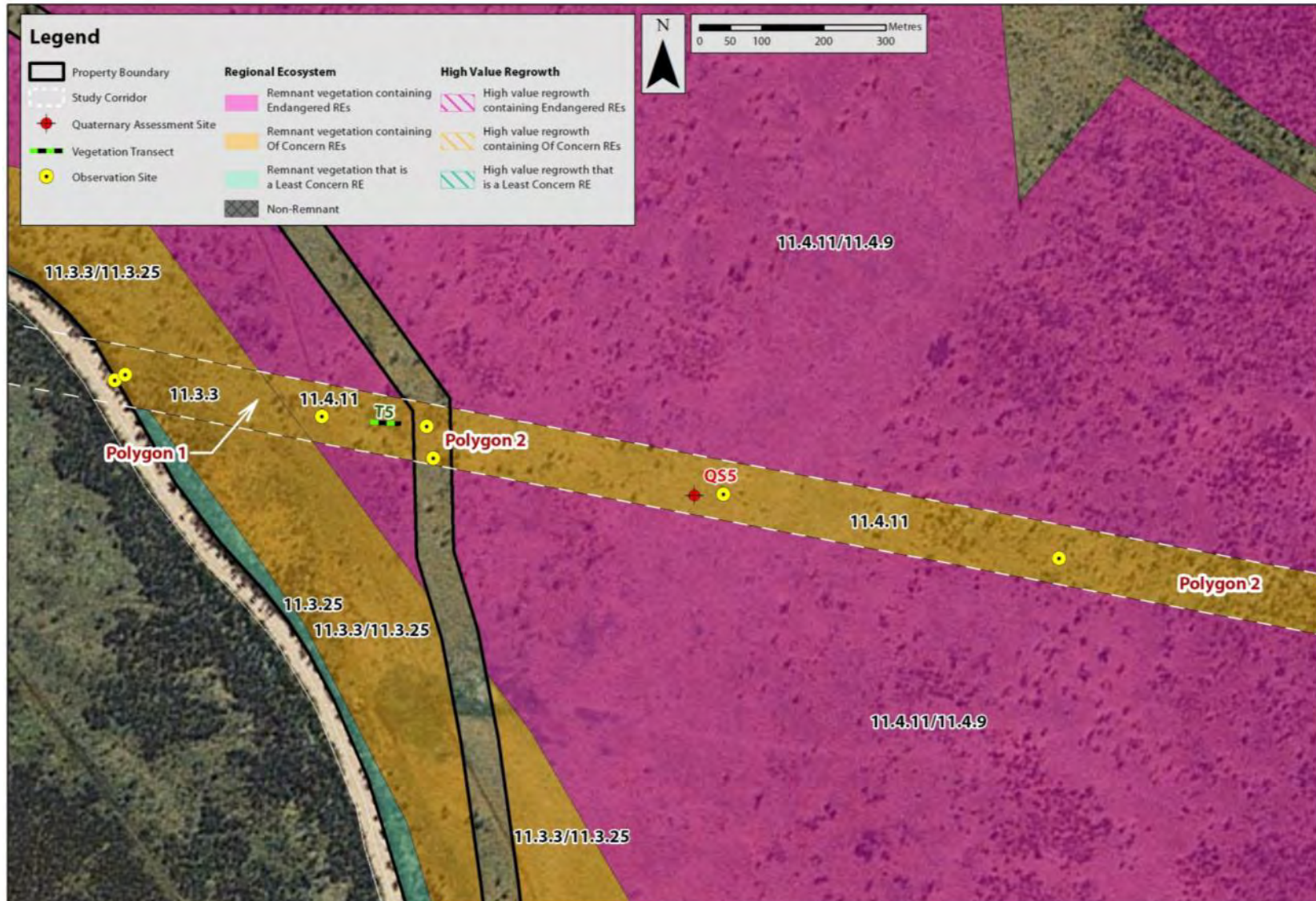




Figure 42b: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)

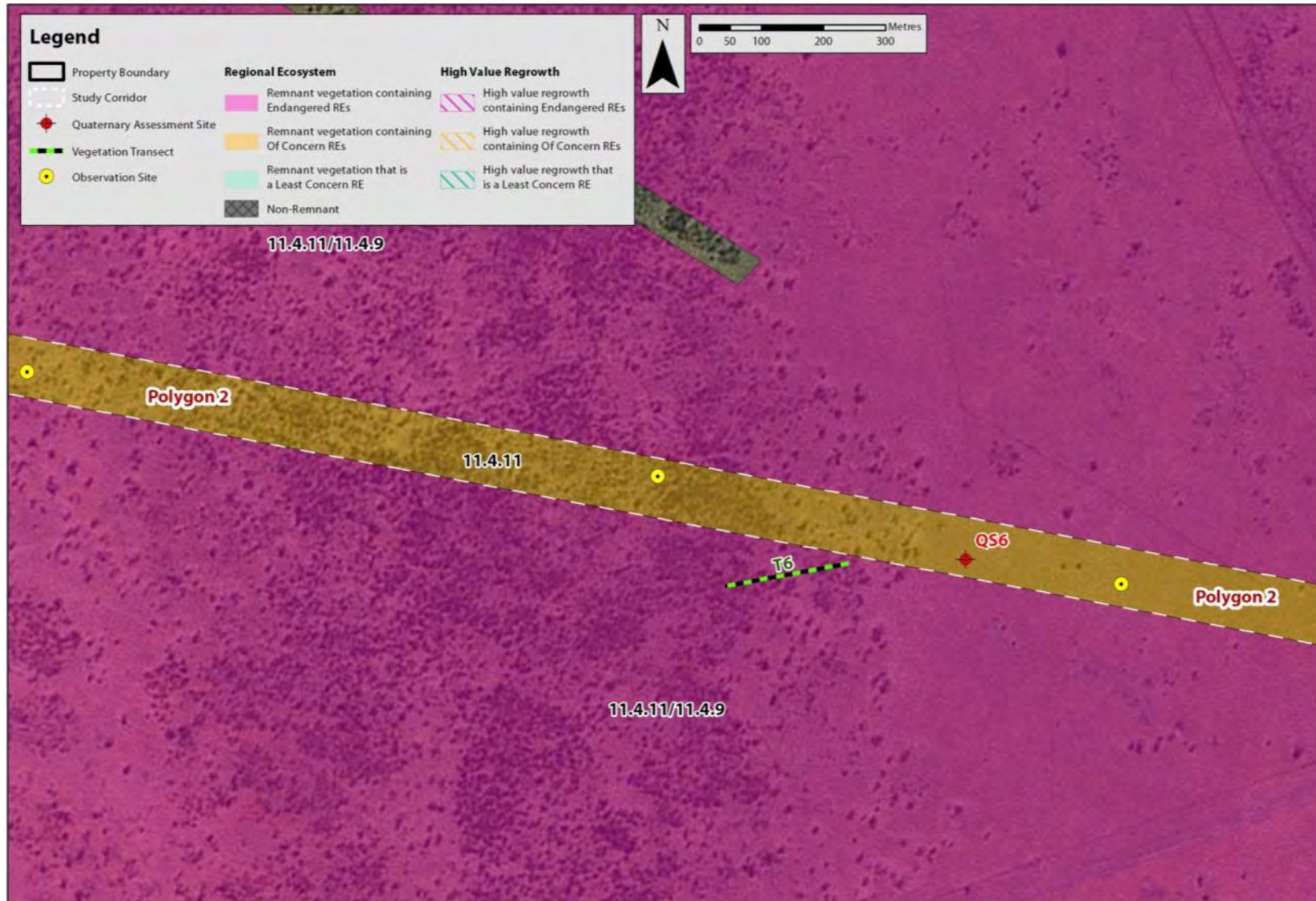




Figure 42c: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)

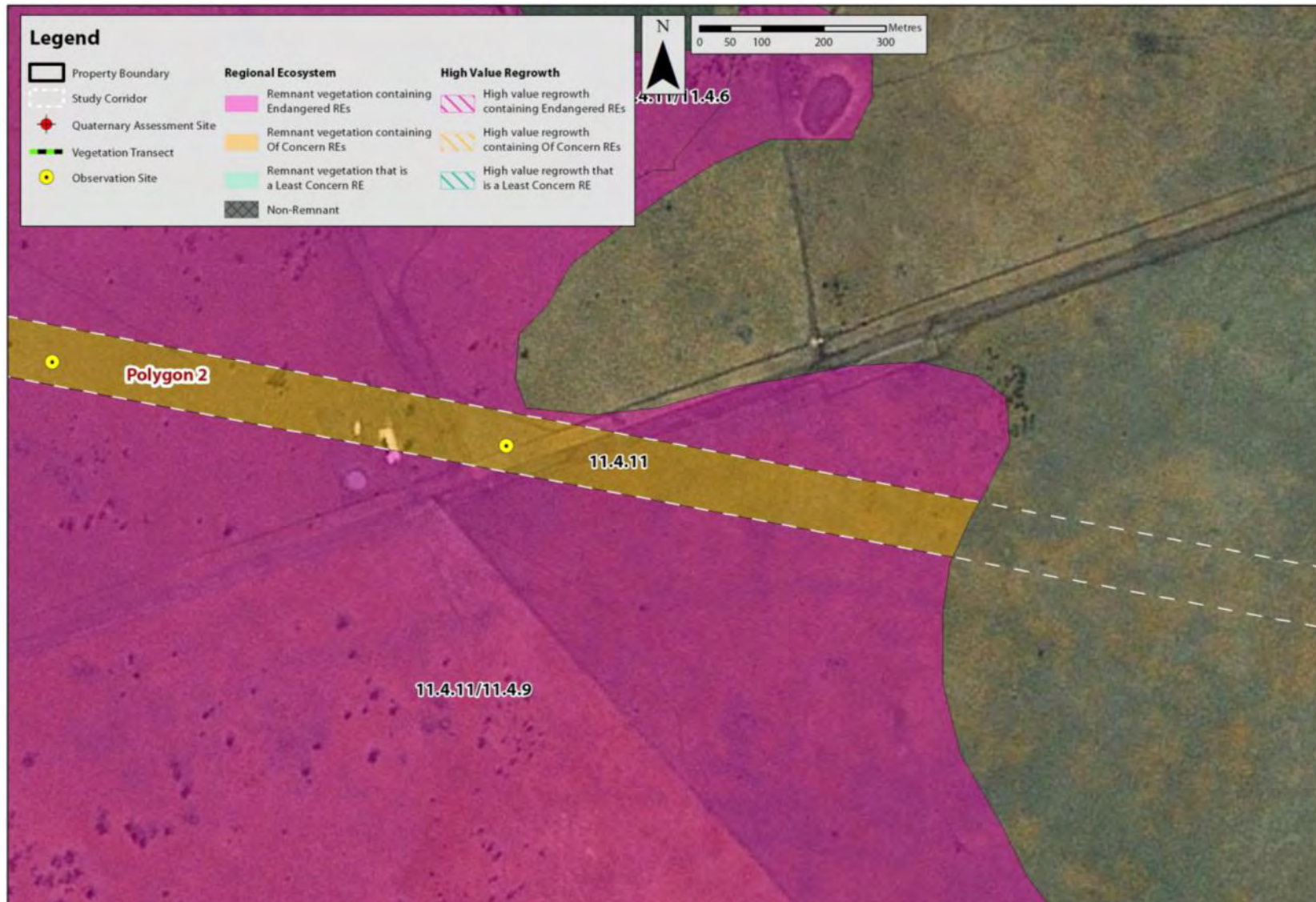




Figure 42d: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)

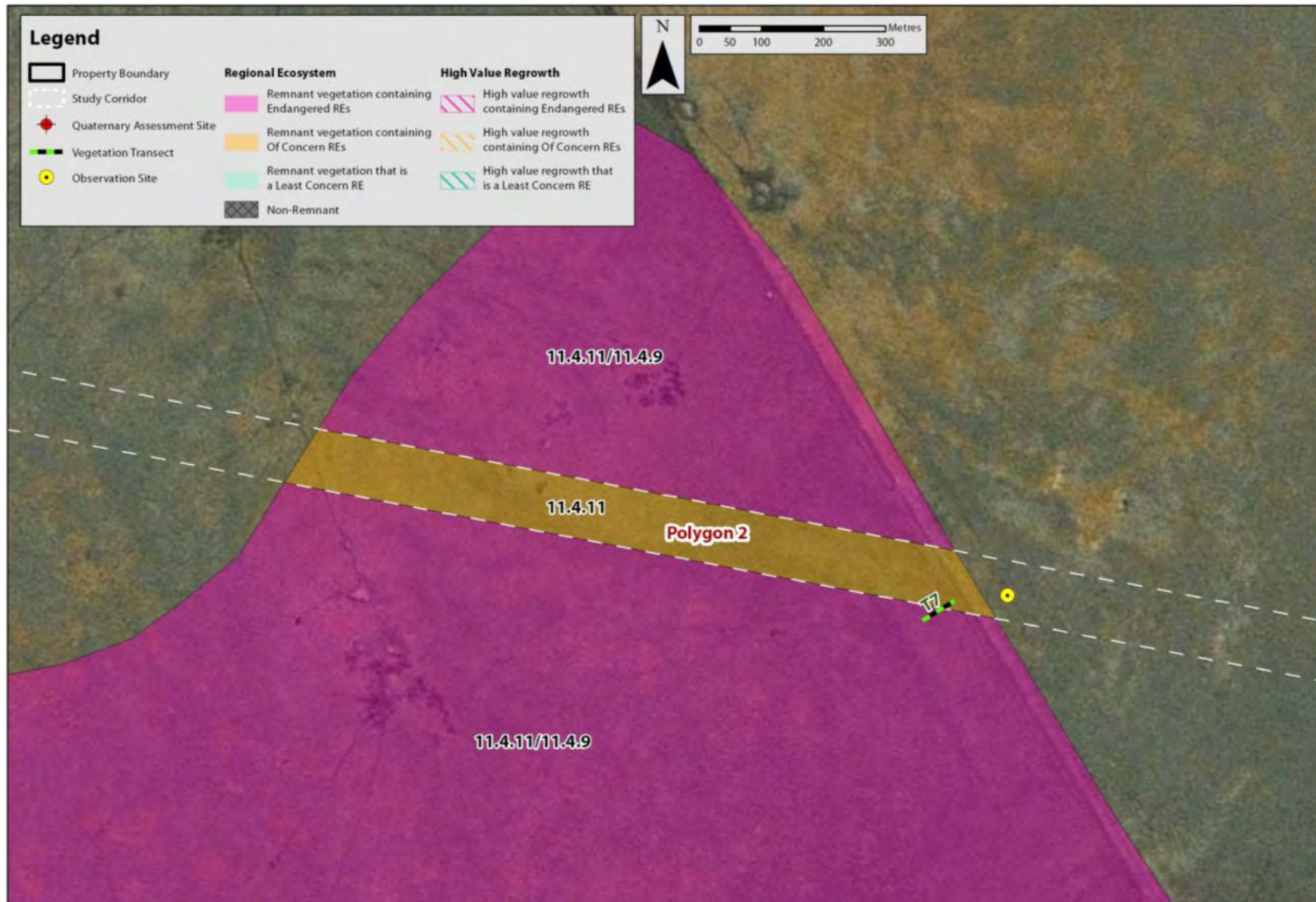


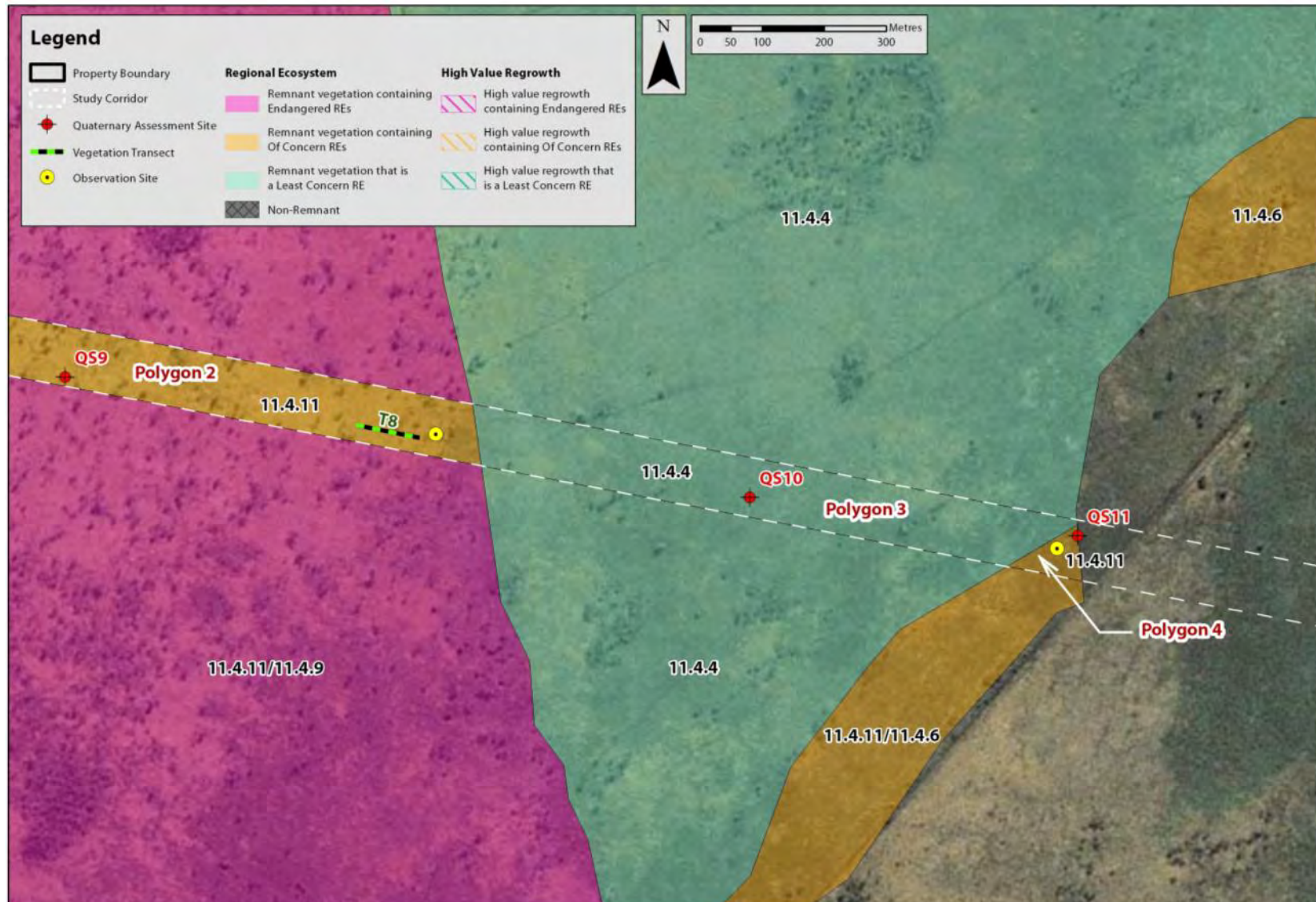


Figure 42e: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)





Figure 42f: Regional Ecosystem Changes (Lot 10 on BL49 Area C – Polygon 1-4)





II. Lot 1 on SP118814

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* has mapped four (4) Regional Ecosystem communities across two (2) Land Zones within the application area on Lot 1 on SP118814. These mapped RE areas are generally associated with tributaries of Logan Creek which includes a lineal area of Of Concern mapped vegetation. This Of Concern area is mapped as containing a number of composite RE types.

Field surveys confirmed the presence of this Of Concern community adjacent to Logan Creek. Data was used to define correct RE codes as slight variations in RE type were observed within the rail corridor

Based on the detailed field assessment, the application site within Lot 1 on SP118814 has been divided into five (5) assessment areas based on the location of the mapped remnant polygons and status of the Regional Ecosystem communities.

Table 58: Lot 1 on SP118814 Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Lot 1 on SP118814 Area A – Polygon 1	Endangered RE 11.4.9 / 11.4.6	< 1 ha	Non-remnant	< 1 ha
Lot 1 on SP118814 Area B – Polygon 1	Of Concern RE 11.4.6	9.8 ha	Of Concern RE 11.4.6	5.5 ha
Lot 1 on SP118814 Area B – Polygon 1	Of Concern RE 11.4.6	<i>As above</i>	Of Concern RE 11.3.3	1.8 ha
Lot 1 on SP118814 Area B – Polygon 1	Of Concern RE 11.4.6	<i>As above</i>	Of Concern RE 11.4.6	2.5 ha
Lot 1 on SP118814 Area B – Polygon 2	Of Concern RE 11.3.3 / 11.3.37	5.9 ha	Of Concern RE 11.3.3	5.9 ha



II.I. Lot I on SP118814 Area A – Polygon I

Table 59: Lot 1 on SP118814 Area A – Polygon 1 Summary

Site Description		
Location:	Lot 1 on SP118814	
Site Description:	The site is located within a mapped Endangered vegetation community described as RE 11.4.9 / 11.4.6 consisting of 50% Endangered RE 11.4.9 and 50% Of Concern RE 11.4.6. Refer to Figure 43. The area contains no vegetation or species representative of the mapped composite RE 11.4.9 / 11.4.6. Both <i>Acacia harpophylla</i> and <i>Acacia cambagei</i> were absent from the survey area. The area was dominated by introduced exotic grass <i>Pennisetum ciliare</i> (Buffel Grass). The area is highly disturbed and shows signs of being historically cleared and heavily grazed. Refer to Quaternary Site 1 within Appendix H and Figure 44 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	515657.50E	7582797.59N
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.9 / 11.4.6	
Regional Ecosystem Observed:	Non-remnant	
Width of RE:	Not linear (<10ha)	



Photo: Lot 1 on SP118814 Area A – Polygon 1

Mapped remnant polygon of Endangered RE 11.4.9 / 11.4.6. Note no Acacia harpophylla or Acacia cambagei. Area dominated by Pennisetum ciliare within ground layer.



Figure 43: Regional Ecosystem and Survey Effort (Lot 1 on SP118814 Area A – Polygon 1)

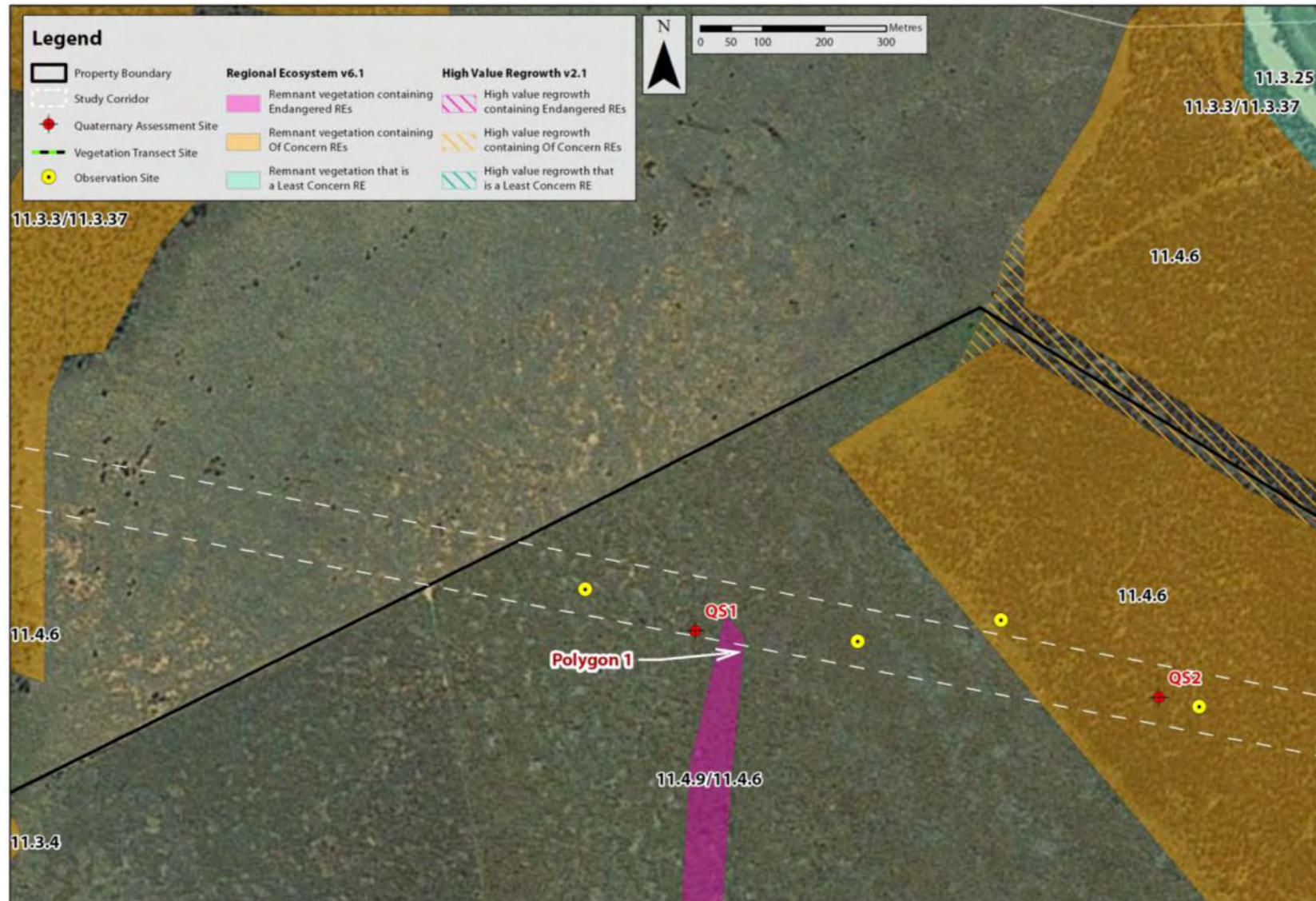
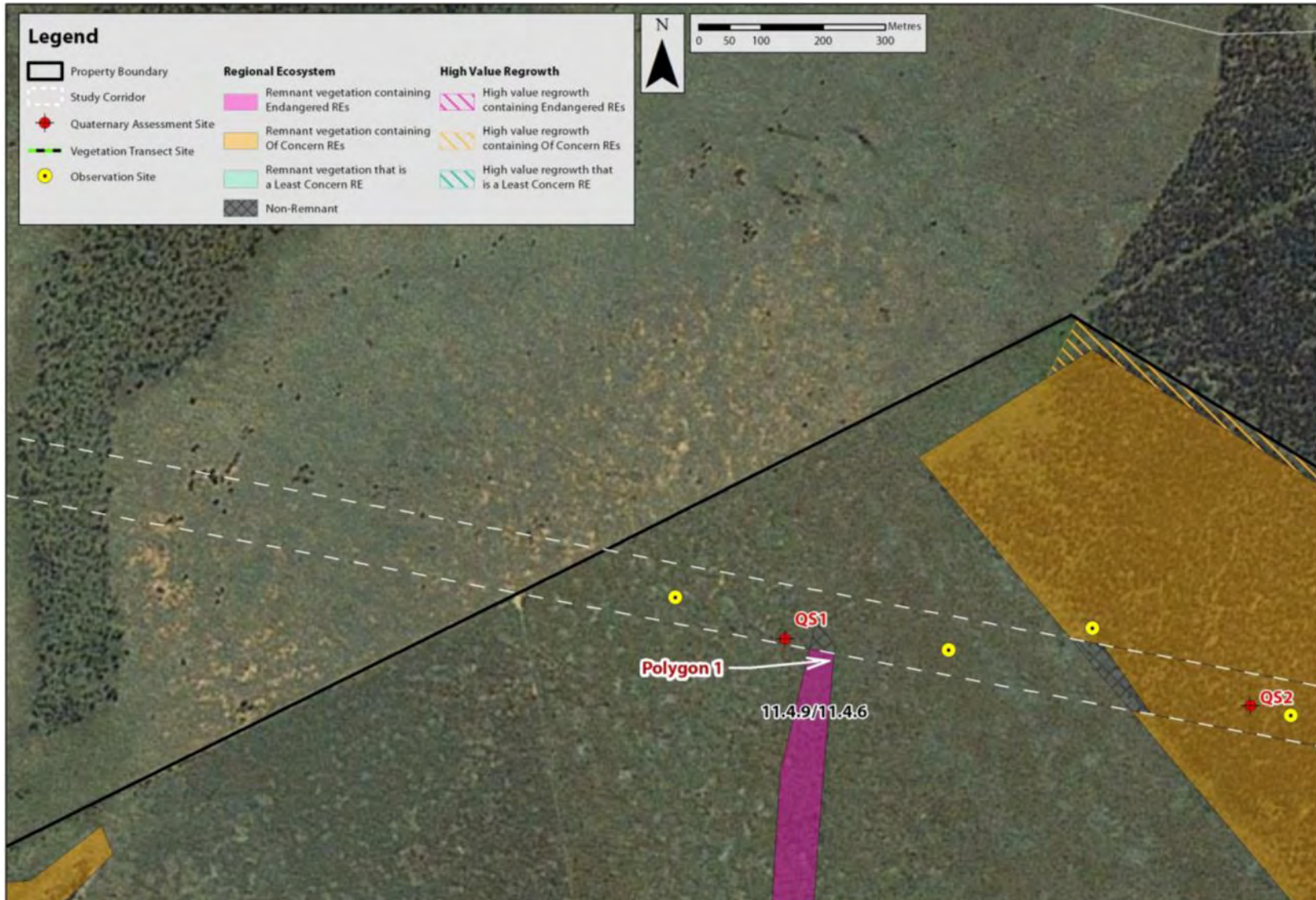




Figure 44: Regional Ecosystem Changes (Lot 1 on SP118814 Area A – Polygon 1)





11.2. Lot 1 on SP118814 Area B Polygon 1

Table 60: Lot 1 on SP118814 Area B – Polygon 1 Summary

Site Description		
Location:	Lot 1 SP118814	
Site Description:	The site is located within a mapped Of Concern vegetation community consisting of RE 11.4.6. Refer to Figure 45. The area's soil and geological formation appears consistent with Land Zone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. These areas exclude clay plains and downs formed in-situ on bedrock. Mainly Vertosols with gilgai microrelief, but includes small areas of thin sandy or loamy surfaced Sodosols and Chromosols. Vegetation structure and species composition within this polygon is consistent with Of Concern RE 11.4.6. <i>Acacia cambagei</i> dominated T1 and T2 layer with sparse understorey and ground layer. The area was dominated by introduced exotic grass <i>Pennisetum ciliare</i> (Buffel Grass) and shows signs of being historically cleared and heavily grazed. Refer to Quaternary Site 2 within Appendix H and Figure 46 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	526419.18 m E	7580718.62 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.6	
Width of RE:	Not linear (<10ha)	



Photo: Lot 1 on SP118814 Area B – Polygon 1

Mapped remnant polygon of Of Concern RE 11.4.6. Note dominance of Acacia cambagei within T1 and T2 layers with Pennisetum ciliare within ground layer.



II.3. Lot 1 on SP118814 Area B – Polygon 2

Table 61: Lot 1 on SP118814 Area B – Polygon 2 Summary

Site Description		
Location:	Lot 1 SP118814	
Site Description:	The site is located within a mapped Of Concern vegetation community consisting of RE 11.4.6. Refer to Figure 45. Area contains no vegetation or species representative of the mapped RE 11.4.6. Vegetation structure and species composition were representative of RE 11.3.3 as follows: <i>Acacia cambagei</i> was absent from the quaternary assessment site. <i>Eucalyptus coolabah</i> within the T1 layer and shrub and ground species including <i>Eremophila mitchellii</i> and <i>Terminalia oblongata</i> were observed within the mapped area indicating RE 11.3.3. The area was dominated by introduced exotic grass <i>Pennisetum ciliare</i> (Buffel Grass) and shows signs of being historically cleared and heavily grazed. Refer to Quaternary Site 3 within Appendix H and Figure 46 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	526830.10 m E	7580708.74 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:	Not linear (<10ha)	



Photo: Lot 1 on SP118814 Area B – Polygon 2

Mapped remnant polygon of Of Concern RE 11.3.3. Note the absence of Acacia cambagei and the presence of Eucalyptus coolabah within T1 layer with Pennisetum ciliare within ground layer.



II.4. Lot 1 on SP118814 Area B – Polygon 3

Table 62: Lot 1 on SP118814 Area B – Polygon 3 Summary

Site Description		
Location:	Lot 1 on SP118814	
Site Description:	The site is located within a mapped Of Concern vegetation community consisting of RE 11.4.6. Refer to Figure 45. The area's soil and geological formation appears consistent with Land Zone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. These areas exclude clay plains and downs formed in-situ on bedrock. Mainly Vertosols with gilgai microrelief, but includes small areas of thin sandy or loamy surfaced Sodosols and Chromosols. Vegetation structure and species composition within this polygon is consistent with Of Concern RE 11.4.6; <i>Acacia cambagei</i> dominated T1 and T2 layer with sparse understorey and ground layer. The area was dominated by introduced exotic grass <i>Pennisetum ciliare</i> (Buffel Grass) and shows signs of being historically cleared and heavily grazed. Refer to Transect 1 within Appendix H and Figure 46 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	527052.64 m E	7580640.52 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.4.6	
Regional Ecosystem Observed:	Of Concern RE 11.4.6	
Width of RE:	Not linear (<10ha)	



Photo: Lot 1 on SP118814 Area B – Polygon 3

Mapped remnant polygon of Of Concern RE 11.4.6. Note dominance of Acacia cambagei within T1 and T2 layers with Pennisetum ciliare within ground layer.



II.5. Lot I on SP118814 Area B – Polygon 4

Table 63: Lot 1 on SP118814 Area B – Polygon 4 Summary

Site Description		
Location:	Lot 1 SP118814	
Site Description:	The site is located within a mapped Of Concern vegetation community described as RE 11.3.3 / 11.3.37 consisting of 90% Of Concern RE 11.3.3 and 10% Least Concern RE 11.3.37. Refer to Figure 45. The area contains vegetation structure and species composition representative of mapped composite RE 11.3.3. <i>Eucalyptus coolabah</i> woodland with a grassy understorey was observed. Numerous <i>Acacia cambagei</i> were also present in the surveyed area, which was more consistent with vegetation on an alluvial plain than fringing watercourse vegetation. The area was dominated by introduced exotic grass <i>Pennisetum ciliare</i> (Buffel Grass) and shows signs of being historically cleared and heavily grazed. Refer to Quaternary Site 4 within Appendix H and Figure 46 for the proposed changes.	
Datum:	GDA94 (MGA55)	
Eastings/Northings	Eastings	Northings
	527708.07 m E	7580467.39 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Of Concern RE 11.3.3 /11.3.37	
Regional Ecosystem Observed:	Of Concern RE 11.3.3	
Width of RE:	Not linear (>10ha)	



Photo: Lot 1 on SP118814 Area B – Polygon 4

Mapped remnant polygon of Of Concern RE 11.3.3. Pennisetum ciliare dominant within ground layer.



Figure 45: Regional Ecosystem and Survey Effort (Lot 1 on SP118814 Area B – Polygon 1-4)

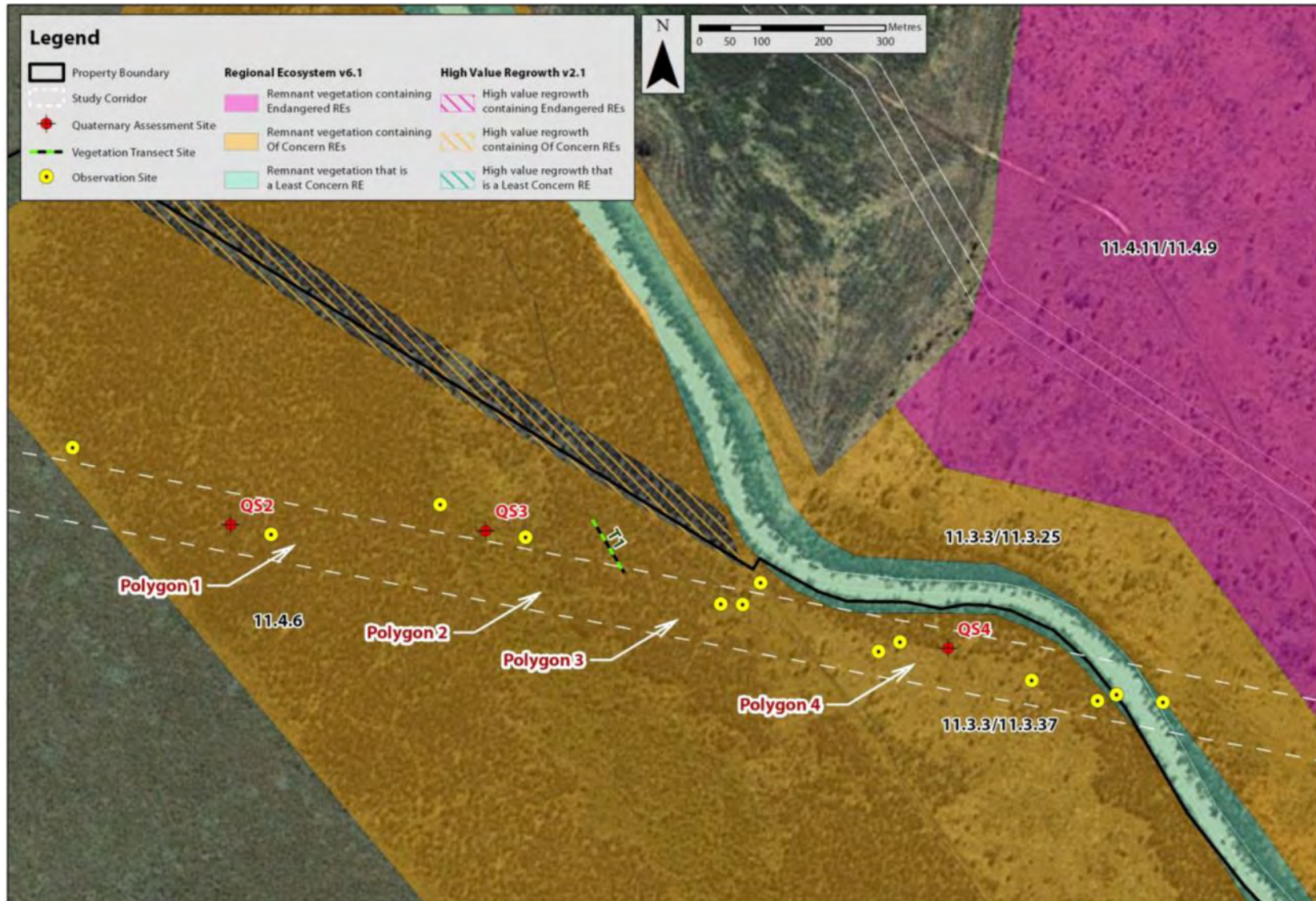
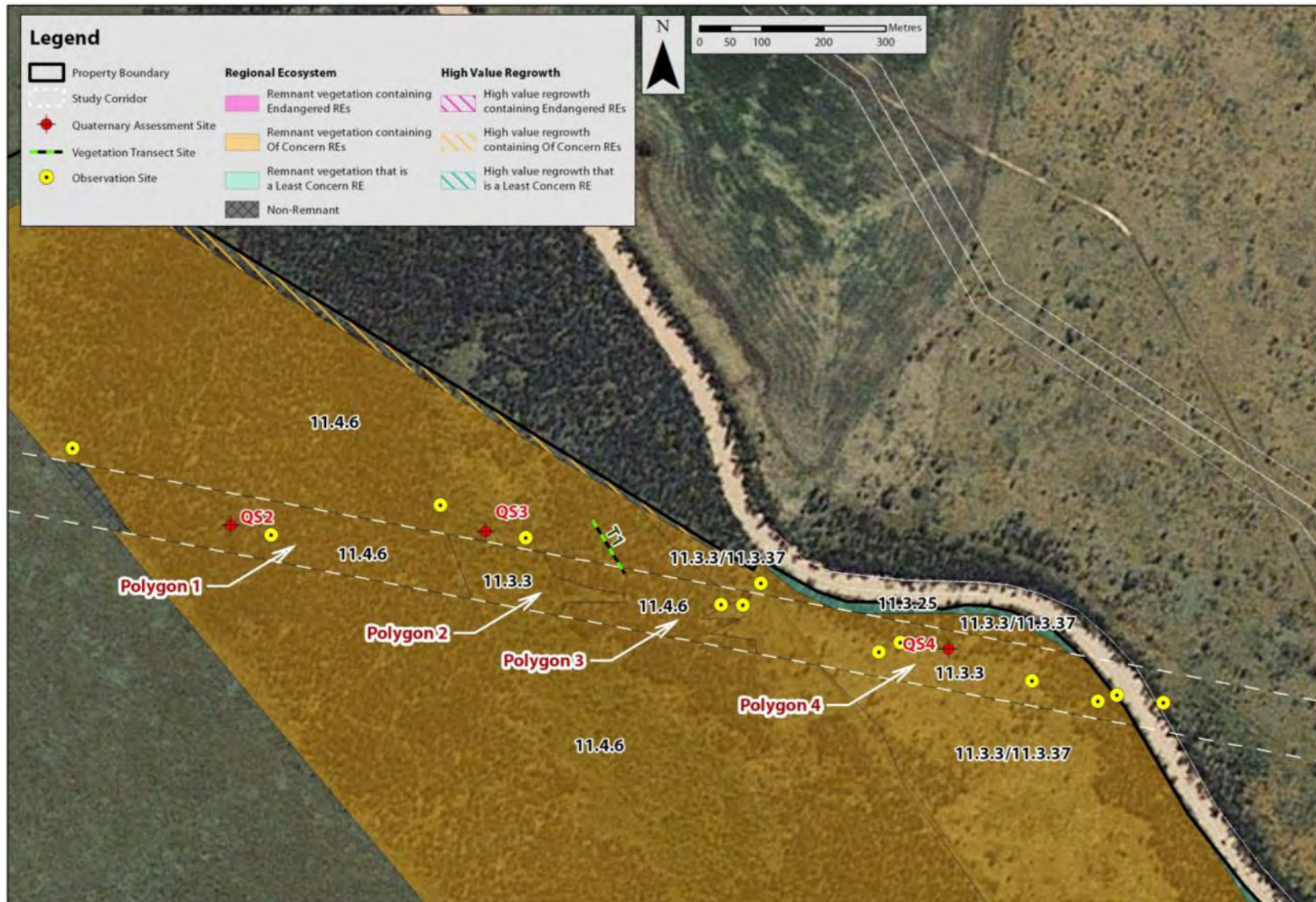




Figure 46: Regional Ecosystem Changes (Lot 1 on SP118814 Area B – Polygon 1-4)





12. Appendices

Appendix A

Lot 662 on PH1491 Vegetation Transects

Appendix B

Lot 3 on BL26 Vegetation Transects

Appendix C

Lot 637 on PH1980 Vegetation Transects

Appendix D

Lot 1 on SP147546 - Vegetation Transects

Appendix E

Lot 3235 on PH752 Vegetation Transects

Appendix F

Lot 4 on SP116046 Vegetation Transects

Appendix G

Lot 10 on BL49 Vegetation Transects

Appendix H

Lot 1 on SP118814 Vegetation Transects



Appendix A

Lot 662 on PHI49I Vegetation Transects



Lot 662 on PH1491 - Vegetation Transect I

Site No.	1	Recorder:	David Havill & Lincoln Smith	Day/Date:	23/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3			
S1	1.5m	1-2m	VS
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Grassland			
Ecologically dominant layer:		G	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:				Datum:		MGA 55		Transect length:		100m					
Start point		Zone	5	5	E	146.519188			N	-21.926820					
End point		Zone	5	5	E	146.519523			N	-21.925965					
COVER %															
Assessment Area. 100m (m) Start 7575196.01N; 450345.60E Finish 7575291.132; 450377.933E Near TP39															
Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G
<i>Pennisetum ciliare</i>										91.3					
<i>Aristida latifolia</i>										3.5					
<i>Acacia decora</i>										0.2					



<i>Parthenium hysterophorus</i>										0.6					
<i>Owenia acidula</i>									9.2	-					
<i>Panicum decompositum</i>										1.3					
Dead										-					
Litter										-					
Rock										-					
Bare Ground										3.1					
Cryptophytes										-					

Summary:

Structural formation

Grassland

Conclusions/notes:

- Only two (2) native grass species observed within transect
- Area dominated by *Pennisetum ciliare* (Buffel Grass)
- Heavily grazed
- No fauna observed
- No hollow logs/fallen timber observed

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1		ABSENT	
T2		ABSENT	
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia decora</i>	Pretty Wattle
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium
	CD	<i>Panicum decompositum</i>	
	CD	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Corchorus trilocularis</i>	
	A	<i>Hibiscus trionum</i>	Flower-Of-An-Hour
	A	<i>Rhynchosia minima</i>	Native Sensitive Plant



	A	<i>Glycine latifolia</i>	
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Lot 662 on PH1491 - Vegetation Transect 2

Site No.	2	Recorder:	David Havill & Lincoln Smith	Day/Date:	23/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			
T2	5m	3-8m	S
T3			
S1	1.3m	1-2m	VS
S2			
G	0.5m	0-1m	M
Structural formation including height: (estimated)			
Grassland with patches of shrubby Acacia harpophylla			
Ecologically dominant layer:		G	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:			Datum:				MGA 55			Transect length:			100m			
Start point		Zone	5	5	E	146.532038			N	-21.917347						
End point		Zone	5	6	E	146.532138			N	-21.916393						
COVER %																
Assessment Area. 100m (m) Start 7576247.832N; 451667.112E Finish 7576353.308N; 451678.038E (Near TP37)																
Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G	
<i>Pennisetum ciliare</i>										10.3						
<i>Parthenium hysterophorus</i>										2.5						
<i>Panicum decompositum</i>										39.2						



<i>Dichanthium sericeum</i>										6.2					
<i>Forbs</i>										24.6					
<i>Chloris truncata</i>										6.7					
<i>Acacia harpophylla</i>								7.1							
<i>Geijera parviflora</i>								9							
<i>Litter</i>										-					
<i>Rock</i>										-					
<i>Bare Ground</i>										10.5					
<i>Cryptophytes</i>										-					

Structural formation	Grassland with patches of small <i>Acacia harpophylla</i> with forb ground layer
Conclusions/notes:	
Grass, forb and shrub species consistent with RE 11.4.11	
Small patches of mature <i>Acacia harpophylla</i> consistent with RE 11.4.9 observed external to transect	
Height and structure of vegetation agrees with RE description for RE 11.4.11	
Heavily grazed	
<i>Parthenium hysterophorus</i> and <i>Pennisetum ciliare</i> observed within area.	

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1		ABSENT	
T2	A	<i>Owenia acidula</i>	Emu Apple
	A	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Lysiphyllum hookeri</i>	Bauhinia
S	A	<i>Owenia acidula</i>	Emu Apple
	A	<i>Acacia farnesiana</i>	Mimosa Bush
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium
	CD	<i>Panicum decompositum</i>	Native Millet
	A	<i>Rhynchosia minima</i>	Native Sensitive Plant



	A	<i>Glycine latifolia</i>	
	A	<i>Corchorus trilocularis</i>	
	A	<i>Hibiscus trionum</i>	Flower-Of-An-Hour
	CD	<i>Aristida latifolia</i>	Feathertop Wiregrass



Lot 662 on PH1491 - Vegetation Transect 3

Site No.	3	Recorder:	Andrew Craig & Lincoln Smith	Day/Date:	7/6/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3			
S1	1.5m	1-2m	VS
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Grassland			
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	5	E	450503.12	N 7575296.51
End point	Zone	5	5	E	450553.89	N 7575382.86

COVER %

Assessment Area. 100(m). Start 7575296.51N; 450503.12E Finish 7575382.86N; 450553.89E (Near TP37)

Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G
<i>Pennisetum ciliare</i>										17.9					
<i>Panicum decomposition</i>										23					
<i>Dichanthium sericeum</i>										3.8					



Forbs										35.3					
Acacia harpophylla								20							
Litter															
Rock															
Bare Ground										20					

Summary:	
Structural formation	Grassland with patches of shrubby <i>Acacia harpophylla</i> .
Conclusions/notes:	
- Only two (2) native grass species observed within transect - Area dominated by <i>Pennisetum ciliare</i> (Buffel Grass) - Heavily grazed - No fauna observed - No hollow logs/fallen timber observed	

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1		ABSENT	
T2		ABSENT	
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia decora</i>	Pretty Wattle
	A	<i>Acacia harpophylla</i>	Brigalow
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium
	A	<i>Panicum decompositum</i>	Native Millet
	O	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Dichanthium sericeum</i>	Bluegrass
	O	<i>Rhynchosia minima</i>	Native Sensitive Plant
	O	<i>Glycine latifolia</i>	
	A	<i>Hibiscus trionum</i>	



Lot 662 on PH1491 - Vegetation Transect 4

Site No.	4	Recorder:	David Havill & Lincoln Smith	Day/Date:	22/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3			
S1	2m	1-3m	S
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Grassland			
Ecologically dominant layer:		G	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m
Start point	Zone	5	5	E	146.550131	N	-21.914944
End point	Zone	5	5	E	146.551087	N	-21.914893

Interval (metres)	Intercept	Str.		Species	Common Name
0-1.2	1.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
1.2-1.6	0.4	G		<i>Bare Ground</i>	
1.6-4.2	2.6	G		<i>Pennisetum ciliare</i>	Buffel Grass
4.2-4.7	0.5	G		<i>Bare Ground</i>	
4.7-6.1	1.4	G		<i>Pennisetum ciliare</i>	Buffel Grass
6.1-7.0	0.9	G		<i>Bare Ground</i>	
7-11.8	4.8	G		<i>Pennisetum ciliare</i>	Buffel Grass
11.8-12.5	0.7	G		<i>Bare Ground</i>	
12.5-19.4	6.9	G		<i>Pennisetum ciliare</i>	Buffel Grass
19.4-19.6	0.2	G		<i>Parthenium hysterophorus</i>	Parthenium



19.6-20.8	1.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
20.8-21.7	0.9	G		<i>Bare Ground</i>	
21.7-24.3	2.6	G		<i>Pennisetum ciliare</i>	Buffel Grass
24.3-25.6	1.3	G		<i>Bare Ground</i>	
25.6-33.2	7.6	G		<i>Pennisetum ciliare</i>	Buffel Grass
33.2-33.7	0.5	G		<i>Bare Ground</i>	
33.7-42.8	9.1	G		<i>Pennisetum ciliare</i>	Buffel Grass
42.8-43.8	1.0	G		<i>Panicum decompositum</i>	
43.8-48.1	4.3	G		<i>Pennisetum ciliare</i>	Buffel Grass
48.1-49.3	1.2	G		<i>Bare Ground</i>	
49.3-50	0.7	G		<i>Parthenium hysterophorus</i>	Parthenium
50-63	13.0	G		<i>Pennisetum ciliare</i>	Buffel Grass
63-63.8	0.8	G		<i>Bare Ground</i>	
63.8-65	1.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
65.0-65.8	0.8	G		<i>Bare Ground</i>	
65.8-71	5.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
71.0-72	1.0	G		<i>Panicum decompositum</i>	Native Millet
72.0-74.8	2.8	G		<i>Bare Ground</i>	
74.8-76.9	2.1	G		<i>Pennisetum ciliare</i>	Buffel Grass
76.9-78.2	1.3	G		<i>Bare Ground</i>	
78.2-87.4	5.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
87.4-89	1.6	G		<i>Parthenium hysterophorus</i>	Parthenium
89.0-90.5	1.5	G		<i>Pennisetum ciliare</i>	Buffel Grass
90.5-91	0.5	G		<i>Bare Ground</i>	
91.0-97	6.0	G		<i>Pennisetum ciliare</i>	Buffel Grass
97.0-100	3.0	G		<i>Aristida latifolia</i>	Feathertop Wiregrass

Summary:

Measured crown cover %
of EDL 0 -100m:

Pennisetum ciliare 79%
Bare ground 13%
Panicum decompositum 2%
Parthenium hysterophorus 3%
Aristida latifolia 3%

Structural formation

Grassland

Conclusions/notes:

- Only two (2) native grass species observed within transect
- Area dominated by *Pennisetum ciliare* (Buffel Grass) 79%CC.
- Heavily grazed
- No fauna observed



- No hollow logs/fallen timber observed

Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel.	Scientific Name	Common Name
T1		ABSENT	
T2		ABSENT	
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia decora</i>	Pretty Wattle
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
		<i>Parthenium hysterophorus</i>	Parthenium
		<i>Panicum decompositum</i>	Native Millet
		<i>Aristida latifolia</i>	Feathertop Wiregrass



Lot 662 on PH1491 - Vegetation Transect 5

Site No.	5	Recorder:	David Havill & Lincoln Smith	Day/Date:	22/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				



Photo: The area mapped as remnant grassland RE11.4.11 within the investigation area is dominated by *Pennisetum ciliare* (Buffel Grass).

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3			
S1	1.5m	1-2m	VS
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			



Grassland	
Ecologically dominant layer:	G

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:				MGA 55	Transect length:	100m
Start point	Zone	5	5	E	0	146.553232	N	-21.915248
End point	Zone	5	5	E	0	146.552816	N	-21.915009

Interval (metres)	Intercept	Str.		Species	Common Name
0-0.8	0.8	G		<i>Leptochloa digitata</i>	Umbrella Cane Grass
0.8-2.1	1.3	G		<i>Parthenium hysterophorus</i>	Parthenium
2.1-3.0	0.7	G		<i>Pennisetum ciliare</i>	Buffel Grass
3.0-3.5	0.5	G		<i>Bare Ground</i>	
3.5-4.8	1.3	G		<i>Leptochloa digitata</i>	Umbrella Cane grass
4.8-5.4	0.6	G		<i>Parthenium hysterophorus</i>	Parthenium
5.4-15.5	10.1	G		<i>Aristida latifolia</i>	Feathertop Wiregrass
15.5-16.7	1.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
16.7-17.9	1.2	G		<i>Aristida latifolia</i>	Feathertop Wiregrass
17.9-18.9	1.0	G		<i>Pennisetum ciliare</i>	Buffel Grass
18.9-19.5	0.6	G		<i>Aristida latifolia</i>	Feathertop Wiregrass
19.5-20.2	0.7	G		<i>Parthenium hysterophorus</i>	Parthenium
20.2-22.4	2.2	G		<i>Pennisetum ciliare</i>	Buffel Grass
22.4-23.0	0.6	G		<i>Bare Ground</i>	
23.0-25.0	2.0	G		<i>Parthenium hysterophorus</i>	Parthenium
25.0-26.1	1.1	G		<i>Panicum decompositum</i>	Native Millet
26.1-27.6	1.5	G		<i>Pennisetum ciliare</i>	Buffel Grass
27.6-29.5	1.9	G		<i>Parthenium hysterophorus</i>	Parthenium
29.5-31.0	1.5	G		<i>Pennisetum ciliare</i>	Buffel Grass
31.0-32.4	1.4	G		<i>Parthenium hysterophorus</i>	Parthenium
32.4-33.0	7.6	G		<i>Leptochloa digitata</i>	Umbrella Cane Grass
33.0-34.4	1.4	G		<i>Bare Ground</i>	
34.4-49.3	14.9	G		<i>Pennisetum ciliare</i>	Buffel Grass



49.3-50.0	0.7	G	Bare Ground
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Conclusions/notes:	
Measured crown cover % of EDL 0 -100m:	<i>Pennisetum ciliare</i> 40% Bare ground 6% <i>Panicum decompositum</i> 2% <i>Parthenium hysterophorus</i> 7.9% <i>Aristida latifolia</i> 21% <i>Leptochloa digitata</i> 17%
Structural formation	Grassland
- Only three (3) native grass species observed within transect - Area dominated by <i>Pennisetum ciliare</i> (Buffel Grass) and <i>Parthenium hysterophorus</i> (Parthenium) - Heavily grazed - No fauna observed - No hollow logs/fallen timber observed	

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel.	Scientific Name	Common Name
T1		ABSENT	
T2		ABSENT	
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia decora</i>	Pretty Wattle
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium
	A	<i>Panicum decompositum</i>	
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	O	<i>Leptochloa digitata</i>	Umbrella Cane Grass
	A	<i>Rhynchosia minima</i>	Native Sensitive Plant
	A	<i>Glycine latifolia</i>	



Lot 662 on PH1491 - Vegetation Transect 6

Site No.	6	Recorder:	David Havill & Lincoln Smith	Day/Date:	22/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13m	11-16m	M
T2	4m	3-5m	VS
T3			
S1	1m	0.5-2m	VS
S2			
G	0.25m	0-0.5m	M/D
Structural formation including height: (estimated)			
Open Forest			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:		100m	
Start point	Zone	5	5	E	146.641707	N	-21.923393		
End point	Zone	5	5	E	146.640818	N	-21.924275		

Interval (metres)	Intercept	Str.	Height	Species	Common Name
5.2-20	14.8	T1	14	<i>Eucalyptus coolabah</i>	Coolabah
27.2-35.6	8.4	T1	15	<i>Eucalyptus coolabah</i>	Coolabah
37-51.3	14.3	T1	15	<i>Eucalyptus coolabah</i>	Coolabah
60-66	6	T1	16	<i>Eucalyptus coolabah</i>	Coolabah
69-73.3	4.3	T1	14	<i>Eucalyptus coolabah</i>	Coolabah
80.1-88.6	8.5	T1	12	<i>Eucalyptus camaldulensis</i>	Murray River Red Gum
93.2-100	6.8	T1	14	<i>Eucalyptus coolabah</i>	Coolabah



Summary:		
Minimum height of plants included in the transect table:	10m	
Intercept of EDL 0 - 50m:	36.2m	
Intercept of EDL 50 -100m:	26.9m	
Measured crown cover % of EDL 0 -100m:	63.1%	
Structural formation	Open Forest	
Conclusions/notes:		
▪ Creek/Flood Plain		
▪ Flooding and cattle damage		
▪ Deadfall and hollow logs within transect		
▪ No Brigalow present		
▪ Pools of water		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Eucalyptus camaldulensis</i>	Murray River Red Gum
T2	A	<i>Acacia salicina</i>	Sally Wattle
	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Acacia cambagei</i>	Gidgee
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
G	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Cyperus sp.</i>	
	A	<i>Gomphrena celosioides</i>	Gomphrena Weed
	A	<i>Cyperus gracilis</i>	Slender Sedge
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	A	<i>Sida cordifolia</i>	Flannel Weed
	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Rhynchosia minima</i>	Native Sensitive Plant



Lot 662 on PH1491 - Vegetation Transect 7

Site No.	7	Recorder:	David Havill & Lincoln Smith	Day/Date:	22/5/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 662 on PH1491				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	16m	10-19m	M
T2	5m	3-8m	VS
T3			
S1	1.5m	0.5-2.0m	VS
S2			
G	0.25m	0-0.5m	M/S
Structural formation including height: (estimated)			
Open Forest			
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:		100m	
Start point	Zone	5	6	E	146.650103	N	-21.923951		
End point	Zone	5	6	E	146.648943	N	-21.923997		

Interval (metres)	Intercept	Str.	Height	Species	Common Name
0-7.8	7.8	T1	13	<i>Eucalyptus coolabah</i>	Coolabah
10.5-27.9	16.5	T1	15	<i>Eucalyptus coolabah</i>	Coolabah
30-37.0	7.0	T1	11	<i>Eucalyptus coolabah</i>	Coolabah
50.0-60.0	10.0	T1	17	<i>Eucalyptus coolabah</i>	Coolabah
74.8-78.9	4.1	T1	15	<i>Eucalyptus coolabah</i>	Coolabah
82.0-89.8	7.8	T1	19	<i>Eucalyptus camaldulensis</i>	Murray River redgum



89.8-100	0.2	T1	17	<i>Eucalyptus coolabah</i>	Coolabah
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Summary:		
Minimum height of plants included in the transect table:	10 m	
Intercept of EDL 0 - 50m:		31.3 m
Intercept of EDL 50 -100m:		22.1 m
Measured crown cover % of EDL 0 -100m:		53.4 %
Structural formation	Open Forest	
Conclusions/notes:		
RE 11.3.3		
Good habitat large hollows		
Flood damage and some cattle damage		
Evidence of fires observed		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Eucalyptus camaldulensis</i>	Murray River Red Gum
T2	A	<i>Acacia salicina</i>	Sally Wattle
	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Acacia cambagei</i>	Gidgee
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
G	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Gomphrena celosioides</i>	Gomphrena Weed
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	A	<i>Sida cordifolia</i>	Flannel Weed
	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Leptochloa digitata</i>	Umbrella Cane Grass





Lot 662 on PHI49I - Quaternary Site I

Dominance (D,CD,O,A)		Species
T1 Layer	CD	<i>Eucalyptus coolabah</i>
	CD	<i>Eucalyptus camaldulensis</i>
T2 Layer	A	<i>Acacia salicina</i>
	A	<i>Lysiphyllum</i> sp.
	A	<i>Terminalia oblongata</i>
Shrub Layer	A	<i>Acacia salicina</i>
	A	<i>Acacia decora</i>
	A	<i>Lysiphyllum</i> sp.
Ground	D	<i>Pennisetum ciliare</i>
	A	<i>Panicum</i> spp.
	A	<i>Leptochloa digitata</i>
	A	<i>Bothriochloa bladhii</i>
	A	<i>Bothriochloa ewartiana</i>
	A	<i>Chrysopogon fallax</i>
Notes :		
- Ground layers largely absent, appears to be result of agricultural runoff - Grasses / weeds returning within areas where sunlight is penetrating through to ground layer - Flood damage evident		



Appendix B

Lot 3 on BL26 Vegetation Transects



Lot 3 on BL26 - Vegetation Transect I

Site No.	1	Recorder:	Andrew Craig	Day/Date:	14/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 3 on BL26				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	10-15	M
T2	7	5-8	S
T3			
S1	3	2-4	S
S2			
G	0.5	0-1	D
Structural formation including height: (estimated)			
Woodland to 15m			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	467668.43 m E	N 7576048.18 m S
End point	Zone	5	6	E	467576.72 m E	N 7576016.47 m S

Interval (metres)	Intercept	Str.	Height	Species	Common Name
17.1-18.2	1.0	T2	7	<i>Geijera parviflora</i>	Wilga
21.2-27.8	6.6	T1	10	<i>Eucalyptus coolabah</i>	Coolabah
37.0-38.5	1.5	T2	8	<i>Geijera parviflora</i>	Wilga
47.0-58.9	11.9	T1	15	<i>Eucalyptus camaldulensis</i>	River Red Gum
79.2-85.1	5.9	T1	12	<i>Eucalyptus camaldulensis</i>	River Red Gum



Summary:		
Minimum height of plants included in the transect table:	9m	
Intercept of EDL 0 - 50m:	11.1m	
Intercept of EDL 50 -100m:	14.8m	
Measured crown cover % of EDL 0 -100m:	25.9%	
Structural formation	Woodland	
Conclusions/notes:		
- Woodland fringing drainage lines - Vegetation structure and species composition consistent with RE 11.3.25/11.3.37 <i>Acacia harpophylla</i> (Brigalow) was absent from the area surveyed. No RE 11.3.1 observed. - Some severe erosion and sedimentation along watercourse edges		

Plant Species (*D* – Dominant; *C* – codominant; *A* – associated; *S* – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	CD	<i>Eucalyptus coolabah</i>	Coolabah
	CD	<i>Eucalyptus camaldulensis</i>	River Red Gum
T2	A	<i>Geijera parviflora</i>	Wilga
	O	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Acacia stenophylla</i>	Shoestring Acacia
S	D	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
G	CD	<i>Enteropogon acicularis</i>	Curly Windmill Grass
	A	<i>Pennisetum ciliare</i>	Buffel Grass
	CD	<i>Dichanthium sericeum</i>	Bluegrass
	O	<i>Ottlochloa gracillima</i>	
	A	<i>Leptochloa digitata</i>	Umbrella Cane Grass
	A	<i>Bothriochloa ewartiana</i>	Desert Bluegrass
	A	<i>Bothriochloa bladhii</i>	



Lot 3 on BL26 - Vegetation Transect 2

Site No.	2	Recorder:	Andrew Craig	Day/Date:	14.08.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 3 on BL26				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	8-12m	M
T2	6	4-8m	M
T3			
S1	1.5	1-2m	M
S2			
G	0.5	0-1m	D
Structural formation including height: (estimated)			
RE 11.3.3 open Woodland confirmed			
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	467756.52 m E	N 7576114.31 m S
End point	Zone	5	6	E	467677.52 m E	N 7576051.60 m S

Interval (metres)	Intercept	Str.	Height		Species	Common Name
18.1-22.5	4.4	T1	9		<i>Eucalyptus coolabah</i>	Coolabah
34.5-43.0	8.5	T1	12		<i>Eucalyptus coolabah</i>	Coolabah
43.0-44.1	1.1	S	1.5		<i>Muehlenbeckia florulenta</i>	Tangled Lignum
45.8-46.6	0.8	S	1.5		<i>Muehlenbeckia florulenta</i>	Tangled Lignum
51.8-54.2	2.4	S	1.7		<i>Muehlenbeckia florulenta</i>	Tangled Lignum
65.1-68.2	2.9	T1	8		<i>Eucalyptus coolabah</i>	Coolabah
90.1-93.4	3.3	T2	7		<i>Terminalia oblongata</i>	Yellowwood



Summary:		
Minimum height of plants included in the transect table:	8m	
Intercept of EDL 0 - 50m:	12.9m	
Intercept of EDL 50 -100m:	2.9m	
Measured crown cover % of EDL 0 -100m:	T1 - 15.8 % T2 – 3.30 % S – 4.3%	
Structural formation	Open Woodland	
Conclusions/notes:		
- Open woodland abutting waterway vegetation. - Vegetation structure and species composition consistent with RE 11.3.3.		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
T2	D	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Geijera parviflora</i>	Wilga
	O	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Acacia salicina</i>	Sally Wattle
S	CD	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
	A	<i>Acacia salicina</i>	Sally Wattle
	CD	<i>Eremophila mitchellii</i>	False Sandalwood
	A	<i>Eremophila bigoniiflora</i>	
	A	<i>Terminalia oblongata</i>	Yellowwood
G	A	<i>Chloris pectinata</i>	Comb Chloris
	D	<i>Enteropogon acicularis</i>	Curly Windmill Grass



Lot 3 on BL26 - Quaternary Site 1

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Eucalyptus brownii</i>
	A	<i>Eucalyptus coolabah</i>
T2 Layer	O	<i>Eucalyptus coolabah</i>
Shrub Layer	A	<i>Carissa ovata</i>
Ground	O	<i>Aristida latifolia</i>
	CD	<i>Chloris truncata</i>
	A	<i>Heteropogon contortus</i>
	CD	<i>Bothriochloa bladhii</i>
Notes : - Vegetation structure and species composition consistent with RE11.3.10. Some species consistent with RE 11.3.37 observed in vicinity - Some moderate erosion observed - Grazing apparent in area. - Mapped as Least Concern vegetation.		

Lot 3 on BL26 - Quaternary Site 2

Dominance (D,CD,O,A)		Species
T1 Layer	CD	<i>Eucalyptus camaldulensis</i>
	CD	<i>Eucalyptus coolabah</i>
T2 Layer	CD	<i>Terminalia oblongata</i>
	O	<i>Eucalyptus coolabah</i>
	CD	<i>Geijera parviflora</i>
	A	<i>Acacia stenophylla</i>
Shrub Layer	A	<i>Carissa ovata</i>
Ground	O	<i>Leptochloa digitata</i>
	A	<i>Bothriochloa ewartiana</i>
	CD	<i>Enteropogon acicularis</i>



	A	<i>Pennisetum ciliare</i>
	CD	<i>Dichanthium sericeum</i>
Notes :		
- Vegetation structure and species composition consistent with RE 11.3.25/11.3.37 - <i>Acacia harpophylla</i> (Brigalow) was absent from the area surveyed. No RE 11.3.1 observed. - Some severe erosion and sedimentation along watercourse edges		

Lot 3 on BL26 - Quaternary Site 3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Corymbia dallachiana</i>
	O	<i>Corymbia clarksoniana</i>
T2 Layer	O	<i>Corymbia dallachiana</i>
	A	<i>Corymbia clarksoniana</i>
	D	<i>Acacia salicina</i>
Shrub Layer	D	<i>Eremophila mitchellii</i>
	A	<i>Carissa ovata</i>
	O	<i>Acacia salicina</i>
	A	<i>Grevillea striata</i>
	O	<i>Acacia excelsa</i>
Ground	D	<i>Pennisetum ciliare</i>
	CD	<i>Parthenium hysterophorus</i>
	A	<i>Themeda triandra</i>
	O	<i>Heteropogon contortus</i>
Notes :		
- Vegetation structure and species composition consistent with regrowth RE 11.3.10/11.3.7. - Signs of previous clearing. Area heavily grazed. - Moderate to heavy infestations of <i>Parthenium hysterophorus</i> (Parthenium) and <i>Pennisetum ciliare</i> (Buffel Grass).		



Lot 3 on BL26 - Quaternary Site 4

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Corymbia dallachiana</i>
	O	<i>Corymbia clarksoniana</i>
	O	<i>Eucalyptus brownii</i>
T2 Layer	O	<i>Corymbia dallachiana</i>
	O	<i>Corymbia clarksoniana</i>
	O	<i>Eucalyptus brownii</i>
Shrub Layer	D	<i>Acacia salicina</i>
	A	<i>Acacia excelsa</i>
	A	<i>Carissa ovata</i>
	O	<i>Acacia salicina</i>
	A	<i>Grevillea striata</i>
	D	<i>Eremophila mitchellii</i>
	O	<i>Alphitonia excelsa</i>
	O	<i>Petalostigma pubescens</i>
	CD	<i>Pennisetum ciliare</i>
	A	<i>Chloris pectinata</i>
Ground	CD	<i>Parthenium hysterophorus</i>
	O	<i>Heteropogon contortus</i>
	O	<i>Xanthium pungens</i>
	O	<i>Xanthium pungens</i>

Notes :

- Vegetation structure and species composition consistent with described RE 11.3.10/11.3.7.
- Large quantity of dead standing timber apparent.
- Moderate to heavy infestations of *Parthenium hysterophorus* (Parthenium) and *Pennisetum ciliare* (Buffel Grass).



Appendix C

Lot 637 on PHI980 Vegetation Transects



Lot 637 on PH1980 - Vegetation Transect I

Area A – Polygon 1

RE 11.3.5/11.3.1

Site No.	1	Recorder:	David Havill / Steve Reeves	Day/Date:	30/8/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 637 on PH1980 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	18m	16 – 19m-	V
T1	7m	3 – 11m	M
T2			
T3			
S1	1.5 m	1 – 2m	VS
S2			
G	00.5m	0 – 1m	M
Structural formation including height: (estimated)			
Open Forest			
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	50m
Start point	Zone	5	5	E	7578028.30	N	473201.80
End point	Zone	5	5	E	7578006.40	N	473159.21

Interval (metres)	Intercept	Str.		Species	Common Name
T1 Transect Intercept					
1 – 3.3	3.3	T1	4	<i>Acacia harpophylla</i>	Brigalow
8.3 – 13.2	4.9	T1	7	<i>Acacia harpophylla</i>	Brigalow
18.4 – 21.1	2.7	T1	8	<i>Acacia harpophylla</i>	Brigalow
26.8 – 29.4	2.6	T1	7	<i>Acacia harpophylla</i>	Brigalow



33.2 – 36.1	2.9	T1	9	<i>Acacia harpophylla</i>	Brigalow
36.1 – 44.7	8.6	E	1	<i>Eucalyptus coolabah</i>	Coolabah
39.2 – 41.3	2.1	T1	8	<i>Acacia harpophylla</i>	Brigalow
42.7 – 48.2	5.5	T1	8	<i>Acacia harpophylla</i>	Brigalow
49.7 – 50	0.3	T1	7	<i>Acacia harpophylla</i>	Brigalow
Shrub Transect Intercept					
35.6 – 37.2m	1.6	S	2	<i>Terminalia oblongata</i>	Yellowwood
38.4 – 39.2m	0.8	S	1	<i>Acacia harpophylla</i>	Brigalow
47.1 – 48.7m	1.6	S	2	<i>Terminalia oblongata</i>	Yellowwood

Summary:

Minimum height of plants included in the transect table:	4.5m
Intercept of EDL 0 – 50m:	
Intercept of EDL 50 – 100m:	65.8%
Measured crown cover % of EDL 0 – 100m:	Open Forest to Woodland
Structural formation	

Conclusions/notes:

- Species consistent with Regional ecosystem 11.3.1
- No changes to mapped polygon proposed.
- Soils appear predominantly deep cracking clays with evidence of gilgai throughout.

Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel.	Scientific Name	Common Name
E	D	<i>Eucalyptus coolabah</i>	Coolabah
T1	D	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
S	A	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
G	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Panicum decompositum</i>	Native Millet
	C	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliaris</i>	Buffel Grass



Lot 637 on PH1980 - Vegetation Transect 2

Area A – Polygon 3

Of Concern RE 11.4.6 – *Acacia cambagei* woodland on Cainozoic clay plains.

Site No.	2	Recorder:	David Havill	Day/Date:	30/8/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 637 on PH1980 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9 m	7 – 11 m	VS
T2	4 m	3 – 7m	VS
T3			
S1	1.5m	1 – 3m	VS
S2			
G	0.5m	0 – 1m	D
Structural formation including height: (estimated)			
Non Remnant			
Ecologically dominant layer:		T2	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:		100m
Start point	Zone	5	5	E	7578316.27	N	474184.70	
End point	Zone	5	5	E	7578414.83	N	474166.82	

Interval (metres)	Intercept	Str.	Height	Species	Common Name
T1 Transect Intercept					
0 – 4.6	4.6m	T1	7.1	<i>Acacia harpophylla</i>	Brigalow
23.5 – 26.7	3.2m	T2	6.6	<i>Terminalia oblongata</i>	Yellowwood
28.1 – 31.3	3.2m	T1	7.2	<i>Acacia harpophylla</i>	Brigalow
33.7 – 36.1	2.4m	T2	6.1	<i>Eremophila mitchellii</i>	False Sandlewood
40.1 – 43.4	3.3m	T2	5.3	<i>Acacia excelsa</i>	Ironwood
47.4 – 49.1	1.7m	T2	3.6	<i>Lysiphyllum carronii</i>	Red Bauhinia



50.7 – 54	3.3m	T1	6.9	<i>Eremophila mitchellii</i>	False Sandlewood
54 – 55.7	1.7m	T2	5.3	<i>Acacia harpophylla</i>	Brigalow
72.8 – 76.9	4.1m	T1	9.7	<i>Acacia harpophylla</i>	Brigalow
79.0 – 85.5	6.5m	T1	11.6	<i>Acacia cambagei</i>	Stinking Wattle
99.7 - 100	0.3m	T1	8.3	<i>Acacia cambagei</i>	Stinking Wattle
Shrub Transect Intercept					
2.5 – 3.6m	1.1m	S	1.4	<i>Carisa ovata</i>	Current Bush
7.9 -8.3m	0.4m	S	1.8	<i>Acacia harpophylla</i>	Brigalow
13.9 – 15.7m	1.8m	S	1.2	<i>Carrisa ovata</i>	Current Bush
20.4 – 22.7m	2.3m	S	1.2	<i>Carrisa ovata</i>	Current Bush
27.7 – 28.3m	0.6m	S	1.9	<i>Eremophila mitchellii</i>	False Sandlewood
28.4 – 30.4m	2.0m	S	1.2	<i>Carrisa ovata</i>	Current Bush
36.3 – 37.8m	1.5m	S	2	<i>Acacia excelsa</i>	Ironwood
40.1 – 43.6m	3.5m	S	1.3	<i>Carrisa ovata</i>	Current Bush
46.9 – 49.6m	2.7m	S	1.3	<i>Carrisa ovata</i>	Current Bush

Summary:

Minimum height of plants included in the transect table:	6.9m
Intercept of EDL 0 - 50m:	7.8m
Intercept of EDL 50 -100m:	15.9m
Measured crown cover % of EDL 0 -100m:	23.7%
Structural formation	Open Forest to Woodland

Conclusions/notes:

- Species consistent with Of Concern Regional Ecosystem 11.4.6.
- 0-72m contains very little canopy vegetation and is proposed as Non remnant. Transect data post 72m contains a canopy density consistent with this regional ecosystem type.
- A small portion of Least Concern RE11.3.10 is mapped incorrectly and should be mapped Of Concern RE 11.4.6. These are slight boundary changes within the current regional ecosystem mapping.

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel.	Scientific Name	Common Name
E	D	<i>Eucalyptus coolbah</i>	Coolabah
T1	D	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
T2	A	<i>Terminalia oblongata</i>	
	A	<i>Eremophila mitchelli</i>	False Sandlewood



S	A	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Eremophila mitchelli</i>	False Sandlewood
	A	<i>Acacia excelsa</i>	Ironwood
G	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Panicum decompositum</i>	Native Millet
	C	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisctum cilianre</i>	Buffel Grass
		<i>Carrisa ovata</i>	Currant Bush



Lot 637 on PH1980 - Vegetation Transect 3

Area C – Polygon 1

Endangered RE 11.4.8 – *Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *Acacia Argurodendron* on Cainozoic clay plains.

Of Concern RE 11.4.6 – *Acacia Cambagei* woodland on Cainozoic clay plains

Site No.	3	Recorder:	David Havill / Steve Reeves	Day/Date:	30/8/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 637 on PH1980 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9m	5-12m	M
T2	3m	2-4m	S
T3			
S1	1.5m	1-2m	VS
S2			
G	0.5m	0-0.8m	D
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m
Start point	Zone	5	5	E	481399.89	N	7583104.41
End point	Zone	5	5	E	481318.23	N	7583161.47

Interval (metres)	Intercept	Str.		Species	Common Name
T1 Transect Intercept					
0 - 5.2	5.2	T1	7	<i>Acacia harpophylla</i>	Brigalow
11.6 - 15	3.4	T1	7	<i>Acacia harpophylla</i>	Brigalow
20.7 - 27	6.3	T1	9	<i>Acacia harpophylla</i>	Brigalow
40.1 - 46	5.9	T1	7	<i>Acacia cambagei</i>	Stinking Wattle



51.3 – 58.3	7	T1	9	<i>Acacia cambagei</i>	Stinking Wattle
61 – 75.2	21.2	T1	8	<i>Acacia cambagei</i>	Stinking Wattle
92.7 – 100	7.3	T1	9	<i>Acacia cambagei</i>	Stinking Wattle
T2 Transect Intercept					
41.6 – 44	3.4	T2	3	<i>Acacia harpophylla</i>	Brigalow
Shrub Transect Intercept					
22.7 – 24	1.3	S	1	<i>Acacia harpophylla</i>	Brigalow
34.5 – 35.6	1.1	S	1	<i>Acacia cambagei</i>	Stinking Wattle
36.4 – 37.6	1.2	S	1	<i>Acacia cambagei</i>	Stinking Wattle
38.8 – 40	1.2	S	1	<i>Acacia cambagei</i>	Stinking Wattle

Summary:

Minimum height of plants included in the transect table:	7
Intercept of EDL 0 - 50m:	20.8
Intercept of EDL 50 -100m:	35.5
Measured crown cover % of EDL 0 -100m:	56.3
Structural formation	Woodland

Conclusions/notes:

- No Eucalyptus cambageana (Dawson Gum) recorded within the investigation area or within close proximity to the vegetation transect.
- Species observed represent Of Concern RE11.4.6 and are dominated by *Acacia cambagei* with *Acacia harpophylla* scattered throughout.
- The site is heavily disturbed with minor changes in vegetation boundaries observed due to vegetation clearing along an existing internal fence line.
- Site contains evidence of cattle disturbances with the shrub layer highly disturbed.

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel.	Scientific Name	Common Name
T1	C	<i>Acacia harpophylla</i>	Brigalow
	D	<i>Acacia cambagei</i>	Stinking Wattle
T2	C	<i>Acacia harpophylla</i>	Brigalow
	D	<i>Acacia cambagei</i>	Stinking Wattle
	A	<i>Lysiphyllum carronii</i>	Red Bauhinia
S	A	<i>Acacia harpophylla</i>	Brigalow
	D	<i>Carrisa ovata</i>	Currant Bush
	A	<i>Geijera Parviflora</i>	Wilga
	A	<i>Eremophila Mitchellii</i>	False Sandalwood



G	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Grewia Reusifolia</i>	Dogs balls
	D	<i>Pennisetum ciliarre</i>	Buffel Grass



Lot 637 on PH1980 - Quaternary Site I

Of Concern Area A Polygon 2

T1 Layer	D	<i>Eucalyptus coolabah</i>
	A	<i>Eucalyptus populnea</i>
T2 Layer	D	<i>Eucalyptus coolabah</i>
Shrub Layer	O	<i>Sesbania cannabina</i>
Ground	O	<i>Aristida latifolia</i>
	CD	<i>Dichanthium sericeum</i>
	O	<i>Themeda triandra</i>
	CD	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	O	<i>Enteropogon acicularis</i>
	O	<i>Parthenium hysterophorus</i>
Notes : • Open woodland dominated by Eucalyptus coolabah (Coolabah) • Dense native grass understorey with infestations of exotic/introduced weed species.. • Alluvial plain species and structure consistent with RE 11.3.3		



Lot 637 on PHI980 - Quaternary Site 2

Endangered Area B Polygon 1 RE 1.3.1

T1 Layer		<i>Acacia harpophylla</i>
		<i>Eucalyptus coolabah</i>
T2 Layer		<i>Acacia harpophylla</i>
		<i>Geijera parviflora</i>
		<i>Terminalia oblongata</i>
Shrub Layer		<i>Eremophila mitchelli</i>
		<i>Carrisa ovata</i>
Ground		<i>Pennisetum ciliare</i>
		<i>Aristida latifolia</i>
		<i>Astrebla squorrosa</i>
		<i>Dichanthium sericeum</i>
Notes :		
• Very sparse understorey with great percentage of bare ground observed. • Area heavily grazed. • Quantity of standing dead timber observed.		

Lot 637 on PHI980 - Quaternary Site 3

Least Concern Area B Polygon 2 RE 11.5.3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Corymbia clarksoina</i>
	C	<i>Corymbia dallachyana</i>
	C	<i>Eucalyptus brownii</i>
T2 Layer	A	<i>Corymbia clarksoina</i>
	A	<i>Corymbia dallachyana</i>
	A	<i>Eucalyptus brownii</i>
		<i>Petalostigma pubescens</i>
		<i>Lysiphyllum carronii</i>



Dominance (D,CD,O,A)		Species
		<i>Alphitonia excels</i>
		<i>Ventilago viminalis</i>
Shrub Layer		<i>Carrisa ovate</i>
		<i>Exocarpus latifolius</i>
		<i>Persoonia falcate</i>
		<i>Petalostigma pubescens</i>
		<i>Owenia acidula</i>
		<i>Myoporum acuminatum</i>
Ground	D	<i>Pennisctum cilianre</i>
	A	<i>Aristida latifolia</i>
	A	<i>Bothriochloa bladhii</i>
Notes : Species composition and structure representative of RE 11.5.3.		

Lot 637 on PHI980 - Quaternary Site 4

Of Concern Area B Polygon 3 RE 11.4.6

E	D	<i>Eucalyptus coolbah</i>
T1	D	<i>Acacia harpophylla</i>
	A	<i>Terminalia oblongata</i>
S	A	<i>Acacia harpophylla</i>
	A	<i>Terminalia oblongata</i>
G	A	<i>Sporobolus caroli</i>
	A	<i>Panicum decompositum</i>
	C	<i>Astrebla squarrosa</i>



	D	<i>Pennisetum ciliare</i>
Notes :		
- Species consistent with RE 11..4.6.		

Lot 637 on PHI980 - Quaternary Site 5

Least Concern Area D Polygon 1 RE 11.5.3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Corymbia clarksoina</i>
	C	<i>Corymbia dallachyana</i>
	C	<i>Eucalyptus brownii</i>
T2 Layer	A	<i>Corymbia clarksoina</i>
	A	<i>Corymbia dallachyana</i>
	A	<i>Eucalyptus brownii</i>
	A	<i>Grevillea parallela</i>
	A	<i>Acacia excelsa</i>
	A	<i>Owenia acidula</i>
	A	<i>Melaleuca sp.</i>
	A	<i>Petalostigma pubescens</i>
	A	<i>Clerodendrum floribundum</i>
Shrub Layer	D	<i>Carrisa ovate</i>
	A	<i>Breynia oblongifolia</i>
	A	<i>Citrus glauca</i>
Ground	D	<i>Pennisetum ciliarre</i>
	A	<i>Aristida latifolia</i>
	A	<i>Bothriochloa bladhii</i>
Notes :		
- Site Consistent with regional ecosystem mapping		
- Heavily grazed with dense <i>Pennisetum ciliare</i> ground layer.		



Appendix D

Lot I on SPI47546 Vegetation Transects



Lot I on SPI47546 - Vegetation Transect I

Site No.	1	Recorder:	David Havill / Steve Reeves	Day/Date:	30/8/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	S & P Dennis (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10m	6 – 13m	M
T2	5m	4 – 6m	VS
T3			
S1	2m	1 – 3m	VS
S2			
G	0.5m	0 – 1m	D
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m
Start point	Zone	5	5	E	7584598.96	N	488929.13
End point	Zone	5	5	E	7584515.91	N	488877.28

Interval (metres)	Intercept	Str.	Height	Species	Common Name
T1 Transect Intercepts					
0 – 7.7m	7.7m	T1	9.4m	<i>Acacia harpophylla</i>	Brigalow
26.5 – 34.0m	7.5m	T1	9.7m	<i>Acacia cambagei</i>	Stinking Wattle
34.0 – 39.3m	5.3m	T1	7.3m	<i>Acacia harpophylla</i>	Brigalow
40.0 – 44.0m	4m	T2	5.6m	<i>Acacia harpophylla</i>	Brigalow
46.6 – 51.2m	4.6m	T1	7.6m	<i>Acacia cambagei</i>	Stinking Wattle
54.4 – 62.0m	7.6m	T1	12.3m	<i>Acacia cambagei</i>	Stinking Wattle
79.0 – 83.7m	4.7m	T1	10.1m	<i>Acacia cambagei</i>	Stinking Wattle
91.7 – 96.1m	4.4m	T1	9.6m	<i>Acacia cambagei</i>	Stinking Wattle
96.1 – 100m	3.9m	T1	9.6m	<i>Acacia cambagei</i>	Stinking Wattle



Groundlayer Transect Intercepts					
0 – 6.4	6.4m	G	0.5m	<i>Pennisctum cilianre</i>	Buffel Grass
6.4 – 7.2	0.8m	G	0.5m	<i>Cyperus bifax</i>	Nut Grass
7.2 – 10.2	3.0m	G	0.5m	<i>Bare Earth</i>	Bare Earth
10.2 – 14.5	4.3m	G	0.5m	<i>Alternanthera nodiflora</i>	Common Joyweed
14.5 – 16.8	2.3m	G	0.5m	<i>Enchylaena tomentosa</i>	Ruby Saltbush
16.8 – 17.5	0.7m	G	0.5m	<i>Parthenium hysterophorus</i>	Parthenium Weed
17.5 – 20.5	3.0m	G	0.5m	<i>Leaf Litter</i>	Leaf Litter
20.5 – 22.6	2.1m	G	0.5m	<i>Bare Earth</i>	Bare Earth
22.6 – 28.6	6.0m	G	0.5m	<i>Cyperus bifax</i>	Nut Grass
28.6 – 33.8	5.2m	G	0.5m	<i>Leaf Litter</i>	Leaf Litter
33.8 – 37.3	3.5m	G	0.5m	<i>Pennisctum cilianre</i>	Buffel Grass
37.3 – 41.4	4.1m	G	0.5m	<i>Bare Earth</i>	Bare Earh
41.4 – 43.6	2.2m	G	0.5m	<i>Pennisctum cilianre</i>	Buffel Grass
43.6 – 47.2	3.6m	G	0.5m	<i>Sporobolus sp.</i>	Grass
47.2 – 48.7	1.5m	G	0.5m	<i>Sporobolus caroli</i>	Fairy Grass
48.7 – 50	1.3m	G	0.5m	<i>Pennisctum cilianre</i>	Buffel Grass

Summary:		
Minimum height of plants included in the transect table:	6.1m	
Intercept of EDL 0 - 50m:	13.4m	
Intercept of EDL 50 -100m:	14.2m	
Measured crown cover % of EDL 0 -100m:	26.6%	
Structural formation	Open Forest to Woodland	
Conclusions/notes:		
▪ Species consistent with Of Concern Regional Ecosystem 11.3.5 ▪ A significant water body is located towards the eastern boundary of the remnant polygon containing fringing vegetation associated with Of Concern RE11.3.3. The vegetation outside of this is associated with Least Concern RE 11.3.5. ▪ Site is highly disturbed due to cattle grazing as well as evidence of feral pig diggings.		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed) Within Proposed Least Concern RE

Str.	Rel.	Scientific Name	Common Name
E	D	<i>Acacia cambagei</i>	Stinking Wattle
		<i>Acacia harpophylla</i>	Brigalow
T!	D	<i>Acacia cambagei</i>	Stinking Wattle
	A	<i>Acacia harpophylla</i>	Brigalow



S	A	<i>Acacia cambagei</i>	Stinking Wattle
	A	<i>Acacia harpophylla</i>	Brigalow
G	A	<i>Sporobolus caroli</i>	Fairy Grass
		<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Panicum decompositum</i>	Native Millet
	C	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliare</i>	Buffel Grass

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed) Adjacent to Lagoon

Str.	Rel.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Eucalyptus camaldulensis</i>	River Red Gum
	A	<i>Acacia cambagei</i>	Stinking Wattle
	A	<i>Acacia harpophylla</i>	Brigalow
T2	A	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Eucalyptus camaldulensis</i>	River Red Gum
	A	<i>Acacia cambagei</i>	Stinking Wattle
	A	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
	A	<i>Lysiphyllum hookeri</i>	White Flowered Bauhinia
S	D	<i>Geijera parviflora</i>	Wilga
G	D	<i>Meuhlenbeckia florulenta</i>	Tangled Lignum
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	A	<i>Pennisetum ciliare</i>	Buffel Grass



Lot I on SPI47546 - Quaternary Site I

Of Concern Area B RE11.3.3

T1	CD	<i>Eucalyptus coolabah</i>
	CD	<i>Acacia cambageana</i>
	O	<i>Acacia harpophylla</i>
T2	A	<i>Eucalyptus coolabah</i>
	D	<i>Acacia cambageana</i>
	A	<i>Acacia harpophylla</i>
	O	<i>Terminalia oblongata</i>
	O	<i>Lysiphyllum carronii</i>
S	A	<i>Eremophila bigoniiflora</i>
	O	<i>Lysiphyllum carronii</i>
	A	<i>Acacia cambagei</i>
	A	<i>Acacia harpophylla</i>
	O	<i>Terminalia oblongata</i>
	O	<i>Owenia acidula</i>
G	O	<i>Parthenium hysterophorus</i>
	O	<i>Carrisa ovata</i>
	A	<i>Sporobolus caroli</i>
	O	<i>Capparis lassiantha</i>
	O	<i>Alternanthera nodosa</i>
	A	<i>Exocarpus latifolius</i>
	D	<i>Pennisetum ciliare</i>
Notes :		
- Species consistent with RE 11.3.3		



Appendix E

Lot 3235 on PH752 Vegetation Transects



Lot 3235 on PH752 - Quaternary Site I

Of Concern Area RE 11.3.5/11.3.3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Eucalyptus coolabah</i>
	A	<i>Acacia harpophylla</i>
	A	<i>Corymbia dallachyana</i>
	A	<i>Eucalyptus camaldulensis</i>
T2 Layer	D	<i>Eucalyptus coolabah</i>
	A	<i>Acacia harpophylla</i>
	A	<i>Corymbia dallachyana</i>
	A	<i>Eucalyptus camaldulensis</i>
	C	<i>Terminalia oblongata</i>
	A	<i>Acacia cambagei</i>
	A	<i>Lysiphyllum hookeri</i>
Shrub	A	<i>Eucalyptus coolabah</i>
	A	<i>Acacia harpophylla</i>
	A	<i>Corymbia dallachyana</i>
	A	<i>Eucalyptus camaldulensis</i>
	A	<i>Terminalia oblongata</i>
	A	<i>Acacia cambagei</i>
	A	<i>Lysiphyllum hookeri</i>
	A	<i>Geijera parviflora</i>
Ground	A	<i>Xanthium pungens</i>
	A	<i>Leptochloa digitata</i>
	A	<i>Panicum decompositum</i>
	A	<i>Dichanthium sericeum</i>
	A	<i>Dactyloctenium radulans</i>
Notes : Species consistent with current regional ecosystem mapping		
-		



Appendix F

Lot 4 on SPII6046 Vegetation Transects



Lot 4 on SPI16046 Holding - Vegetation Transect I

Area A – Polygon 1

Site No.	1	Recorder:	David Havill & Tom Connor	Day/Date:	15.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	8	5 – 16	Medium
T2	2.5	2 – 4	Sparse
T3		-	
S1	1.5	1 - 2	Very Sparse
S2		-	
G	0.5	0 - 1	Medium
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	5	E	146.921704	N -21.835030
End point	Zone	5	5	E	146.922158	N -21.834883

Interval (metres)	Intercept	Str.	Height	Species	Common Name
0 – 4.7	4.7m	T1	15	<i>Eucalyptus coolabah</i>	Coolabah
4.7 – 7.1	2.4m	T2	3.5	<i>Geijera parviflora</i>	Wilga
15.9 – 18.8	2.9m	T2	3.8	<i>Geijera parviflora</i>	Wilga
23.9 – 29.8	5.9m	T1	7	<i>Acacia harpophylla</i>	Brigalow
29.8 – 33.5	3.7m	T2	4	<i>Geijera parviflora</i>	Wilga
35.3 – 36.9	1.6m	T2	3.6	<i>Geijera parviflora</i>	Wilga



Interval (metres)	Intercept	Str.	Height		Species	Common Name
36.9 – 41.1	5.2m	T1	7		<i>Acacia harpophylla</i>	Brigalow
43.5 – 46.4	2.9m	T1	7		<i>Terminalia oblongata</i>	Yellowwood
55.7 – 60.7	5m	T1	7		<i>Acacia harpophylla</i>	Brigalow
61.7 – 65.4	3.7m	T2	3.2		<i>Geijera parviflora</i>	Wilga
67.4 – 77.4	10m	T2	4.5		<i>Geijera parviflora</i>	Wilga
78.6 – 80.7	2.1m	T2	4.5		<i>Geijera parviflora</i>	Wilga
80.7 – 81.9	1.2m	T1	5		<i>Eucalyptus coolabah</i>	Coolabah
95.3 – 97.5	2.2m	T1	6		<i>Terminalia oblongata</i>	Yellowwood

Summary:

Minimum height of plants included in the transect table:	3.2 m	
Intercept of EDL 0 - 50m:		18.7 m
Intercept of EDL 50 -100m:		8.4 m
Measured crown cover %		27.1%
Structural formation	Woodland	

Conclusions/notes:

- Vegetation clump heavily grazed;
- Flood debris at base of trees.
- Ground layer dominated by *Pennisetum ciliare* (Buffel Grass) within open patches.
- The *Eucalyptus coolabah* specimens have a trunk DBH between 20mm and 500mm.
- The *Acacia harpophylla* specimens have a trunk DBH between 100mm and 200mm.

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
	C	<i>Acacia harpophylla</i>	Brigalow
T2	D	<i>Acacia harpophylla</i>	Brigalow
	C	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
S	A	<i>Geijera parviflora</i>	Wilga
	A	<i>Terminalia oblongata</i>	Yellowwood
G	A	<i>Sporobolus caroli</i>	Fairy Grass



	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Gomphrena celosioides</i>	Gomphrena Weed
	A	<i>Cyperus gracilis</i>	Slender Sedge
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	A	<i>Sida cordifolia</i>	Flannel Weed
	C	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliare</i>	Buffel Grass



Lot 4 on SP116046 - Vegetation Transect 2

Area A – Polygon 2

Site No.	2	Recorder:	David Havill & Tom Connor	Day/Date:	15.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	8 – 15	Sparse / Medium
T2	4	2 – 6	Sparse
T3		-	
S1	1.5	1 - 2	Very Sparse
S2		-	
G	0.5	0 - 1	Dense
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	5	E	146.929387	N -21.835489
End point	Zone	5	5	E	146.930331	N -21.835419

Interval (metres)	Intercept	Str.	Height	Species	Common Name
0 – 7	7m	T1	8	<i>Archidendropsis basaltica</i>	Dead Finish
28.9 – 29.9	1m	T2	4	<i>Terminalia oblongata</i>	Yellowwood
39.5 – 50	10.5 m	T1	14.5	<i>Eucalyptus brownie</i>	Reid River Box
54.5 – 60.8	6.3 m	T1	12	<i>Eucalyptus brownie</i>	Reid River Box
92 - 100	8 m	T1	9	<i>Eucalyptus brownii</i>	Reid River Box



Summary:

Minimum height of plants included in the transect table:	4m	
Intercept of EDL 0 - 50m:	17.5 m	
Intercept of EDL 50 -100m:	14.3 m	
Measured crown cover % of EDL 0 -100m:	31.8%	
Structural formation	Woodland	
Conclusions/notes:		
▪ Vegetation clump heavily grazed;		
▪ Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) .		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus brownii</i>	Reid River Gum
	C	<i>Archidendropsis basaltica</i>	Dead Finish
T2	C	<i>Archidendropsis basaltica</i>	Dead Finish
	D	<i>Eucalyptus brownii</i>	Reid River Gum
	A	<i>Terminalia oblongata</i>	Yellowwood
S	A	<i>Archidendropsis basaltica</i>	Dead Finish
	A	<i>Carissa ovata</i>	Current Bush
G	A	<i>Heteropogon contortus</i>	Black spear Grass
	A	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliare</i>	Buffel Grass



Lot 4 on SPI16046 - Vegetation Transect 3

Area A – Polygon 2

Site No.	3	Recorder:	David Havill & Tom Connor	Day/Date:	15.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	8 – 15	Sparse
T2	5	3 – 7	Very Sparse
T3		-	
S1	1.5	1 - 2	Very Sparse
S2		-	
G	0.5	0 - 1	Dense
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	146.933059	N -21.835736
End point	Zone	5	6	E	146.933998	N -21.835826

Interval (metres)	Intercept	Str.	Height		Species	Common Name
10.2 – 22.3	12.1 m	T1	14		<i>Corymbia dallachiana</i>	Ghost Gum
40.8 – 47	6.2 m	T1	15		<i>Eucalyptus brownii</i>	Reid River Gum
50 - 64	14 m	T1	15		<i>Corymbia intermedia</i>	Pink Bloodwood



Summary:		
Minimum height of plants included in the transect table:	14m	
Intercept of EDL 0 - 50m:	18.3 m	
Intercept of EDL 50 -100m:	14 m	
Measured crown cover % of EDL 0 -100m:	32.3%	
Structural formation	Woodland	
Conclusions/notes:		
Vegetation clump heavily grazed;		
Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass)		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus brownii</i>	Reid River Gum
	A	<i>Archidendropsis basaltica</i>	Dead Finish
	A	<i>Corymbia dallachiana</i>	Ghost Gum
		<i>Corymbia intermedia</i>	Pink Bloodwood
T2	C	<i>Archidendropsis basaltica</i>	Dead Finish
	D	<i>Eucalyptus brownii</i>	Reid River Gum
		<i>Terminalia oblongata</i>	Yellowwood
S	A	<i>Archidendropsis basaltica</i>	Dead Finish
	A	<i>Carissa ovata</i>	Current Bush
		<i>Melaleuca bracteata</i>	Black Teatree
G	A	<i>Heteropogon contortus</i>	Black spear Grass
	A	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliare</i>	Buffel Grass
	O	<i>Capparis lasiantha</i>	Wait-a-while
	A	<i>Chloris gayana</i>	Rhodes Grass



Lot 4 on SPII6046 - Quaternary Site 1

Dominance (D,CD,O,A)		Species
T1 Layer	D	Eucalyptus coolabah
	C	Acacia harpophylla
	A	Acacia cambagei
T2 Layer	C	Acacia harpophylla
	C	Geijera parviflora
	A	Terminalia oblongata
	A	Eremophila mitchellii
Shrub Layer	A	Terminalia oblongata
	A	Geijera parviflora
	A	Eremophila mitchellii
	A	Acacia farnesiana

Lot 4 on SPII6046 - Quaternary Site 2

- No *Acacia harpophylla* (Brigalow)

Dominance (D,CD,O,A)		Species
T1 Layer	D	Eucalyptus brownii
	A	Archidendropsis basaltica
T2 Layer	D	Archidendropsis basaltica
		Acacia cambagei
Shrub Layer	A	Carissa ovata
		Eucalyptus brownii
		Acacia cambagei



Lot 4 on SP116046 - Quaternary Site 3

Site No.	3	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover % of EDL 0 -100m:	0%
Structural formation	Non remnant
Conclusions/notes:	
- Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.	



Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
G	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Heteropogon contortus</i>	Black Spear grass
	A	<i>Chrysopogon fallax</i>	Golden Beard Grass
	A	<i>Chloris virgata</i>	Feathertop Rhodes Grass
	A	<i>Chloris divaricata</i>	Slender Chloris
	A	<i>Pennisetum echinatus</i>	Mossman River Grass
	A	<i>Arundinella nepalensis</i>	Reed Grass
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Gomphrena celosioides</i>	Gomphrena Weed
	A	<i>Cyperus gracilis</i>	Slender Sedge
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	A	<i>Sida cordifolia</i>	Flannel Weed
	C	<i>Astrebla squarrosa</i>	Bull Mitchell Grass
	D	<i>Pennisetum ciliare</i>	Buffel Grass



Lot 4 on SP116046 - Quaternary Site 4

Site No.	4	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1		-	ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover % of EDL 0 -100m:	0%
Structural formation	Non remnant
Conclusions/notes:	
- Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.	



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Carissa ovata</i>	Currant Bush
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	A	<i>Capparis lasiantha</i>	Wait-A-While
	A	<i>Dichanthium sericeum</i>	Bluegrass
	D	<i>Pennisetum ciliare</i>	Buffel Grass



Lot 4 on SP116046 - Quaternary Site 5

Site No.	5	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:		Ground	

Summary:		
Minimum height of plants included in the transect table:	0 m	
Intercept of EDL 0 - 50m:	0 m	
Intercept of EDL 50 -100m:	0 m	
Measured crown cover % of EDL 0 -100m:	0%	
Structural formation	Non remnant	
Conclusions/notes:		
- Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.		

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
G	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed



	D	<i>Pennisetum ciliare</i>	Buffel Grass
	S	<i>Acacia cambagei</i>	Gidgee
	A	<i>Heteropogon contortus</i>	Black Spear Grass
	A	<i>Bothriochloa bladhii</i>	



Lot 4 on SP116046 - Quaternary Site 6

Site No.	6	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:		Ground	

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover % of EDL 0 -100m:	0%
Structural formation	Non remnant
Conclusions/notes:	
- Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.	



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Acacia farnesiana</i>	Mimosa Bush
	S	<i>Capparis lasiantha</i>	Wait-A-While
	A	<i>Dichanthium sericeum</i>	Bluegrass
	S	<i>Carissa ovata</i>	Currant Bush
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass



Lot 4 on SP116046 - Quaternary Site 7

Site No.	7	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:		Ground	

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover % of EDL 0 -100m:	0%
Structural formation	Non remnant
Conclusions/notes: - Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.	



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	D	<i>Pennisetum ciliare</i>	Buffel Grass
	S	<i>Petalostigma pubescens</i>	Quinine Bush
	S	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Cyperus gracilis</i>	Slender Sedge
	A	<i>Sida cordifolia</i>	Flannel Weed
	A	<i>Dichanthium sericeum</i>	Bluegrass



Lot 4 on SP116046 - Quaternary Site 8

Site No.	8	Recorder:	Dave Havill & Andrew Craig	Day/Date:	14.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover % of EDL 0 -100m:	0%
Structural formation	Non remnant
Conclusions/notes:	
- Vegetation located outside of property - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) within open patches.	



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Dichanthium sericeum</i>	Bluegrass
	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Bothriochloa bladhii</i>	
	S	<i>Acacia excelsa</i>	
	S	<i>Acacia decora</i>	Pretty Wattle



Lot 4 on SP116046 - Quaternary Site 9

Site No.	9	Recorder:	Dave Havill & Andrew Craig	Day/Date:	13.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover %	0%
Structural formation	Non remnant

Conclusions/notes:

- No vegetation observed within mapped remnant polygon
- Ground layer dominated by *Pennisetum ciliare* (Buffel Grass) within open patches.



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Chloris virgata</i>	Feathertop Rhodes Grass
	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	S	<i>Capparis lasiantha</i>	Wait-A-While
	S	<i>Carissa ovata</i>	Currant Bush
	A	<i>Dichanthium sericeum</i>	Bluegrass
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass



Lot 4 on SP116046 - Quaternary Site 10

Site No.	10	Recorder:	Dave Havill & Andrew Craig	Day/Date:	13.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover %	0%
Structural formation	Non remnant

Conclusions/notes:

- No vegetation observed within mapped remnant polygon
- Ground layer dominated by *Pennisetum ciliare* (Buffel Grass) within open patches.



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Dichanthium sericeum</i>	Bluegrass
	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	S	<i>Acacia excelsa</i>	
	S	<i>Acacia decora</i>	Pretty Wattle
	A	<i>Bothriochloa bladhii</i>	



Lot 4 on SP116046 - Quaternary Site II

Site No.	11	Recorder:	Dave Havill & Andrew Craig	Day/Date:	13.06.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 4 on SP116046 (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1			ABSENT
T2			ABSENT
T3		-	
S1			ABSENT
S2		-	
G	1	0 – 1.5	Dense
Structural formation including height: (estimated)			
Open Paddock			
Ecologically dominant layer:	Ground		

Summary:

Minimum height of plants included in the transect table:	0 m
Intercept of EDL 0 - 50m:	0 m
Intercept of EDL 50 -100m:	0 m
Measured crown cover %	0%
Structural formation	Non remnant

Conclusions/notes:

- No vegetation observed within mapped remnant polygon
- Ground layer dominated by *Pennisetum ciliare* (Buffel Grass) within open patches.



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Leptochloa digitata</i>	Umbrella Canegrass
	S	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Dichanthium sericeum</i>	Bluegrass
	A	<i>Sida cordifolia</i>	Flannel Weed
	A	<i>Bothriochloa bladhii</i>	



Appendix G

Lot 10 on BL49 Vegetation Transects



Lot 10 on BL49 - Vegetation Transect I

Site No.	1	Recorder:	Andrew Craig	Day/Date:	16/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10m	8-12m	D
T2	5m	4-6m	M
T3			
S1	1.5m	1-2m	S
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Open Forest			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m	
Start point	Zone	5	5	E	147° 9'5.53"E	N -21°51'31.50"S		
End point	Zone	5	5	E	147° 9'3.82"E	N -21°51'31.10"S		

				COVER %											
				Assessment Area. 50 (m)											
Species	Cr. Den %	Misc	ID	E 1	T1	T2	T 3	S1	S2	G1	G2	G3	G4	G5	G
<i>Acacia harpophylla</i>					47.6	7.6		1.8							
<i>Acacia shirleyi</i>					13.6	1.2									
<i>Terminalia oblongata</i>								-							
<i>Acacia decora</i>								14.4							
<i>Eremophila mitchellii</i>								-							
<i>Carissa ovata</i>								3.2							



<i>Pennisetum ciliare</i>										55							
<i>Enneapogon nigricans</i>										3.0							
<i>Enchylaena tomentosa</i>										4.6							
<i>Aristida latifolia</i>										15							
<i>Themeda triandra</i>										2.6							
Dead										-							
Litter										-							
Rock										-							
Bare Ground										16							
Cryptophytes										-							

Summary:

Minimum height of plants included in the transect table:	8m	
Intercept of EDL 0 - 50m:		30.6m
Measured crown cover % of EDL 0 - 100m:		61.2%
Structural formation	Open Forest	

Conclusions/notes:

- Vegetation structure and species composition representative of 11.4.9 with species of 11.7.2 mixed within the remnant vegetation. RE 11.5.3 absent.
- Area dominated by *Pennisetum ciliare* (Buffel Grass)
- Heavily grazed
- No fauna observed
- No hollow logs/fallen timber observed

Plant Species (*D* – Dominant; *C* – codominant; *A* – associated; *S* – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Acacia harpophylla</i>	Brigalow
	CD	<i>Acacia shirleyi</i>	Lancewood
T2	D	<i>Acacia harpophylla</i>	Brigalow
	CD	<i>Acacia shirleyi</i>	Lancewood
S	A	<i>Terminalia oblongata</i>	Yellow Wood
	O	<i>Acacia decora</i>	Pretty Wattle
	A	<i>Eremophila mitchellii</i>	False Sandalwood
	A	<i>Carissa ovata</i>	Currant Bush



G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Enneapogon nigricans</i>	Nigger Heads
	A	<i>Enchylaena tomentosa</i>	Ruby Saltbush
	O	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Themeda triandra</i>	Kangaroo Grass



Lot 10 on BL49 - Vegetation Transect 2

Site No.	2	Recorder:	Andrew Craig	Day/Date:	16/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10m	8-12m	D
T2	5m	4-6m	M
T3			
S1	1.5m	1-2m	S
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Woodland to Open Forest 51.2%CC			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:				Datum:			MGA 55			Transect length:			50m			
Start point	Zone	5	5	E	147° 9'23.80"			N	E-21°51'37.06"S							
End point	Zone	5	5	E	147° 9'22.16"			M	E-21°51'36.59"S							
				COVER %												
				Assessment Area. 50 (m)												
Species	Cr. De n %	Misc	ID	E 1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G	
Acacia harpophylla					51.2	6.8										
Terminalia oblongata								1.6								
Eremophila mitchellii								3.4								
Carissa ovata																
Pennisetum ciliare										60.2						
Enneapogon nigricans										21.2						
Enchylaena tomentosa										-						



<i>Aristida latifolia</i>										2.6					
<i>Aristida caput-medusae</i>										5.6					
Dead										-					
Litter										-					
Rock										-					
Bare Ground										4.8					
Cryptophytes										-					

Summary:

Minimum height of plants included in the transect table:	8m
Intercept of EDL 0 - 50m:	25.6m
Measured crown cover % of EDL 0 - 100m:	51.2%
Structural formation	Woodland to Open Forest

Conclusions/notes:

- Vegetation structure and species composition consistent with RE 11.4.9
- Area dominated by *Pennisetum ciliare* (Buffel Grass)
- Heavily grazed
- No fauna observed
- No hollow logs/fallen timber observed



Plant Species (*D – Dominant; C – codominant; A – associated; S – Suppressed*)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Acacia harpophylla</i>	Brigalow
T2	D	<i>Acacia harpophylla</i>	Brigalow
S	CD	<i>Terminalia oblongata</i>	Yellowwood
	CD	<i>Eremophila mitchellii</i>	False Sandalwood
	A	<i>Carissa ovata</i>	Currant Bush
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Enneapogon nigricans</i>	Niggerheads
	A	<i>Enchylaena tomentosa</i>	Ruby Saltbush
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Aristida caput-medusae</i>	Many headed



Lot 10 on BL49 - Vegetation Transect 3

Site No.	3	Recorder:	David Havill	Day/Date:	16/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E			
T1	10m	8 – 12m	M
T2	5 m	3 – 7m	M
T3			
S1	1.8m	1 – 3m	S
S2			
G	0.5m	0 – 1m	D
Structural formation including height: (estimated)			
Open Forest to Woodland			
Ecologically dominant layer:	T1		



Transect – Crown Cover Measured (Transect intercept method)

Start point	Zone	5	5	E	516716.35			N	7582610.73						
End point	Zone	5	5	E	516707.68			N	7582567.87						
				COVER %											
				Assessment Area. 50 (m)											
Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G
Acacia harpophylla					45.6										
Acacia cambagei					14.2										
Eremophila mitchellii								8.6							
Pennisetum ciliare										22.2					
Sporobolus caroli										12.4					
Bothriochloa bladhii										0.40					
Enchylaena tomentosa										0.48					
Dead										0					
Litter										0					
Rock										0					
Bare Ground										41.0					
Cryptophytes										0					

Summary:

Minimum height of plants (T1) included in the transect table:	8m
Intercept of EDL 0 - 50m:	29.9 m
Measured crown cover % of EDL 0 -100m:	59.8 %
Structural formation	Open Forest to Woodland

Conclusions/notes:

- Vegetation structure and species composition consistent with RE 11.4.9
- Area dominated by *Acacia harpophylla* (Brigalow)
- Heavily grazed
- Avi fauna observed
- Dead fall present including hollow logs/fallen timber observed

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)



Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Acacia harpophylla</i>	Brigalow
	C	<i>Acacia cambagei</i>	Stinking Wattle
T2	D	<i>Acacia harpophylla</i>	Brigalow
	A	<i>Terminalia oblongata</i>	Yellowwood
S	D	<i>Eremophila mitchellii</i>	False Sandalwood
	A	<i>Carissa ovata</i>	Currant Bush
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Enchylaena tomentosa</i>	Ruby Saltbush
	A	<i>Bothriochloa bladhii</i>	Forest Blue Grass
	A	<i>Opuntia tomentosa</i>	Velvety Tree Pear



Lot 10 on BL49 - Vegetation Transect 4

Site No.	4	Recorder:	David Havill	Day/Date:	16/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E			
T1	12 m	5 – 14m	M
T2	4 m	3 – 5m	VS
T3			
S1	1.2 m	1 – 2m	VS
S2			
G	0.5 m	0 – 1m	D
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

Start point	Zone	5	5	E	524453.17			N	7581073.31						
End point	Zone	5	5	E	524549.61			N	7581095.41						
				COVER %											
				Assessment Area. 100 (m)											
Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G
Acacia harpophylla					3.5			1.1							
Terminalia oblongata					2.7										
Eucalyptus coolabah					37.6										
Eremophila bigoniiflora															
Lomandra leucocephala										87.4					
Alternanthera										6.0					



<i>denticulata</i>															
Dead															
Litter															
Rock															
Bare Ground										6.6					
Cryptophytes															

Summary:

Minimum height of plants (T1) included in the transect table:	6.5m	
Intercept of EDL 0 - 50m:		21.9 m
Intercept of EDL 50 - 100m:		21.9m
Measured crown cover % of EDL 0 -100m:		43.8 %
Structural formation	Woodland	

Conclusions/notes:

- Vegetation structure and species composition consistent with RE 11.3.3
- One small patch of *Acacia harpophylla* (Brigalow) on western edge of mapped polygon more likely remnants of the cleared adjacent regional ecosystem. No other patches of *Acacia harpophylla* noted within the vicinity.
- Very little weed cover throughout drainage line.
- Canopy trees contain hollows and nesting features.



Lot 10 on BL49 - Vegetation Transect 5

Site No.	5	Recorder:	David Havill	Day/Date:	16/8/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E			
T1	12 m	4 – 11m	M
T2			
T3			
S1	1.2 m	1 – 2m	VS
S2			
G	0.5 m	0 – 1m	D
Structural formation including height: (estimated)			
Low Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

Start point	Zone	5	5	E	524453.17			N	7581073.31						
End point	Zone	5	5	E	524549.61			N	7581095.41						
				COVER %											
				Assessment Area. 100 (m)											
Species	Cr. Den %	Misc	ID	E1	T1	T2	T3	S1	S2	G1	G2	G3	G4	G5	G
Acacia harpophylla				19.7											
Acacia pendula				2											
Acacia excelsa				8.1											
Lysiphyllum carronii				2.8											
Terminalia oblongata															
Pennisetum ciliare										35.0					



<i>Parthenium hysterophorus</i>										3.0					
<i>Dichanthium sericeum</i>										12.2					
<i>Melinis repens</i>															
<i>Sporobolus caroli</i>										4.0					
<i>Sida cordifolia</i>										0.18					
<i>Panicum decompositum</i>										16.6					
<i>Lomandra leucocephala</i>															
<i>Owenia acidula</i>															
<i>Capparis lasiantha</i>										6.0					
Dead															
Litter															
Rock															
Bare Ground										14.4					
Cryptophytes															

Summary:

Minimum height of plants (T1) included in the transect table:	6.5m	
Intercept of EDL 0 - 50m:		29.3 m
Intercept of EDL 50 - 100m:		3.3 m
Measured crown cover % of EDL 0 -100m:		32.6 %
Structural formation	Low Woodland	

Conclusions/notes:

- Vegetation structure and species composition consistent with RE 11.4.11
- A number of native grass species were observed within the vicinity of the vegetation transect.
- Site is highly disturbed due to cattle grazing and weed invasion within the ground layer.

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Acacia harpophylla</i>	Brigalow



	A	<i>Acacia pendula</i>	Myall
	O	<i>Lysiphyllum carronii</i>	Red Bauhinia
	O	<i>Terminalia oblongata</i>	Yellowwood
G	D	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Parthenium hysterophorus</i>	Parthenium Weed
	A	<i>Dichanthium sericeum</i>	Queensland Bluegrass
	A	<i>Melinis repens</i>	Red Natal Grass
	A	<i>Sporobolus caroli</i>	Fairy Grass
	A	<i>Sida cordifolia</i>	Flannel Weed
	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Lomandra sp.</i>	Woolly-headed Matrush
	A	<i>Owenia acidula</i>	Emu Bush
	A	<i>Capparis lasiantha</i>	Wait-a-while



Lot 10 on BL49 - Vegetation Transect 6

Site No.	6	Recorder:	Andrew Craig	Day/Date:	15.08.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	10-14	S
T2	6	4-8	M
T3			
S1	2	1-3	M
S2			
G	0.5	0-1	D
Structural formation including height: (estimated)			
Woodland			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	530749.72 m E	N	7579832.58 m S	
End point	Zone	5	6	E	530550.81 m E	N	7579796.10 m S	



Interval (metres)	Intercept	Str.	Height	Species	Common Name
0-1	1	T2	4	<i>Acacia harpophylla</i>	Brigalow
3.4-4.8	1.4	S	3	<i>Acacia harpophylla</i>	Brigalow
8.1-10.8	2.7	T2	5	<i>Acacia harpophylla</i>	Brigalow
15.0-22.2	7.2	T2	5	<i>Acacia harpophylla</i>	Brigalow
28.1-31	2.9	T2	7	<i>Acacia harpophylla</i>	Brigalow
55.4-58	2.6	T2	6	<i>Acacia harpophylla</i>	Brigalow
93.2-108	14.8	T1	12	<i>Eucalyptus coolabah</i>	Coolabah
120.1-126.4	6.3	T1	11	<i>Eucalyptus coolabah</i>	Coolabah
149.6-151.2	1.6	T2	6	<i>Terminalia oblongata</i>	Yellowwood
152.1-152.9	0.8	S	3	<i>Terminalia oblongata</i>	Yellowwood
160.9-161.2	0.3	S	2	<i>Terminalia oblongata</i>	Yellowwood
162.1-168	5.9	T2	6	<i>Acacia harpophylla</i>	Brigalow
178.6-186.0	7.4	T1	10	<i>Acacia harpophylla</i>	Brigalow
191-194.2	3.2	T2	6	<i>Acacia harpophylla</i>	Brigalow

Summary:		
Minimum height of plants included in the transect table:	9m	
Intercept of EDL 0 - 100m:	6.8 m	
Intercept of EDL 100 -200m:	7.2 m	
Measured crown cover % of EDL 0 -200m:	T1 14.25% T2 13.55% S 1.25%	
Structural formation	Open Woodland	
Conclusions/notes:		
Vegetation structure and species composition is representative of RE 11.4.11		
<i>Acacia harpophylla</i> clumps range from 4-10m		



Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
	A	<i>Acacia harpophylla</i>	Brigalow
T2	D	<i>Acacia harpophylla</i>	Brigalow
	O	<i>Terminalia oblongata</i>	Yellowwood
S	CD	<i>Terminalia oblongata</i>	Yellowwood
	O	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia harpophylla</i>	Brigalow
	CD	<i>Carissa ovata</i>	Currant Bush
	O	<i>Apophyllum anomalum</i>	
G	A	<i>Panicum decompositum</i>	Native Millet
	A	<i>Dichanthium sericeum</i>	Bluegrass
	D	<i>Pennisetum ciliare</i>	Buffel Grass (Greater than 50% cover)
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass
	A	<i>Parthenium hysterophorus</i>	Parthenium
	O	<i>Tribulus micrococcus</i>	
	A	<i>Rhynchosia minima</i>	Native Sensitive Plant
	O	<i>Ipomoea lonchophylla</i>	



Lot 10 on BL49 - Vegetation Transect 7

Site No.	7	Recorder:	Andrew Craig	Day/Date:	15.08.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	-	-	ABSENT
T2	-	-	ABSENT
T3			
S1	-	-	ABSENT
S2			
G	-	-	D
Structural formation including height: (estimated)			
Grassland			
Ecologically dominant layer:		G	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:		100m	
Start point	Zone	5	6	E	535243.60 m E	N	7579002.73 m S		
End point	Zone	5	6	E	535192.85 m E	N	7578971.01 m S		



Interval (metres)	Intercept	Str.	Species	Common Name
0-3.6	3.6	G	<i>Forb species</i>	
3.6-4.4	0.8	G	<i>Panicum decompositum</i>	Native Millet
4.4-6.0	1.6	G	<i>Bare</i>	
6.0-8.0	2.0	G	<i>Pennisetum ciliare</i>	Buffel Grass
8.0-14.0	6.0	G	<i>Forb Species</i>	
14.0-14.4	0.4	G	<i>Panicum decompositum</i>	Native Millet
14.4-15.9	1.5	G	<i>Bare</i>	
15.9-17.0	1.1	G	<i>Panicum decompositum</i>	Native Millet
17.0-20.0	3.0	G	<i>Dichanthium sericeum</i>	Bluegrass
20.0-22.0	2.0	G	<i>Panicum decompositum</i>	Native Millet
22.0-27.6	5.6	G	<i>Aristida latifolia</i>	Feathertop Wiregrass
27.6-32.9	5.3	G	<i>Dichanthium sericeum</i>	Bluegrass
32.9-35.0	2.1	G	<i>Astrebla lappacea</i>	Curly Mitchell Grass
35.0-38.2	3.2	G	<i>Bare</i>	
38.2-42.6	4.4	G	<i>Aristida latifolia</i>	Feathertop Wiregrass
42.6-45.3	2.7	G	<i>Dichanthium sericeum</i>	Bluegrass
45.3-56.0	10.7	G	<i>Pennisetum ciliare</i>	Buffel Grass
56.0-67.8	11.8	G	<i>Dichanthium sericeum</i>	Bluegrass
67.8-81.2	13.4	G	<i>Astrebla lappacea</i>	Curly Mitchell Grass
81.2-82.6	1.4	G	<i>Bare</i>	
82.6-88.7	6.1	G	<i>Forb Species</i>	
88.7-90.2	2.5	G	<i>Panicum decompositum</i>	Native Millet
90.2-93.7	3.7	G	<i>Dichanthium sericeum</i>	Bluegrass
93.7-94.1	0.4	G	<i>Bare</i>	
94.1-97.2	3.1	G	<i>Pennisetum ciliare</i>	Buffel Grass
97.2-100	2.8	G	<i>Dichanthium sericeum</i>	Bluegrass

Forb species consistent with those described for RE 11.4.11 and include *Abelmoschus ficulneus*, *Glycine latifolia*, *Rhynchosia minima*, *Hibiscus trionum*, *Ipomoea lonchophylla* and *Phyllanthus maderspatensis*.



Summary:

Structural formation

Grassland

Conclusions/notes:

- Vegetation structure and species composition representative of a native grassland community RE 11.4.11
- No T1, T2 or shrub layer species were observed within the transect area.
- *Acacia harpophylla* (Brigalow) was absent from the transect and therefore RE 11.4.9 was not observed within this area.
- Area heavily grazed.
- Black soil plains.

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	-		ABSENT
T2	-		ABSENT
S	-		ABSENT
G	CD	<i>Dichanthium sericeum</i>	Bluegrass
	A	<i>Astrebla lappacea</i>	Curly Mitchell Grass
	A	<i>Aristida latifolia</i>	Feathertop wiregrass
	CD	<i>Panicum decompositum</i>	Native Millet
	A	<i>Pennisetum ciliare</i>	Buffel Grass
	A	<i>Abelmoschus ficulneus</i>	
	A	<i>Aristida leptopoda</i>	White Spear grass
	A	<i>Bothriochloa erianthoides</i>	Satintop
	O	<i>Rhynchosia minima</i>	Native Sensitive Plant
	A	<i>Ipomoea lonchophylla</i>	
	A	<i>Glycine latifolia</i>	
	O	<i>Hibiscus trionum</i>	
	A	<i>Tribulus micrococcus</i>	
	A	<i>Parthenium hysterophorus</i>	Parthenium



Lot 10 on BL49 - Vegetation Transect 8

Site No.	8	Recorder:	Andrew Craig	Day/Date:	15.08.2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 10 on BL49				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10m	8-12m	S
T2	-	-	ABSENT
T3			
S1	3m	2-4m	VS
S2			
G	0.5m	0-1m	D
Structural formation including height: (estimated)			
Grassland			
Ecologically dominant layer:		Ground	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:	MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	539211.77 m E	N 7578254.74 m S
End point	Zone	5	6	E	539110.17 m E	N 7578275.48 m S

Interval (metres)	Intercept	Str.	Height	Species	Common Name
4.0-12.2	8.2m	T1	11	<i>Eucalyptus coolabah</i>	Coolabah
93.0-100	7.0	T1	9	<i>Eucalyptus coolabah</i>	Coolabah

Summary:

Minimum height of plants included in the transect table:	8m
Intercept of EDL 0 - 50m:	8.2m
Intercept of EDL 50 -100m:	7.0m



Measured crown cover % of EDL 0 -100m:	30.4%
Structural formation	Woodland
Conclusions/notes:	
- Area heavily grazed <i>Eucalyptus coolabah</i> in T1 layer with dominant native grassland in ground layer - Vegetation structure and species composition consistent with RE 11.4.11. <i>Acacia harpophylla</i> (Brigalow) absent from transect. - No RE 11.4.9 observed within transect. - Black soil flats.	

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Eucalyptus coolabah</i>	Coolabah
T2		ABSENT	
S	O	<i>Terminalia oblongata</i>	Yellowwood
	O	<i>Apophyllum anomalum</i>	
G	CD	<i>Panicum decompositum</i>	Native Millet
	A	<i>Dichanthium sericeum</i>	Bluegrass
	CD	<i>Astrebula lappacea</i>	Curly Mitchell Grass
	O	<i>Parthenium hysterophorus</i>	Parthenium
	A	<i>Pennisetum ciliare</i>	Buffel Grass



Lot 10 on BL49 - Quaternary Site I

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Acacia harpophylla</i>
	V.sparse	<i>Eucalyptus cambageana</i>
T2 Layer	D	<i>Acacia harpophylla</i>
	O	<i>Terminalia oblongata</i>
Shrub Layer	O	<i>Eremophila mitchellii</i>
	O	<i>Carissa ovata</i>
Ground	D	<i>Pennisetum ciliare</i>
	A	<i>Aristida latifolia</i>
	O	<i>Enneapogon nigricans</i>
	A	<i>Aristida caput-medusae</i>
Notes : - <i>Acacia harpophylla</i> (Brigalow) dominant species. - Very sparse distribution of <i>Eucalyptus cambageana</i>. - Vegetation structure and species composition consistent with RE 11.4.9 - Heavily grazed. - Brigalow comprised over 80% of ground cover.		



Lot IO on BL49 - Quaternary Site 2

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Acacia harpophylla</i>
	O	<i>Acacia shirleyi</i>
T2 Layer	CD	<i>Acacia harpophylla</i>
	O	<i>Terminalia oblongata</i>
	CD	<i>Acacia shirleyi</i>
Shrub Layer	O	<i>Carissa ovata</i>
	CD	<i>Eremophila mitchellii</i>
	CD	<i>Terminalia oblongata</i>
	A	<i>Capparis glauca</i>
	A	<i>Opuntia tomentosa</i>
Ground	D	<i>Pennisetum ciliare</i>
	O	<i>Enneapogon nigricans</i>
	A	<i>Aristida latifolia</i>
	A	<i>Enchylaena tomentosa</i>
	O	<i>Eriocereus martini</i>
	A	<i>Eragrostis parviflora</i>

Notes :

- Vegetation structure and species composition representative of a remnant vegetation community dominated by RE 11.4.9 with species from RE 11.7.2 distributed throughout.
- No species consistent with RE 11.5.3 observed within area.
- Area heavily grazed.
- *Pennisetum ciliare* (Buffel grass) dominates the understorey with *Eriocereus martini* observed as individual plants.
- *Pennisetum ciliare* (Buffel grass) greater than 50% of ground layer.
- T1 layer to 12m.



Lot 10 on BL49 - Quaternary Site 3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Acacia harpophylla</i>
	O	<i>Acacia shirleyi</i>
T2 Layer	CD	<i>Acacia harpophylla</i>
	O	<i>Terminalia oblongata</i>
	CD	<i>Acacia shirleyi</i>
Shrub Layer	O	<i>Carissa ovata</i>
	O	<i>Eremophila mitchellii</i>
Ground	D	<i>Pennisetum ciliare</i>
	O	<i>Enneapogon nigricans</i>
	A	<i>Aristida latifolia</i>
	A	<i>Enchylaena tomentosa</i>
	O	<i>Eriocereus martini</i>
	A	<i>Eragrostis parviflora</i>

Notes :

- Vegetation structure and species composition representative of a remnant vegetation community dominated by RE 11.4.9 with species from RE 11.7.2 distributed throughout.
- No species consistent with RE 11.5.3 observed within area.
- Area heavily grazed.
- *Pennisetum ciliare* (Buffel grass) dominates the understorey with *Eriocereus martini* observed as individual plants.
- *Pennisetum ciliare* (Buffel grass) greater than 50% of ground layer.
- T1 layer to 12m.



Lot IO on BL49 - Quaternary Site 4

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Acacia harpophylla</i>
T2 Layer	D	<i>Acacia harpophylla</i>
	A	<i>Terminalia oblongata</i>
Shrub Layer	A	<i>Carissa ovata</i>
	O	<i>Eremophila mitchellii</i>
Ground	D	<i>Pennisetum ciliare</i>
	A	<i>Enneapogon nigricans</i>
		<i>Aristida latifolia</i>
Notes : - Vegetation structure and species composition consistent with RE 11.4.9. - <i>Acacia harpophylla</i> (Brigalow) dominant within T1 and T2 layer. - T1 height average 9m, range 8-12m. - Ground layer dominated by <i>Pennisetum ciliare</i> (Buffel Grass) at densities greater than 50% cover. - Gilgai within the associated vegetation. - Heavily grazed.		



Lot 10 on BL49 - Quaternary Site 5

Dominance (D,CD,O,A)		Species
T1 Layer	O	<i>Eucalyptus coolabah</i>
T2 Layer	-	ABSENT
Shrub Layer	D	<i>Apophyllum anomalum</i>
	O	<i>Acacia harpophylla</i>
Ground	D	<i>Dichanthium sericeum</i>
	A	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	A	<i>Aristida latifolia</i>
	O	<i>Parthenium hysterophorus</i>
	A	<i>Abelmoschus ficulneus</i>
	O	<i>Ipomoea lonchophylla</i>
	O	<i>Cyperus bifax</i>
	O	<i>Tribulus micrococcus</i>

Notes :

- Grassland with isolated *Eucalyptus coolabah* to 9m.
- Vegetation structure and species composition consistent with RE 11.4.11.
- *Acacia harpophylla* (Brigalow) was observed in the quaternary site but height of *Acacia harpophylla* observed was consistent with that of RE 11.4.11 and not remnant RE 11.4.9. Height of *Acacia harpophylla* to 4m. Brigalow community absent from alignment.
- Area heavily grazed.
- Some weed infestation from *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium).



Lot IO on BL49 - Quaternary Site 6

Dominance (D,CD,O,A)		Species
T1 Layer	O	<i>Eucalyptus coolabah</i>
T2 Layer	-	ABSENT
Shrub Layer	D	<i>Apophyllum anomalum</i>
	A	<i>Acacia salicina</i>
Ground	CD	<i>Dichanthium sericeum</i>
	CD	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	A	<i>Aristida latifolia</i>
	A	<i>Abelmoschus ficulneus</i>
	A	<i>Parthenium hysterophorus</i>
	O	<i>Astrebla lappacea</i>
	O	<i>Tribulus micrococcus</i>
	O	<i>Ipomoea lonchophylla</i>
	O	<i>Cyperus bifax</i>

Notes :

- Grassland with isolated *Eucalyptus coolabah* to 9m.
- Vegetation structure and species composition consistent with RE 11.4.11.
- No *Acacia harpophylla* (Brigalow) was observed in the vicinity of the quaternary site. Brigalow community absent from alignment.
- Area heavily grazed.
- Some weed infestation from *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium).



Lot IO on BL49 - Quaternary Site 7

Dominance (D,CD,O,A)		Species
T1 Layer	O	<i>Eucalyptus coolabah</i>
T2 Layer	-	ABSENT
Shrub Layer	O	<i>Apophyllum anomalum</i>
Ground	D	<i>Dichanthium sericeum</i>
	A	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	A	<i>Parthenium hysterophorus</i>
	O	<i>Astrela lappacea</i>
	O	<i>Juncus sp.</i>
	O	<i>Ipomoea lonchophylla</i>
	O	<i>Cyperus bifax</i>
	O	<i>Aristida latifolia</i>

Notes :

- Grassland with isolated *Eucalyptus coolabah* to 9m.
- Vegetation structure and species composition consistent with RE 11.4.11.
- No *Acacia harpophylla* (Brigalow) was observed in the vicinity of the quaternary site. Brigalow community absent from alignment.
- Area heavily grazed.
- Some weed infestation from *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium).



Lot 10 on BL49 - Quaternary Site 8

Dominance (D,CD,O,A)		Species
T1 Layer	O	<i>Eucalyptus coolabah</i>
T2 Layer	-	ABSENT
Shrub Layer	O	<i>Apophyllum anomalum</i>
Ground	D	<i>Dichanthium sericeum</i>
	A	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	A	<i>Parthenium hysterophorus</i>
	O	<i>Astrela lappacea</i>
	A	<i>Phyllanthus maderaspatensis</i>
	O	<i>Juncus sp.</i>
	O	<i>Ipomoea lonchophylla</i>
	O	<i>Aristida latifolia</i>

Notes :

- Grassland with isolated *Eucalyptus coolabah* to 12m.
- Vegetation structure and species composition consistent with RE 11.4.11.
- No *Acacia harpophylla* (Brigalow) was observed in the vicinity of the quaternary site. Brigalow community absent from alignment.
- Area heavily grazed.
- Some weed infestation from *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium).



Lot 10 on BL49 - Quaternary Site 9

Dominance (D,CD,O,A)		Species
T1 Layer	O	<i>Eucalyptus coolabah</i>
T2 Layer	-	ABSENT
Shrub Layer	O	<i>Terminalia oblongata</i>
	A	<i>Muehlenbeckia florulenta</i>
	O	<i>Apophyllum anomalum</i>
Ground	D	<i>Dichanthium sericeum</i>
	A	<i>Panicum decompositum</i>
	O	<i>Pennisetum ciliare</i>
	A	<i>Parthenium hysterophorus</i>
	O	<i>Astrebla lappacea</i>
	O	<i>Digitaria brownii</i>
	O	<i>Ipomoea lonchophylla</i>
	O	<i>Aristida latifolia</i>

Notes :

- Grassland with isolated *Eucalyptus coolabah* to 12m.
- Vegetation structure and species composition consistent with RE 11.4.11.
- No *Acacia harpophylla* was observed in the vicinity of the quaternary site. Brigalow community absent from alignment.
- Area heavily grazed.
- Some weed infestation from *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium).
- 50% of the area contained bare earth.
- Black soils



Lot IO on BL49 - Quaternary Site IO

Dominance (D,CD,O,A)		Species
T1 Layer		ABSENT
T2 Layer		ABSENT
Shrub Layer	A	<i>Muehlenbeckia florulenta</i>
Ground	D	<i>Dichanthium sericeum</i>
	O	<i>Astrebla lappacea</i>
	A	<i>Astrebla pectinata</i>
	O	<i>Panicum decompositum</i>
	A	<i>Pennisetum ciliare</i>
	A	<i>Parthenium hysterophorus</i>
Notes :		
- Grassland to 1m - Vegetation structure and species composition consistent with RE 11.4.4. - Some <i>Pennisetum ciliare</i> (Buffel Grass) at low densities.		



Lot IO on BL49 - Quaternary Site II

Dominance (D,CD,O,A)		Species
T1 Layer		ABSENT
T2 Layer		ABSENT
Shrub Layer	O	<i>Acacia cambagei</i>
	O	<i>Muehlenbeckia florulenta</i>
Ground	D	<i>Panicum decompositum</i>
	A	<i>Pennisetum ciliare</i>
	O	<i>Aristida latifolia</i>
	A	<i>Astrebla sp.</i>
	A	<i>Corchorus trilocularis</i>
	A	<i>Glycine latifolia</i>
	O	<i>Hibiscus trionum</i>
	A	<i>Ipomoea lonchophylla</i>
Notes :		
- Tree layers absent. - Vegetation structure and species composition consistent with RE 11.4.11/11.4.6 - Heavily grazed		



Appendix H

Lot I on SPII88I4 Vegetation Transects



Lot 1 on SP118814 - Vegetation Transect 1

Site No.	1	Recorder:	Andrew Craig	Day/Date:	27/7/2012
Purpose	Regional Ecosystem & Remnant Check				
Locality:	Lot 1 on SP118814				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	9-12	M
T2	6	4-8	V
T3			
S1	2	1-3	V
S2			
G	0.5	0-1	D
Structural formation including height: (estimated)			
Woodland to 12m			
Ecologically dominant layer:		T1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:		Datum:			MGA 55	Transect length:	100m	
Start point	Zone	5	6	E	527052.64 m E	N	7580640.52 m S	
End point	Zone	5	6	E	527000.77 m E	N	7580726.89 m S	



Interval (metres)	Intercept	Str.	Height	Species	Common Name
16.4-18.8	2.4	T1	10	<i>Acacia cambagei</i>	Gidgee
22.1-23.6	1.5	T1	11	<i>Acacia cambagei</i>	Gidgee
33.2-37.1	3.9	T1	10	<i>Acacia cambagei</i>	Gidgee
44.8-51.0	6.2	T1	9.8	<i>Acacia cambagei</i>	Gidgee
51.0-55.3	4.3	T1	9.6	<i>Acacia cambagei</i>	Gidgee
68.3-69.4	1.1	S	1.5	<i>Apophyllum anomalum</i>	
67.2-68.4	1.2	T2	5	<i>Acacia cambagei</i>	Gidgee
72.1-73.4	1.3	T2	5.5	<i>Acacia cambagei</i>	Gidgee
77.1-79.0	1.9	T1	12	<i>Acacia cambagei</i>	Gidgee
99.2-100	0.8	T1	10	<i>Acacia cambagei</i>	Gidgee

Summary:

Minimum height of plants included in the transect table:	8m
Intercept of EDL 0 - 50m:	13m
Intercept of EDL 50 -100m:	8m
Measured crown cover % of EDL 0 -100m:	21%
Structural formation	Woodland

Conclusions/notes:

- Species composition and vegetation structure consistent with RE 11.4.6. *Acacia cambagei* dominant species within T1 layer.
- Heavily grazed
- Dense *Pennisetum ciliare* (Buffel Grass) understorey (Approx 80%)

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

Str.	Rel. dom.	Scientific Name	Common Name
T1	D	<i>Acacia cambagei</i>	Gidgee
T2	O	<i>Geijera parviflora</i>	Wilga
	A	<i>Acacia harpophylla</i>	Brigalow
	C	<i>Acacia cambagei</i>	Gidgee
S	O	<i>Apophyllum anomalum</i>	Tangled Lignum
	A	<i>Opuntia stricta</i>	Tree Pear
	A	<i>Terminalia oblongata</i>	Yellowwood



	O	<i>Carissa ovata</i>	Currant Bush
G	D	<i>Pennisetum ciliare</i>	Buffel Grass

Lot I on SP118814 - Quaternary Site I

Dominance (D,CD,O,A)		Species
T1 Layer		ABSENT
T2 Layer		ABSENT
Shrub Layer	VS	<i>Acacia harpophylla</i>
Ground	D	<i>Pennisetum ciliare</i>
	A	<i>Leptochloa digitata</i>
	O	<i>Dichanthium sericeum</i>
	A	<i>Aristida latifolia</i>

Notes :

- No T1, T2 layer apparent in alignment area.
- Very small and sparse *Acacia harpophylla* plants (<1m). No RE 11.4.9 present.
- Area cleared and dominated by *Pennisetum ciliare* (Buffel Grass).
- See photo below



Lot I on SPII88I4 - Quaternary Site 2

Dominance (D,CD,O,A)		Species
T1 Layer		<i>Acacia cambagei</i>
T2 Layer		<i>Acacia cambagei</i>
		<i>Terminalia oblongata</i>
Shrub Layer		<i>Terminalia oblongata</i>
		<i>Citrus glauca</i>
		<i>Carissa ovata</i>
		<i>Capparis lasiantha</i>
Ground		<i>Pennisetum ciliare</i>
		<i>Parthenium hysterophorus</i>
		<i>Sporobolus sp.</i>
		<i>Panicum decompositum</i>
Notes :		
- Area heavily grazed. - No hollows/nests present. - Number of tracks previously cleared - Species composition and vegetation structure consistent with RE 11.4.6		



Lot I on SPII8814 - Quaternary Site 3

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Eucalyptus coolabah</i>
	A	<i>Corymbia dallachiana</i>
	O	<i>Acacia harpophylla</i>
T2 Layer		Absent
Shrub Layer	CD	<i>Geijera parviflora</i>
	CD	<i>Terminalia oblongata</i>
	A	<i>Atalaya hemiglauca</i>
	O	<i>Eremophila mitchellii</i>
	A	<i>Acacia harpophylla</i>
Ground	O	<i>Pennisetum ciliare</i>
	D	<i>Cyperus bifax</i>
	A	<i>Panicum decompositum</i>
	O	<i>Dichanthium sericeum</i>
Notes :		
- Species composition and vegetation structure not consistent with RE 11.4.6. Species composition and structure representative of RE 11.3.3. - Land zone representative of an alluvial deposit. - Potentially old back swamp/old channels, potentially 11.3.3c.		



Lot I on SP118814 - Quaternary Site 4

Dominance (D,CD,O,A)		Species
T1 Layer	D	<i>Eucalyptus coolabah</i>
T2 Layer	D	<i>Eucalyptus coolabah</i>
	A	<i>Geijera parviflora</i>
	O	<i>Terminalia oblongata</i>
	A	<i>Acacia salicina</i>
Shrub Layer	CD	<i>Muehlenbeckia florulenta</i>
	A	<i>Acacia salicina</i>
	CD	<i>Eremophila mitchellii</i>
	A	<i>Eremophila bigoniiflora</i>
	A	<i>Terminalia oblongata</i>
Ground	A	<i>Chloris pectinata</i>
	A	<i>Enteropogon acicularis</i>
	D	<i>Pennisetum ciliare</i>
Notes :		
- Species composition and vegetation structure not consistent with RE 11.4.6. Species composition and structure representative of RE 11.3.3. - land zone representative of an alluvial deposit. - Heavily grazed.		



13. Attachments

Attachment 1

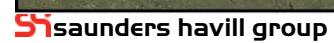
Extract from **GHD's Carmichael Coal Mine and Rail Off-site Infrastructure Property Map of Assessable Vegetation**



Attachment I

Extract from **GHD's** *Carmichael Coal Mine and Rail Off-site Infrastructure Property Map of Assessable Vegetation*

The following Property Map of Assessable Vegetation of the balloon loop area at the SP1 Mine terminus was reproduced by **Saunders Havill Group** from the *Carmichael Coal Mine and Rail Off-site Infrastructure Property Map of Assessable Vegetation* with the permission of **GHD**. Transect data sourced from **GHD** associated with the reproduced PMAV are provided.



Of concern to non-remnant

Polygon 11 (Vegetation assessment site 39) and representative of Polygon 18

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	11	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3.5	2 – 5	Very sparse
S2	1.5	1 – 2	Very sparse
G	0.6	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5 E 440738	N 7567675	
50 m point:	Zone	5 5 E 440781	N 7567678	

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
11.1 – 12.8	1.7	S1	<i>Acacia salicina</i>	sally wattle
33.2 – 35.6	2.4	S1	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

Structure does not meet remnant status

Species not consistent with of concern RE polygon 11.4.11/11.4.5; species composition and community height not sufficient to be included as 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see appendix 3, Neldner et al. 2012)

Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area

Summary:

Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Acacia salicina</i>	sally wattle
S1	A	<i>Capparis mitchellii</i>	bumble tree
S2	D	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Desmodium sp.</i>	
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Tribulus terrestris</i>	caltrop
G	A	<i>Cyperus sp.</i>	
G	A	<i>Cucumis melo subsp. agrestis</i>	Ulcardo melon
G	A	<i>Aster sp.</i>	
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 12 Vegetation assessment polygon 11





Polygon 13 (Vegetation assessment site 41)

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	13	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	1.5	1 – 2	Very sparse
S2	Absent	Absent	Absent
G	0.5	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 440924	N 7566044
50 m point:	Zone	5 5	E 440971	N 7566061

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
15.1 – 15.4	0.3	S1	<i>Atalaya hemiglauc</i>	cattle bush
25.8 – 27.3	1.5	S1	<i>Atalaya hemiglauc</i>	cattle bush
33.2 – 35.5	2.3	S1	<i>Lysiphyllum carronii</i>	red bauhinia
87.2 – 87.9	0.7	S1	<i>Atalaya hemiglauc</i>	cattle bush

Summary:

Intercept of EDL 0 – 50m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland
Conclusions/notes:	
Structure does not meet remnant status	
Species not consistent with of concern RE polygon 11.4.11/11.4.5; species composition and community height not sufficient to be included as 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see appendix 3, Neldner et al. 2012)	
Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area	
Site is proposed as non-remnant	

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Hibiscus sturtii</i>	hill hibiscus
G	A	<i>Brachyscome dentata</i>	
G	A	<i>Rhychosia minima var. australis</i>	rhynchosia
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Evolvulus alsinoides</i>	tropical speedwell
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Solanum sp.</i>	
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 13 Vegetation assessment polygon 13



Polygon 15 (Vegetation assessment Site 32)

Mapped RE: Of concern, 11.4.11 (100)

Observed RE: Non-remnant (100)

Polygon No.:	15	Recorder:	Peter Wagner	Date:	01/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1			
T2			
T3			
S1	3.5	2 – 6	Very sparse
S2	1.5	2 – 6	Very sparse
G	0.7	0 - 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 441108	N 7565019
50 m point:	Zone	5 5	E 441150	N 7565026

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
45.1 – 45.6	0.5	S2	<i>Capparis lasiantha</i>	wait-a-while
78.3 – 82.2	3.9	S1	<i>Lysiphyllum carronii</i>	red bauhinia
91.1 – 91.3	0.2	S2	<i>Capparis lasiantha</i>	wait-a-while

Summary:

Intercept of EDL 0 – 50m:	N/A
Intercept of EDL 50 – 100 m:	N/A
Measured crown cover % of EDL 0 – 100 m:	N/A
Structural formation:	Non-remnant pasture grassland
Conclusions/notes:	Structure does not meet remnant status Species not consistent with of concern RE 11.4.11; grass layer dominated by non-native buffel grass deeming it non-remnant (see appendix 3, Neldner et al. 2012) Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Alectryon oleifolius</i>	western rosewood
S2	C	<i>Capparis lasiantha</i>	wait-a-while
S2	C	<i>Apophyllum anomalum</i>	warrior bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Aster sp.</i>	
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Aristida personata</i>	purple wiregrass
G	A	<i>Astrebula elymoides</i>	Mitchell grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Solanum esuriale</i>	quena
G	A	<i>Cyperus sp.</i>	
G	A	<i>Physalis angulata</i> *	
G	A	<i>Dichanthium sericeum</i>	Queensland bluegrass
G	A	<i>Aristida leptopoda</i>	white speargrass
G	D	<i>Panicum decompositum</i> var. <i>decompositum</i>	native millet
G	A	<i>Sesbania cannabina</i>	sesbania pea
G	A	<i>Bothriochloa pertusa</i> *	Indian bluegrass
G	A	<i>Iseilema vaginiflorum</i>	red Flinders grass

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 15 Vegetation assessment polygon 15

