Carmichael Coal Mine and Rail Project
Supplementary Environmental Impact Statement

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

Containing

- Part 4:
  - SP2 PMAV continued
  - SP2 Laydown Area NCA Vegetation Clearing Permit

Figure 7: Regional Ecosystem and Survey Effort (Area A)

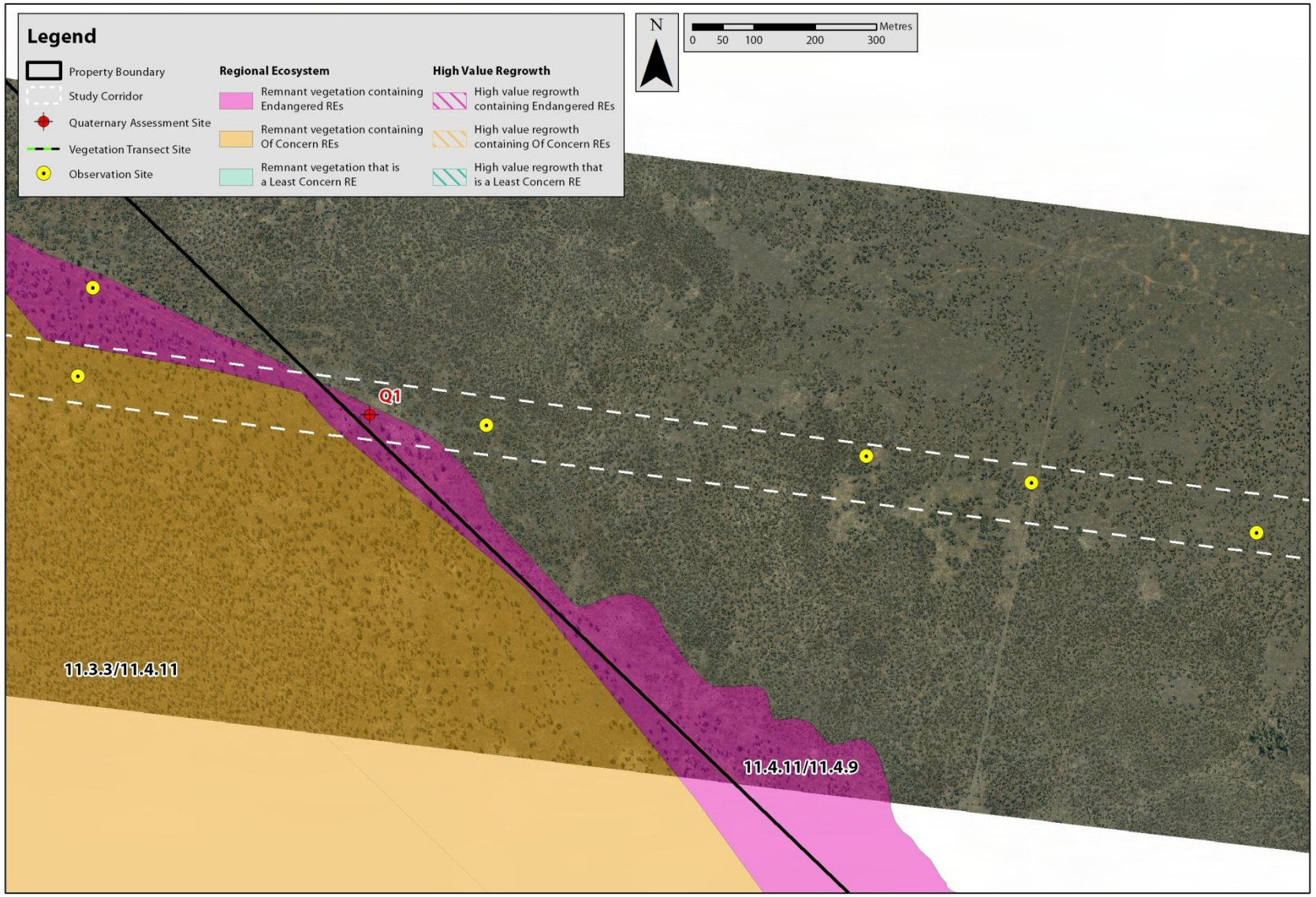
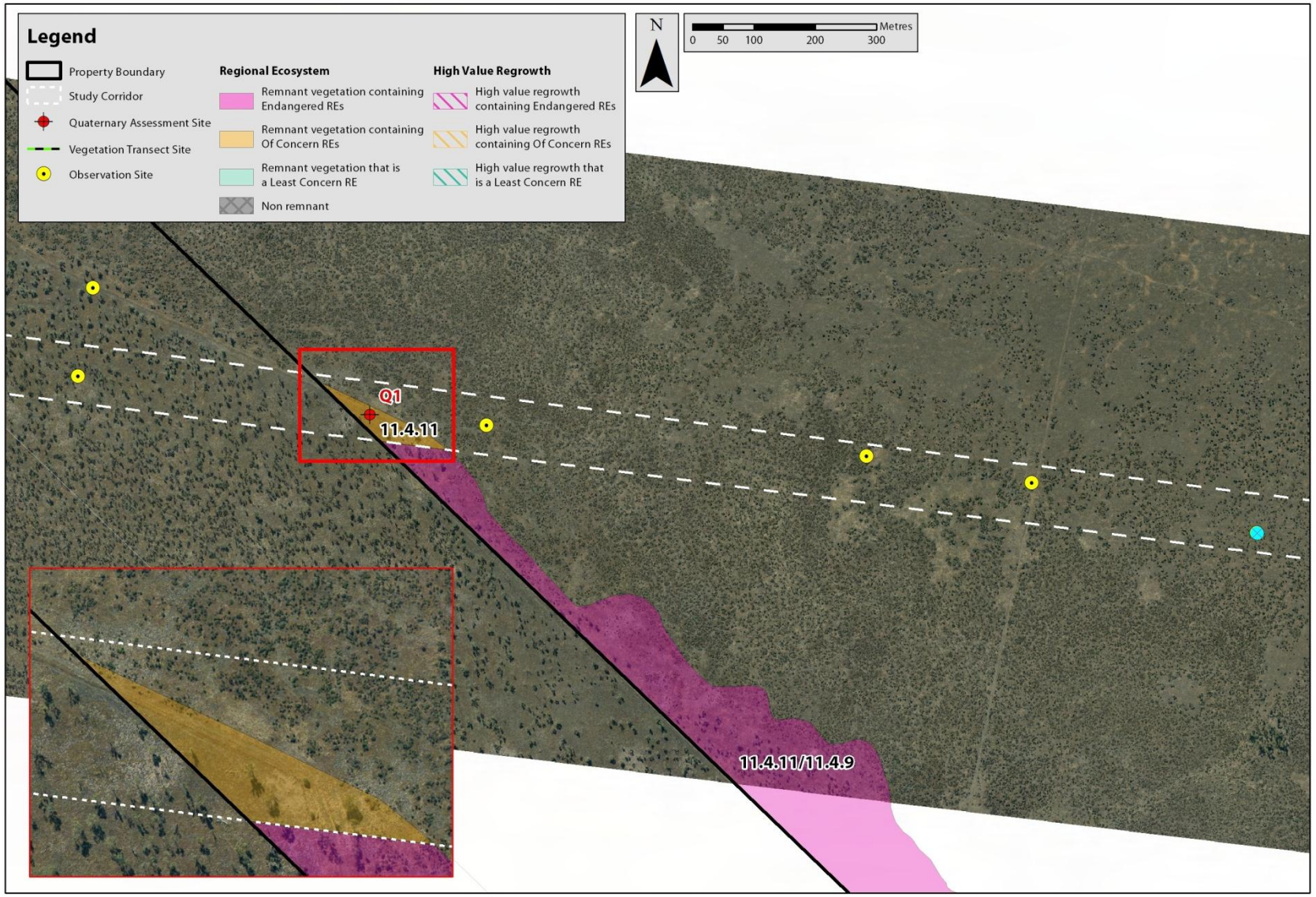


Figure 8: Proposed Regional Ecosystem Changes (H & T Jones - Area A)



5.2. H & T Jones – Area B

Table 10: H & T Jones - Area B Summary

Site Description		
Location:	H & T Jones; Lot 5 on SP125740	
Site Description:	The site is located within mapped vegetation community described as Endangered RE 11.4.8 – Figure 9. Field investigations confirmed scattered *Acacia harpophylla* (Brigalow) and *Acacia cambagei* (Gidgee) within the local surrounds, however clearing associated with the establishment of fence lines and historical agricultural practices has removed much of the areas vegetation values. The area is highly disturbed with cattle damage and weed invasion obvious throughout the thin vegetation corridor. Weeds observed within corridor include *Pennisetum ciliare* (Buffel Grass), *Parthenium hysterophorus* (Parthenium) and *Eriocerius martinii* (Harissa Cactus). Within the proposed rail corridor vegetation present is less than 10m in width and therefore this polygon has been remapped as non-remnant. Refer to Quaternary Site 2 and Figures 10 for the proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	551197.77 m E	7576222.70 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.8	
Regional Ecosystem Observed:	Non Remnant	
Width of RE:	>10m	

Photo: Area B - Polygon 1

The area mapped as remnant RE 11.4.8. Acacia harpophylla was identified within a very narrow, highly disturbed strip of vegetation. Weed infestation, cattle damage and erosion were evident in the survey area.

Figure 9: Regional Ecosystem and Survey Effort (H & T Jones - Area B)

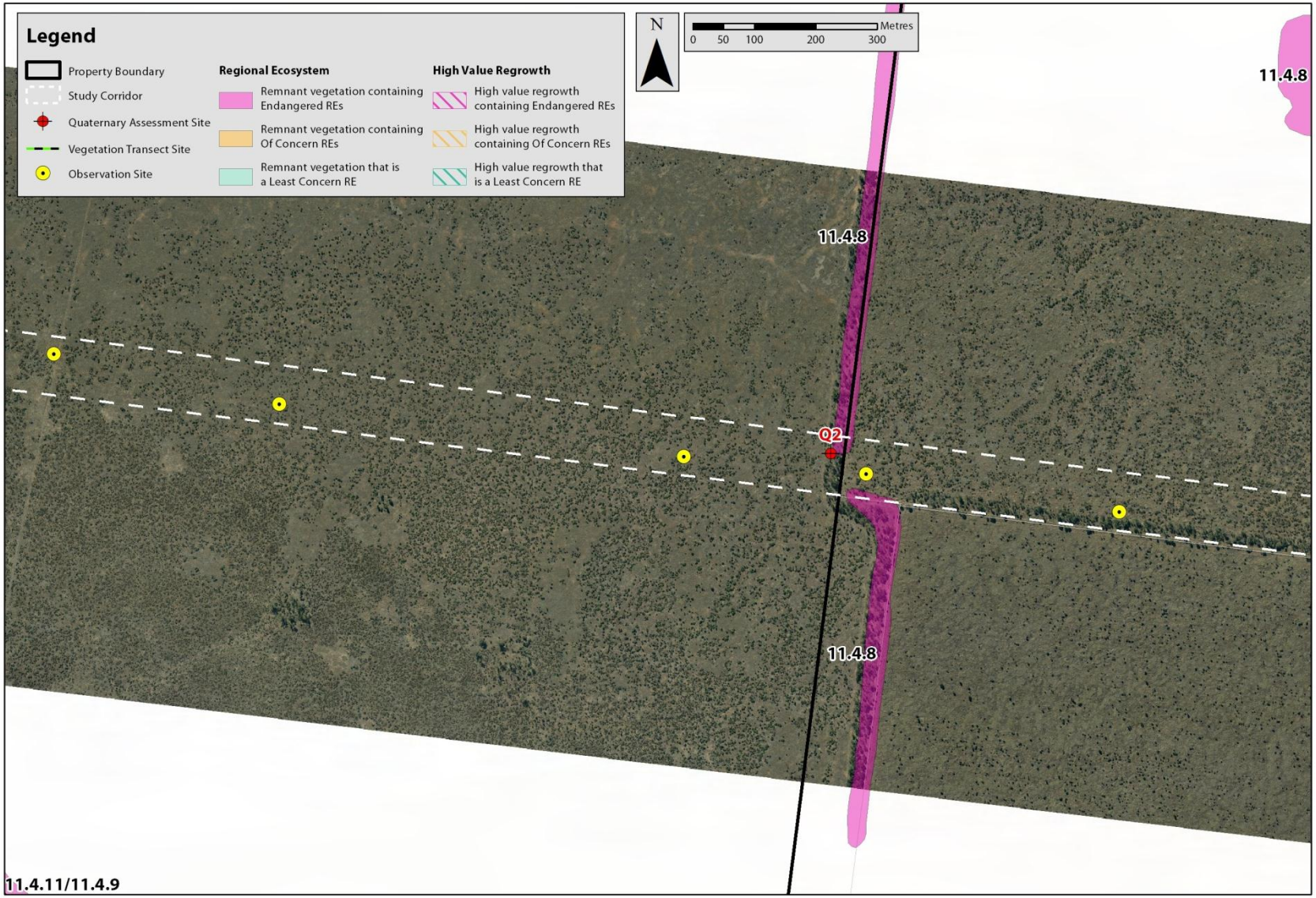
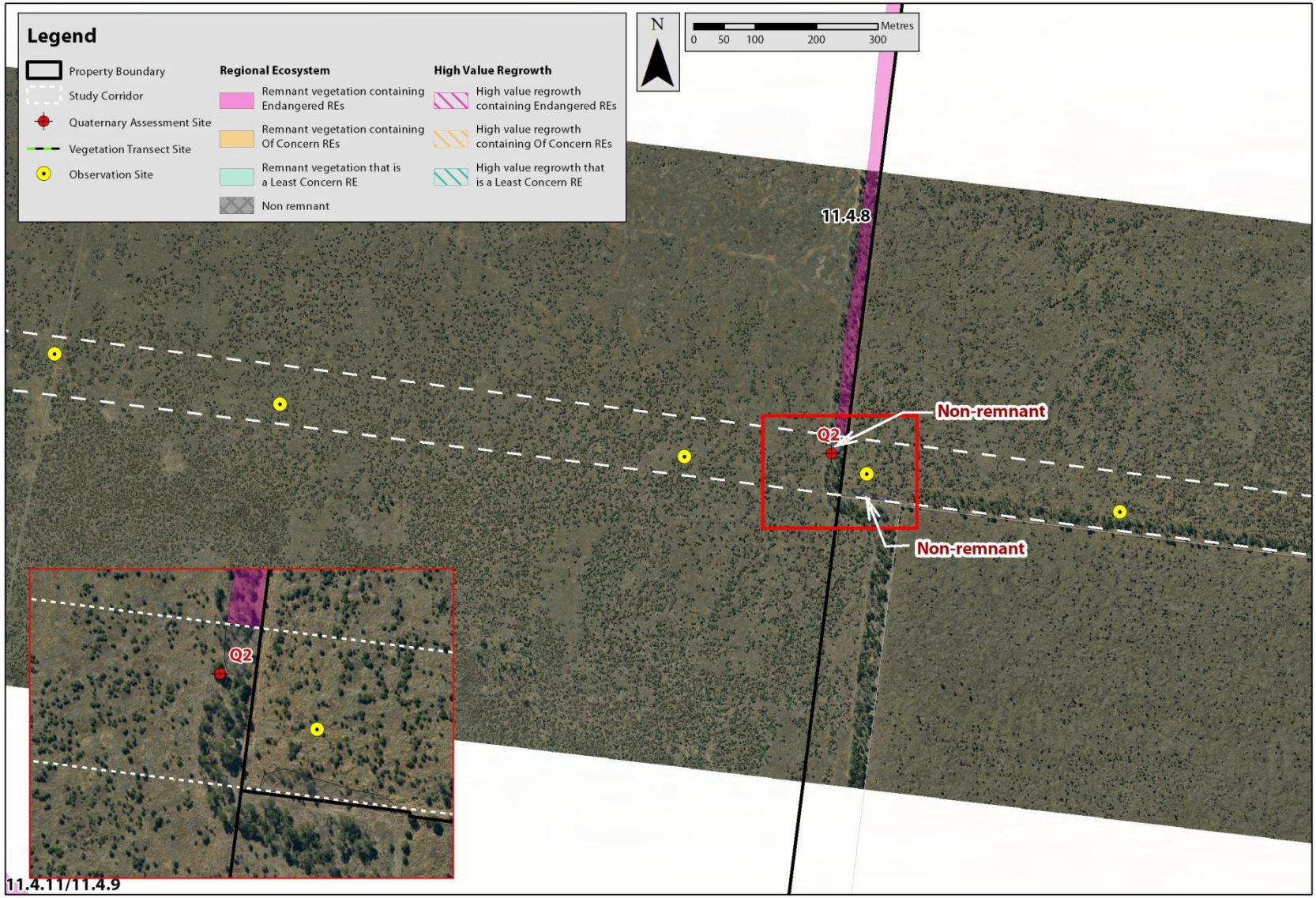


Figure 10: Regional Ecosystem Changes (H & T Jones - Area B)



6. T Jones Results

The T Jones property is largely devoid of vegetation values due to the areas historical agricultural use. Areas of remnant vegetation and high value regrowth are mapped on the property, however limited vegetation values are present within these locations. As such mapping amendments propose that these areas are changed to non remnant.

The T Jones Property was divided into four (4) assessment areas based on the location of the mapped remnant polygons and status of the regional ecosystem community.

Table 11: T Jones Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
T Jones Area A – Polygon 1	Endangered RE 11.4.8	< 0.5 ha	Non-remnant	-
T Jones Area B – Polygon 1	Regrowth of Endangered RE 11.4.8	1.0 ha	Non-remnant	-
T Jones Area C – Polygon 1	Regrowth of Endangered RE 11.4.8	0.8 ha	Non-remnant	-
T Jones Area C – Polygon 2	Regrowth of Endangered RE 11.4.8	1.7 ha	Non-remnant	-

6.1. T Jones – Area A

Table 12: T Jones - Area A Summary

Site Description		
Location:	T Jones; Lot 8 on DC98	
Site Description:	The site is located within mapped vegetation community described as Endangered RE 11.4.8 – Figure 11 Field investigations confirmed the absence of vegetation due to clearing associated with the establishment of fence lines and historical agricultural practices has removed much of the areas vegetation values. The area is highly disturbed with cattle damage and weed invasion obvious within the corridor. Weeds observed within corridor include *Pennisetum ciliare* (Buffel Grass), *Parthenium hysterophorus* (Parthenium) and *Eriocerius martinii* (Harissa Cactus). Within the proposed rail corridor vegetation present is less than 10m in width and therefore this polygon has been remapped as non-remnant. Imagery clearly identifies inaccuracies with existing RE mapping. The proposed rail corridor is non-remnant. Refer to Quaternary Site 1 and Figure 12 for the proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	551254.34 m E	7576177.08 m S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Endangered RE 11.4.8	
Regional Ecosystem Observed:	Non Remnant	
Width of RE:	30m	

Photo: Area A

The area mapped as remnant RE 11.4.8. No remnant Acacia harpophylla was identified on the northern side of east – west fenceline.

Figure 11: Regional Ecosystem and Survey Effort (Area A)

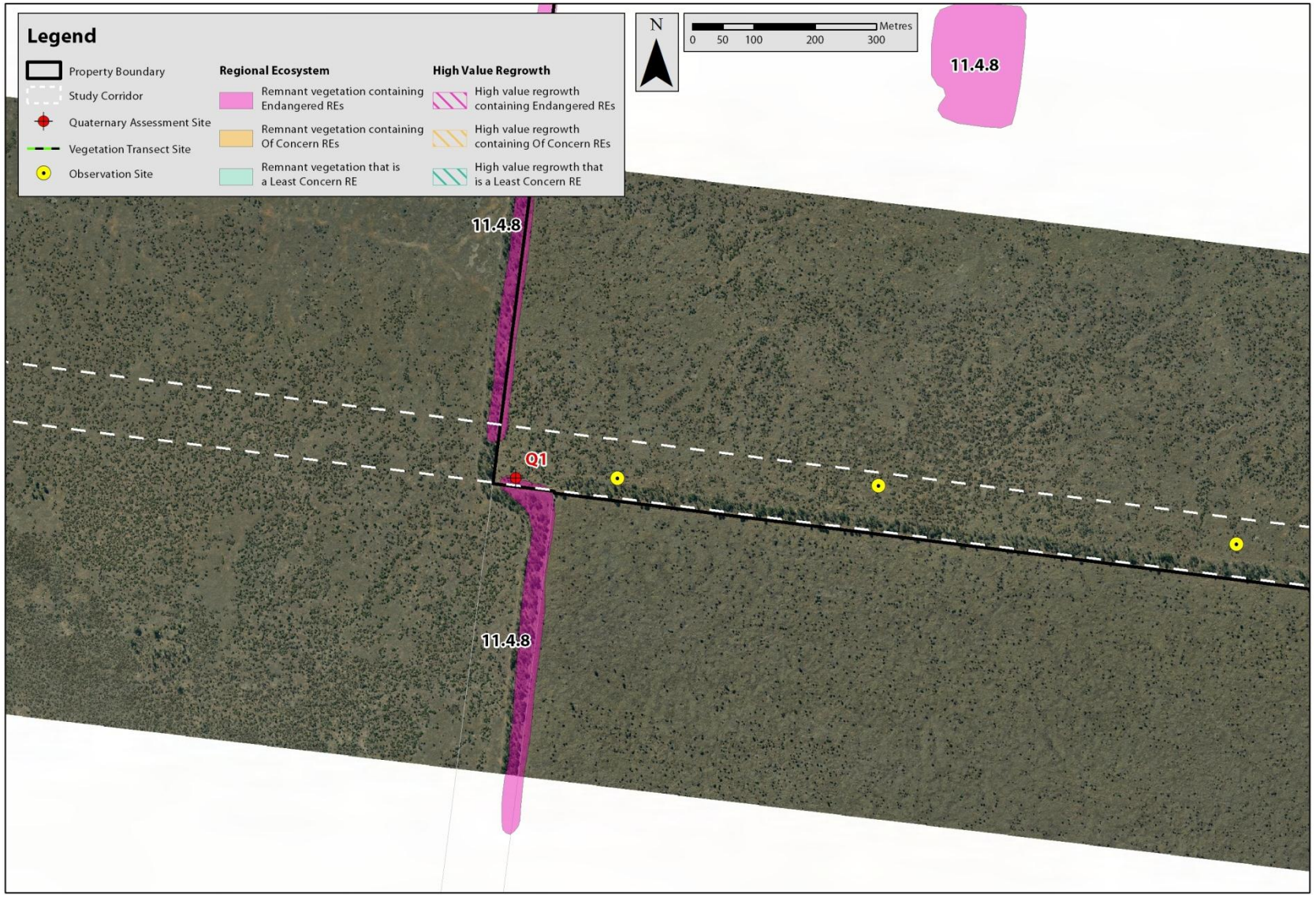
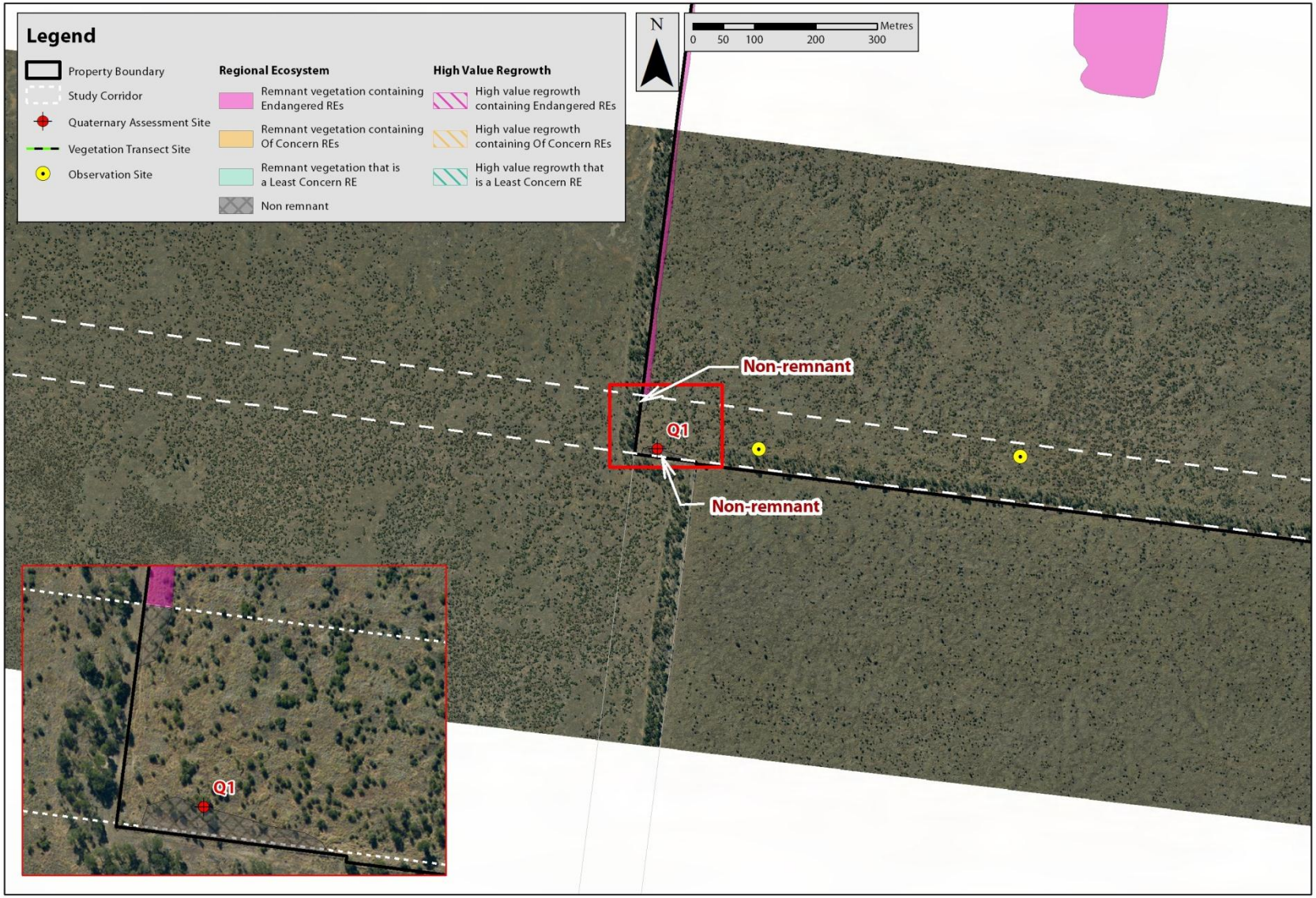


Figure 12: Regional Ecosystem Changes (Area A)



6.2. T Jones - Area B

Table 13: T Jones - Area B Summary

Site Description		
Location:	T Jones; Lot 8 on DC98	
Site Description:	The site is located within mapped polygon described as Endangered High Value Regrowth – Figure 13 The location is within an existing agricultural land holding and observed to contain only occasional very scattered small *Acacia harpophylla* (Brigalow) specimens (<1m) in height. These scattered individual do not form part of a regrowth vegetation community. The area appears to have been cleared and seeded with sorghum in the past and cattle grazing is apparent within this highly disturbed area. Exotic/introduced weed species including *Pennisetum ciliare* (Buffel Grass), *Parthenium hysterophorus* (Parthenium) and *Sorghum halepense* (Johnsons Grass) are dominant within the survey area Refer to Quaternary Site 2 and Figures 14 for the proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	555138.86 m E	7575962.42 m S
Regional Ecosystem Profile		
Current High Value Regrowth v2.1 mapping	Regrowth of Endangered 11.4.8	
Regional Ecosystem Observed:	Non Remnant	
Width of RE:	500m	

Photo: Area B

The area mapped as Endangered High Value Regrowth. Area contains very scattered Acacia harpophylla and no other other vegetation within the T1, T2 or shrub layer.

Figure 13: Regional Ecosystem and Survey Effort (Area B)

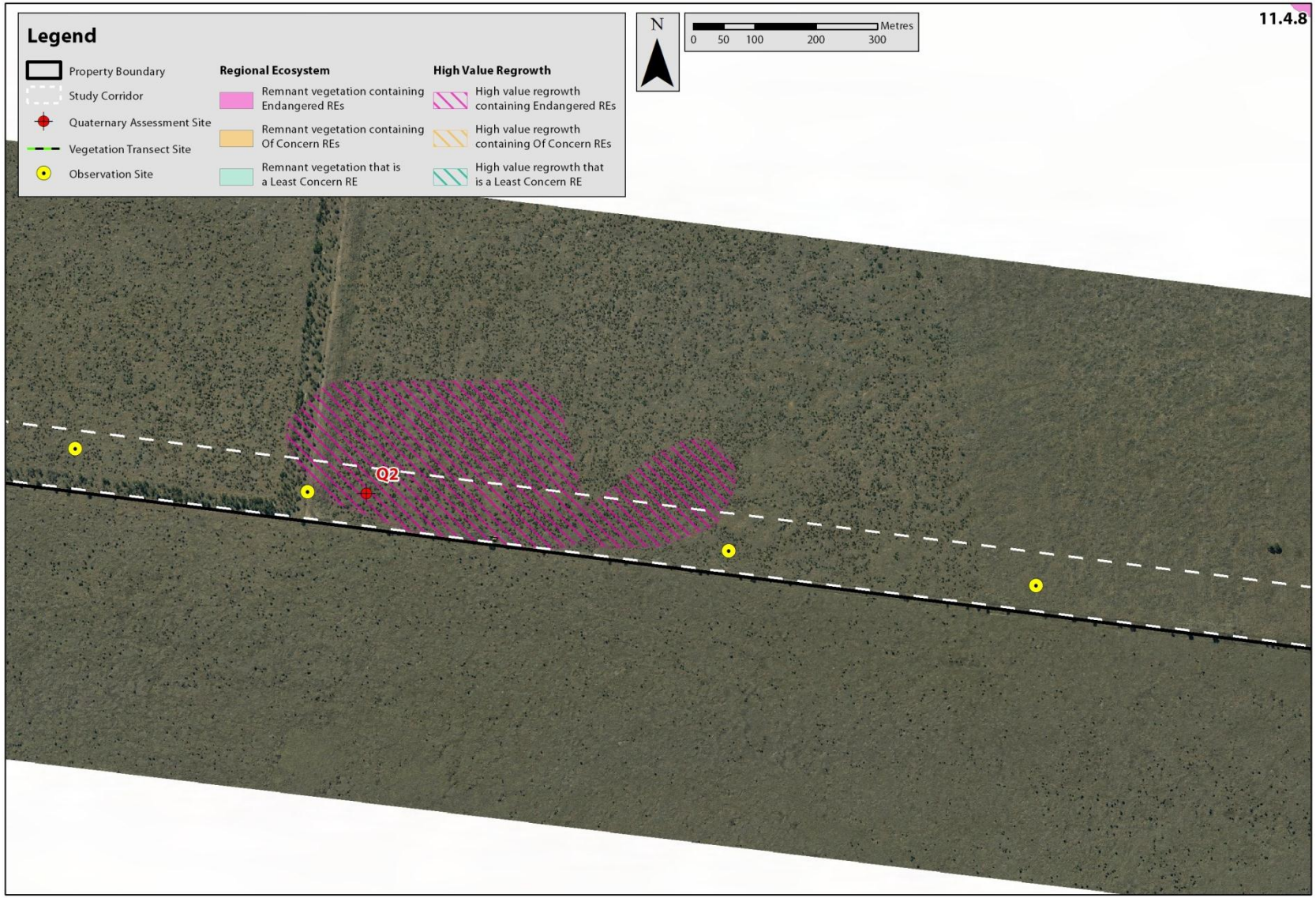
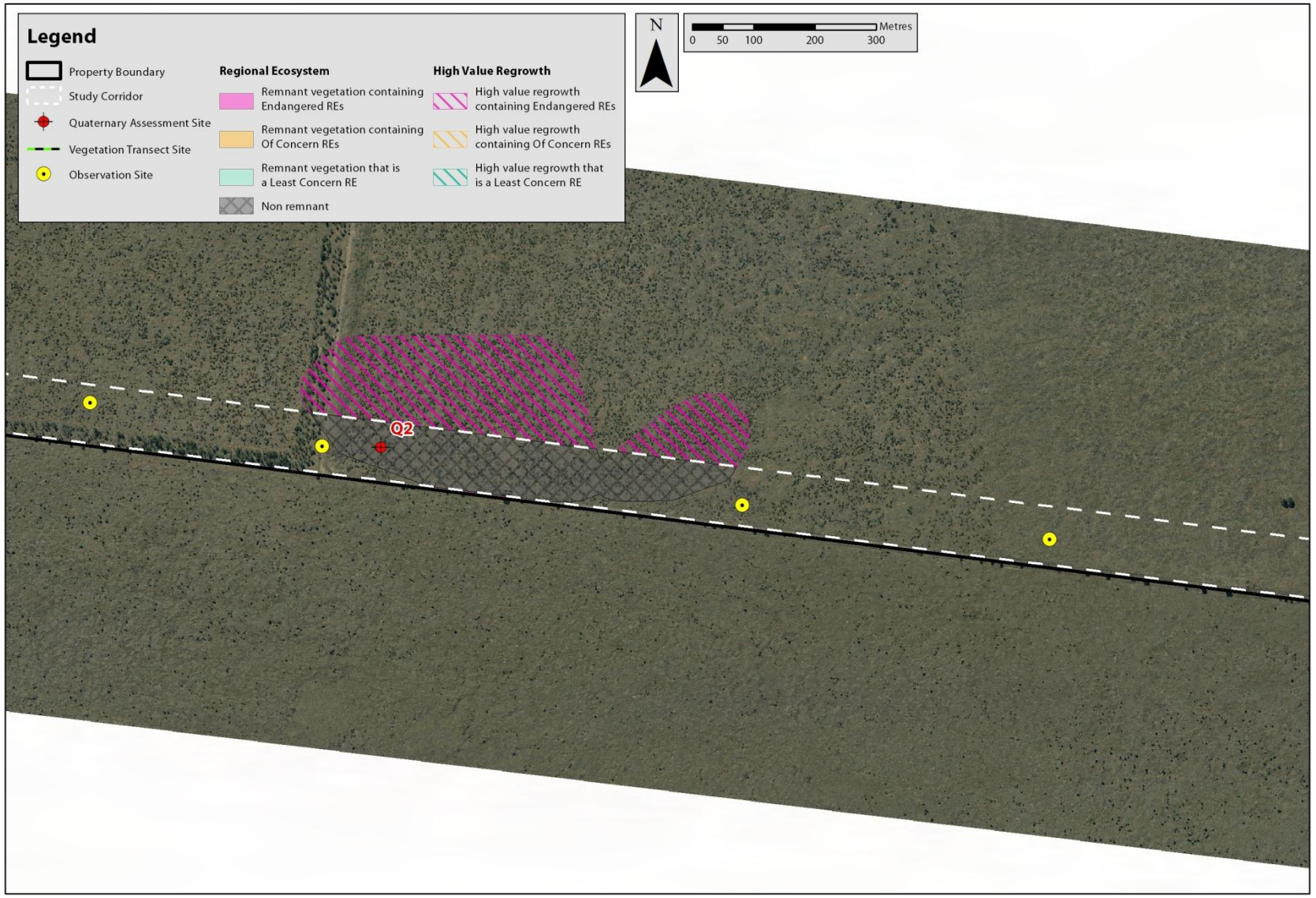


Figure 14: Regional Ecosystem Changes (Area B)



6.3. T Jones - Area C Polygon I

Table 14: T Jones Area C – Polygon 1 Summary

Site Description		
Location:	T Jones; Lot 8 on DC98	
Site Description:	The site is located within mapped polygon described as Endangered High Value Regrowth – Figure 16 The areas soil and geological formation appears consistent with Landzone 4 described as Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems. As per the majority of mapped regrowth areas on this property vegetation observed contains only occasional very scattered *Acacia harpophylla* (Brigalow) specimens (<1m) in height, that do not form part of a regrowth vegetation community. Exotic/introduced weed species including *Pennisetum ciliare* (Buffel Grass), *Parthenium hysterophorus* (Parthenium) and *Sorghum halepense* (Johnsons Grass) are dominant within the survey area Refer to Quaternary Site 3 and Figures 16 for the proposed mapping changes As depicted by aerial imagery the area does not contain vegetation consistent with a high value regrowth community.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	557643.34 m E	7575459.35 m S
Regional Ecosystem Profile		
Current High Value Regrowth v2.1 mapping	Regrowth of Endangered RE 11.4.8	
Regional Ecosystem Observed:	Non Remnant	
Width of RE:	150m	

Photo: Area C - Polygon 1

The area mapped as Endangered High Value Regrowth. Area contains very scattered Acacia harpophylla and no other other vegetation within the T1, T2 or shrub layer.

6.4. T Jones - Area C Polygon 2

Table 15: T Jones Area C – Polygon 2 Summary

Site Description		
Location:	T Jones; Lot 8 on DC98	
Site Description:	The site is located within mapped polygon described as Endangered High Value Regrowth – Figure 15 The location is within an existing agricultural land holding and as per Polygon 1 this area was observed to contain only occasional very scattered small *Acacia harpophylla* (Brigalow) specimens (<1m) in height. As depicted by aerial imagery the area does not contain vegetation consistent with a high value regrowth community. Exotic/introduced weed species including *Pennisetum ciliare* (Buffel Grass), *Parthenium hysterophorus* (Parthenium) and *Sorghum halepense* (Johnsons Grass) are dominant within the survey area Refer to Quaternary Site 4 and Figures 16 for the proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	558620.91 m E	7575305.35 m S
Regional Ecosystem Profile		
Current High Value Regrowth v2.1 mapping	Regrowth of Endangered RE 11.4.8	
Regional Ecosystem Observed:	Non Remnant	
Width of RE:	200m	

Photo: Area C- Polygon 2

The area mapped as Endangered High Value Regrowth. Area contains very scattered Acacia harpophylla and no other other vegetation within the T1, T2 or shrub layer.

Figure 15: Regional Ecosystem and Survey Effort (Area C – Polygon 1 & 2)

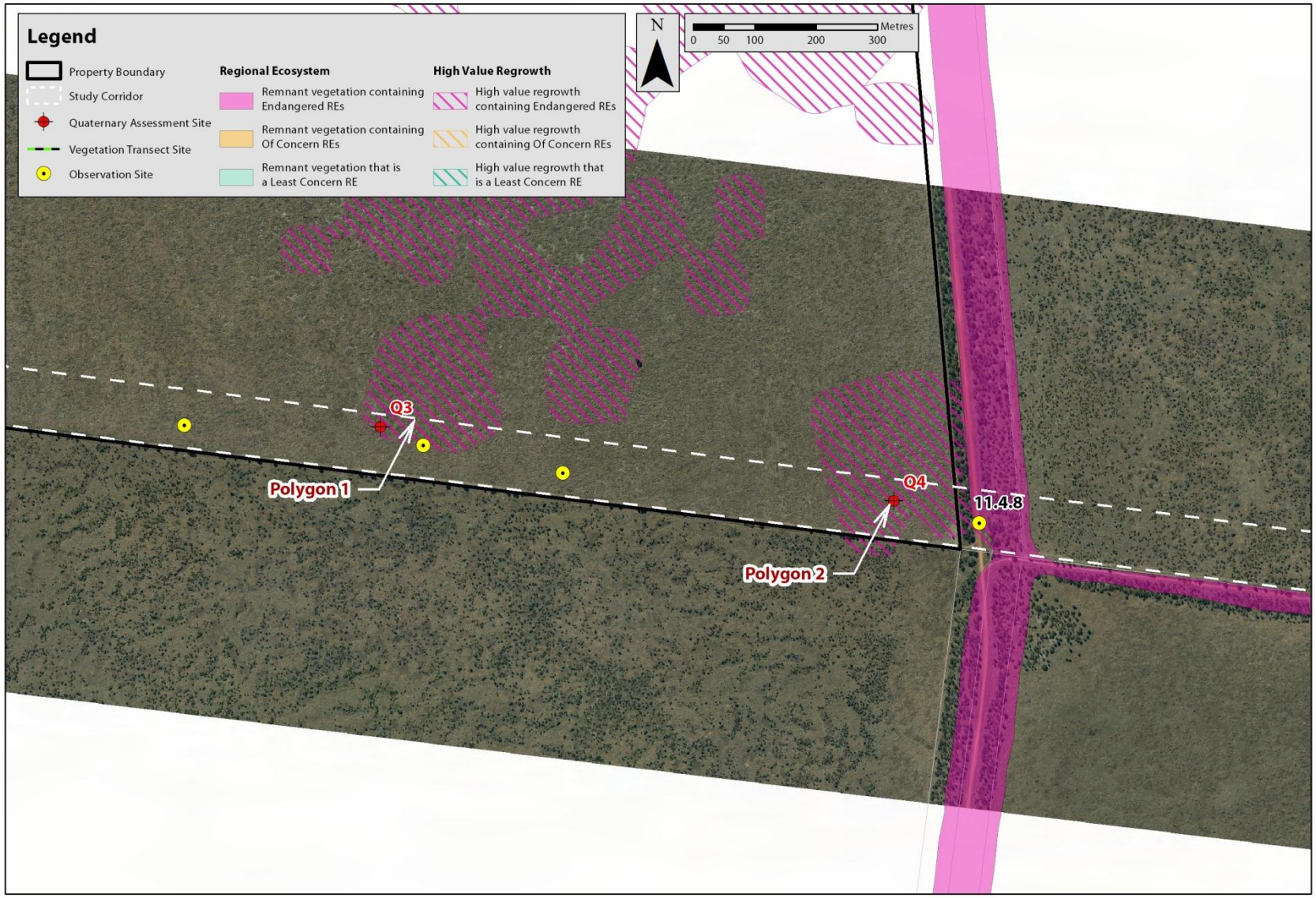
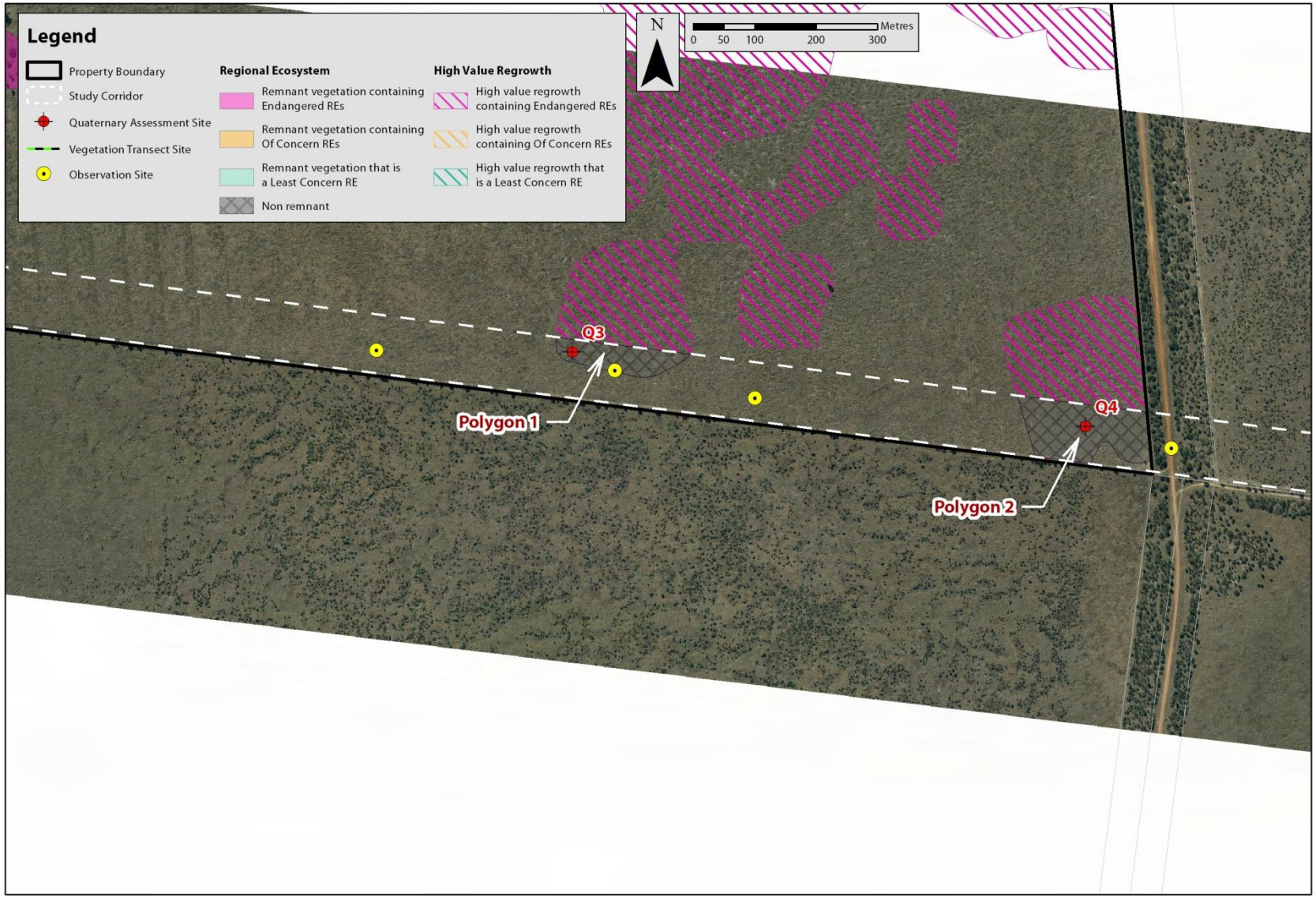


Figure 16: Regional Ecosystem Changes (Area C – Polygon 1 & 2)



7. L & O Scott

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* have mapped one regional ecosystem community within the L & O Scott property.

No field survey was conducted on the property; however 2011 Aerial imagery clearly indicates inaccuracies in the current *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* mapping. Imagery demonstrates this area is clearly non remnant.

Refer Figures 17 a and 17 b for current RE mapping.

Figures 18 a and 18b include close ups of aerial imagery demonstrating the lack of vegetation values.

Table 16: L & O Scott Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
L & O Scott Area A – Polygon 1	Endangered RE 11.4.8	< 0.5 ha	Non-remnant	-

Figure 17a: Regional Ecosystem Mapping (Area A)

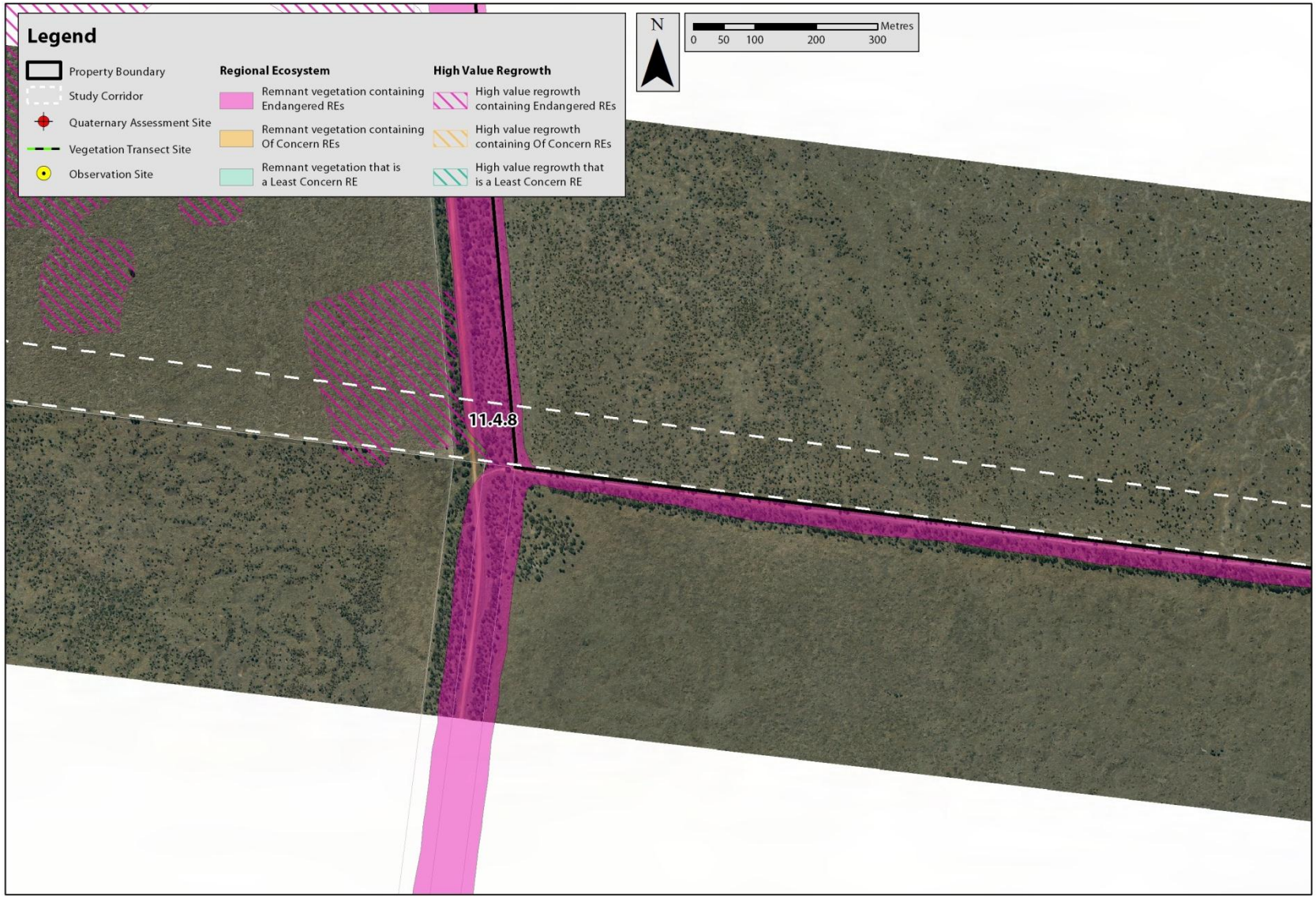


Figure 17b: Regional Ecosystem Mapping (Area A)

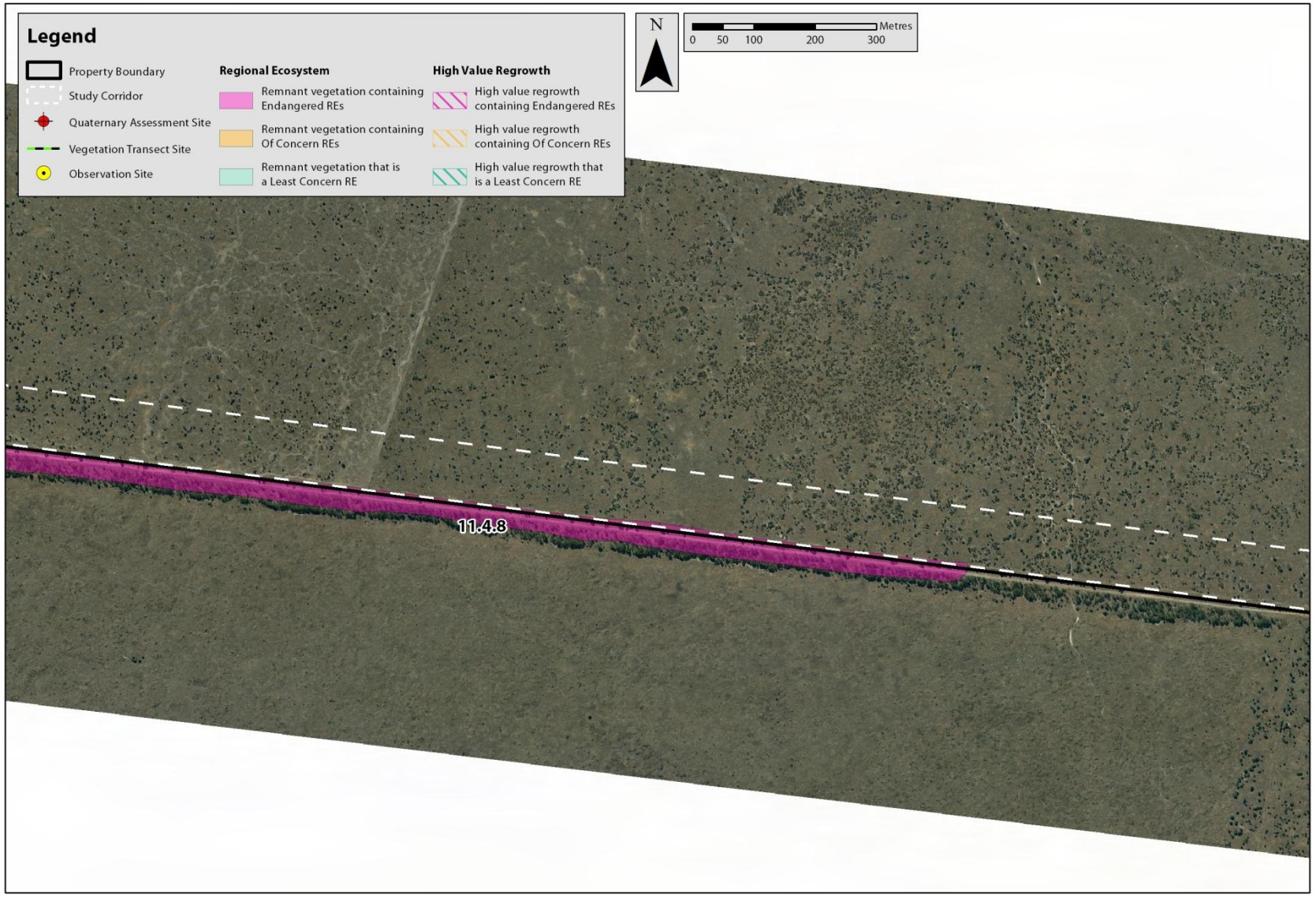


Figure 18a: Regional Ecosystem Changes (Area A)

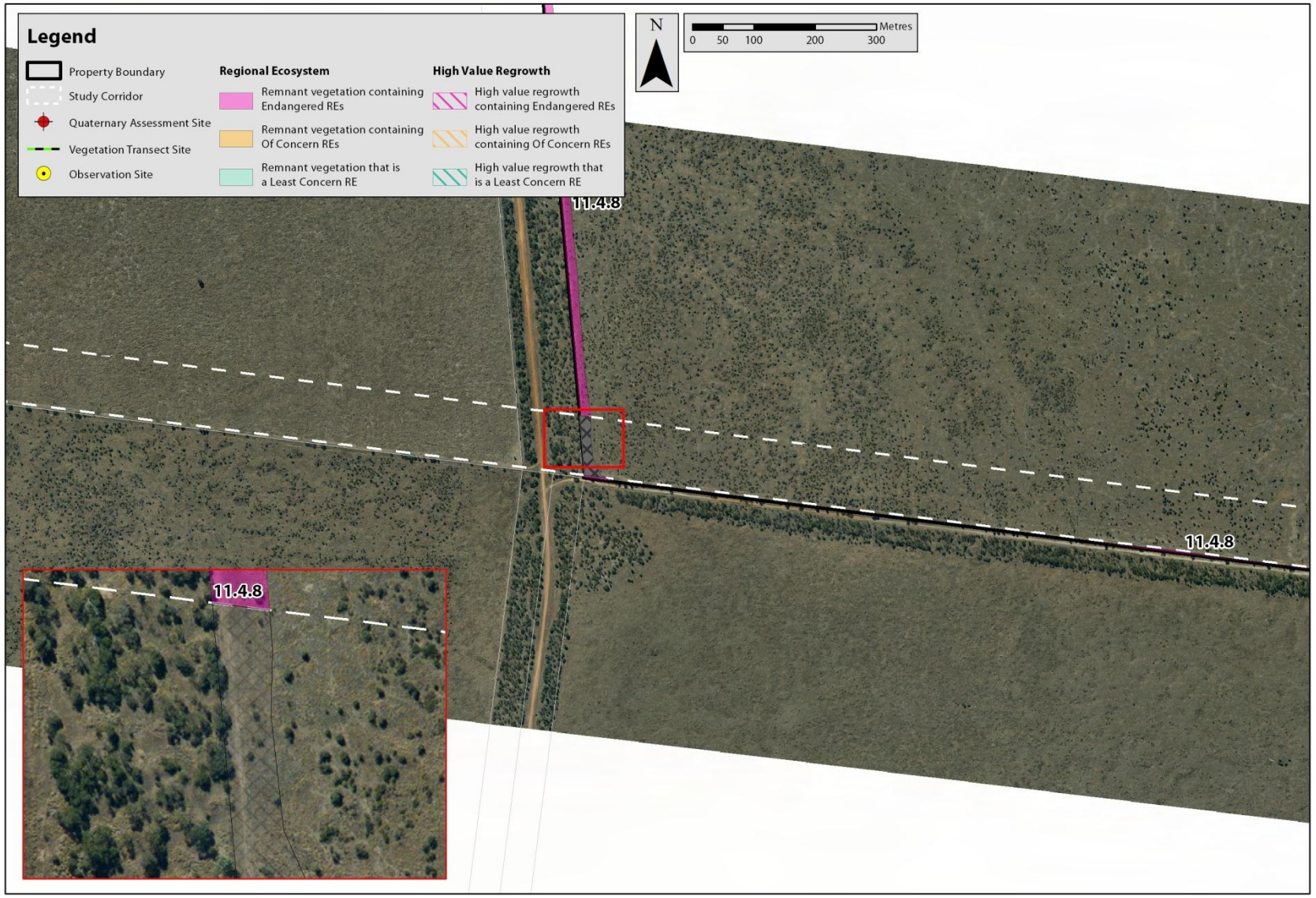
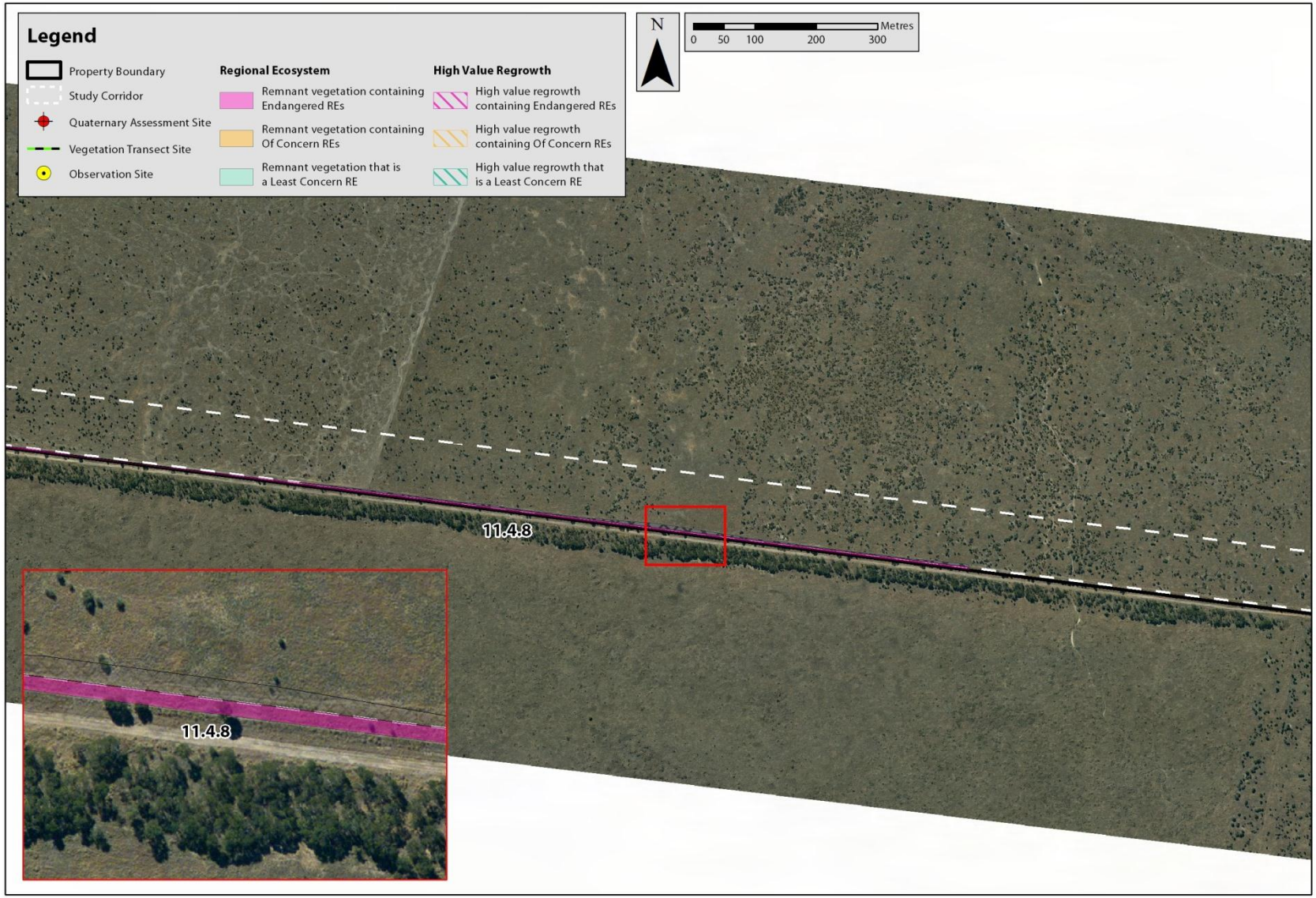


Figure 18b: Regional Ecosystem Changes (Area A)



8. H & S Phillip

The *Vegetation Management Act Regional Ecosystem, Remnant Map Version 6.1 & High Value Regrowth v2.1* have mapped two regional ecosystem communities across the one Landzone within the H& S Phillip property.

The application area within the L & O Scott property was divided into two (2) assessment areas based on the location of the mapped remnant polygon and status of the regional ecosystem community. No field survey was conducted on the property; however 2011 Aerial imagery clearly indicates absence of vegetation within each assessment area.

Table 17: H&S Phillip

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
H & S Philip Area A – Polygon 1	Endangered RE 11.4.11/11.4.9/11.4.5	< 0.5 ha	Non-remnant	< 0.5 ha
H & S Philip Area B – Polygon 2	Endangered RE 11.4.11/11.4.9/11.4.5	< 0.5 ha	Non-remnant	< 0.5 ha
H & S Philip Area B – Polygon 3	Endangered RE 11.4.9	< 0.5 ha	Non-remnant	< 0.5 ha

Figure 17: Regional Ecosystem Mapping (L & O Scott - Area A)

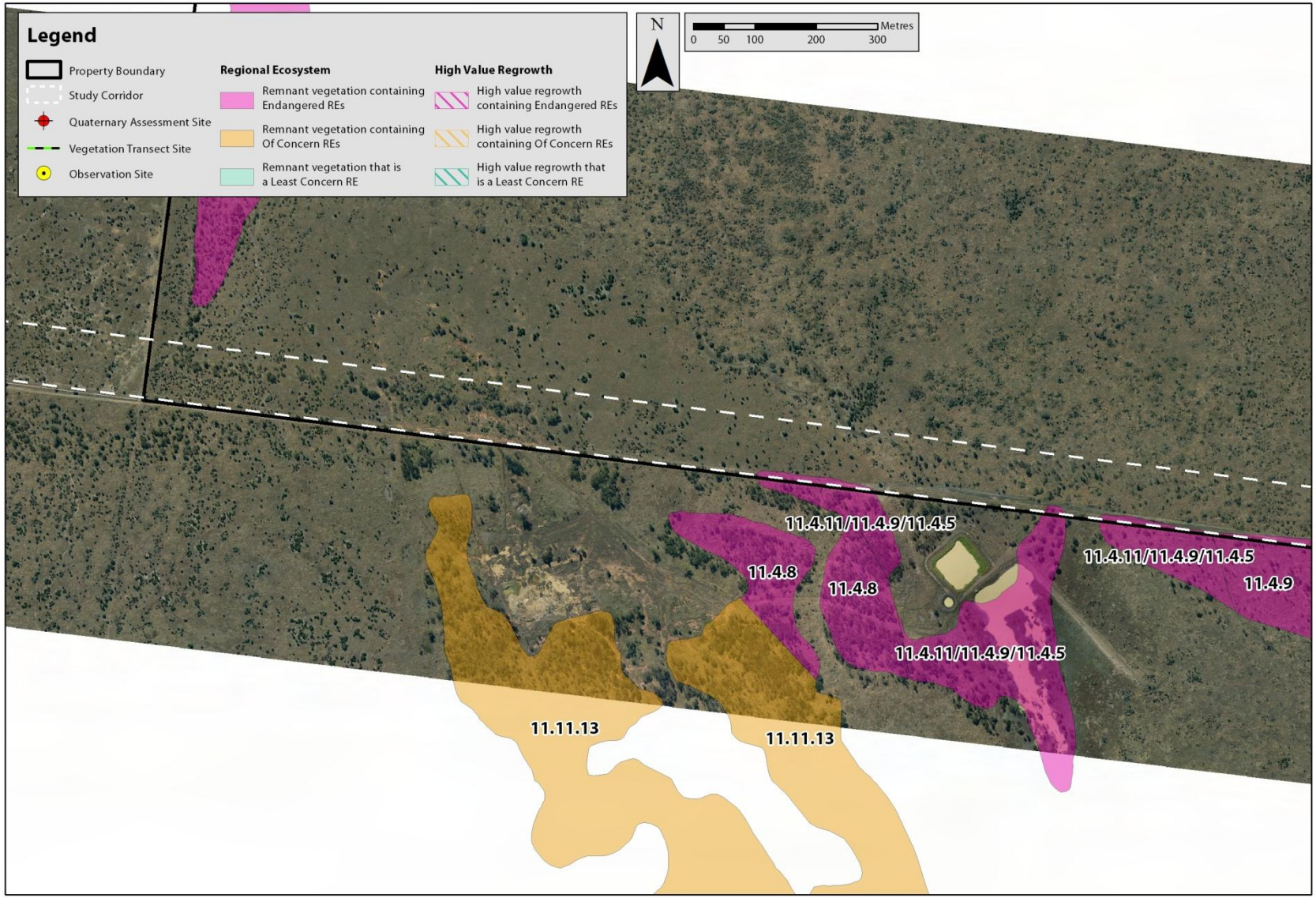


Figure 18: Regional Ecosystem Changes (Area A)

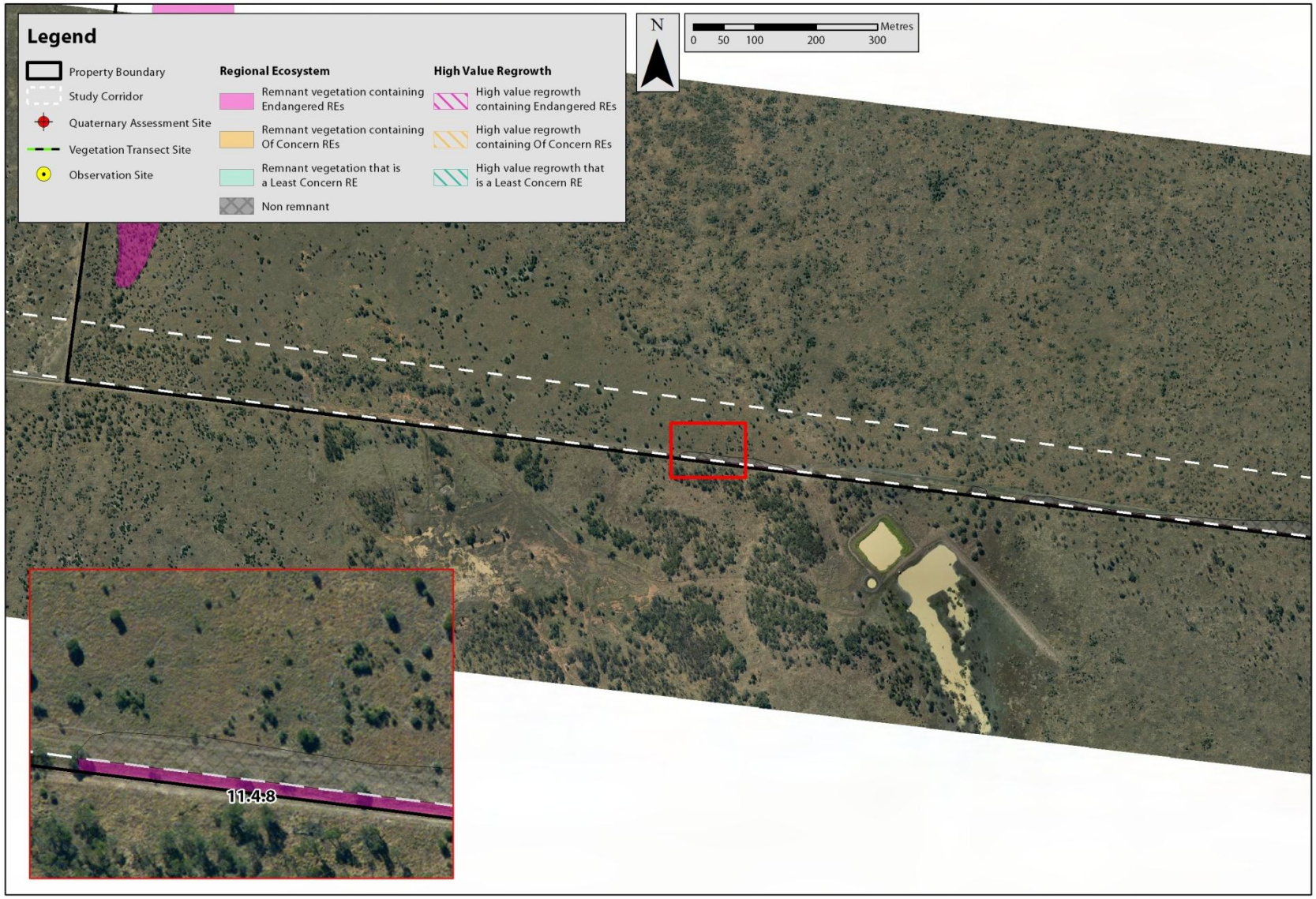


Figure 18: Regional Ecosystem Changes (Area B)

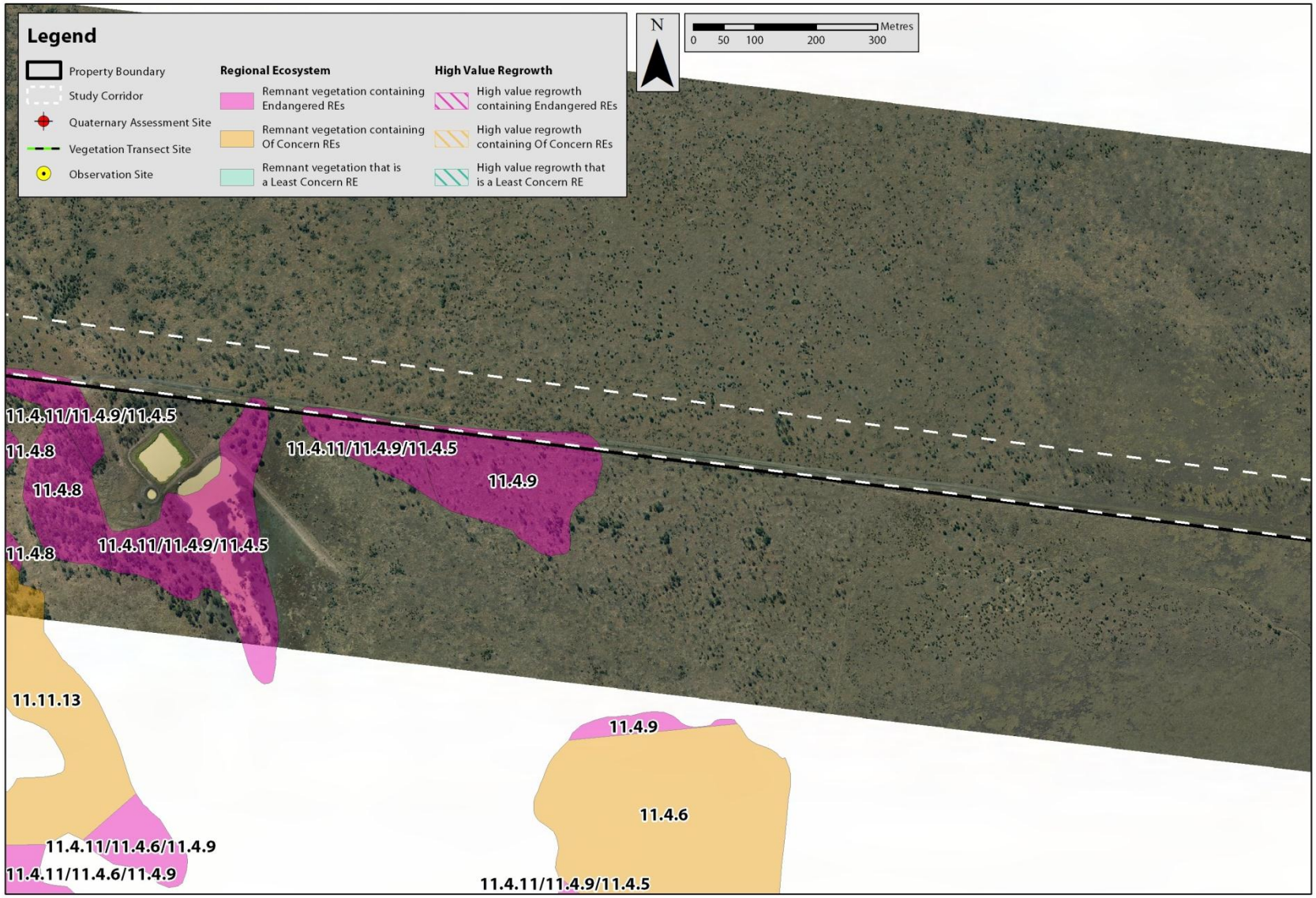
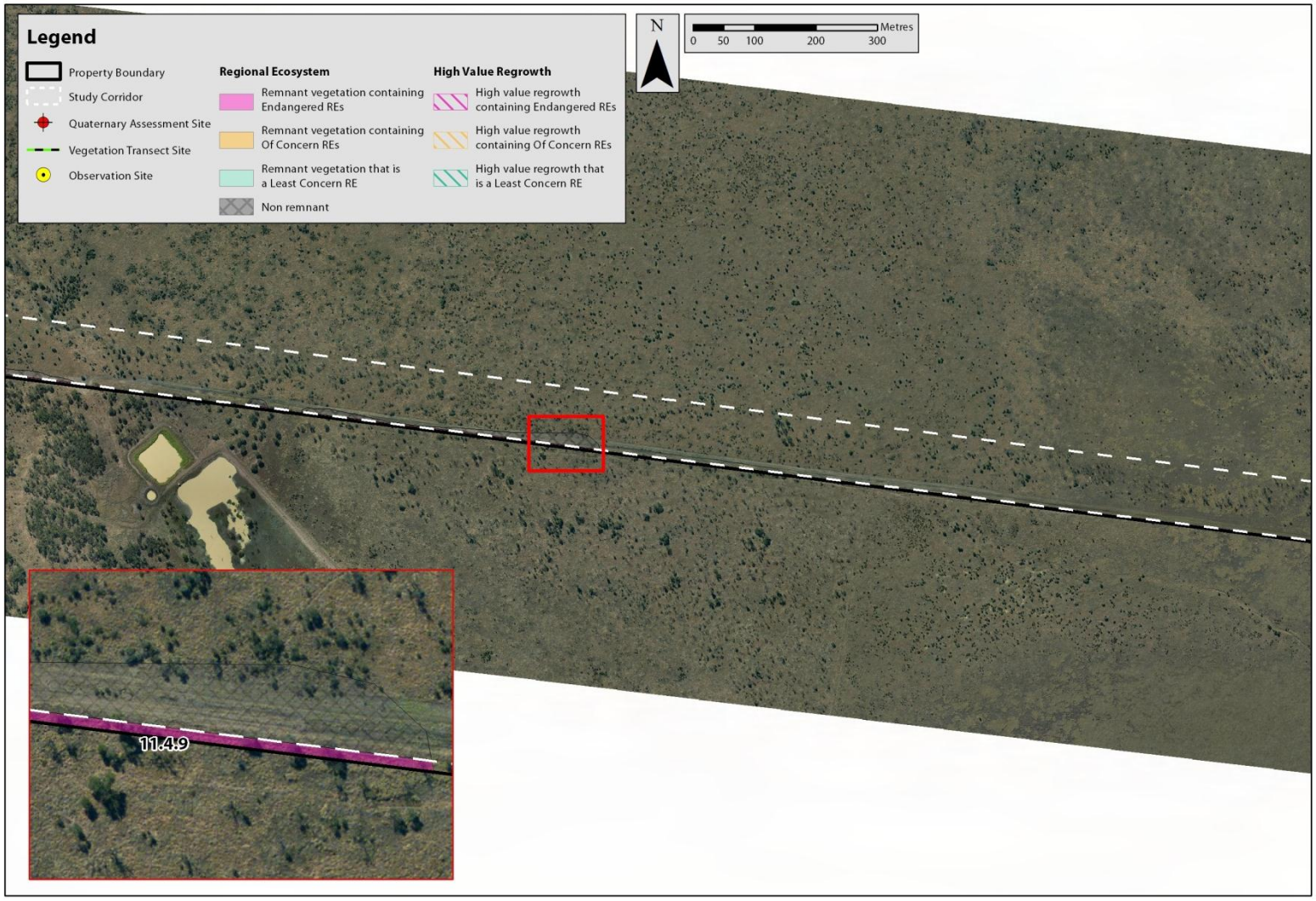


Figure 18: Regional Ecosystem Changes (Area B)

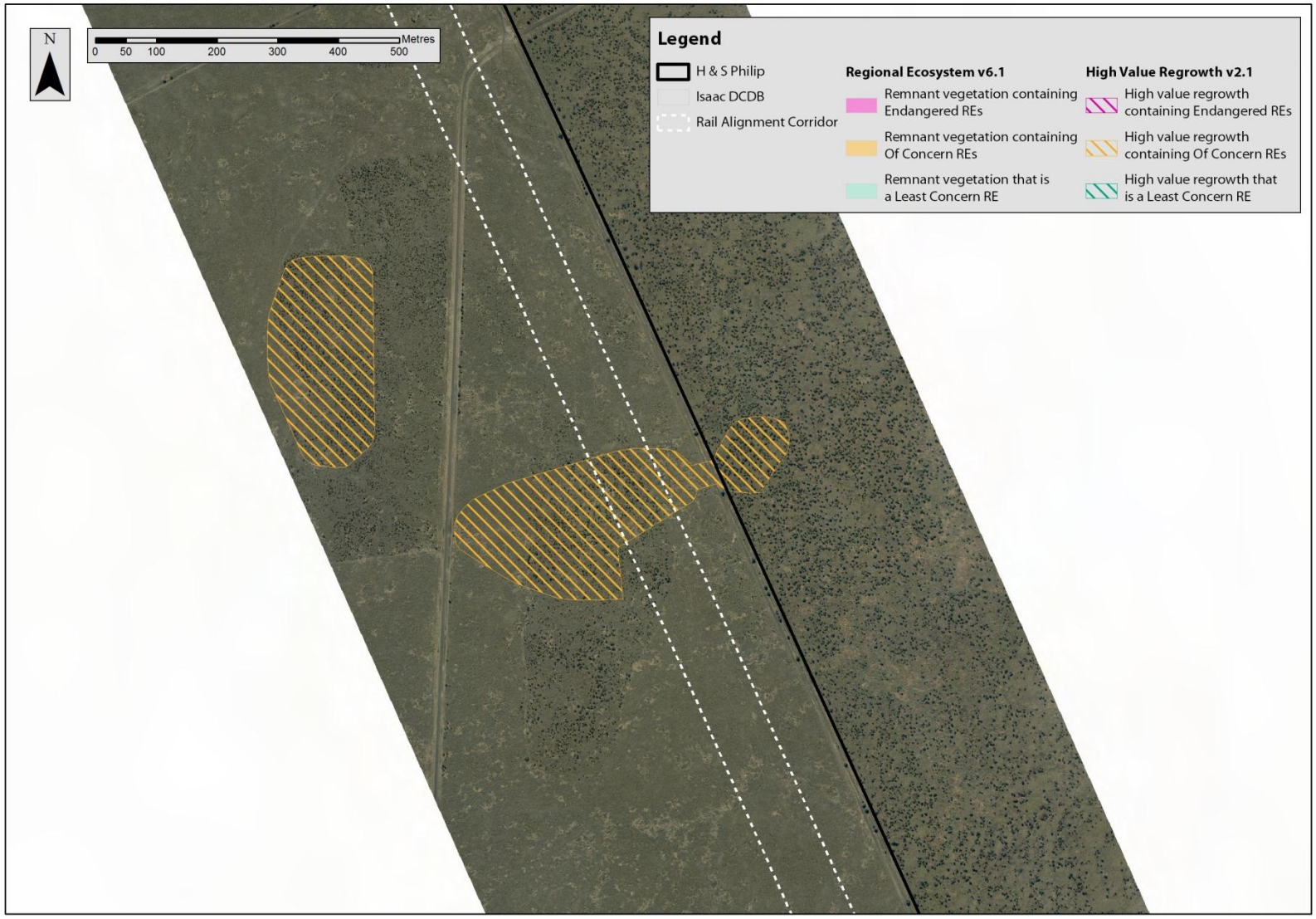


9. K, S & R Hughes

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* have mapped a single polygon of Of Concern High Value Regrowth across the K, S & R Hughes property. The preclear data within this area identifies that the regrowth is from the Of Concern RE11.4.6

No field survey was conducted within this property.

Figure 20: Regional Ecosystem Mapping v6.1 (K, S & R Hughes - Area A)



10. Rugby Run

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* have mapped two regional ecosystems across two landzones within the Rugby Run property.

Six vegetation polygons were assessed throughout the rail corridor which includes one composite regional ecosystem and one single regional ecosystem community.

The assessment identified that RE mapping is correct within the property with the exception of some minor mapping amendments required to confirm RE boundaries at the property scale.

Table 18: Rugby Run Summary

Site	Current RE Mapping Version 6.1	Current RE Mapping Version 6.1 (Area)	RE Observed	RE Observed (Area)
Rugby Run Area A – Polygon 1	Endangered RE 11.3.1	1.7 ha	Endangered RE 11.3.1	1.0 ha
Rugby Run Area B – Polygon 1	Least Concern RE 11.5.3/11.5.9c	2.1 ha	Least Concern RE 11.5.3/11.5.9c	2.1 ha
Rugby Run Area C – Polygon 1	Least Concern RE 11.5.3/11.5.9c	11.2 ha	Least Concern RE 11.5.3/11.5.9c	11.2 ha
Rugby Run Area D – Polygon 1	Least Concern RE 11.5.3/11.5.9c	6.3 ha	Least Concern RE 11.5.3/11.5.9c	6.3 ha
Rugby Run Area E – Polygon 1	Least Concern RE 11.5.3/11.5.9c	< 1 ha	Least Concern RE 11.5.3/11.5.9c	< 1 ha
Rugby Run Area F – Polygon 1	Least Concern RE 11.5.3/11.5.9c	19.2 ha	Least Concern RE 11.5.3/11.5.9c	19.2 ha

10.1. Rugby Run – Area A

Table 19: E & R Action (Rugby Run) - Area A Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The rail corridor is currently mapped as containing Endangered RE 11.3.1 – Figure 21 *Acacia harpophylla* (Brigalow) was observed within the T1 layer with *Eremophila mitchellii* and *Geijera parviflora* within the shrub layer. Vegetation consistent with this Regional Ecosystem type was observed within this location indicating the presence of Endangered RE 11.3.1. Some minor amendments are proposed to mapped boundaries. The minor rectification of boundaries in this area is due to current RE mapping inaccuracies (scale). Cattle grazing is apparent and the area is highly disturbed. Exotic/introduced weed species including *Pennisetum ciliare* (Buffel Grass) and *Parthenium hysterophorus* (Parthenium) are dominant within the survey area. Refer to Quaternary Site 1 and Figures 22 for the proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	585622.84E	7562728.60S
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:	150m	

Photo: Area A

The area mapped as remnant RE11.3.1 within the investigation area.

Figure 21: Regional Ecosystem Mapping and Survey Effort (Rugby Run - Area A)

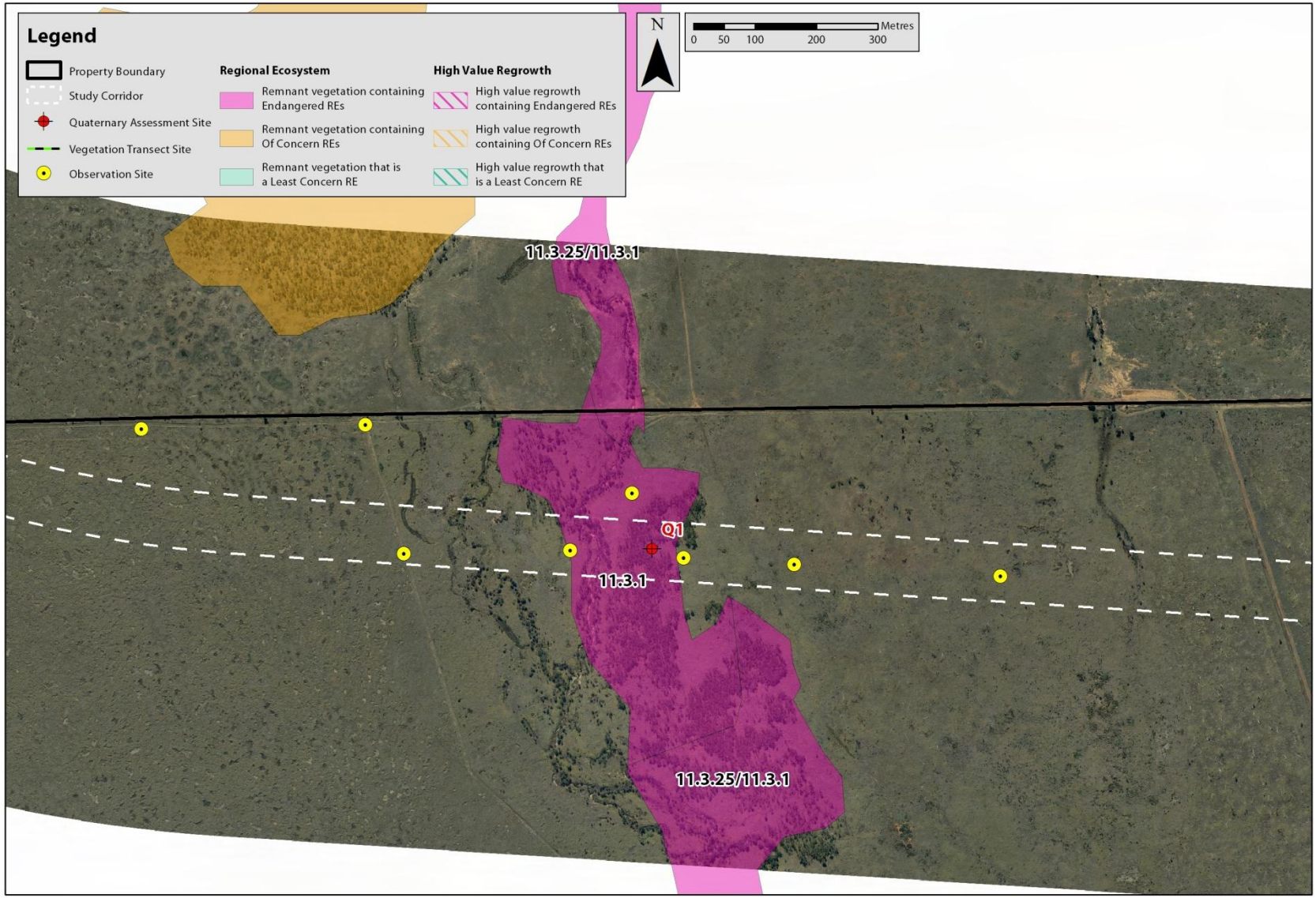
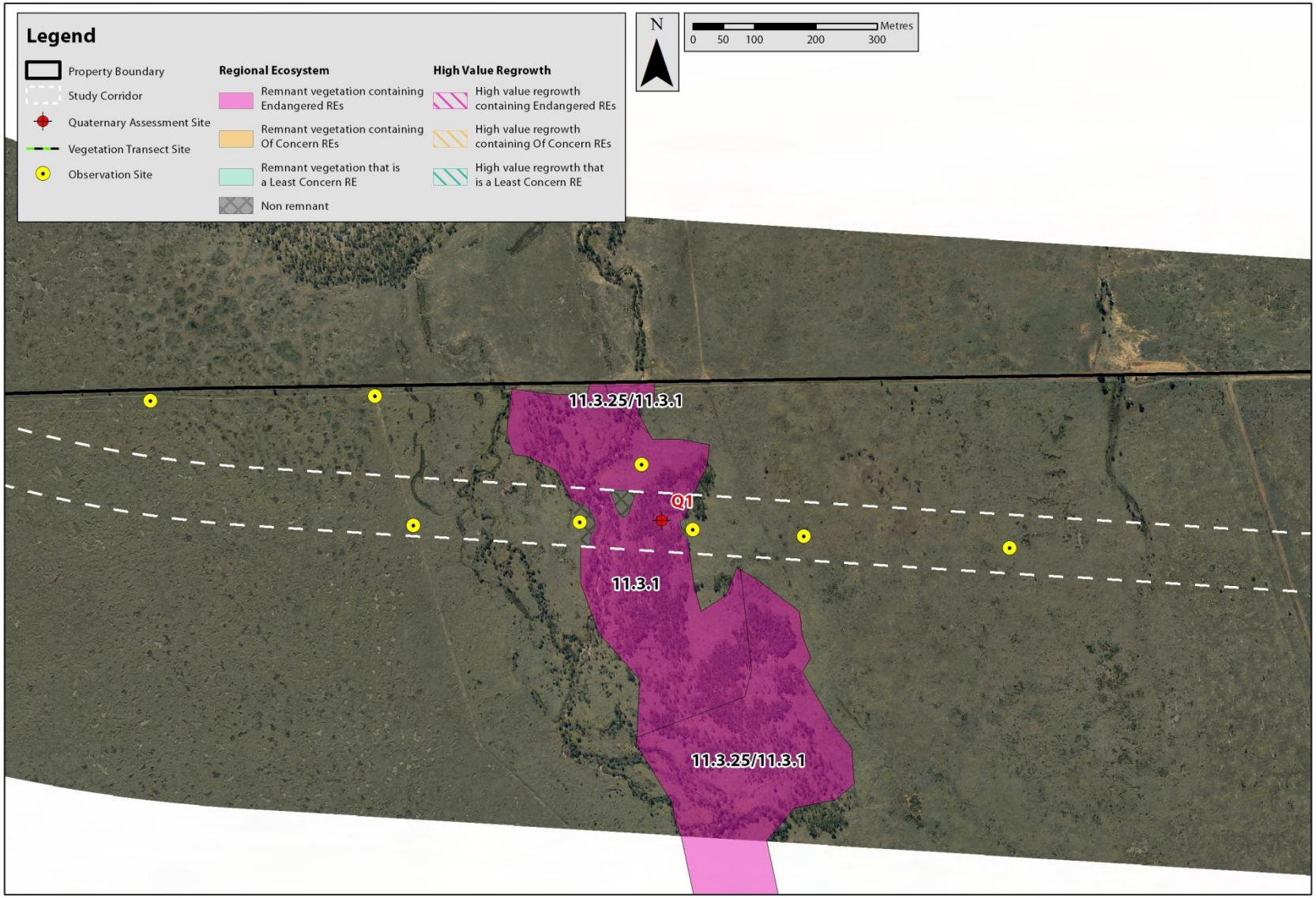


Figure 22: Regional Ecosystem Changes (Rugby Run - Area A)



10.2. Rugby Run – Area B

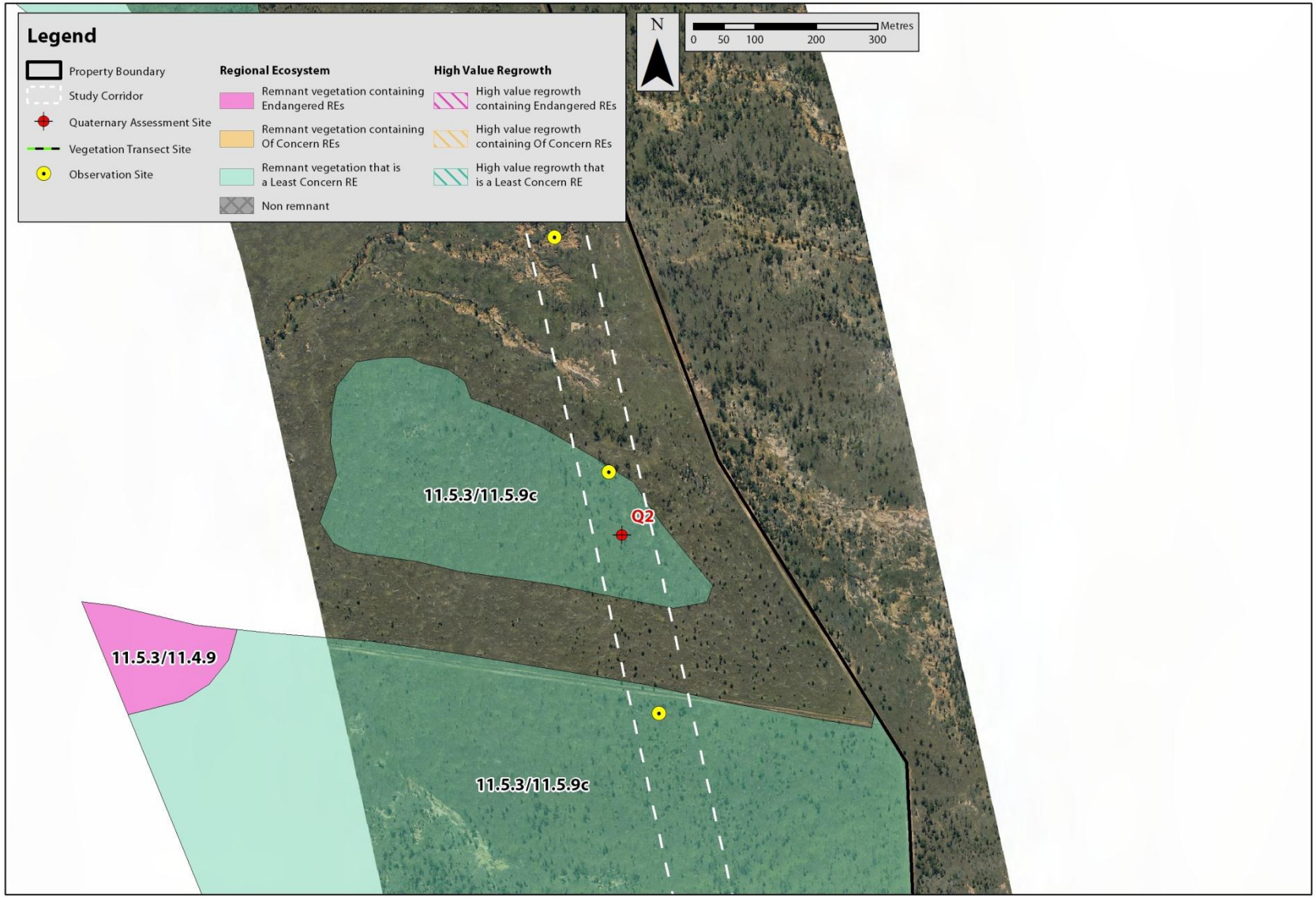
Table 20: E & R Action (Rugby Run) - Area B Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.5.3/11.5.9c. The community is described as comprising approximately 50% Least Concern RE 11.5.2 and 50% Least Concern 11.5.9c. Species observed include *Eucalyptus populnea*, *Eucalyptus crebra* and *Corymbia clarksonia* within the T1 layer and *Petalostigma pubsecens* and *Acacia excelsa* within the T2 and shrub layers. Ground layer was dominated by *Pennisetum ciliare*, *Heteropogon contortus* and *Themeda triandra*. Moderate levels of disturbance were observed within the survey area including weed invasion, grazing,erosion and historical clearing. Field observations indicate the presence of species consistent with both 11.5.3 and 11.5.9 within the polygons of Area B. Refer to Quaternary site 2 and Figure 22. No mapping changes are proposed within this location.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	593394.60	7560324.30
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern 11.5.3/11.5.9c	
Regional Ecosystem Observed:	Least concern 11.5.3/11.5.9c	
Width of RE:		

Photo: Area B

The area mapped as remnant RE11.5.3/1.5.9 within the investigation area. Note large areas of erosion within gully lines.

Figure 22: Regional Ecosystem and Survey Effort (Area B – No Changes Proposed)



10.3. Rugby Run – Area C

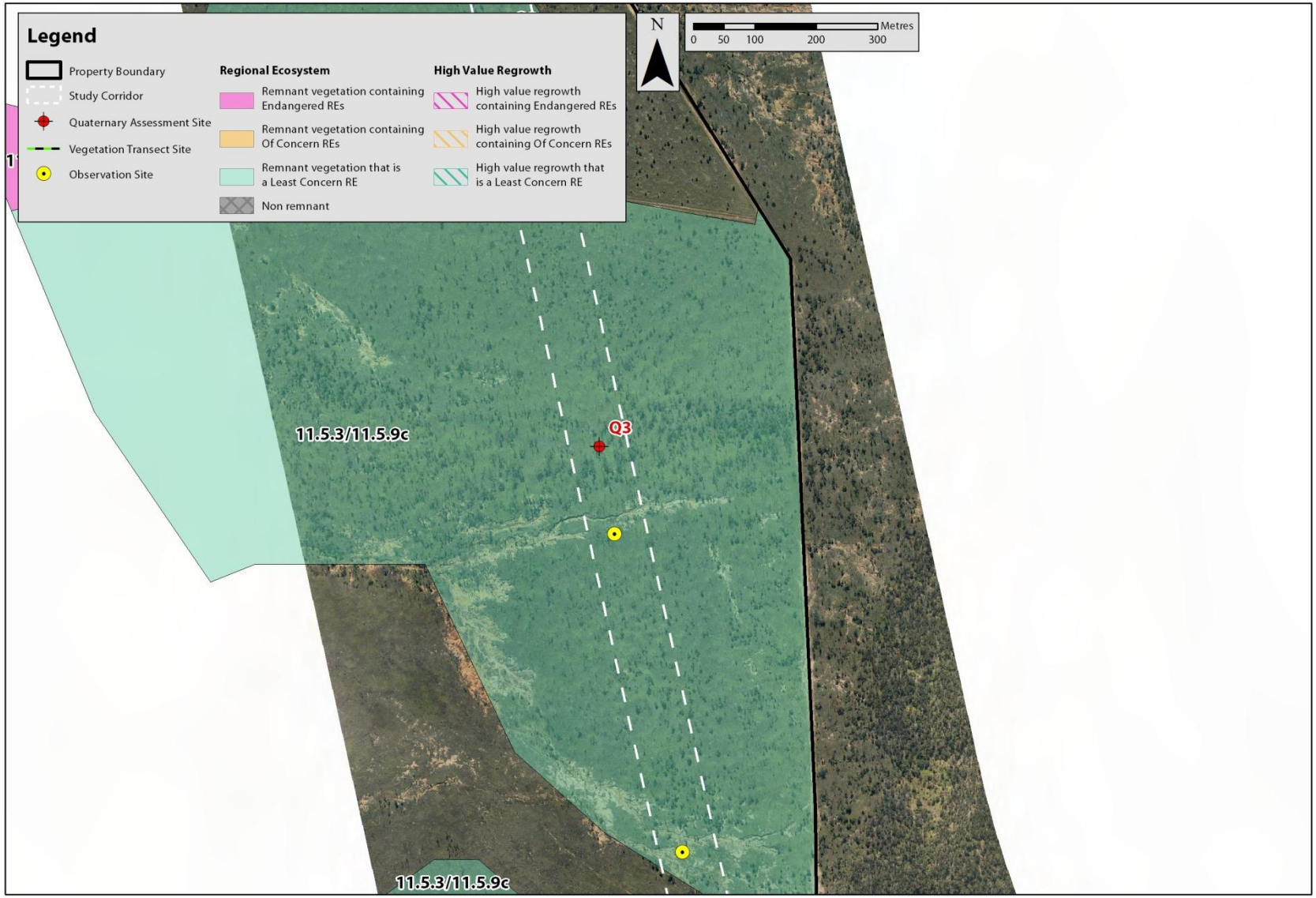
Table 21: E & R Action (Rugby Run) - Area C Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.5.3/11.5.9c. The community is described as comprising approximately 50% Least Concern RE 11.5.2 and 50% Least Concern 11.5.9c. Species observed include *Eucalyptus populnea* and *Corymbia clarksonia* within the T1 layer and *Petalostigma pubsecens*, *Alphitonia excels*a and *Acacia excelsa* within the T2 and shrub layers. Ground layer was dominated by *Pennisetum ciliare* and *Themeda triandra*. High levels of disturbance were observed within the survey area including weed invasion, grazing and historical clearing. Large quantity of dead standing timber within survey area. Field observations indicate the presence of species consistent with both 11.5.3 and 11.5.9 within the polygons of Area C . Refer to Quaternary site 3 and Figure 23 for proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	593564.63E	7559504.12S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE11.5.3/11.5.9c	
Regional Ecosystem Observed:	Least Concern RE11.5.3/11.5.9c	
Width of RE:	>10Ha	

Photo: Area C

The area mapped as remnant RE11.5.3/1.5.9 within the investigation area. High levels of disturbance from grazing, clearing and erosion.

Figure 23: Regional Ecosystem and Survey Effort (Area C – No Changes Proposed)



10.4.E & R Action (Rugby Run) Area D

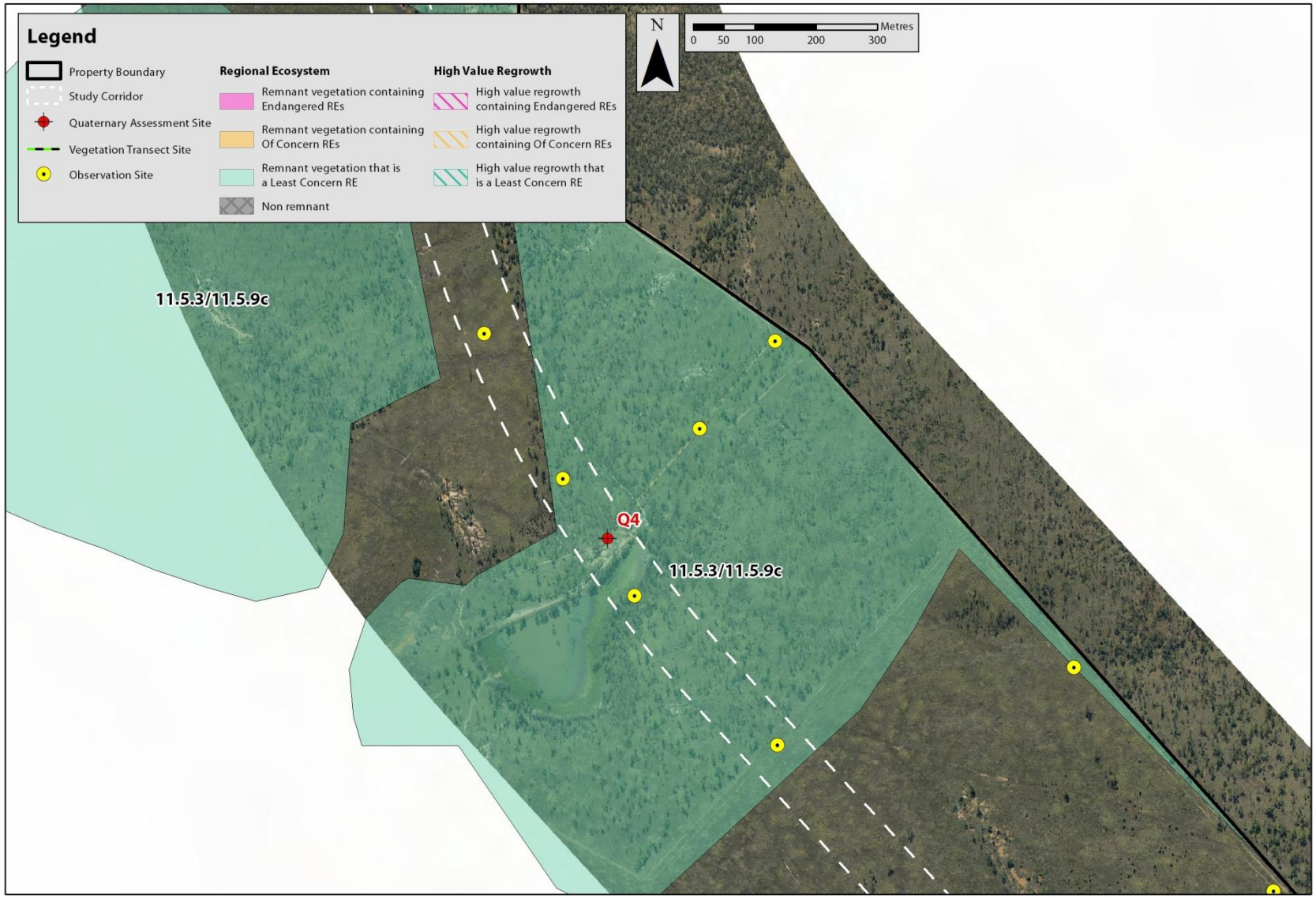
Table 22: E & R Action (Rugby Run) - Area D Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.5.3/11.5.9c. The community is described as comprising approximately 50% Least Concern RE 11.5.2 and 50% Least Concern 11.5.9c. Species observed include *Eucalyptus populnea* and *Corymbia clarksonia* within the T1 layer and *Petalostigma pubsecens, Alphitonia excels*a and *Acacia excelsa* within the T2 and shrub layers. Ground layer was dominated by *Pennisetum ciliare* and *Themeda triandra*. Moderate levels of disturbance were observed within the survey area including weed invasion, grazing and historical clearing. Field observations indicate the presence of species consistent with both 11.5.3 and 11.5.9 within the polygons of Area D. Refer to Quaternary site 4 and Figure 24 for proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	594076.41E	7557971.82S
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.5.3/11.5.9c	
Regional Ecosystem Observed:	Least Concern RE 11.5.3/11.5.9c	
Width of RE:	>10Ha	

Photo: Area D

The area mapped as remnant RE11.5.3/1.5.9 within the investigation area. Note dense Pennisetum ciliare (Buffel Grass) within understorey.

Figure 24: Regional Ecosystem and Survey Effort (Area D – No Changes Proposed)



10.5.E & R Action (Rugby Run) Area E

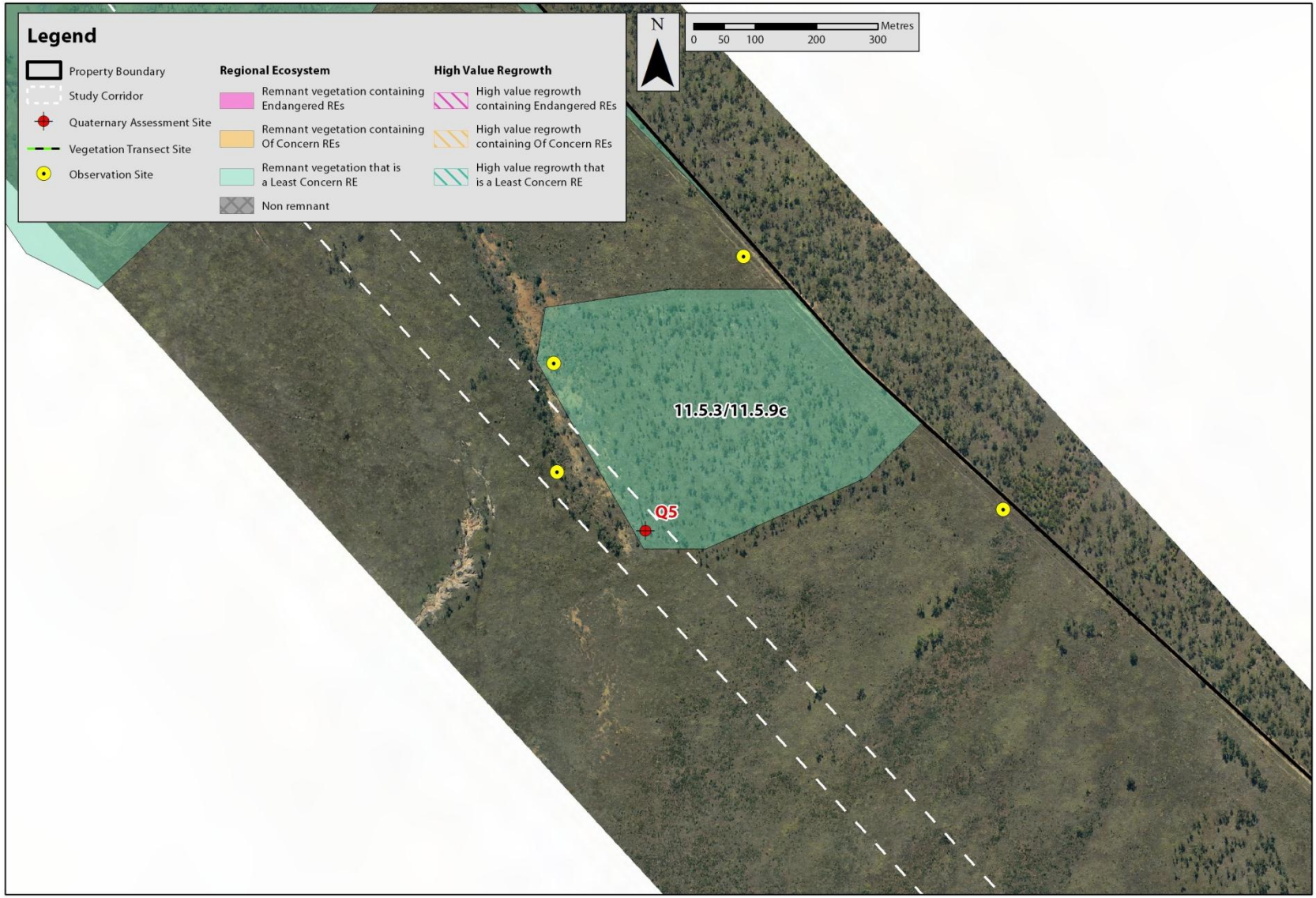
Table 23: E & R Action (Rugby Run) - Area E Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.5.3/11.5.9c. The community is described as comprising approximately 50% Least Concern RE 11.5.2 and 50% Least Concern 11.5.9c. Species observed include *Eucalyptus populnea, Eucalyptus crebra, Eucalyptus exerta* and *Corymbia clarksonia* within the T1 layer and *Petalostigma pubsecens, Alphitonia excelsa* and *Acacia excelsa* within the T2 and shrub layers. Ground layer was dominated by *Pennisetum ciliare*. Moderate levels of disturbance were observed within the survey area including weed invasion, grazing and historical clearing. Field observations indicate the presence of species consistent with both 11.5.3 and 11.5.9 within the polygons of Area E. Refer to Quaternary site 5 and Figure 25 for proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	594867.07E	7557141.62s
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.5.3/11.5.9c	
Regional Ecosystem Observed:	Least Concern RE 11.5.3/11.5.9c	
Width of RE:	5-20Ha	

Photo: Area E

The area mapped as remnant RE11.5.3/1.5.9 within the investigation area. Note vegetation positioned on rocky outcrop.

Figure 25: Regional Ecosystem and Survey Effort (Area E – No Changes Proposed)



10.6.E & R Action (Rugby Run) Area F

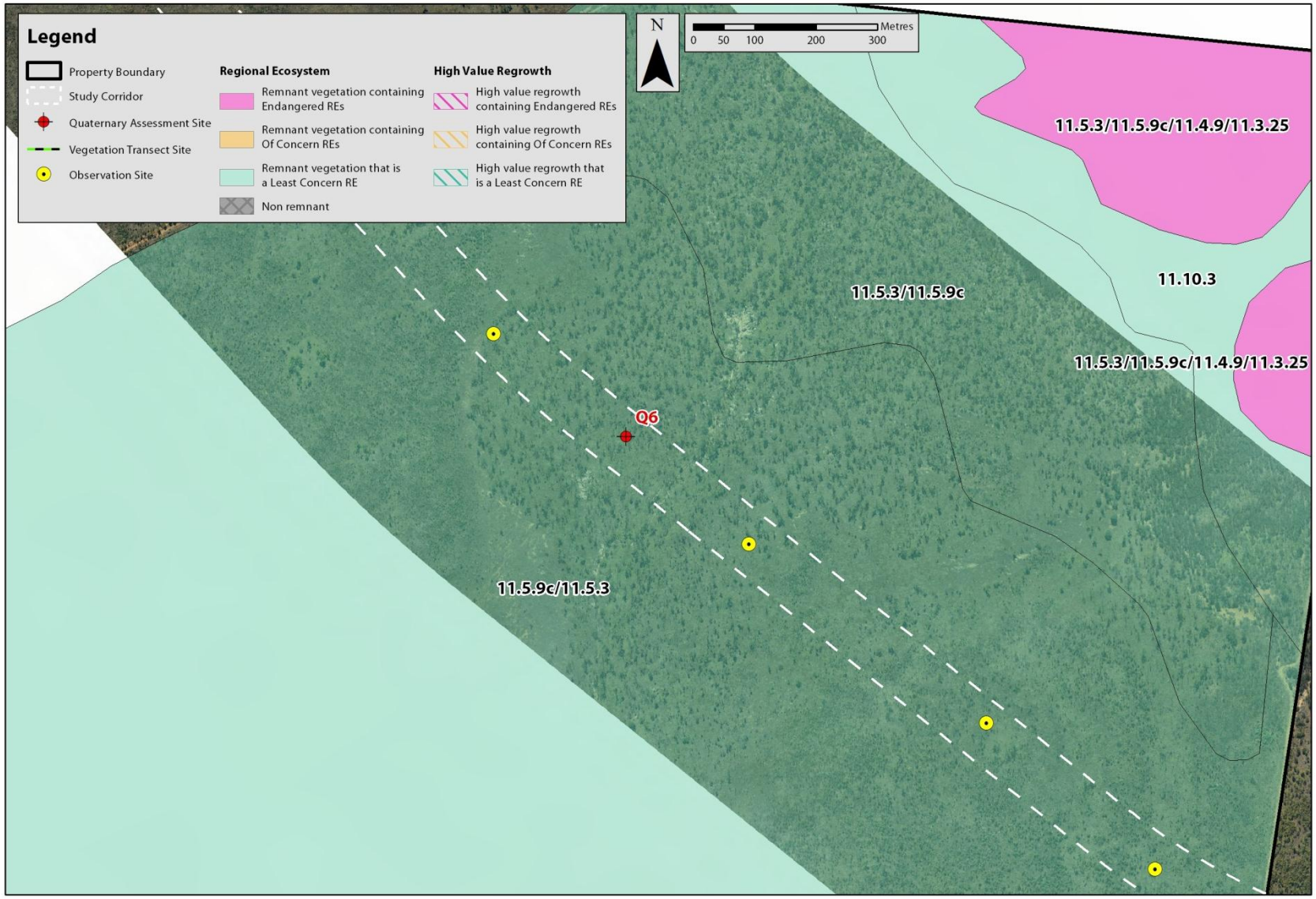
Table 24: E & R Action (Rugby Run) - Area F Summary

Site Description		
Location:	E & R Action (Rugby Run); Lot 2 on GV248	
Site Description:	The site is mapped as a composite vegetation community described as Least Concern RE 11.5.3/11.5.9c. The community is described as comprising approximately 50% Least Concern RE 11.5.2 and 50% Least Concern 11.5.9c. Species observed include *Eucalyptus crebra, Eucalyptus melanophloia, Corymbia clarksonia, Corymbia intermedia* and *Eucalyptus cambageana* within the T1 layer and *Petalostigma pubsecens, Alphitonia excelsa* and *Acacia excelsa* within the T2 and shrub layers. Ground layer was dominated by *Pennisetum ciliare* and *Themeda triandra*. High levels of disturbance were observed within the survey area including weed invasion, grazing and historical clearing. Large quantities of dead standing timber observed. Copus growth obvious on a large number of trees in the area. In areas dense regrowth of Acacia spp evident. Field observations indicate the presence of species consistent with both 11.5.3 and 11.5.9 within the polygons of Area F. Refer to Quaternary site 6 and Figure 26 for proposed mapping changes.	
Datum:	GDA94 MGA55	
Eastings/Northings	Eastings	Northings
	596234.97E	7555663.79
Regional Ecosystem Profile		
Current RE Mapping (Version 6.1)	Least Concern RE 11.5.9c/11.5.3	
Regional Ecosystem Observed:	Least Concern RE 11.5.9c/11.5.3	
Width of RE:	>20Ha	

Photo: Area D

The area mapped as remnant RE11.5.9/11.5.3 within the investigation area. Note dense Pennisetum ciliare (Buffel Grass) within understorey.High levels of disturbance from clearing and grazing within survey area.

Figure 26: Regional Ecosystem and Survey Effort (Area F – No Changes Proposed)



II.BHP Coal

The *Vegetation Management Act Regional Ecosystem and Remnant Map Version 6.1* have mapped three regional ecosystems across three landzones within the BHP property.

This area was not accessible during the time of the survey and therefore no RE mapping amendments are proposed – Refer Figures 27 – 28.

Figure 27: Regional Ecosystem (Area A – No Changes Proposed)

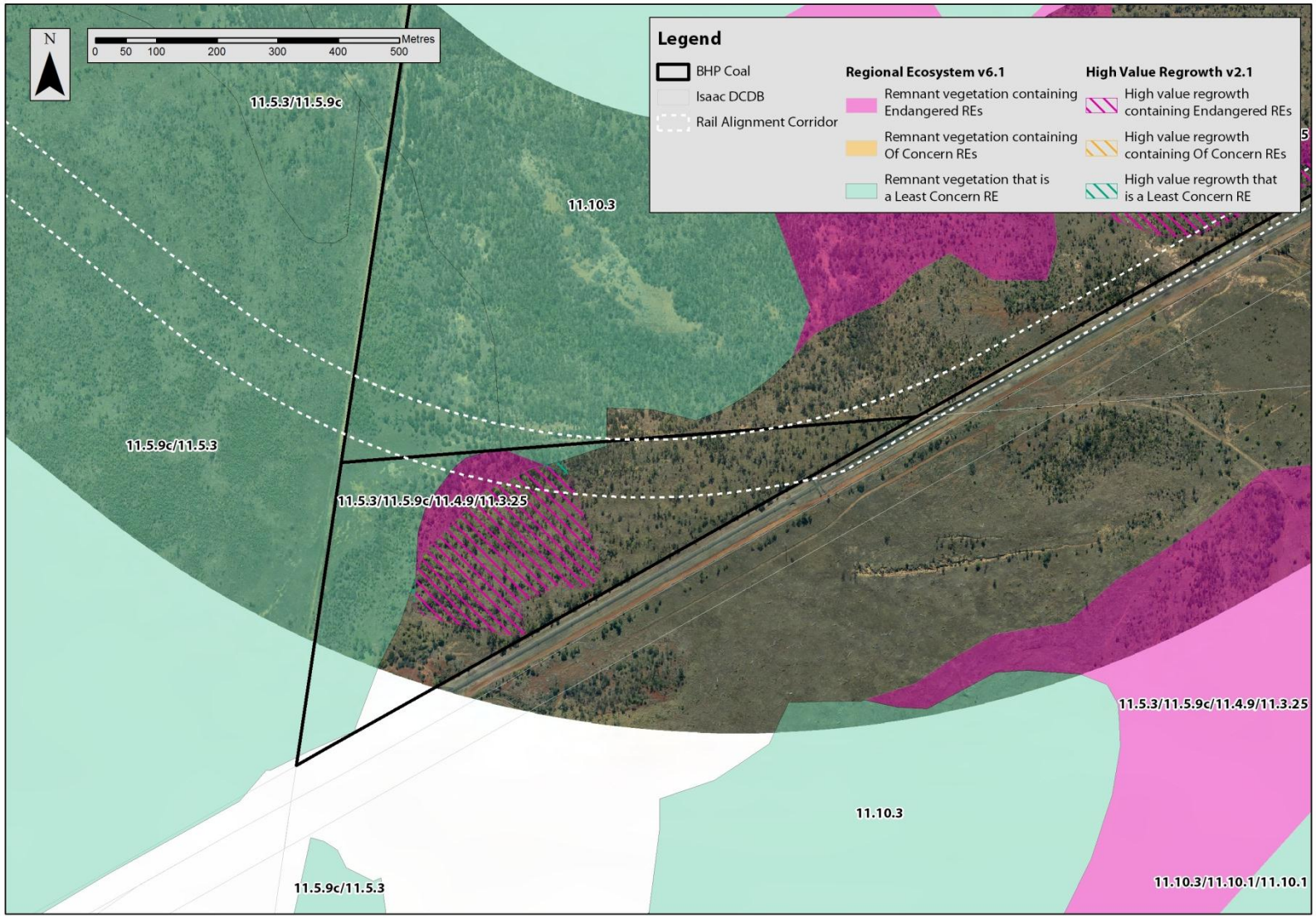
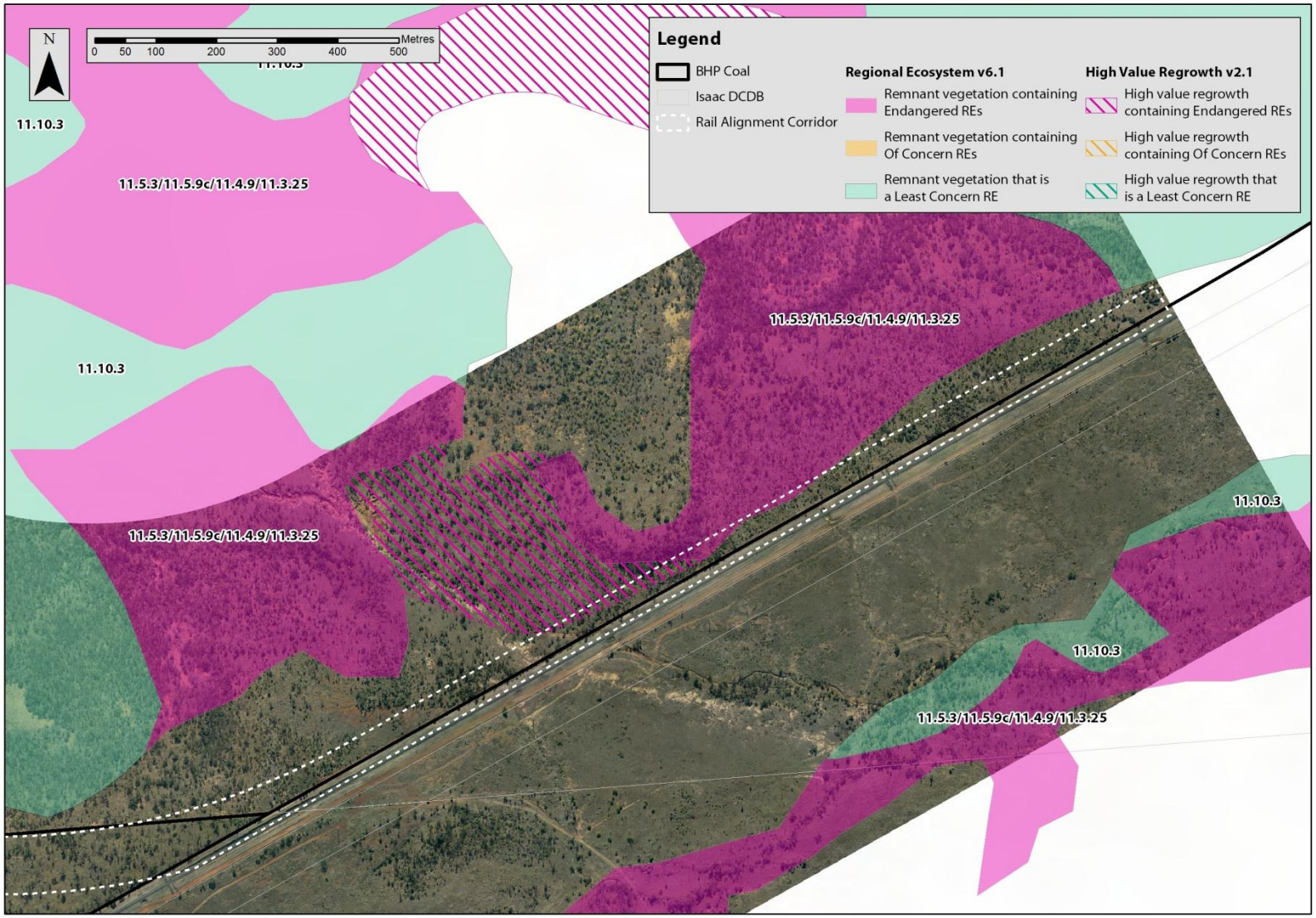


Figure 28: Regional Ecosystem (Area B No Changes Proposed)



12. Appendices

Appendix A

H & S Dahl

Appendix B

H & T Jones

Appendix C

T Jones

Appendix D

Rugby Run

Appendix A

H&S Dahl

H&S Dahl - Vegetation Transect I

Site No.	1	**Recorder:**	David Havill / Steve Reeves	**Day/Date:**	2/9/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	H & S Dahl (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	16m	10 – 20m	S
T2	7m	4 – 10m	S
T3			
S1	2m	1 – 3m	VS
S2			
G	0.6m	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	7577378.57	N	543610.57	
End point	Zone **5 5** E	7577350.52	N	543515.59	

Interval (metres)	Intercept	Str.	Height	*Species*	Common Name
T1 Transect Intercept					
0 – 7.2m	7.2m	T1	9.7m	*Acacia cambagei*	Stinking Wattle
9.9 – 11.5m	1.6m	T2	6.7m	*Terminalia oblongata*	Yellowwood
11.5 – 13.5m	2.0m	T2	4.5m	*Acacia cambagei*	Stinking Wattle
14.3 – 18m	3.7m	T2	6.1m	*Acacia cambagei*	Stinking Wattle
21.6 – 28m	6.4m	T1	10.3m	*Acacia cambagei*	Stinking Wattle
37.1 – 45.6m	8.5m	T1	20.6m	*Acacia cambagei*	Stinking Wattle
45.6 – 51.5m	5.9m	T1	11.5m	*Acacia cambagei*	Stinking wattle
68.2 – 72.4m	4.2m	T2	6.8m	*Acacia cambagei*	Stinking wattle

Interval (metres)	Intercept	Str.	Height	*Species*	Common Name
94 - 100	6.0m	T1	11.4m	*Acacia Cambagei*	Stinking Wattle
Shrub Transect Intercept					
9 – 9.9m	0.9m	S	1.7m	*Eremophila mitchellii*	False Sandlewood
16.0 – 17.4m	1.4m	S	1.5m	*Terminalia oblongata*	Yellowwood
Ground Transect Intercept					
0-11.6m	11.6m	G	0..5m	*Pennisetum ciliare*	Buffel Grass
11.6-21.7m	10.1m	G	0.5m	*Astrebla squarrosa*	Bull Mitchell Grass
21.7-23.4m	1.7m	G	0.5m	*Enchylaena tomentosa*	Ruby Salt Bush
23.4-31.2m	7.8m	G	0.5m	*Astrela squarrosa*	Bull Mitchell Grass
31.2-33.3m	2.1m	G	0.5m	*Panicum decompositum*	Native Millet
33.3-35.5m	2.2m	G	0.5m	*Bare Earth*	Bare Earth
35.5-41m	5.5m	G	0.5m	*Astrebla squarrosa*	Bull Mitchell Grass
41-45m	4m	G	0.5m	*Panicum decompositum*	Native Millet
45-46.1m	1.1m	G	0.5m	*Cynodon dactylon*	Couch
46.1-47m	0.9m	G	0.5m	*Pennisetum ciliare*	Buffel Grass
47-48.8m	1.8m	G	0.5m	*Cynodon dactylon*	Couch
48.8-50m	1.2m	G	0.5m	*Astrebla squarrosa*	Bull Mitchell Grass

Summary:	
Minimum height of plants included in the transect table:	5.9m
Intercept of EDL 0 - 50m:	26.5m
Intercept of EDL 50 -100m:	7.5m
Measured crown cover % of EDL 0 -100m:	34.0%
Structural formation	Open Forest to Woodland

Conclusions/notes:

- Species representing both regional ecosystems were observed throughout the mapped polygon.
- Remnant polygon to remain as Of Concern status.
- Some evidence of cattle disturbance throughout polygon.
- No changes to current regional ecosystem mapping proposed.

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

Str.	Rel.	Scientific Name	Common Name
E	D	*Acacia cambagei*	Stinking Wattle
T!	D	*Acacia cambagei*	Stinking Wattle
	A	*Terminalia oblongata*	Yellowwood

Str.	Rel.	Scientific Name	Common Name
S	A	*Acacia cambagei*	Stinking Wattle
	A	*Terminalia oblongata*	Yellowwood
		Owenia acidula	Emu Apple
		Eremophila mitchellii	False Sandlewood
G	A	*Cynodon dactylon*	Couch
	A	*Panicum decompositum*	Native Millet
	C	*Astrebla squarrosa*	Bull Mitchell Grass
		Enchylaena tomentosa	Ruby Salt Bush
	D	*Pennisetum ciliare*	Buffel Grass

H&S Dahl - Vegetation Transect 2

Area C

Site No.	2	**Recorder:**	David Havill / Steve Reeves	**Day/Date:**	2/9/12
Purpose	Regional Ecosystem & Remnant Check				
Locality:	H & S Dahl (Isaac Regional Council)				

Vegetation Structure

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11m	8-14m	S/M
T2	5m	4-7m	S
T3			
S1	2m	1-3m	VS
S2			
G	0 – 0.5m	0.3m	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	7576735.78	N	547738.82		
End point	Zone	**5**	**5**	E	7576741.66	N	547642.23		

Interval (metres)	Intercept	Str.	Height	*Species*	Common Name
T1 Transect Intercept					
0-10.4m	10.4m	T1	18.0m	*Eucalyptus coolabah*	Coolabah
10.4 – 13.0m	2.6m	T2	4.6m	*Eucalyptus coolabah*	Coolabah
22.5 – 31.9m	9.4m	T1	10.8m	*Eucalyptus coolabah*	Coolabah
28.3 – 31.4	3.1m	T2	6.1m	*Eucalyptus coolabah*	Coolabah
41.1 – 52.1m	11.0m	T1	11.8m	*Eucalyptus coolabah*	Coolabah
53.4 -56m	2.6m	T2	6.0m	*Eucalyptus Coolabah*	Coolabah
83.4 – 91.8	8.4m	T1	12.1m	*Eucalyptus coolabah*	Coolabah

Interval (metres)	Intercept	Str.	Height	*Species*	Common Name
Groundlayer Transect Intercept					
0 – 5.9m	5.9m	G	0.5m	*Cyperus sp.*	Sedge
5.9 – 7m	1.1m	G	0.5m	*Cynodon dactylon*	Couch
7 – 7.3m	0.3m	G	0.5m	*Astrebla squarrosa*	Bull Mitchell Grass
7.3 – 7.9m	0.6m	G	0.5m	*Cyperus sp.*	Sedge
7.9 – 9.0m	1.1m	G	0.5m	*Cynodon dactylon*	Couch
9.0 – 10.2m	1.2m	G	0.5m	*Cyperus sp.*	Sedge
10.2 – 12.0m	1.8m	G	0.5m	*Cynodon dactylon*	Couch
12.0 – 13.0m	1.0m	G	0.5m	*Cyperus sp.*	Sesbane Pea
13.0 – 15.8m	2.8m	G	0.5m	*Panicum decompositum*	Native Millet
15.8 – 18.5m	2.7m	G	0.5m	*Cynodon dactylon*	Couch
18.5 – 20.7m	2.2m	G	0.5m	*Panicum decompositum*	Native Millet
20.7 – 21.7m	1.0m	G	0.5m	*Cynodon dactylon*	Couch
21.7 – 25.8m	4.1m	G	0.5m	*Panicum decompositum*	Native Millet
25.8 – 29.3m	3.5m	G	0.5m	*Cynodon dactylon*	Couch
29.3 – 31.7m	2.4m	G	0.5m	*Cyperus sp.*	Sedge
31.7 – 36.1m	4.4m	G	0.5m	*Panicum decompositum*	Native Millet
36.1 – 36.7m	0.6m	G	0.5m	*Cyperus sp.*	Sedge
36.7 – 42.4m	5.7m	G	0.5m	*Astrebla squarrosa*	Bull Mitchell Grass
42.4 – 50m	7.6m	G	0.5m	*Cyperus sp.*	Sedge

Summary:	
Minimum height of plants included in the transect table:	5.9m
Intercept of EDL 0 - 50m:	26.5m
Intercept of EDL 50 -100m:	7.5m
Measured crown cover % of EDL 0 -100m:	34.0%
Structural formation	Open Forest to Woodland

Conclusions/notes:

- Species representing both regional ecosystems were observed throughout the mapped polygon.
- Remnant polygon to remain as Of Concern status.
- Some evidence of cattle disturbance throughout polygon.
- No changes to current regional ecosystem mapping proposed.

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

Str.	Rel.	Scientific Name	Common Name
E	D	*Acacia cambagei*	Stinking Wattle
T1	D	*Acacia cambagei*	Stinking Wattle
	A	*Terminalia oblongata*	Yellowwood
S	A	*Acacia cambagei*	Stinking Wattle
	A	*Terminalia oblongata*	Yellowwood
		Owenia acidula	Emu Apple
		Eremophila mitchellii	False Sandlewood
G	A	*Cynodon dactylon*	Couch
	A	*Panicum decompositum*	Native Millet
	C	*Astrebla squarrosa*	Bull Mitchell Grass
		Enchylaena tomentosa	Ruby Salt Bush
	D	*Pennisetum ciliare*	Buffel Grass

H&S Dahl - Quaternary Site 1

High Value Regrowth containing Of Concern Regional Ecosystems

Dominance (D,CD,O,A)		Species
T1 / T2		*Acacia cambagei*
		Terminalia oblongata
		Lysiphyllum carronii
		Acacia harpophylla
Ground / Shrub	A	*Panicum decompositum*
	D	*Pennisetum ciliare*
	A	*Acacia harpophylla*
Notes : Ground layer dominated by Pennisetum ciliare. Species appear consistent with re 11.4.6		

H&S Dahl - Quaternary Site 2

High Value Regrowth containing Endangered Regional Ecosystems

Dominance (D,CD,O,A)		Species
T1 / T2	D	*Eucalyptus coolabah*
	A	*Terminalia oblongata*
	A	*Geijera parviflora*
	A	*Acacia harpophylla*
Ground / Shrub	A	*Xanthium pungens*
	A	*Leptochloa digitata*
	A	*Panicum decompositum*
	D	*Pennisetum ciliare*
	A	*Meuhlenbeckia florulenta*
	A	*Parthenium hysterophorus*
	A	*Evolvulus alsinoides*
	A	*Acacia harpophylla*
	A	*Dactyloctenium radulans*
Notes : Ground layer dominated by Pennisetum ciliare. Species appear		

Appendix B

H&T Jones

H&T Jones - Quaternary Site I

Endangered western end

T1 Layer	D	*Eucalyptus coolibah*
T2 Layer	A	*Acacia cambagei*
		Eucalyptus coolibah
Shrub Layer	O	*Meuhlenbeckia florulenta*
	O	*Eremophila mitchelli*
Ground	CD	*Pennisetum ciliare*
	CD	*Dichanthium sericeum*
	A	*Themeda triandra*
	O	*Aristida latifolia*
	O	*Astrebla sp.*
	A	*Heteropogon contortus*

Notes:

- Coolibah woodland on alluvial plains. Native grass and exotic understorey.
- *Acacia harpophylla* not present in area.
- Some hollows and nests within larger coolibah specimens.
- Area very open with very sparse T2 and shrub layer.

H&T Jones - Quaternary Site 2

Endangered Brigalow eastern Boundary

T1 Layer	CD	*Acacia harpophylla*
	CD	*Acacia cambagei*
T2 Layer	A	*Acacia cambagei*
		Eremophila mitchellii
Shrub Layer	O	*Lysiphyllum carronii*
	O	*Eremophila mitchelli*
Ground	CD	*Pennisetum ciliare*
	O	*Aristida latifolia*
	A	*Themeda triandra*
	A	*Eriocereus martinii*
	O	*Astrebla sp.*
	A	*Heteropogon contortus*

Notes:

- *Acacia harpophylla* present in area highly disturbed
- *Pennisetum ciliare* dense within ground layer.
- Very thin strip of vegetation.
- Lots of dead standing timber
- Area very open with very sparse T2 and shrub layer.

Appendix C

T Jones

T Jones – Quaternary Site 1

Endangered Western End

T1 Layer		*ABSENT*
T2 Layer		*ABSENT*
Shrub Layer	O	*Lysiphyllum carronii*
	O	*Eremophila mitchelli*
	A	*Acacia harpophylla*
Ground	CD	*Pennisetum ciliare*
	O	*Parthenium hysterophorus*
	CD	*Themeda triandra*
	A	*Eriocereus martinii*
	O	*Astrebla sp.*
	A	*Heteropogon contortus*
Notes: *Acacia harpophylla* present in shrub layer. Highly disturbed *Pennisetum ciliare* dense within ground layer. No remnant vegetation within area. Remnant vegetation to the south of the alignment. Area very open with very sparse T2 and shrub layer.		

T Jones – Quaternary Site 2

Endangered High value regrowth western End

T1 Layer		*Absent*
T2 Layer		*Absent*
Shrub Layer	O	*Acacia harpophylla*
	A	*Sesbania cannabina*
Ground	CD	*Pennisetum ciliare*
	O	*Parthenium hysterophorus*
	O	*Dichanthium sericeum*

	A	*Aristida latifolia*
	CD	*Sorghum halapense*
Notes • No regrowth observed in proximity to area. • Area appears to have been cleared and cultivated. • Exotic weeds such as *Sorghum halapense, Pennisetum ciliare and Parthenium hysterophorus.* • Very little regrowth observed.		

T Jones – Quaternary Site 3

Second patch of regrowth endangered high value

T1 Layer	-	*Absent*
T2 Layer	-	*Absent*
Shrub Layer	O	*Acacia harpophylla*
	A	*Sesbania cannabina*
Ground	CD	*Pennisetum ciliare*
	O	*Parthenium hysterophorus*
	CD	*Sorghum halapense*
	O	*Dichanthium sericeum*
	A	*Aristida latifolia*
Notes No regrowth observed in proximity to area. Area appears to have been cleared and cultivated. Exotic weeds such as *Sorghum halapense, Pennisetum ciliare* and *Parthenium hysterophorus.* Very little regrowth observed.		

T Jones – Quaternary Site 4

High value endangered regrowth vegetation

T1 Layer	-	*Absent*
T2 Layer	-	*Absent*
Shrub Layer	O	*Acacia harpophylla*
	A	*Sesbania cannabina*
Ground	CD	*Pennisetum ciliare*
	O	*Parthenium hysterophorus*
	CD	*Sorghum halapense*
	O	*Dichanthium sericeum*
	A	*Aristida latifolia*
Notes • No regrowth observed in proximity to area. • Area appears to have been cleared and cultivated. • Exotic weeds such as *Sorghum halapense, Pennisetum ciliare and Parthenium hysterophorus.* • Very little regrowth observed.		

Appendix D

Rugby Run

Rugby Run – Quaternary Site 1

Area A

Dominance (D,CD,O,A)		Species
T1 Layer	CD	*Acacia harpophylla*
	CD	*Acacia cambagei*
	A	*Casuarina cristata*
	A	*Eucalyptus coolabah*
T2 Layer	C	*Eremophila mitchellii*
	A	*Acacia harpophylla*
Shrub Layer	A	*Geijera parviflora*
	A	*Carissa ovata*
Ground	A	*Carissa ovata*
	D	*Pennisetum ciliare*
	A	*Cenchrus echinatus*
	A	*Chloris virgata*

Notes :

- *Acacia harpophylla* (Brigalow) and *Acacia cambagei* (Gidgee) are co-dominant species.
- Vegetation structure and species composition consistent with Endangered Regional ecosystem
- Heavily grazed.

Rugby Run – Quaternary Site 2

Area B

Dominance (D,CD,O,A)		Species
T1 Layer	A	*Eucalyptus melanophloia*
	D	*Eucalyptus populnea*
	A	*Corymbia dallachiana*
T2 Layer	D	*Eucalyptus populnea*
	A	*Alphitonia excels*
	A	*Acacia excelsa*

Ground	A	*Capparis lasiantha*
	A	*Sida cordifolia*
	A	*Cenchrus echinatus*
	A	*Dactyloctenium radulans*
	O	*Leptochloa digitata*
	O	*Panicum decompositum*
	O	*Sporobolus caroli*

Notes :

- *Eucalyptus populnea* dominant species.
- Vegetation structure and species composition consistent with Regional Ecosystem Mapping
- Heavily grazed.

Rugby Run – Quaternary Site 3

Area C

T1 Layer	CD	*Eucalyptus populnea*
	CD	*Corymbia clarksonia*
T2 Layer	A	*Acacia excelsa*
	O	*Petalsotigma pubescens*
Shrub Layer	A	*Petalostigma pubescens*
	O	*Alphitonia excelsa*
	O	*Archidendropsis basaltica*
	A	*Eremophila mitchellii*
Ground	CD	*Pennisetum ciliare*
	A	*Aristida latifolia*
	CD	*Themeda triandra*
	O	*Heteropogon contortus*

Notes:

- Open woodland/woodland highly disturbed due to grazing.
- Areas of erosion
- Large quantity of dead timber standing and on the ground.
- Shrub layer dense in spots.
- Grass layer mix of exotic and native grasses

Rugby Run – Quaternary Site 4

Area D

T1 Layer	D	*Eucalyptus populnea*
	A	*Corymbia clarksonia*
T2 Layer	A	*Acacia excelsa*
	A	*Petalsotigma pubescens*
Shrub Layer	O	*Petalostigma pubescens*
	A	*Alphitonia excelsa*
	A	*Archidendropsis basaltica*
	O	*Eremophila mitchellii*
Ground	D	*Pennisetum ciliare*
	A	*Aristida latifolia*
	A	*Themeda triandra*
	A	*Heteropogon contortus*

Notes:

- Open woodland/woodland highly disturbed due to grazing.
- Areas of erosion
- Large quantity of dead timber standing and on the ground.
- Shrub layer dense in spots.
- Grass layer mix of exotic and native grasses

Rugby Run – Quaternary Site 5

Area E

T1 Layer	D	*Eucalyptus crebra*
	A	*Eucalyptus cambageana*
	A	*Corymbia intermedia*
	O	*Eucalyptus melanophloia*

	A	*Eucalyptus exerta*
T2 Layer	-	*Absent*
Shrub Layer	CD	*Petalostigma pubescens*
	O	*Acacia excelsa*
	CD	*Alphitonia excelsa*
	A	*Capparis lassiantha*
Ground	CD	*Themeda triandra*
	A	*Aristida sp.*
	O	*Chloris virgata*
	O	*Chloris truncata*
	CD	*Panicum decompositum*
	A	*Pennisetum ciliare*
Notes • Open forest / Woodland • Native grass understorey • Heavily grazed, High levels of disturbance.		

Rugby Run - Quaternary Site 6

Area F

T1 Layer	D	*Eucalyptus crebra*
	A	*Eucalyptus cambageana*
	A	*Corymbia intermedia*
	O	*Eucalyptus melanophloia*
	O	*Corymbia clarksonia*
T2 Layer	A	*Eucalyptus exerta*
Shrub Layer	CD	*Petalostigma pubescens*
	O	*Acacia excelsa*
	CD	*Alphitonia excelsa*
	A	*Capparis lassiantha*

Ground	CD	*Themeda triandra*
	A	*Aristida sp.*
	O	*Chloris virgata*
	O	*Chloris truncata*
	CD	*Panicum decompositum*
	A	*Pennisetum ciliare*

Notes

- Open forest / Woodland
- Native grass understorey
- Heavily grazed, High levels of disturbance.

environmental management

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Carmichael Coal Rail Project
NCA Vegetation Clearing Permit

SP2 Rail –
Laydown & Temporary Works Areas

Adani Mining Pty Ltd
6396
October 2012

Document Control

Title	Carmichael Coal Rail Project – NCA Vegetation Clearing Permit – SP2 Temporary Works Areas
Job Number	**6396**
Client	Adani Mining Pty Ltd

Document Issue

Issue	Date	Prepared By	Checked By
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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 to prepare this vegetation clearing permit application to enable clearing for the Carmichael Coal Rail Project (SP2 section – Refer to Plan 1). This report supports the *Nature Conservation Act, 1992* (NCA) Clearing Permit application.

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. This report is prepared to accompany the EIS and seek approval to clear 'least concern' plants along the rail corridor for temporary works associated with construction.

The rail line is divided into two (2) project components as follows:

- **Separable Portion 1 (SP1)** – known as 'west rail' which traverses approximately 120km from the Mine site east towards Moranbah; and

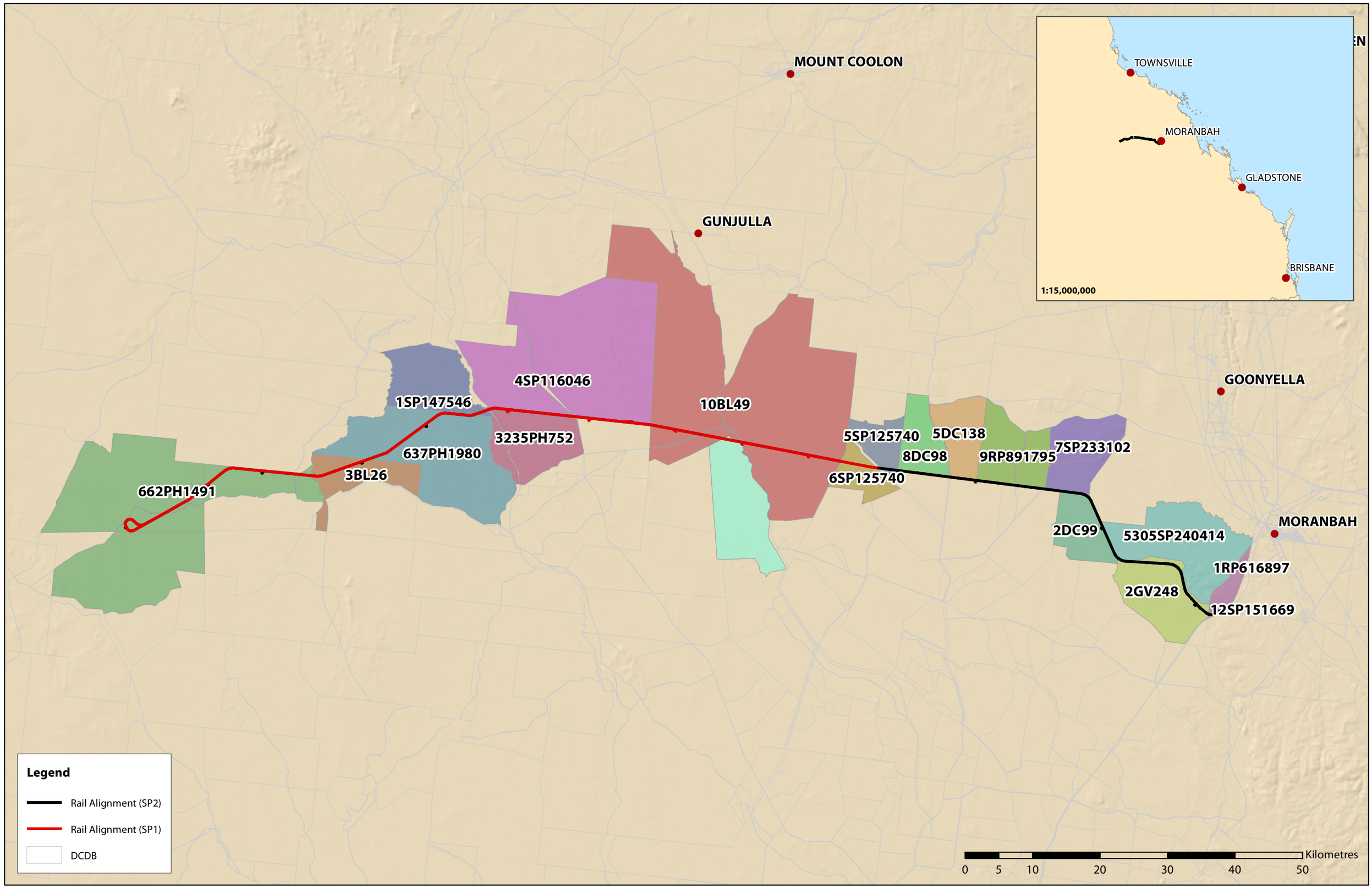
- **Separable Portion 2 (SP2)** – known as 'east rail' which connects 'west rail' with the existing Goonyella rail system and provides access to Dalrymple Bay and Hay Point coal terminals.

This report is prepared for clearing associated with SP2 of the rail line, and in particular the temporary works associated with the rail construction including laydown areas, construction camps, turning and ballast 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 SP2 laydown and temporary works areas is provided.



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Carmichael Coal Rail Project

Property Overview (SP1 & SP2)

N

SHG File | 6396
Date | 24/10/2012
Scale | 1:500,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

Client | Adani Mining Pty Ltd
Project | Carmichael Coal Rail Project
Source | DCBD (Derm 2012)

Plan 1

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 the laydown and temporary works areas associated with the SP1 section of the Rail Corridor. The clearing for temporary works 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 temporary works 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 plats 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 (Refer to *Plan 1 Rail project overview SP2*).

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 laydown and temporary works areas are required to facilitate the construction of the rail. This associated infrastructure includes:

- Construction Camp – 1
- Laydown Area Turning Circle – 16
- Laydown Area – Track – 10
- Laydown Area Bridge – 7
- Ballast Stockpile – 1

Refer to **Appendix B** for a location plan of the laydown and temporary works areas. Example drawings are presented in **Appendix C.**

Table 1: Application Summary

Applicant	Adani Mining Pty Ltd
Location	**SP2 Rail Corridor** - associated infrastructure, including laydown areas, batching plants and construction camps
RPD	• Lot 5 SP125740 • Lot 8 DC98 • Lot 5 DC138 • Lot 9 RP891795 • Lot 7 SP233102 • Lot 2 DC99 • Lot 2 GV248 • Lot 1 RP616897
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 **Appendix A** – Tenure Plan for further information.

4. Clearing Extent & Methodology

4.1. Clearing extent

Clearing for construction of the rail corridor and associated infrastructure (e.g. laydown areas, batching plants and construction camps) is required along the length of the SP2 rail corridor. Clearing triggers a permit under the Nature Conservation Act (1992) within the following properties:

- Lot 5 SP125740
- Lot 8 DC98
- Lot 5 DC138
- Lot 9 RP891795
- Lot 7 SP233102
- Lot 2 DC99
- Lot 2 GV248
- Lot 1 RP616897

The proposed clearing encompasses the areas of the various laydown and temporary works areas along the length of the SP2 rail alignment.

4.2. 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).

4.3. Fauna Spotter

A fauna spotter will be present throughout the clearing process. The fauna spotter will check proposed clearing areas 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.

4.4. 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 footprints. 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 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 SP125740
- Lot 8 DC98
- Lot 5 DC138
- Lot 9 RP891795
- Lot 7 SP233102
- Lot 2 DC99
- Lot 2 GV248
- Lot 1 RP616897

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 laydown and temporary works areas 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.

6. Temporary Works – Clearing for Laydown Areas, Batching Plants and Construction Camps

6.1. Lot 5 SP125740 Laydown Area Track (I) @ 4.5 Ha = 4.5Ha

- 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. Calculations based on 3 4mx5m quadrats.

Table 2: Species Audit of the Laydown Areas (Track) within Lot 5 on SP125740

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Aristida latifolia*	Feathertop Wiregrass	Least Concern	Not Listed	4050m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	1350m2
	A	*Cyperus bifax*		Least Concern	Not Listed	1350m2

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

6.2. Lot 5 SP125740 Turning Circle (1) @1 Ha = 1Ha

- 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. Calculations based on 3 4mx5m quadrats.

Table 3: Species Audit of the Turning Circle Area within Lot 5 on SP125740

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Aristida latifolia*	Feathertop Wiregrass	Least Concern	Not Listed	900m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	300m2
	A	*Cyperus bifax*		Least Concern	Not Listed	300m2

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

6.3. Lot 8 DC98 Laydown Area Track (1) @ 4.5 Ha = 4.5Ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (56.2%) and bare ground (15.56%) These areas are heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 9 4mx5m quadrats.

Table 4: Species Audit of the Laydown Area (Track) for Lot 8 on DC98

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	

		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	of native ground layer species was generally recorded as described below.
Forbs and grasses	A	*Aristida latifolia*	Feathertop Wiregrass	Least Concern	Not Listed	3600m2
	A	*Dichanthium*	Queensland	Least Concern	Not Listed	270m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	495m2
	A	*Sporobolus*	Brigalow Grass	Least Concern	Not Listed	495m2

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

6.4. Lot 8 DC98 Turning Circle (2) @1 Ha = 2 Ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (56.2%) and bare ground (15.56%) These areas are heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 9 4mx5m quadrats.

Table 5: Species Audit of the Turning Circle Areas (2) within Lot 8 on DC98

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Aristida latifolia*	Feathertop Wiregrass	Least Concern	Not Listed	1600m2
	A	*Dichanthium*	Queensland	Least Concern	Not Listed	120m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	220m2
	A	*Sporobolus*	Brigalow Grass	Least Concern	Not Listed	220m2

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

6.5. Lot 5 DC138 Laydown Area Track (1) and Laydown Area Turning Circle (1)

(No land Owner Access Granted)

Table 6: Species Audit of the Laydown Area (Track) and Laydown Area Turning Circle within Lot 5 on DC138

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*To be determined*				*To be determined*
Forbs and grasses		*To be determined*				*To be determined*

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

6.6. Lot 9 RP891795 Laydown Area Bridge (1), Laydown Area Track (1) and Laydown Area Turning Circle (2)

(No land Owner Access Granted)

Table 7: Species Audit of the Laydown Area (Bridge), Laydown Area (Track) and Laydown Areas (Turning Circles) within Lot 9 on RP891795

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*To be determined*				*To be determined*

Forbs and grasses		*To be determined*				*To be determined*

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

6.7. Lot 7 SP233102 Laydown Area Bridge (I) @ 6 Ha = 6Ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (90%) and in these areas heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 13 4mx5m quadrats.

Table 8: Species Audit of the Laydown Area (Bridge) within Lot 7 on SP233102

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Dichanthium sericeum*	Queensland Bluegrass	Least Concern	Not Listed	750m2
	A	*Aristida latifolia*	Feathertop Wiregrass	Least Concern	Not Listed	750m2

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

6.8. Lot 7 SP233102 Laydown Area Track (I) @ 4.5 Ha = 4.5Ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (90%) and in these areas heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 13 4mx5m quadrats.

Table 9: Species Audit of the Laydown Area (Track) within Lot 7 on SP233102

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Dichanthium sericeum*	Queensland Bluegrass	Least Concern	Not Listed	563m2
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	563m2

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

6.9. Lot 7 SP233102 Laydown Area Turning Circle (2) @ 1 Ha = 2Ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (90%) and in these areas heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 13 4mx5m quadrats.

Table 10: Species Audit of the Laydown Area (Turning Circles) within Lot 7 on SP233102

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	

Forbs and grasses	A	*Dichanthium sericeum*	Queensland Bluegrass	Least Concern	Not Listed	250m2
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	250m2

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

6.10. Lot 7 SP233102 Camp (I) @ 9.3 Ha = 9.3ha

- Groundlayer in non-remnant areas dominated by *Pennisetum ciliare* (Buffel Grass) (90%) and in these areas heavily grazed and disturbed. These areas have historically been cleared for cattle pastures or cropping. Calculations based on 13 4mx5m quadrats.

Table 11: Species Audit of the Construction Camp Area within Lot 7 on SP233102

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not	
		Capparis	Wait-A-While	Least Concern	Not	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Dichanthium sericeum*	Queensland Bluegrass	Least Concern	Not Listed	1163m2
	A	*Aristida*	Feathertop	Least Concern	Not	1163m2

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

6.11. Lot 2 DC99 Laydown Area Track (2) and Laydown Area Turning Circle (3)

(No land Owner Access Granted)

Table 12: Species Audit of the Laydown Areas (Track) and Laydown Areas (Turning Circle) within Lot 2 on DC99

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*To be determined*				*To be determined*
Forbs and grasses		*To be determined*				*To be determined*

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

6.12. Lot 2 GV248 Laydown Area Bridge (4) @ 6 Ha = 24Ha

- 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.

Table 13: Species Audit of the Turning Circle Areas (2) within Lot 8 on DC98

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	

		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	general density analysis of native ground layer species was generally recorded as described below.
Forbs and grasses	A	*Heteropogon contortus*	Black Speargrass	Least Concern	Not Listed	43200m2
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	6480m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	1920m2
	A	*Themeda triandra*	Kangaroo Grass	Least Concern	Not Listed	30480m2
	A	*Sporobolus caroli*	Fairy Grass	Least Concern	Not Listed	2400m2

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

6.13. Lot 2 GV248 Laydown Area Track (3) @ 4.5 Ha = 13.5Ha

- 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

Table 14: Species Audit of the Laydown Areas (Track) within Lot 2 on GV248

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Heteropogon contortus*	Black Speargrass	Least Concern	Not Listed	24300m2
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	3645m2
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	1080m2

	A	*Themeda triandra*	Kangaroo Grass	Least Concern	Not Listed	17145m2
	A	*Sporobolus caroli*	Fairy Grass	Least Concern	Not Listed	1350m2

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

6.14. Lot 2 GV248 Laydown Area Turning Circle (4) @ 1 Ha & 1 @6.7ha = 10.7 Ha

- 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

Table 15: Species Audit of the Laydown Areas (Turning Circle) within Lot 2 on GV248

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M^2 of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Heteropogon contortus*	Black Speargrass	Least Concern	Not Listed	18% (12060m^2)
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	2.7% (1809m^2)
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	0.8% (536m^2)
	A	*Themeda triandra*	Kangaroo Grass	Least Concern	Not Listed	12.7% (8509m^2)
	A	*Sporobolus caroli*	Fairy Grass	Least Concern	Not Listed	1.0% (670m^2)

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

6.15. Lot 2 GV248 Ballast Area (28.0128ha)

- 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.

Table 16: Species Audit of the Ballast Area in Lot 2 on GV248

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M² of vegetation
Tree and Shrubs		*Acacia harpophylla*	Brigalow	Least Concern	Not Listed	Species lists within this non remnant location were recorded during field survey; however no tree and shrub species density counts has been undertaken. Flied data to support this application will be provided. It is noted that general density analysis of native ground layer species was generally recorded as described below.
		Carissa ovata	Currant Bush	Least Concern	Not Listed	
		Capparis lassiantha	Wait-A-While	Least Concern	Not Listed	
		Eremophila mitchellii	False Sandlewood	Least Concern	Not Listed	
Forbs and grasses	A	*Heteropogon contortus*	Black Speargrass	Least Concern	Not Listed	18% (50423m²)
	A	*Aristida latifolia*	Feathertop	Least Concern	Not Listed	2.7% (7563m²)
	A	*Enteropogon*	Curly Windmill	Least Concern	Not Listed	0.8% (560m²)
	A	*Themeda triandra*	Kangaroo Grass	Least Concern	Not Listed	12.7% (35576m²)
	A	*Sporobolus caroli*	Fairy Grass	Least Concern	Not Listed	1.0% (280m²)

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

6.16. Lot 1 RP616897 Laydown Area Bridge (1) (No land Owner Access Granted)

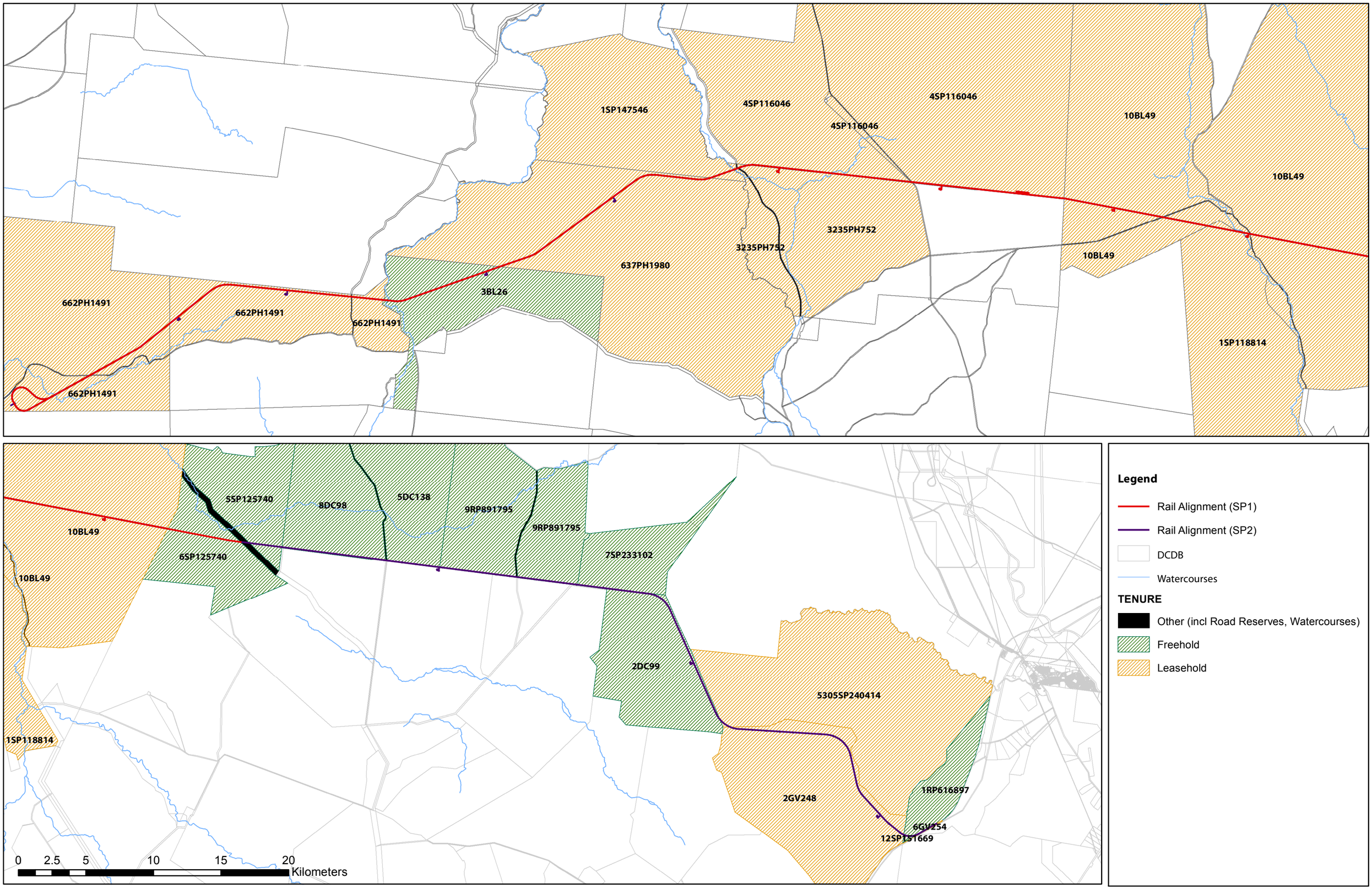
Table 17: Species Audit of the Laydown Area (Bridge) for Lot 1 on RP616897

Str.	Rel. dom.	Scientific Name	Common Name	Conservation Status (NCA92)	EPBC Status	Number or M² of vegetation
Tree and Shrubs		*To be determined*				*To be determined*
Forbs and grasses		*To be determined*				*To be determined*

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

Attachment A

Tenure Plan



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Carmichael Coal Rail Alignment

Tenure Plan

N

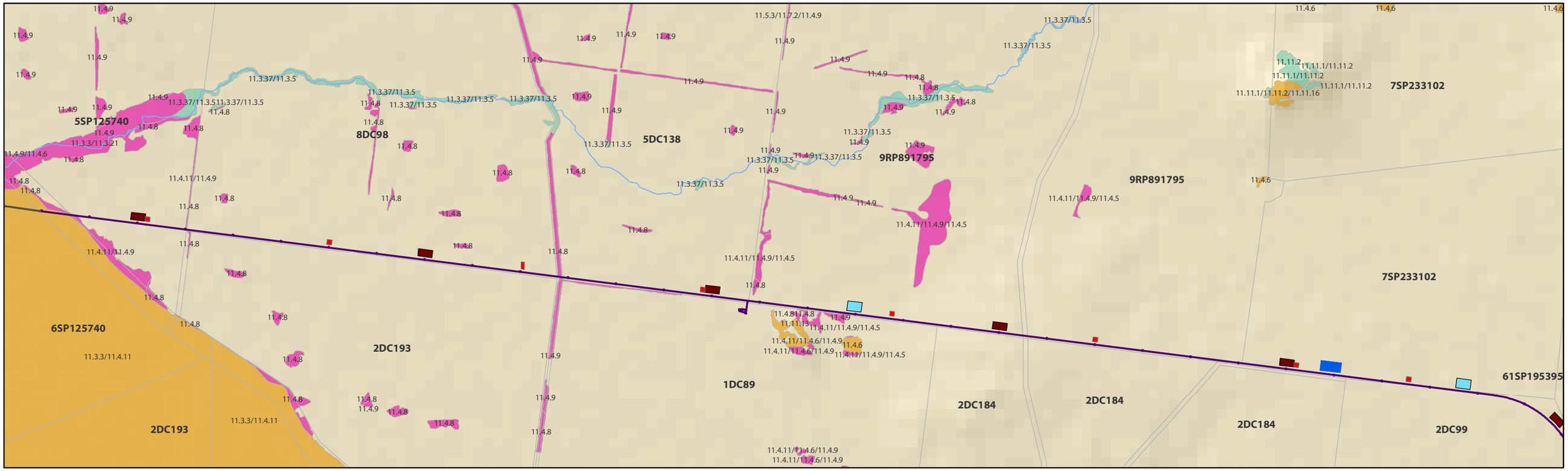
SHG File | 6396
Date | 26/10/2012
Scale | 1:250,000@ A3
Data Information:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

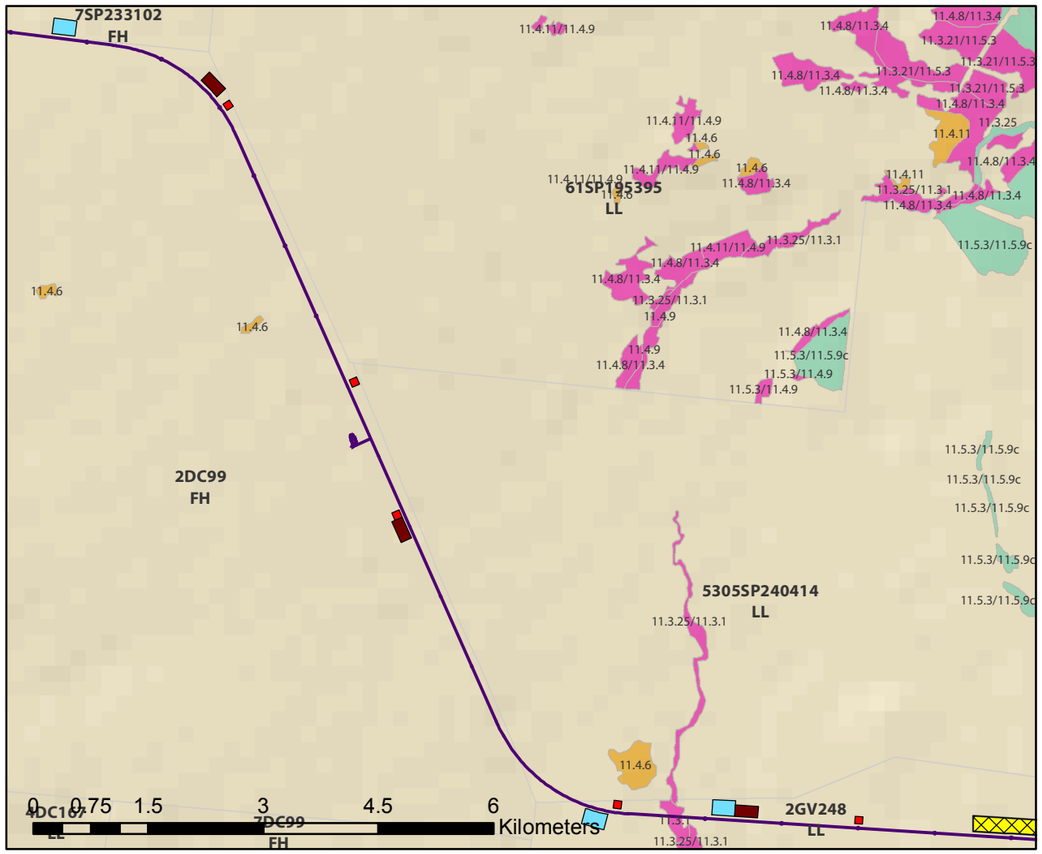
Client | Adani Mining Pty Ltd
Project | Carmichael Coal Rail Project
Source | DCBD (Derm 2012), Aerial (Vetka 2011)

Plan 1

Attachment B

Location of Temporary Works Areas





Legend

- Rail Alignment (SP1)
- Rail Alignment (SP2)
- DCDB
- Watercourses

Regional Ecosystem Mapping v6.1

- Remnant vegetation containing Endangered REs
- Remnant vegetation containing Of Concern REs
- Remnant vegetation that is a Least Concern RE
- Camp Locations
- Laydown Area Turning Circle
- Laydown Area Track
- Laydown Area Facility Area
- Laydown Area Bridge
- Batch Plant
- Ballast Stockpile

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Carmichael Coal Rail Alignment

Laydown Areas in SP2

N

SHG File | 6396
Date | 26/10/2012
Scale | 1:80,000@ A3
Data Infomation:
Universal Transverse Mercator
GDA 1994 MGA Zone 55

Client | Adani Mining Pty Ltd
Project | Carmichael Coal Rail Project
Source | DCBD (Derm 2012), Aerial (Vetka 2011)

Plan 2

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Carmichael Coal Rail Alignment

Laydown Areas in SP1

N

SHG File | 6396
Date | 26/10/2012
Scale | 1:70,000@ A3
Data Information: Universal Transverse Mercator GDA 1994 MGA Zone 55

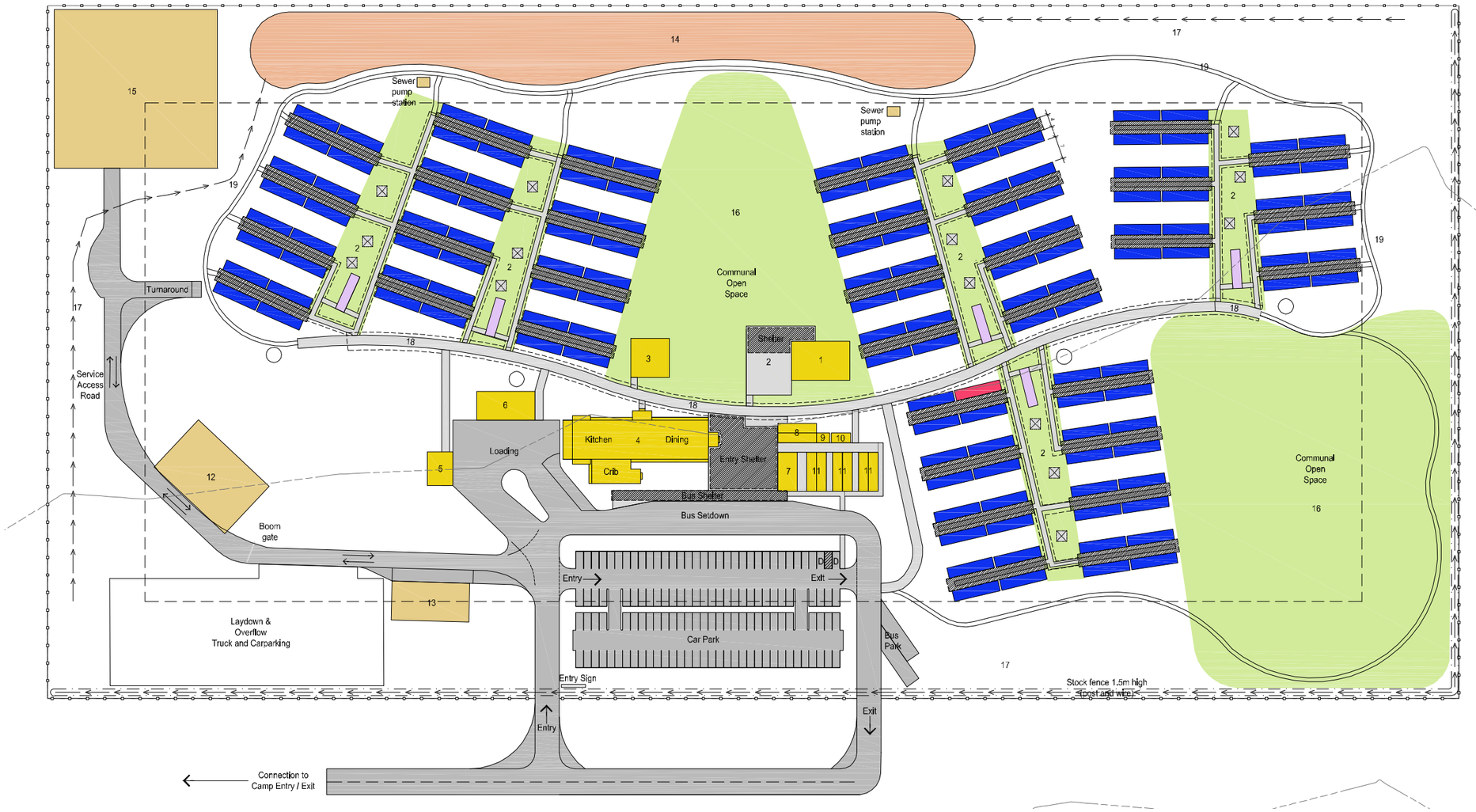
Client | Adani Mining Pty Ltd
Project | Carmichael Coal Rail Project
Source | DCBD (Derm 2012), Aerial (Vetka 2011)

Plan 3

Attachment C

Construction/Layout Plans

RAIL CAMP ONE
PLAN



LEGEND

- COMMUNAL BUILDING
- ACCOMMODATION UNIT
- DISABLED UNIT
- LAUNDRY
- PATH
- INFRASTRUCTURE
- COMMUNAL OPEN SPACE
- DETENTION BASIN

1 - Recreation Centre/ Wet Mess IT & Telephone
2 - BBQ & Shelter Areas
3 - Gym
4 - Kitchen/Dining
5 - Waste
6 - Maintenance / Linen Store
7 - Office
8 - Ablution M&F
9 - Ablution (Disabled)
10 - First Aid
11 - Lockers
12 - Water Treatment Plant
13 - Generator
14 - Detention Basin
15 - Sewerage Treatment Plant
16 - Communal Open Space
17 - Fire Break (30M wide)
18 - Central Path (3M wide) with Freestanding Awning
19 - Walking Track / Maintenance (1.2M - 2.5M wide)

Fire Tank Water
Catch Drain
Perimeter Bund
Perimeter Fence

ACCOMMODATION UNITS	405
DISABLED UNITS	2
CAR PARKING	125
DISABLED CARPARKING	2
BUS PARKING	2
EFFLUENT DISPOSAL (based on 100m² per person)	4 ha
DETENTION BASIN	.42ha
TOTAL OPEN SPACE (including firebreak)	5.58 ha
TOTAL SITE AREA	9.38 ha

0 10 20 30 40 50 100
Scale 1:1500 @ A3 - Dimensions in metres

Cardno Shaping the Future

landscape architecture
urban design
environmental management

ADANI MINING Pty Ltd **RAIL CAMP 1**

DATE	DRAWING NO	ISSUE
22.10.12	SP126801 -RC01-02	B