



Carmichael Coal Mine and Rail Project Supplementary Environmental Impact Statement

Volume 4, Appendix C3f – Vegetation Reports for SP2 and Laydown areas

Containing

- Part 2:
 - NCA Vegetation Clearing Permit

environmental management



Carmichael Coal Rail Project NCA Vegetation Clearing Permit SP2 Rail

Adani Mining Pty Ltd
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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 to prepare this *Nature Conservation Act, 1992* (NCA) vegetation clearing permit application to enable clearing for the Carmichael Coal Rail Project (SP1 section).

The Carmichael Coal Rail Project involves the construction of a rail line connecting the Carmichael mine site to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Hay Point and Abbot Point coal terminals. The proposed mine is projected to have a total output capacity of 60 million tonnes per annum.

The Project has been declared a 'significant project' under the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and as such, an Environmental Impact Statement (EIS) is required for the Project. The rail line is divided into two (2) components as follows:

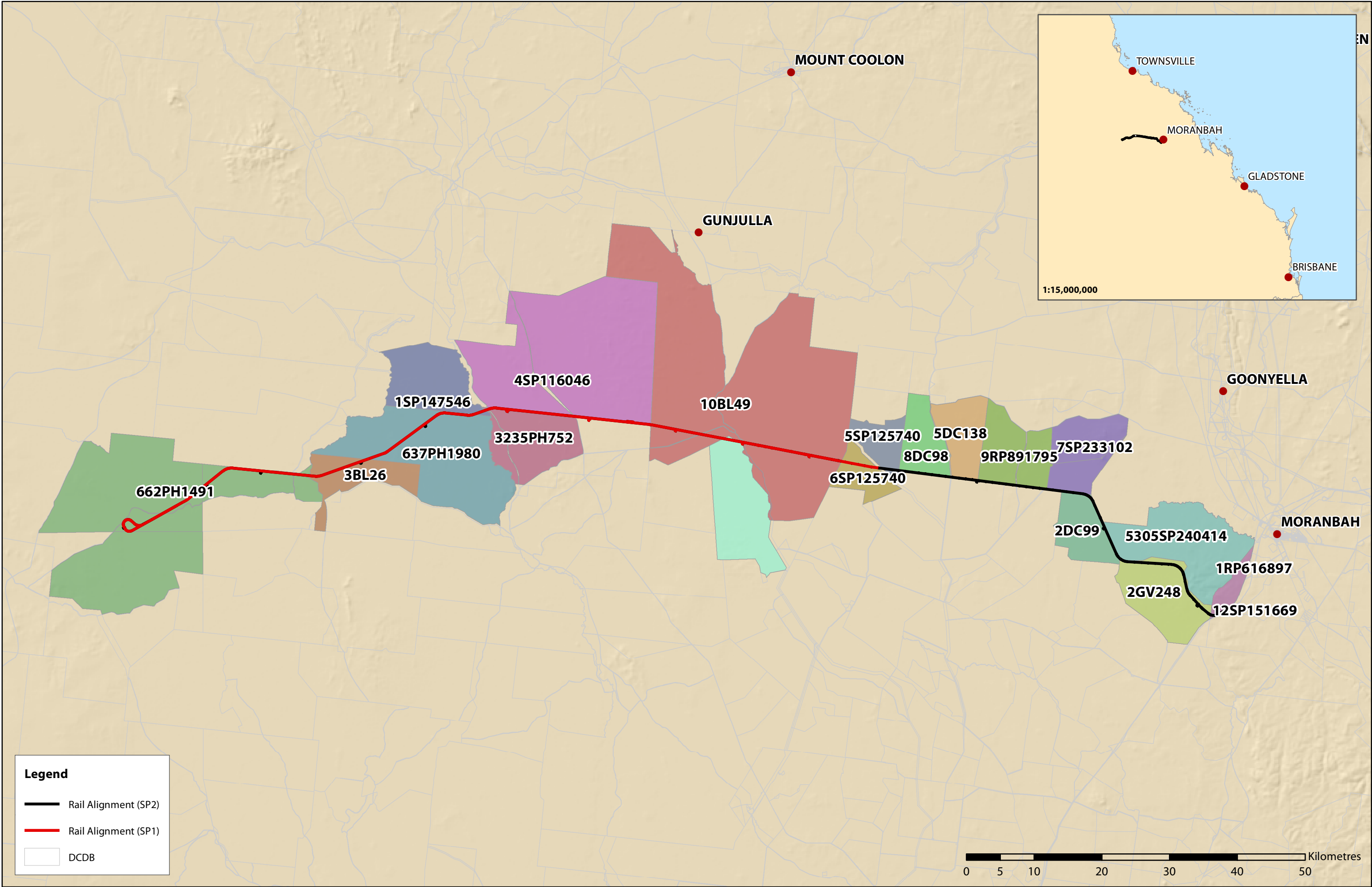
- **Separable Portion 1 (SP1)** – known as 'west rail' which traverses approximately 120km from the Mine site east towards Moranbah; and
- **Separable Portion 2 (SP2)** – known as 'east rail' which connects 'west rail' with the existing Goonyella rail system and provides access to Dalrymple Bay and Hay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

This report is prepared to accompany the EIS and seek approval to clear 'Least Concern' plants along the 95m wide rail corridor. This document applies only to SP2 of the rail alignment with separate documents provided for clearing associated with SP1 alignment and temporary works areas.

Adani mining Pty Ltd is aware of a number of processes and exemptions under the *Nature Conservation Act 1992* which may lead to the ability to clear 'Least Concern' plants for the Carmichael Coal Rail Project. These processes and exemptions are discussed in further detail within this report, however include:

- Various exemptions listed under S41(1) of the Nature Conservation (Protected Plants) Conservation Plan 2000;
- Receipt of a clearing permit for the clearing of Least Concern Plants

In support of this clearing application detailed information regarding the type and approximate numbers of Least Concern plants present within the SP1 Rail corridor is provided.





2. Nature Conservation Act, 1992

The *Nature Conservation Act 1992* (NCA) provides for the conservation of nature including important natural areas such as national parks and conservation parks or resource reserves as well as flora and fauna considered to be 'extinct in the wild', 'endangered', 'vulnerable', 'near threatened' and 'least concern wildlife'.

The Carmichael Coal rail project requires the clearing of 'Least Concern' Plants within a 95m wide corridor in order to construct the Rail. The clearing for the rail can be facilitated in two ways under the NCA. This includes:

1. The receipt of a clearing permit for the clearing of 'Least Concern' Plants; and/or
2. Agreement to a process under S41 of the *Nature Conservation (Protected Plants) Conservation Plan 2000* (NC Plan).

S41 of the NC Plan provides a number of exemptions that may be applicable to the Carmichael Coal Rail project including:

- 1) *'A clearing permit is not needed for taking a protected plant if –*
 - a) *The taking happens in the course of an activity under an authority, other than a mining lease or petroleum lease, made, granted or given under another Act by—*
 - i. *the Governor in Council; or*
 - ii. *someone else and the chief executive approves the taking in the course of the activity; or*
 - b) *the taking happens in the course of an activity under a mining lease; or*
 - c) *the taking happens in the course of an activity under a petroleum lease; or*
 - d) *for a least concern plant on private land—the person taking the plant is the landholder of the land.*
- 2) *For subsection (1)(a)(ii), the chief executive's approval may be given –*
 - a) *for a particular activity or class of activity; and*
 - b) *with or without conditions; and*
 - c) *only if the chief executive is satisfied the taking will not adversely affect the survival in the wild of the plant.*

Under S41 of the NC Plan an exemption for the project could be facilitated in a number of ways, subject to the final tenure / lease arrangement for the corridor. It is requested that the clearing of Least Concern' Plants for the Carmichael Coal Rail corridor is either facilitated through an exemption under S41 described above, or through the issue of a 'Clearing Permit'.

This document provides information to support the issuing of a clearing permit and to demonstrate that the clearing will not adversely affect the survival of identified plants in the wild.



3. Application Details

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 QR National 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.

Table 1: Application Summary

Applicant	Adani Mining Pty Ltd
Location	SP2 Rail Corridor and associated infrastructure, including laydown areas, batching plants and construction camps
RPD	Lot 6 on SP125740 Lot 5 on SP125740 Lot 8 on DC98 Lot 5 on DC138 Lot 9 on RP891795 Lot 7 on SP233102 Lot 2 on DC99 Lot 5305 on SP240414 Lot 2 on GV248 Lot 1 on RP616897 Lot 12 on SP151699
Local Government	Isaac Regional Council
Clearing Purpose	Establishment of Carmichael Coal Mine rail infrastructure

3.1.Land Tenure

The SP2 rail line is located within either freehold, leasehold, unallocated State land or road reserve and is not currently controlled by Adani Mining Pty Ltd. It is not yet known what the final tenure arrangement for the rail line will be, therefore this report addresses clearing associated with all properties along the SP2 alignment. Refer to **Attachment A** – Tenure Plan for further information.



4. Clearing Extent & Methodology

4.1. Clearing extent

Clearing for construction of the rail corridor is required along the length of the SP2 rail corridor and within the following properties:

- Lot 5 on SP125740
- Lot 8 on DC98
- Lot 5 on DC138
- Lot 9 on RP891795
- Lot 7 on SP233102
- Lot 2 on DC99
- Lot 5305 on SP240414
- Lot 2 on GV248
- Lot 1 on RP616897
- Lot 12 on SP151699

The proposed clearing encompasses a 95m corridor along the length of the SP2 rail alignment.

4.1. Construction & Clearing Methodology

It is expected that construction of the Project (Rail) will commence in the third quarter of 2013 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 2013 and continue through 2014. Track laying, followed by ballasting and tamping, will commence in 2014 and is scheduled for completion in 2015.

The Construction Environmental Management Plan will detail the various requirements for the clearing, earthworks and construction phase aspects of the project. Specific to the requirements for clearing activities 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).

4.2. Fauna Spotter

A fauna spotter will be present throughout the clearing process. The fauna spotter will check proposed access tracks for fallen logs, nests and other potential animal breeding places and as per any conditions required under the requirements of the NCA and *Nature Conservation (Wildlife) Regulation 2006*.

It is intended that the proponent will operate under a Species Management Program (whether specifically prepared or generic), which allows for the tampering of animal breeding places and can be obtained under Section 88 of the NCA and Section 332 of the *Nature Conservation (Wildlife Management) Regulation 2006*.



4.3. Threatened Flora

This NCA Permit report does not seek approval to clear Listed Endangered, Vulnerable or Near Threatened (EVNT) species. Prior to the commencement of clearing activities, additional field investigations will be conducted within potential habitat areas to confirm the absence of listed species. Should any EVNT species be encountered, approval to clear relevant species will be sought.



5. Audit of proposed clearing

The following provides an audit of Least Concern Plants within the proposed clearing footprint. The density and number of plants have been determined using standard assessment methods which detail the numbers of individuals per hectare. This information correlates to detailed vegetation mapping within the SP2 corridor to determine numbers of each species requiring removal within various vegetation community types. It is noted that in a number of instances, the estimates of individual plants to be removed by the clearing exercise is likely to be less than identified within the schedules.

Reporting is on a property basis with species schedules coinciding with mapped vegetation polygons. The following properties are included within the audit.

- Lot 5 on SP125740
- Lot 8 on DC98
- Lot 5 on DC138
- Lot 9 on RP891795
- Lot 7 on SP233102
- Lot 2 on DC99
- Lot 5305 on SP240414
- Lot 2 on GV248
- Lot 1 on RP616897
- Lot 12 on SP151699

Where further detailed information is required to provide more accurate estimates, this has been noted and will be supplied prior to the issue of the final clearing permit (if required).

In addition, the plant audit information provided within this document demonstrates that the clearing will not adversely affect the survival of identified plants in the wild. This is evident when comparing the minor clearing required for the rail corridor in comparison to the vast areas of similar mapped vegetation that will remain within the local and regional landscape. This information may also provide confidence that appropriate exemptions under S41 of the NC Plan may be relevant to the project.

Extensive vegetation surveys have been completed along the SP2 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. Species and areas of regional ecosystem clearing contained within this report reflect the results of the PMAV survey. Where there are inconsistencies between the Regional Ecosystem mapping and the field survey results, this has been detailed for the relevant location. The original Version 6.1 of Regional Ecosystem mapping is used within the Vegetation Community mapping within Attachment A.



6. SP2 Rail Alignment – Lot 5 SPI25740

6.1. Location 1 – Lot 5 SPI25740 – Mapped Endangered RE11.4.11 / 11.4.9 (0.6ha)

- Field survey confirmed Of Concern Regional Ecosystem 11.4.11.
- No species representing Endangered Regional Ecosystem 11.4.9 were observed within the 0.6ha area.
- Refer to Attachment B – NCA Permit Plan 1

Table 2: Location 1 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		Absent				
Forbs and Grasses		<i>Dichanthium sericeum</i>	Queensland Bluegrass	Least Concern	Not Listed	300m ²
		<i>Leptochloa digitata</i>	Cane Grass	Least Concern	Not Listed	300m ²
		<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	300m ²
		<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	300m ²

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



Photo: The area mapped as remnant RE 11.4.11/11.4.9. RE 11.4.9 was not identified during survey with *Acacia harpophylla* absent from survey area.



Location 2 – Lot 5 on SPI25740 – Mapped Endangered RE11.4.8 – Proposed Non remnant (0.5ha)

- Field survey identified limited vegetation within the mapped area. Site proposed as non-remnant.
- Refer to Attachment B – NCA Permit Plan 1

Table 3: Location 2 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	20
		<i>Acacia cambagei</i>	Gidgee	Least Concern	Not Listed	20
Forbs and Grasses		<i>Dichanthium sericeum</i>	Queensland Bluegrass	Least Concern	Not Listed	300m ²
		<i>Leptochloa digitata</i>	Cane Grass	Least Concern	Not Listed	300m ²
		<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	300m ²
		<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	300m ²

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



Photo: The area mapped as remnant RE 11.4.8. *Acacia harpophylla* was identified within a very narrow, highly disturbed strip of vegetation.



6.2. Lot 5 on SP125740 Balance Area – Mapped Non Remnant Areas

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (>50%) and bare ground (30%). These areas are heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping.
- Refer to Attachment B – NCA Permit Plan 1

Table 4: Lot 5 on SP125740 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	9%
	A	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	3%
	A	<i>Cyperus bifax</i>		Least Concern	Not Listed	3%

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



Photo: Non remnant areas within Lot 5 on SP125740



7. SP2 Rail Alignment – Lot 8 DC98

7.1. Location 3 – Lot 8 on DC98 - Mapped Endangered RE11.4.8 – Proposed non Remnant (0.5ha)

- Field survey identified limited vegetation within the mapped area. Site proposed as non-remnant.
- Refer to Attachment B – NCA Permit Plan 1

Table 5: Location 3 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	A	<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	15
Forbs and Grasses	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	5%
	A	<i>Enteropogon acicularis</i>	Curly Windmill	Least Concern	Not Listed	5%
	A	<i>Cyperus bifax</i>		Least Concern	Not Listed	5%

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



Photo: The area mapped as remnant RE 11.4.8. No remnant *Acacia harpophylla* was identified on the northern side of east – west fence line.



7.2. Lot 8 on DC98 Balance Area – Mapped Non Remnant Areas

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (>50%) and bare ground (30%). These areas are heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping.
- Refer to Attachment B – NCA Permit Plan 1 (remainder of Lot 8 on DC98 not mapped)

Table 6: Lot 8 on DC98 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	9%
	A	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	3%
	A	<i>Cyperus bifax</i>		Least Concern	Not Listed	3%

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



Photo: Non remnant areas within Lot 8 on DC98



8. SP2 Rail Alignment –Kilcummin Diamond Downs Road

8.1. Location 4 –Mapped Endangered REII.4.8

- Field survey confirmed Regional Ecosystem Mapping Version 6.1
- Refer to Attachment B – NCA Permit Plan 2

Table 7: Location 4 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Terminalia oblongata</i>	Yellowwood	Least Concern	Not Listed	To Be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and Grasses		<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To be determined
		<i>Aristida caput-medusae</i>	Many-headed Wiregrass	Least Concern	Not Listed	To be determined

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



9. SP2 Rail Alignment – Lot 9 RP89I795

9.I. Lot 9 on RP89I795 (No land Owner Access Granted)

- Refer to Attachment B – NCA Permit Plan 3

Table 8: Lot 9 on RP89I795 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Species to be determined</i>	-	-	-	Numbers to be determined
Forbs and Grasses						

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



IO. SP2 Rail Alignment – Lot 7 SP233102

IO.I. Lot 7 SP233102 Balance Area - No remnant vegetation within rail alignment on this property

Table 9: Lot 7 SP233102 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Dichanthium sericeum</i>	Queensland Bluegrass	Least Concern	Not Listed	1.25%
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	1.25%

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



Photo: Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (90%) and in these areas heavily grazed and disturbed.



II.SP2 Rail Alignment – Lot 2 DC99

II.I. Lot 2 DC99 (No land Owner Access Granted)

Table 10: Lot 2 DC99 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Species to be determined</i>	-	-	-	Numbers to be determined
Forbs and Grasses						

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



I2. SP2 Rail Alignment – Lot 5305 SP240414

I2.I. Lot 5305 SP240414 (No land Owner Access Granted)

Table 11: Lot 5305 SP240414 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Species to be determined</i>	-	-	-	Numbers to be determined
Forbs and Grasses						

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



13. SP2 Rail Alignment – Lot 2 GV248

13.1. Location 5 – Lot 2 GV248 – Mapped RE II.3.1 (1.7 Ha)

- Field survey confirmed 1.0ha of this mapped area is consistent with Regional Ecosystem Mapping Version 6.1. The remaining 0.7ha contains no vegetation and is non-remnant.
- Refer to Attachment B – NCA Permit Plan 4

Table 12: Location 5 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	170
	CD	<i>Acacia cambagei</i>	Gidgee	Least Concern	Not Listed	210
	A	<i>Eucalyptus camaldulensis</i>	River Red Gum	Least Concern	Not Listed	5
	A	<i>Eremophila mitchellii</i>	False	Least Concern	Not Listed	30
	A	<i>Geijera parviflora</i>	Wilga	Least Concern	Not Listed	30
	A	<i>Terminalia oblongata</i>	Yellowwood	Least Concern	Not Listed	30
Forbs and Grasses	CD	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	3000 m ²
	CD	<i>Dicathanthium sericeum</i>	Queensland	Least Concern	Not Listed	1000 m ²

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



Photo: Calculations from RE description, site photos, aerial maps and quaternary sites. *Pennisetum ciliare* (Buffel Grass) dominant within this remnant polygon (>60%).



13.2. Locations 6 – Lot 2 GV248 – Mapped RE II.5.3/II.5.9c (2.1Ha)

- Field survey confirmed Regional Ecosystem Mapping Version 6.1.
- Refer to Attachment B – NCA Permit Plan 5

Table 13: Location 6 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Eucalyptus populnea</i>	Poplar Box	Least Concern	Not Listed	84
		<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	84
		<i>Corymbia clarksonia</i>	Long-fruited	Least Concern	Not Listed	42
		<i>Petalostigma pubescens</i>	Quinine Bush	Least Concern	Not Listed	168
		<i>Acacia excelsa</i>		Least Concern	Not Listed	168
		<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	84
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	42
Forbs and Grasses		<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	2100m ²
		<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	2100m ²
		<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	1050m ²
		<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	1050m ²

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



Photo: *Penisetum ciliare* (Buffel Grass) dominant grass within vegetation polygon (>70%) remaining area predominantly bare ground. Densities determined from quaternary transects and photographic/aerial records.



13.3. Location 7 – Lot 2 GV248 – Mapped RE 11.5.3/11.5.9c (11.2Ha)

- Field survey confirmed Regional Ecosystem Mapping Version 6.1.
- Refer to Attachment B – NCA Permit Plan 5-6

Table 14: Location 7 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	A	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	448
	A	<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	448
	A	<i>Corymbia clarksonia</i>	Long-fruited Bloodwood	Least Concern	Not Listed	224
	A	<i>Eucalyptus exerta</i>	Queensland Peppermint	Least Concern	Not Listed	1792
	A	<i>Petalostigma pubescens</i>	Quinine Bush	Least Concern	Not Listed	1792
	D	<i>Eucalyptus populnea</i>	Poplar Box	Least Concern	Not Listed	448
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	224
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	448
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	224
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	5600m ²
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	5600m ²
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	5600m ²
	A	<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	2800m ²
	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	2800m ²

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



Photo: *Penisetum ciliare* (Buffel Grass) dominant grass within vegetation polygon (>80%) remaining area predominantly bare ground. Densities determined from secondary transects and photographic/aerial records.



13.4. Locations 8 – Lot 2 GV248 - Mapped RE II.5.3/II.5.9c (6.3 Ha)

- Field survey confirmed Regional Ecosystem Mapping Version 6.1.
- Refer to Attachment B – NCA Permit Plan 6

Table 15: Location 8 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	13
	A	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	8
	A	<i>Corymbia clarksonia</i>	Long-fruited	Least Concern	Not Listed	8
	A	<i>Petalostigma pubescens</i>	Quinine Bush	Least Concern	Not Listed	26
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	26
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	26
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	13
	CD	<i>Eucalyptus populnea</i>	Poplar Box	Least Concern	Not Listed	26
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	6300m ²
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	3150m ²
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	6300m ²
	A	<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	3150m ²

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



Photo: *Penisetum ciliare* (Buffel Grass) dominant grass within vegetation polygon (>70%) remaining area predominantly bare ground. Densities determined from secondary transects and photographic/aerial records.



13.5. Location 9 – Lot 2 GV248 – Mapped 11.5.3/11.5.9c (1Ha)

- Field survey confirmed Regional Ecosystem Mapping Version 6.1.
- Refer to Attachment B – NCA Permit Plan 7

Table 16: Location 9 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	40
	CD	<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	20
	A	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	20
	CD	<i>Eucalyptus melanophloia</i>	Silver-leaved Ironbark	Least Concern	Not Listed	10
	A	<i>Corymbia clarksonia</i>	Long-fruited Bloodwood	Least Concern	Not Listed	10
	A	<i>Eucalyptus exerta</i>	Queensland Peppermint	Least Concern	Not Listed	10
	A	<i>Petalostigma pubescens</i>	Quinine Bush	Least Concern	Not Listed	40
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	40
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	10
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	1000m2
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	500m2
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	1000m2
	A	<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	500m2
	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	1000m2

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



Penisetum ciliare (Buffel Grass) dominant grass within vegetation polygon (>60%) remaining area predominantly bare ground. Densities determined from secondary transects and photographic/aerial records.



13.6. Location 10 – Lot 2 GV248 RE 11.5.3/11.5.9c (17.1Ha)

- Field survey confirmed Regional Ecosystem Mapping Version 6.1.
- Refer to Attachment B – NCA Permit Plan 7

Table 17: Location 10 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	346
	A	<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	346
	CD	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	346
	A	<i>Eucalyptus melanophloia</i>	Silver-leaved Ironbark	Least Concern	Not Listed	346
	A	<i>Corymbia clarksonia</i>	Long-fruited	Least Concern	Not Listed	173
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	1037
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	173
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	346
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	21420m ²
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	5355m ²
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	10710m ²
	A	<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	5355m ²
	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	10710m ²

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



Photo: *Penisetum ciliare* (Buffel Grass) dominant grass within vegetation polygon (>50%) remaining area predominantly bare ground. Densities determined from secondary transects and photographic/aerial records.



13.7. Lot 2 GV248 Balance Area – Mapped Non Remnant Areas

- Refer to Attachment B – NCA Permit Plan 4-7

Table 18: Lot 2 GV248 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	18%
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	2.7%
	A	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	0.8%
	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	12.7%
	A	<i>Sporobolus caroli</i>	Fairy Grass	Least Concern	Not Listed	1.0%

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



Photo: Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (45%) and in these areas heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 15 4mx5m quadrats.



14. SP2 Rail Alignment – Lot I RP616897 (Expected Species)

14.1. Location 11 – Lot I RP616897 - Mapped RE 11.5.3/11.5.9c (2.1Ha)

- Refer to Attachment B – NCA Permit Plan 8

Table 19: Location 11 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	To Be Determined
	A	<i>Eucalyptus</i>		Least Concern	Not Listed	To Be Determined
	CD	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	To Be Determined
	A	<i>Eucalyptus</i>	Silver-leaved Ironbark	Least Concern	Not Listed	To Be Determined
	A	<i>Corymbia clarksonia</i>	Long-fruited Bloodwood	Least Concern	Not Listed	To Be Determined
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	To Be Determined
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	To Be Determined
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To Be Determined
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	To Be Determined
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To Be Determined
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	To Be Determined
	A	<i>Panicum</i>	Native Millet	Least Concern	Not Listed	To Be Determined
	A	<i>Heteropogon</i>	Black Speargrass	Least Concern	Not Listed	To Be Determined

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





Photo: *Penisetum ciliare* (Buffel Grass) dominant grass within vegetation polygon (>50%) remaining area predominantly bare ground. Densities determined from secondary transects and photographic/aerial records.

14.2. Location 12 – Lot 1 RP616897 – Mapped RE II.10.3 (0.5Ha)

- Refer to Attachment B – NCA Permit Plan 8

Table 20: Location 12 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia shirleyi</i>	Wattle	Least Concern	Not Listed	To be determined
		<i>Eucalyptus exerta</i>	Queensland	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Current Bush	Least Concern	Not Listed	To be determined
Forbs and Grasses		<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	To be determined
		<i>Panicum</i>	Native Millet	Least Concern	Not Listed	To be determined
		<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To be determined
		<i>Dichanthium sericeum</i>	Queensland Bluegrass	Least Concern	Not Listed	To be determined

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

14.3. Lot 1 RP616897 Balance Area – Mapped Non Remnant Areas (Expected Species)

- Refer to Attachment B – NCA Permit Plan 8

Table 21: Lot 1 RP616897 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia harpophylla</i>	Brigalow	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	To be determined
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To be determined
	A	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	To be determined
	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	To be determined
	A	<i>Sporobolus caroli</i>	Fairy Grass	Least Concern	Not Listed	To be determined

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



15. SP2 Rail Alignment – Lot 12 SPI51669 (Expected Species)

15.1. Location 13 – Lot 12 SPI51669 - Mapped RE 11.5.3/11.5.9/11.4.9/11.3.25 (0.5Ha)

- Refer to Attachment B – NCA Permit Plan 8

Table 22: Location 13 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	To Be Determined
	A	<i>Eucalyptus</i>		Least Concern	Not Listed	To Be
	CD	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	To Be
	A	<i>Eucalyptus</i>	Silver-leaved Ironbark	Least Concern	Not Listed	To Be
	A	<i>Petalostigma</i>	Quinine Bush	Least Concern	Not Listed	To Be
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	To Be Determined
	A	<i>Alphitonia excelsa</i>	Red Ash	Least Concern	Not Listed	To Be
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	To Be Determined
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To Be
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	To Be
	A	<i>Panicum</i>	Native Millet	Least Concern	Not Listed	To Be

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



Photo: Vegetation within location 12 mapped as RE11.5.3/11.5.9/11.4.9/11.3.25



15.2. Location 14 – Lot 12 SPI51669 – Mapped RE 11.10.3 (0.3Ha)

- Refer to Attachment B – NCA Permit Plan 8

Table 23: Location 14 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs		<i>Acacia shirleyi</i>	Wattle	Least Concern	Not Listed	To be determined
		<i>Eucalyptus exerta</i>	Queensland	Least Concern	Not Listed	To be determined
		<i>Carissa ovata</i>	Current Bush	Least Concern	Not Listed	To be determined
Forbs and Grasses		<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	To be determined
		<i>Panicum</i>	Native Millet	Least Concern	Not Listed	To be determined
		<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To be determined
		<i>Dichanthium</i>	Queensland Bluegrass	Least Concern	Not Listed	To be determined

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

15.3. Location 15 – Lot 12 SPI51669 – Mapped RE 11.5.3/11.5.9c (2.1Ha)

- Refer to Attachment B – NCA Permit Plan 8

Table 24: Location 15 Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree and Shrubs	CD	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	Least Concern	Not Listed	To Be Determined
	A	<i>Eucalyptus cambageana</i>		Least Concern	Not Listed	To Be Determined
	CD	<i>Corymbia intermedia</i>	Pink Bloodwood	Least Concern	Not Listed	To Be Determined
	A	<i>Corymbia clarksonia</i>	Long-fruited Bloodwood	Least Concern	Not Listed	To Be Determined
	A	<i>Acacia excelsa</i>		Least Concern	Not Listed	To Be Determined
	A	<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To Be Determined
Forbs and Grasses	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	To Be Determined
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To Be Determined
	A	<i>Chloris truncata</i>	Windmill Grass	Least Concern	Not Listed	To Be Determined
	A	<i>Panicum decompositum</i>	Native Millet	Least Concern	Not Listed	To Be Determined
	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	To Be Determined

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



15.4. Lot 12 SP151669 Balance Area – Mapped Non Remnant Areas

- Refer to Attachment B – NCA Permit Plan 8

Table 25: Lot 12 SP151669 Balance Area Species Audit

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M ² of vegetation
Tree		<i>Carissa ovata</i>	Currant Bush	Least Concern	Not Listed	To be determined
		<i>Capparis lassiantha</i>	Wait-A-While	Least Concern	Not Listed	To be determined
		<i>Eremophila mitchellii</i>	False Sandlewood	Least Concern	Not Listed	To be determined
Forbs and grasses	A	<i>Heteropogon contortus</i>	Black Speargrass	Least Concern	Not Listed	To be determined
	A	<i>Aristida latifolia</i>	Feathertop Wiregrass	Least Concern	Not Listed	To be determined
	A	<i>Enteropogon acicularis</i>	Curly Windmill Grass	Least Concern	Not Listed	To be determined
	A	<i>Themeda triandra</i>	Kangaroo Grass	Least Concern	Not Listed	To be determined
	A	<i>Sporobolus caroli</i>	Fairy Grass	Least Concern	Not Listed	To be determined

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