



Impact Assessment of Clearing and Matters of NES report

**Northam-Pithara Road Widening 129.12 - 148.8 and 150.85 -
152.25 SLK**

August 2015

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CONTENTS

SUMMARY	4
1. ASSESSMENT SCOPE	8
2. PROJECT DESCRIPTION.....	8
2.1 PROJECT LOCATION.....	9
3. METHODOLOGY.....	13
4. CLEARING OF NATIVE VEGETATION	13
4.1 MEASURES TO AVOIDANCE AND MINIMISE CLEARING:	13
4.2 ALTERNATIVE MEASURES	13
4.3 EXISTING VEGETATION DETAILS.....	14
4.4 ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES.....	16
5. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE	28
6. SUMMARY OF BIOLOGICAL SURVEYS.....	34
7. STAKEHOLDER CONSULTATION.....	35
7.1 INDIGENOUS CONSULTATION	35
8. SOCIAL AND ECONOMIC BENEFITS.....	35
9. VEGETATION MANAGEMENT	36
10. REFERENCES.....	36
APPENDIX A SITE INSPECTION REPORT	38
APPENDIX B PROTECTED MATTERS SEARCH TOOL DATABASE SEARCH	41
APPENDIX C DECLARED RARE FLORA AND PRIORITY FLORA IN PROJECT AREA AND SURROUNDS.....	52
APPENDIX D BIOLOGICAL ASSESSMENT.....	55
APPENDIX E ASSESSMENT UNDER SIGNIFICANCE GUIDELINES 1.1– MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE	56
APPENDIX F CORRESPONDENCE FROM DEPARTMENT OF THE ENVIRONMENT.....	57
APPENDIX G BED AND BANKS PERMIT	60
APPENDIX H ENVIRONMENTAL MANAGEMENT PLAN	62

SUMMARY

Project Title: Northam-Pithara Road Widening 129.12 - 148.8 and 150.85 - 152.25 SLK (Figure 1)

Project location(s): This project will occur on Northam-Pithara Road between 129.12 and 152.25 SLK within the Shire of Dalwallinu and the Shire of Wongan-Ballidu, excluding the section from SLK 148.8-150.85 which was constructed in early 2015.

Area proposed to be cleared: Total clearing for this project is 21.96 hectares (ha) in an envelope that is 97.4 ha in size. Of the 21.96 ha of clearing, 6.35 ha is saltlake vegetation and 15.61 ha is non-saltlake vegetation.

The clearing of 6.35ha of native vegetation in the salt lake watercourse areas will be carried out in accordance with Main Roads Section 17 approval under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The remaining 15.61 ha of native vegetation clearing will be subject to a clearing permit under Part V of the *Environmental Protection Act 1986* (EP Act).

The project area is based on the design plus 1 m to allow for the movement of machinery. A project envelope of 3 m has been applied to the project area to allow for potential movements and minor changes to the design and batters between approvals and construction.

The road will be realigned in two sections that contain substandard curves:

- SLK 136.82 to 139.57 (Realignment 1)
- SLK 140.27 to 141.33 (Realignment 2)

The precise location of the road in Realignment 1 has yet to be determined. To allow approvals to be completed while the alignment is being determined, the clearing impact area calculations have been based on the worst case scenario with the highest environmental impact. The area under application includes the entirety of realignment 1, to allow flexibility in the approval while design is being completed (See Figure 2).

Project purpose / components: In order to comply with required safety standards, the widening of the seal and road formation along Northam Pithara Road between SLK 129.12 and 152.25 is required. In order to complete these works, an estimated widening of 11 metres on each side from the existing centre line will be applied. The road will be widened on one side only from SLK 129.12 to 131.26 and both sides from SLK 131.26.

The road will be realigned in two sections that contain substandard curves, from SLK 136.82 to 139.57 and SLK 140.27 to 141.33 (see Figure 2).

The road section between SLK 128.96 and 131.28 will be moved to provide a clear distance zone away from the above ground water main situated on the western side of existing road verge. This section of realignment will also involve widening of an existing 4 way intersection with Federation Road and Ballidu- Bindi Bindi Road.

SLK 148.8 – 150.85 has been constructed separately, in the 2015 financial year and is not the subject of this report.

Temporary clearing required: None.

Biological Surveys

Main Roads commissioned AECOM to complete a Level 2 flora and vegetation assessment in accordance with EPA Guidance Statement 51 in May 2012. A Level 1 fauna assessment was also undertaken in accordance with EPA Guidance Statement 56. A 100 m corridor (up to the fence line or 100 metres each side of the road if no fence was present) was utilised for this survey. This area is referred to in this report as the survey area.

A Targeted flora survey was undertaken by AECOM in September 2014. A 200 m survey buffer around the road centreline was applied and populations of rare and priority flora were followed to map the extent of each population.

Project Approvals

The project was determined by the Commonwealth Department of the Environment (DotE) to be a 'Controlled Action' under the *Environment Protection Biodiversity Act 1999* (EPBC Act) (EPBC referral no. 2015/7454) due to impacts on Listed Threatened species and communities. A clearing permit is required under Part V of the *Environmental Protection Act 1986* (EP Act). The project was considered against the Ten Clearing Principles and is considered to be at variance to Principles a), b), c) and e).

Under the new bilateral agreement, the Department of Environment Regulation will assess the impacts of the proposal on matters of national environmental significance and the clearing of native vegetation. Copies of correspondence from DotE is provided in Appendix F.

An impact assessment was undertaken and documented in this report, *Impact Assessment of Clearing and matters of NES report - Northam-Pithara Road Widening 129.12 - 148.8 and 150.85 - 152.25 SLK*, was produced. This report outlines the key activities associated with the road project, the existing environment and an assessment of native vegetation clearing and matters of NES. This assessment provides an evaluation of the impacts and strategies used to manage them. Key impacts are listed below.

Key clearing assessment Items

Clearing calculations breakdown

Project envelope	97.41 ha
Total vegetation clearing	21.96 ha
Salt lake vegetation (Section 17 of the <i>Rights in Water and Irrigation Act 1914</i>)	6.35 ha
Non-salt lake vegetation (State clearing permit)	15.61 ha
Black cockatoo feeding habitat in project envelope	13.56 ha
Potential Black Cockatoo breeding trees the project envelope	56
Hollows in the project envelope	1
Priority Ecological Community to be cleared	10.52 ha

- The project is located across four Beard Vegetation Associations. Two of these are below the 30% state threshold of concern, Beard Vegetation Association 142 and 1024. Approximately 6.65 ha of Vegetation Association 142 and 3.22 ha of Vegetation Association 1024 will be cleared for this project. In addition, while Vegetation Association 125 is above 90% on a state level, in the IBRA region this Vegetation Association has only 9.77% remaining and is therefore also considered to be of concern. 0.518 ha of Vegetation Association 125 will be cleared.
- 74.5 ha of P3 'Eucalyptus woodlands of the Western Australian Wheatbelt' is present in the survey area. A total of 10.52 ha (14%) of this PEC will be cleared for the project based on GIS shapefiles provided by AECOM. This PEC is expected to occur throughout the Wheatbelt region and will extend further than the areas mapped as such in the field assessment.
- The majority of the vegetation of the project envelope is in Good to Very Good condition (Keighery 1994).
- Vegetation in Realignment 1 and Realignment 2 is *Tecticornia* Heath (saline) and 'bare areas – salt lakes' in Very Good condition. No Black Cockatoo trees were identified in the either realignment area. One priority species, *Podotheca uniseta*, has 40 individual plants inside the Realignment 1 area.

- One species of Threatened flora was recorded during the 2012 AECOM survey, *Grevillea dryandroides* subsp. *Dryandroides*. This species was not present in the project area.
- A Targeted Flora survey was undertaken in spring 2014, targeting 31 conservation significant flora species considered potentially occurring in the project envelope. The survey identified a total of seven DRF and Priority flora species potentially occurring. This includes:
 - *Eremophila viscida* (Declared Rare Flora; Endangered)
 - *Frankenia conferta* (Declared Rare Flora; Endangered)
 - *Dampiera glabrescens* (Priority 1)
 - *Acacia lirellata* subsp. *compressa* (Priority 2)
 - *Acacia dissona* var. *indoloria* (Priority 3)
 - *Acacia scalene* (Priority 3)
 - *Podotrochea unisetata* (Priority 3)
- 4 *Eremophila viscida* were recorded in the field assessment, none are within 50 m of the project area.
- *Frankenia conferta* prefer clayey soils on the edge of salt lakes. Within the Project area it occurred in loamy clay above salt lake fringes. The flora survey identified 232 plants in total in the survey area, only 50 plants were within 50m of the project envelope and none within the project area. The closest plant is 3m from the edge of the project area at 140.5 SLK. , This species was within the envelope for the project, but a 3 m by 20 m buffer has been applied as a 'no go' zone. A subsequent site visit by the Main Roads Wheatbelt Environment Officer at the location of the 50 recorded plants identified a further 100 plants nearby the salt lake edge (making a total of 150 plants), these are considered to be one population and outside the project area. Correspondence from the Department of Parks and Wildlife has identified that this species is potentially abundant in WA and therefore could be considered for delisting.
- 427 *Dampiera glabrescens* were recorded during the field assessment. 19 plants were removed for the earlier project (SLK 148.8 to 150.85). Eight *Dampiera glabrescens* will be cleared for this project.
- 35 *Acacia lirellata* subsp. *compressa* were recorded in the survey. No *Acacia lirellata* subsp. *compressa* were recorded within 50 m of the project.
- 31 *Acacia dissona* var. *indoloria* were recorded in the survey area. The *Acacia dissona* var. *indoloria* plants were all recorded between SLK 148.8 and 150.85 and 7 were cleared as part of the earlier works. One has the potential to be cleared for this project, as it is within the project envelope. Six *Acacia dissona* var. *indoloria* plants are within 10 m of the project.
- 14 *Acacia scalene* were recorded in the survey area. One will be cleared for this project and 2 are within 10 m of the project.
- 245 *Podotrochea unisetata* were identified in the survey area. Of these, 40 are within the project area and 120 are within 50m of the project envelope.
- The *Grevillea dryandroides* subsp. *dryandroides* was extensively searched for; however no populations were recorded during the targeted survey.
- Thirty fauna species were recorded during the survey. This included 24 birds, 5 mammals and 1 reptile. One potential conservation significant fauna was observed, the White Browed Babbler, which was not identifiable to the sub-species level. The likelihood of occurrence assessment undertaken by AECOM identified 9 conservation significant fauna species likely to occur in the survey area. These include:
 - White-browed Babbler Western Wheatbelt subspecies (*Pomatostomus superciliosus ashbyi*) (Priority 4)
 - Southern Brown Bandicoot (*Isodon obesulus fusciventer*) (Priority 5)
 - Peregrine Falcon (*Falco peregrinus*) (Schedule 4)
 - Australian Bustard (*Ardeotis australis*) (Priority 4)
 - Bush Stone-curlew (*Burhinus grallarius*) (Priority 4)
 - Rainbow Bee-eater (*Merops ornatus*) (Marine and Migratory)
 - Fork-tailed Swift (*Apus pacificus*) (Marine and Migratory)
 - Woma (*Aspidites ramsayi*) (Schedule 4)
 - Western Spiny-tailed Skink (*Egernia stokesii badia*), (Endangered and Schedule 1)

- Of these species, the Western Spiny-tailed Skink and White-browed Babbler are considered to be potentially impacted by the project, as suitable habitat is present.
- There are five Environmentally Sensitive Areas (ESAs) within the survey area; these are associated locations of rare flora with a 50 metre buffer. Two of these ESAs are within the project envelope however no rare flora were recorded in these two locations.
- The project is considered to be at variance to Principles a), b), c) and e).

Matters of National Environmental Significance

- 56 cockatoo nesting trees meeting the referral size requirement (Diameter at Breast Height (DBH) of 500mm for York Gum and DBH of 300mm for Wandoo) are within the project envelope, as well as 1 hollow. No Carnaby's Black Cockatoos have been observed in any of the field visits or surveys. The hollow identified (116.670858; -30.455323) was not of suitable size for use as a nest. An additional 15 trees are within 3 meters of the project area; however these were removed from the project envelope and will not be impacted.
- Approximately 13.56 ha of foraging habitat in Degraded to Very Good condition will be cleared. This was comprised of
 - Eucalyptus Tree Mallee (EhTMATS) - 0.83 ha
 - Eucalyptus loxophleba subsp. supralaevis Low Woodland (ELOWAMTOS) - 2.911 ha
 - Eucalyptus loxophleba subsp. supralaevis Low Woodland (ELOWATOS) – 7.49 ha
 - Eucalyptus Tree Mallee (EIoTMMcLOS) - 0.182 ha
 - Eucalyptus loxophleba subsp. supralaevis Low Woodland (EWAIS) - 0.156 ha
 - Grevillea, Santalum Scrub (GSTOS) - 0.345 ha
 - Grevillea, Melaleuca Shrubland (GTSaCOH) - 1.64 ha

Key vegetation management actions

An Environmental Management Plan has been prepared to minimise impacts to conservation significant fauna and flora. This is included in Appendix H.

1. ASSESSMENT SCOPE

In order to comply with required safety standards, the widening of the seal and road formation along Northam Pithara Road between SLK 129.12 and 152.25 is required. SLK 148.8 – 150.85 was constructed separately, in the 2015 financial year and is not the subject of this report.

Main Roads commissioned AECOM to complete a Level 2 flora and vegetation assessment in accordance with EPA Guidance Statement 51 in May 2012. A Level 1 fauna assessment was also undertaken in accordance with EPA Guidance Statement 56. A Targeted flora survey was undertaken by AECOM in September 2014, and an Environmental Impact Assessment was prepared by Main Roads. The project was referred to the Commonwealth Department of the Environment (DotE) in accordance with the EPBC Act Referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo, Baudin's cockatoo and Forest red-tailed black cockatoo.

The project was determined by DotE to be a 'Controlled Action' under the *Environment Protection Biodiversity Act 1999* (EPBC Act) (EPBC referral no. 2015/7454) due to impacts on Listed Threatened species and communities. A clearing permit is required under Part V of the *Environmental Protection Act 1986* (EP Act). The project was considered against the Ten Clearing Principles and is considered to be at variance to Principles a), b), c) and e).

Under the new bilateral agreement, the Department of Environment Regulation will assess the impacts of the proposal on matters of national environmental significance and the clearing of native vegetation. Copies of correspondence from DotE is provided in Appendix F.

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2. PROJECT DESCRIPTION

Widening of the seal and road formation along Northam Pithara Road between SLK 129.12 and 152.25 is necessary to comply with safety requirements. Up to 21.96 hectares (ha) will be cleared for this project. Of this 6.35 ha is native salt lake vegetation, and 15.61 ha is non-salt lake native vegetation, to be approved under project specific state clearing permit.

The road will be realigned in two sections that contain substandard curves, from SLK 136.82 to 139.57 and SLK 140.27 to 141.33. Approval is being sought for the entirety of the potential impact area for realignment 1 (Figure 2), the realignment from SLK 136.82 to 139.57. The precise location of the road in this area has yet to be determined, and the clearing impact area has been based on the worst case scenario with the highest environmental impact.

The road section between SLK 128.96 and 131.28 will be moved to provide a clear distance zone away from the above ground water main situated on the western side of the existing road verge. This section of road will also involve widening of the existing 4 way intersection with Federation Road and Ballidu- Bindi Bindi Road.

Widening from SLK 148.8 – 150.85 has been constructed separately, in the 2015 financial year.

Gravel will be sourced from farmland and therefore there will be no significant environmental impact expected for the gravel pits.

2.1 Project Location

The project area is located on Northam-Pithara Road between 129.12 and 152.25 SLK, within the Shire of Dalwallinu and the Shire of Wongan-Ballidu.

MGA reference: 50

Northam Pithara Road at 129.12 SLK

Latitude: -30.5954

Longitude: 116.7663

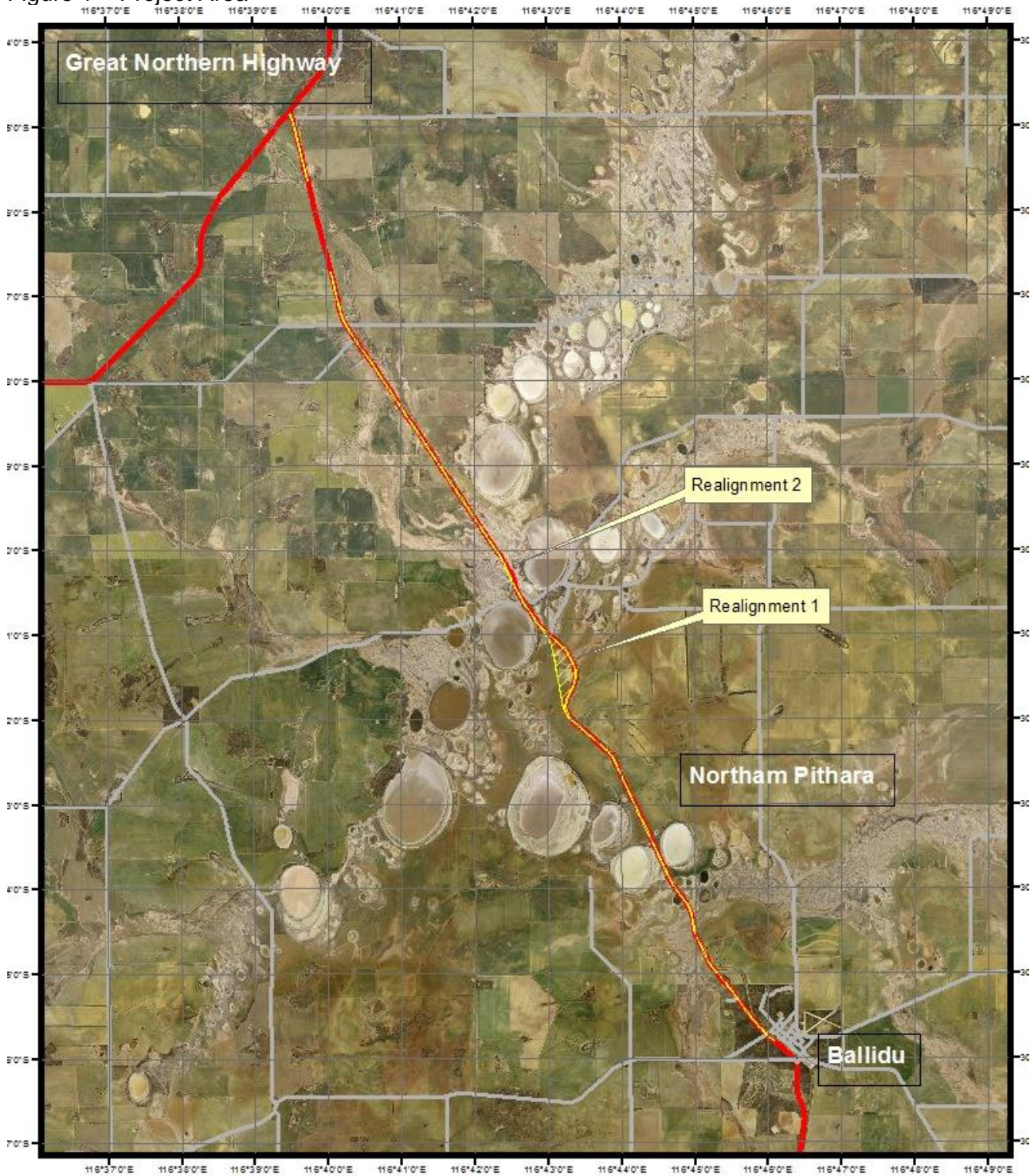
Northam Pithara Road at 152.25 SLK

Latitude: -30.415

Longitude: 116.6589

The project area is shown in Figure 1.

Figure 1 – Project Area



Legend
 Clearing Area
 State Road

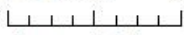
0 0.75 1.5 3 Kilometers

 1 cm = 1 kilometers



Figure 2 – Realignment areas



Legend

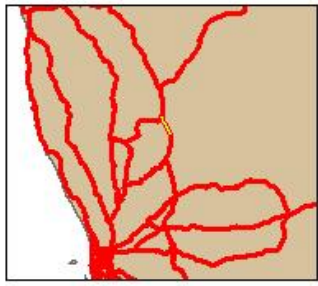
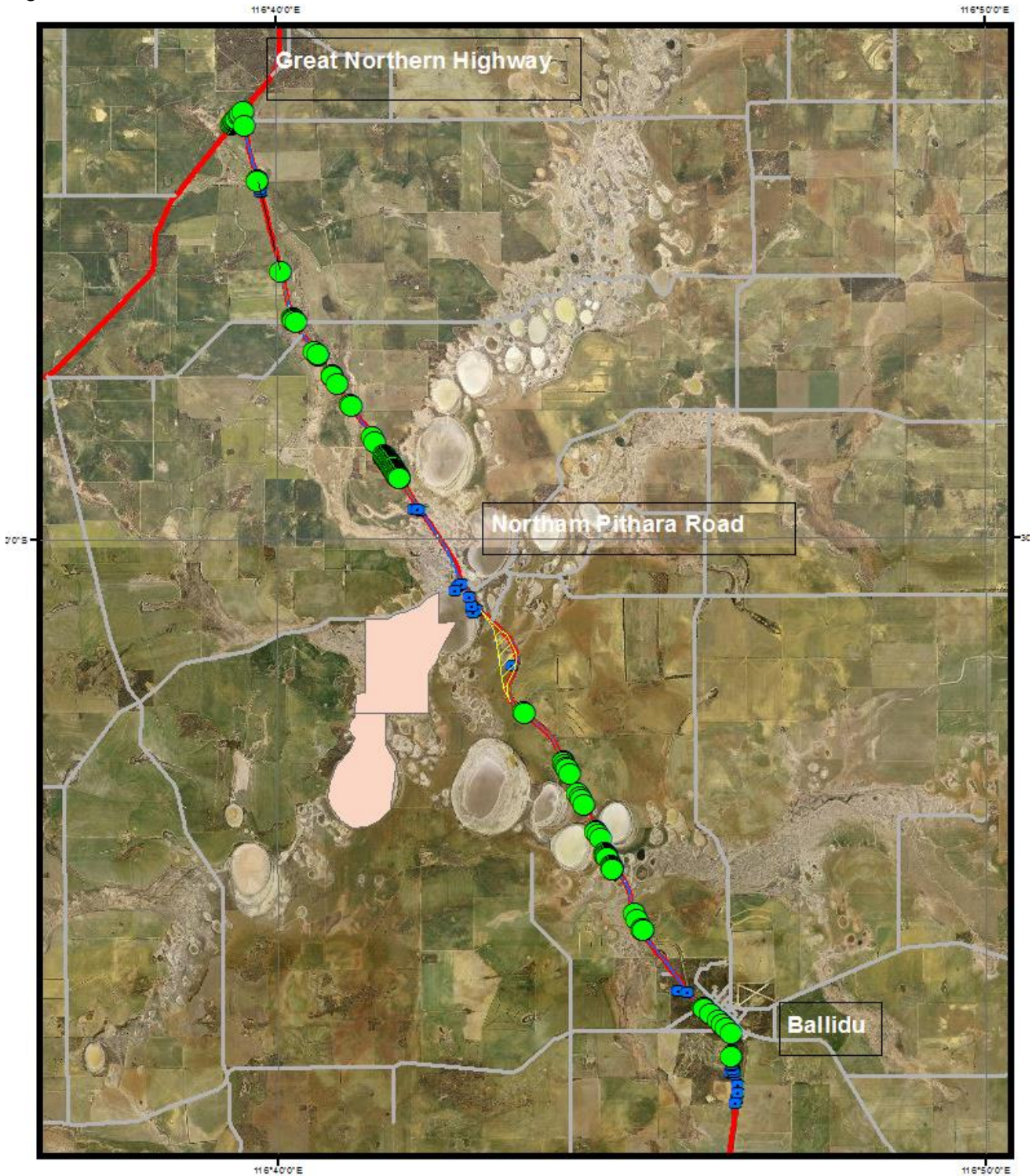
- Project area
- State road



390 195 0 390 Meters



Figure 3– Environmental Constraints



- Legend**
- Cockatoo trees recorded
 - Priority and DRF recorded in survey
 - DPAW managed lands and waters
 - Priority 3 PEC in clearing area
 - Project Envelope
 - Project area
 - State Road

0 0.75 1.5 3 Kilometers
 1 cm = 1 kilometers



3. METHODOLOGY

A preliminary assessment of the project area and the potential constraints of the proposal were undertaken by viewing ArcGIS shapefiles, reviewing government agency managed databases and consulting with relevant stakeholders where necessary. A field assessment of the flora, vegetation and fauna values of the area was carried out by AECOM Australia Pty Ltd (AECOM) during May 2012. A follow up survey was conducted in September 2014 to target Declared Rare Flora and Priority flora in the project envelope. Following this, Environment Officer Rochelle Lupton attended site to GPS locate all trees that meet the size requirements for referral under the *EPBC Act referral guidelines for three threatened black cockatoo species*.

The project is to be assessed by the State DER under the Commonwealth-State Assessment Bilateral. An impact assessment of the project was undertaken and this report produced. This report outlines the key activities associated with the road project, the existing environment and an assessment of native vegetation clearing and matters of NES. The methodology used when completing an assessment of the clearing principles is provided in Section 4.3. Mapping was completed using ArcMap.

Key stakeholders were also consulted to engage and inform them of the proposed project activities. Information from stakeholders was considered and incorporated in this report where practicable.

Further details regarding the outcome of the field assessment are provided in Section 8 and in the appendices.

4. CLEARING OF NATIVE VEGETATION

Native vegetation describes all indigenous aquatic and terrestrial vegetation (living or dead). The term does not include vegetation that was intentionally sown, planted or propagated unless it was required under a statutory condition.

Apart from activities that are exempt under the clearing regulation (Section 5 – Prescribed Clearing), all native vegetation clearing completed by Main Roads WA will be undertaken using a permit.

4.1 Measures to Avoidance and Minimise Clearing:

The project area was minimised as far as practicable during project development, being the design plus a 1 m buffer for the movement of machinery. 15 trees suitable as future Black Cockatoo habitat are within 3 meters of the project area; however these were removed from the project envelope and will not be impacted.

The design has been further altered to steepen batters and prevent direct impacts to Declared Rare Flora *Frankenia conferta*. The final design is a balance between environmental and safety considerations. In addition, the existing alignment of the road has been utilised where possible, with only two realignments proposed to straighten steep unsafe curves. A number of management measures to mitigate clearing impacts have been included in the project Environmental Management Plan, and include:

- Installation of barriers around the *Frankenia conferta* population during works. A 'no go' zone 20 m x 3 m will be applied to *Frankenia conferta* to prevent impacts during construction.
- Inspection of clearing lines by Environment Officer prior to clearing.
- A 'soft start' will be implemented prior to clearing to allow animals in the area to move away before clearing activities commence.
- Topsoil and seed bank will be retained to aid in regeneration after works.

4.2 Alternative measures

Three alignments were optioned for realignment 1, one circling the salt lakes, a second going through the salt lakes and the third involves the widening of the existing road. At present option 2 is

favoured as option 1 will result in a loss of usable land for the adjacent landowner, and option 3 does not meet current safety standards. The precise location of the road in Realignment 1 has yet to be determined. To allow approvals to be completed while the alignment is being determined the clearing impact area calculations have been based on the worst case scenario with the highest environmental impact. This is unlikely to be the alignment chosen.

Further alternatives have not been considered as safety requires the widening of the road from a single lane road to two lanes (one north and one south).

4.3 Existing Vegetation Details

4.3.1 Project site vegetation description

Beard’s (1981) 1:250 000 vegetation series map shows four broad terrestrial vegetation types that occur within the project envelope.

For a full description of the existing vegetation, refer to the Biological Assessment in Appendix D.

Table 1: Summary of Projects Existing Vegetation

Project Vegetation Complex	Project Clearing Description	Project Vegetation Condition	Comments
Beard Vegetation Association 142 described as Medium woodland; York gum & salmon gum (Government of Western Australia, 2013)	Clearing of up to 6.65 ha for road widening.	Varies between Very Good to Degraded (Keighery, 1994).	Vegetation description and condition determined from AECOM 2012, aerial imagery and GIS layers.
Beard Vegetation Association 1024 described as Shrublands; mallee & casuarina thicket (Government of Western Australia, 2013)	Clearing of up to 3.22 ha for road widening.	Excellent to Good (Keighery, 1994).	
Beard Vegetation Association 988 described as Succulent steppe with thicket; <i>Melaleuca thyoides</i> over samphire (Government of Western Australia, 2013)	Clearing of up to 11.57 ha for road widening.	Very Good to Good (Keighery, 1994).	
Beard Vegetation Association 125 described as Bare areas; salt lakes (Government of Western Australia, 2013)	Clearing of up to 0.518 ha for road widening.	Very Good where vegetation is present.	

Vegetation in the project envelope falls into five categories; salt lake and associated saline vegetation, grevillea scrubland, allocasuarina scrubland, acacia scrubland and eucalyptus woodland.

4.3.2 Vegetation complexes and representation

Table 2: Vegetation Representation

	Pre-European	Current Extent (ha)	% Remaining	% Remaining

Table 2: Vegetation Representation

		(ha)			in DEC reserves
IBRA Region Avon Wheatbelt		9,517,109.90	1,778,407.08	18.69	9.70
Beard Vegetation Association 142 described as Medium woodland; York gum & salmon gum (Government of Western Australia, 2013)	Statewide	819,143.51	238,868.96	29.16	3.97
	Beard Vegetation Association In IBRA region	637,707.53	80,971.20	12.70	2.93
	Shire of Dalwallinu	123,063.82	8,758.36	7.12	5.30
	Shire of Wongan-Ballidu	37,518.23	1,294.49	3.45	0.90
Beard Vegetation Association 1024 described as Shrublands; mallee & casuarina thicket (Government of Western Australia, 2013)	Statewide	742,950.55	87,341.95	11.76	9.49
	Beard Vegetation Association In IBRA region	738,926.59	84,756.41	11.47	7.26
	Shire of Dalwallinu	142,789.06	12,568.24	8.80	6.06
	Shire of Wongan-Ballidu	240,675.29	14,225.71	5.91	14.96
Beard Vegetation Association 988 described as Succulent steppe with thicket; <i>Melaleuca thyoides</i> over samphire (Government of Western Australia, 2013)	Statewide	96,635.23	29,486.63	30.51	15.45
	Beard Vegetation Association In IBRA region	94,338.35	27,712.44	29.38	13.57
	Shire of Dalwallinu	5,846.05	1,219.03	20.85	0.00
	Shire of Wongan-Ballidu	33,224.57	2,420.84	7.29	12.40
Beard Vegetation Association 125	Statewide	3,544,827.8	3,211,103.16	90.59	7.93

Table 2: Vegetation Representation

described as Bare areas; salt lakes (Government of Western Australia, 2013)	Beard Vegetation Association In IBRA region	167,448.18	16,355.56	9.77	20.25
	Shire of Dalwallinu	61,603.94	2,455.90	3.99	2.80
	Shire of Wongan-Ballidu	2,596.69	45.24	1.74	45.95

4.4 Assessment Against the 10 Clearing Principles

In assessing whether the project is likely to have a significant impact on the environment, the project was assessed against the Ten Clearing Principles (EP Act 1986, Schedule 5). The project is considered to be at variance to Principles a), b), c) and e).

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments	Proposal is at variance to this Principle
	<p>Beard's (1981) 1:250 000 vegetation series map identifies four broad terrestrial vegetation types that occur within the project envelope. Two of the four are limited on a state level, below the 30% threshold for concern, and one is limited on an IBRA level. A total of 15 vegetation units were described and mapped from 22 sites within the survey area during the field assessment in May 2012. Broadly speaking these fall into five categories; salt lake and associated saline vegetation, grevillea scrubland, allocasuarina scrubland, acacia scrubland and eucalyptus woodland.</p> <p>One of these, <i>Allocasuarina Melaleuca</i> Scrub community, was the most diverse community in terms of species richness.</p> <p>A total of 113 plant species from 58 genera and 27 families were recorded within the survey area during the field assessment. The total includes 111 (98%) locally native species, and 2 (2%) introduced (exotic) or naturalised weed species. Vegetation condition ranged from Degraded to Excellent.</p> <p>The likelihood of occurrence assessment undertaken by AECOM in 2012 identified 18 conservation significant flora species are likely to occur in the survey area. One species of Threatened flora was recorded during the 2012 survey, <i>Grevillea dryandroides</i> subsp. <i>Dryandroides</i>. This species is not present in the project envelope and was extensively searched for in both field assessments.</p> <p>Four Priority Flora species were recorded from the 2012 survey:</p> <ul style="list-style-type: none"> • <i>Acacia ?dissona</i> var. <i>indoloria</i> (Priority 3) • <i>Acacia ?scalena</i> (Priority 3) • <i>Acacia lirellata</i> subsp. <i>compressa</i> (Priority 2) • <i>Dampiera ?glabrescens</i> (Priority 1) <p>These species were not recorded inside the project envelope in 2012.</p> <p>The Targeted Flora survey (2014) identified a total of seven DRF and Priority flora species in the project and surrounds. This includes:</p> <ul style="list-style-type: none"> • <i>Eremophila viscida</i> (Declared Rare Flora; Endangered) • <i>Frankenia conferta</i> (Declared Rare Flora; Endangered)

- *Dampiera glabrescens* (Priority 1)
- *Acacia lirellata* subsp. *compressa* (Priority 2)
- *Acacia dissona* var. *indoloria* (Priority 3)
- *Acacia scalene* (Priority 3)
- *Podotheca unisetata* (Priority 3)

Of these, one Priority 1 and two Priority 3 species are assessed as being directly impacted. The project will remove eight *Dampiera glabrescens* (Priority 1) within 1 population and one individual *Acacia scalene* (Priority 3). One population of *Podotheca unisetata* (Priority 3) comprising 40 plants may be removed for Realignment 1.

A table with the location of these species, including which species are within the project area (and therefore likely to be cleared), 20 m and 50 m of the project is included in Appendix C.

Eremophila viscida prefer brown, sandy-loam or red brown clay-loam soils, in open woodland in association with *Eucalyptus loxophleba* and scrub vegetation (Mollemans et al. 1993). It appears to prefer areas that are associated with granite and salt lake systems and plants are particularly frequent in runoff areas, including drainage lines or ephemeral creeks connected to granite outcrops. There are currently 16 populations containing 816 mature plants currently known between Merredin and Mullewa. One population of *Eremophila viscida* was recorded during the targeted survey (AECOM 2014). This population was located approximately 100m outside the project area, north of Damboring West Road. The population contained a total of four individuals. Other salt lake habitats throughout the survey area were searched. As *Eremophila viscida* is a large shrub to 2 m, it is relatively easy to spot from a distance, therefore it was considered all populations were captured during the survey.

Four plants of *Eremophila viscida* were recorded outside the project envelope and will not be directly impacted. Indirect impacts to this species are also not expected as it is not within 50 m of the project envelope.

Frankenia conferta prefer clayey soils on the edge of salt lakes. Within the project area it occurred in loamy clay above salt lake fringes. *Frankenia conferta* is widely distributed between Koorda, Dalwallinu, Perenjori and Coorow (Luu and Brown, 2008). 232 plants were recorded in the 2014 survey, extending over 200 m outside the project envelope, occurring along salt lake fringes above the high water mark. None of these were recorded inside the project area. Of the 232 recorded, only 50 plants were located within 50 m of the project, approximately 3 m outside the edge of the project area at SLK 140.5. The project envelope has been amended to remove this species, and a 'no go' zone 20 m x 3 m will be applied to *Frankenia conferta* to prevent impacts during construction.

A subsequent site visit by the Main Roads Wheatbelt Environment Officer in the following year at the location of the 50 recorded plants identified a further 100 plants nearby the salt lake edge, these are considered to be one population. These plants were recorded at the end of summer and verified by the Herbarium.

The key threat to the *Frankenia conferta* is disrupted hydrology as a result of extensive clearing for agricultural purposes, causing rising salinity and waterlogging (DotE 2007). Fencing will be installed to prevent direct impacts to this species, and the batters in the project design have been steepened to prevent the removal of these plants. The road will be widened

and include drainage structures to capture runoff and channel it to existing culverts to minimise disruption to hydrological regimes. There is a culvert located approximately 85 m north of this population. In addition, dust will be managed to prevent impacts to this species. A total of 0.06 ha of habitat suitable for this species may be impacted by the project, assuming all plants within 50 m of the project will be impacted from localised changes to hydrology regimes. Records obtained from the DPaW and the WA Herbarium indicates that there are 32 known populations of *Frankenia conferta* in WA. This data was last updated in 2009, and correspondence from DPaW is that there are likely to be additional populations that are not included in the public data. Further, correspondence with the DPaW (Appendix B) identified that this species is widespread in Western Australia and is potentially eligible for delisting.

Dampiera glabriscens prefer white or grey/yellow sand, on gravel pits, along road verges and degraded areas such as tracks. 427 *Dampiera glabrescens* were recorded during the field assessment. 19 plants were removed for the earlier project (SLK 148.8 to 150.85 as discussed in Section 2), which was given conditional approval to proceed, provided that an offset proposal for this species is provided by December 2015. A further eight *Dampiera glabrescens* will be cleared for this project. No additional *Dampiera glabrescens* were recorded within 50 m of the project envelope. The offset proposal for this project includes an offset for the *Dampiera glabrescens* impacts for the 148.8-150.85 works.

Acacia lirellata subsp. *compressa* prefers a variety of soils from yellow sand to heavier clayey loam soils, within sandplains. It favours degraded areas and open vegetation along road and rail verges. During the targeted survey, *Acacia lirellata* subsp. *compressa* was found within the road verge around Ballidu, dropping out further into the natural undisturbed bushland. 35 *Acacia lirellata* subsp. *compressa* were recorded in the survey area. No *Acacia lirellata* subsp. *compressa* were recorded within 50 m of the project.

Acacia dissona var. *indoloria* prefer loamy sandy brown soils on undulating plains. It occurs along the roadside and degraded areas, preferring open areas with scattered vegetation. 31 *Acacia dissona* var. *indoloria* were recorded in the survey area. The *Acacia dissona* var. *indoloria* plants were all recorded between SLK 148.8 and 150.85 and 7 were cleared as part of the earlier works. None will be cleared for this project. Six *Acacia dissona* var. *indoloria* plants are within 10 m of the project envelope.

Acacia scalene prefer yellow gravelly sand or loam on plains and road verges. 14 *Acacia scalene* were recorded in the survey. One will be cleared for this project and 2 are within 10 m of the project envelope. The removal of one plant is not expected to significantly impact this species.

Podotheca uniseta prefer loamy sandy soils in salty areas adjacent to salt lakes. *Podotheca uniseta* populations recorded during the Targeted Survey all occurred in salt lake areas in more open vegetation or degraded areas such as along old tracks and fence lines. 245 *Podotheca uniseta* were identified in the survey area. Of these, 40 are within the project area and 120 are within 50m of the project envelope. There are 24 known populations of *podotheca uniseta*, according to the WA Herbarium and Department of Parks and Wildlife (DPaW 2009). Over 1200 plants have been recorded, although half of the recorded locations do not have accompanying plant

numbers so this number is likely to be much higher based on the clumping habit of this species.

Grevillea dryandroides subsp. *dryandroides* was recorded 3.5 km south of the project in the 2012 survey and suitable habitat was present in the project envelope. This species was extensively searched for; however no populations were recorded during the targeted survey and it is considered to not occur in the project envelope.

One Priority Ecological Community (PEC) 'Eucalyptus Woodlands of the Western Australian Wheatbelt' was recorded in the project area. Approximately 10.5 ha of this PEC will be cleared for the project. The biological assessment identified 74.5 ha of P3 'Eucalyptus woodlands of the Western Australian Wheatbelt' present in the survey area. The PEC vegetation to be cleared for the project may be significant; however is a small percentage of the available vegetation in the region.

Thirty fauna species were recorded during the field survey. This included 24 birds, 5 mammals and 1 reptile.

Seven fauna habitats were mapped in the field assessment, specifically:

- Shrublands and scrub
- York gum woodland
- Succulent heath
- Salt lake
- Eucalyptus Tree Mallee
- Melaleuca Thicket Over Succulent Heath
- Planted vegetation

All seven were represented in the project envelope.

The likelihood of occurrence assessment undertaken by AECOM identified 9 conservation significant fauna species likely to occur in the survey area.

These include:

- White-browed Babbler Western Wheatbelt subspecies (*Pomatostomus superciliosus ashbyi*) (Priority 4)
- Southern Brown Bandicoot (*Isodon obesulus fusciventer*) (Priority 5)
- Peregrine Falcon (*Falco peregrinus*) (Schedule 4)
- Australian Bustard (*Ardeotis australis*) (Priority 4)
- Bush Stone-curlew (*Burhinus grallarius*) (Priority 4)
- Rainbow Bee-eater (*Merops ornatus*) (Marine and Migratory – See Section 7)
- Fork-tailed Swift (*Apus pacificus*) (Marine and Migratory – See Section 7)
- Woma (*Aspidites ramsayi*) (Schedule 4)
- Western Spiny-tailed Skink (*Egernia stokesii badia*), (Endangered and Schedule 1)

The White-browed Babbler may occur in the project region, and prefers mulga and Acacia thickets and scrub, and the shrubland understorey (Gannet and Crowley, 2000) of Eucalyptus forests, Casuarina woodlands and mallee (Johnstone and Storr, 2004). While the White-browed Babbler was recorded during the survey, determination to the subspecies level was not possible. Habitat suitable for this species has been mapped inside the

project envelope and is also present extensively in the larger survey area. The project is not considered to be key habitat for this species due to the lack of shrubby thick understory in the majority of the project envelope. Management measures to minimise impacts are included in the Environmental Management Plan (EMP).

The Southern Brown Bandicoot has not been recorded in the project area since 1980 and the vegetation in the project envelope is not considered dense enough to provide significant habitat for this species.

The Peregrine Falcon occurs across much of mainland Australia occupying diverse habitats, from rainforest to arid scrubland. It relies on abundant prey, secure nest sites and a lack of human interference (Pizzey & Knight, 2007). This species was not recorded during the survey; however the species still may be an infrequent visitor to the area. Assuming the species does use the area, given the linear nature of the proposal, the species is unlikely to be significantly impacted.

The Australian Bustard occupies open dry woodlands of mulga, mallee, heath, tussock grasslands, spinifex, and arid scrub (Morcombe 2003). It was last recorded in the area in 2008, south of Watheroo National Park. While habitat for this species does occur within the survey area, the majority is fragmented and therefore the likelihood of this species occurring is low and the project is not considered to be significant habitat.

The Bush Stone-curlew occupies woodlands, mallee and mulga and within these habitats it requires some groundcover of small sparse shrubs, grass or twig litter (Morcombe 2003). While the survey area contains York Gum Woodland and some areas of Eucalyptus Tree Mallee, these habitats do not contain suitable groundcover for this species and therefore it is unlikely to occur within the project envelope.

The Woma is found in woodlands, heaths and shrublands; often associated with spinifex and is known to utilise soil cracks, monitor and mammal burrows for shelter (Wilson & Swan 2010). During the 2012 field investigation of the survey area, few suitable burrows were observed. The Woma has been recorded previously in the project area, however due to the linear nature of the proposal, and limited number of suitable burrows/shelters, this species is unlikely to be significantly impacted.

The Western Spiny-tailed Skink can persist in woodland patches as small as one hectare and completely surrounded by wheat fields. This species typically relies on Salmon Gum woodland to provide large logs for habitation, but York Gum woodland also has the potential to provide suitable habitat. While 10.5 ha of York Gum Woodland is proposed to be cleared, no suitable large logs were identified in the project envelope. The Western Spiny-tailed Skink is sensitive to disturbance and typically rare in landscapes that are subject to predation by foxes or habitat fragmentation caused by roads and agriculture. In addition, the last record of this species in the project area was in 1922. Given this, the species is considered unlikely to occur in the project envelope.

Carnaby's Black Cockatoo have been previously recorded in 2003 in Dalwallinu, south of Walebing. This species has been known to occupy the Wheatbelt during the breeding and non-breeding season and may nest in

	<p>hollows of Wandoo and York Gum and feed on proteaceous species. Approximately 13.56 ha of suitable foraging habitat will be cleared, which varied in condition. The majority was in either Good or Degraded condition. 56 trees and 1 hollow are within the project envelope. The hollow recorded was not of sufficient size to be of current use. An additional fifteen trees, one with a hollow, are within 3 m of the project, however have been removed from the project envelope and are not expected to be impacted. No Carnaby's Black Cockatoos have been recorded in the project envelope in any of the field visits or surveys. Large stands of feeding habitat occur near and adjacent to the survey area, and as such, the species may utilize this in preference to the survey area which is more degraded, however the project contains suitable habitat and it is assumed that Black Cockatoo may utilise this area. An assessment under the Significance Guidelines 1.1 is included in Appendix E.</p> <p>There are five Environmentally Sensitive Areas (ESAs) within the survey area and all are associated with rare flora records. Only two ESAs are within the project envelope; however no rare flora were recorded at either location in the targeted survey.</p> <p>The project is considered to be at variance to this principle due to impacts to Carnaby's Black Cockatoo habitat and 8 <i>Dampiera glabriscens</i>, as well as indirect impacts to 150 <i>Frankenia conferta</i>.</p>
Methodology	<p>DPAW shapefiles Biological Survey (2012) Targeted Flora Survey (2014) MRWA GIS Shapefiles NatureMap Protected Matters Search Tool Government of WA (2013)</p>

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments	Proposal is at variance to this Principle
	<p>Thirty fauna species were recorded during the field survey. This included 24 birds, 5 mammals and 1 reptile.</p> <p>Seven fauna habitats were mapped in the field assessment, specifically:</p> <ul style="list-style-type: none"> • Shrublands and scrub • York gum woodland • Succulent heath • Salt lake • Eucalyptus Tree Mallee • Melaleuca Thicket Over Succulent Heath • Planted vegetation <p>All seven are represented in the project envelope.</p> <p>The likelihood of occurrence assessment undertaken by AECOM identified 9 conservation significant fauna species likely to occur in the survey area. These include:</p> <ul style="list-style-type: none"> • White-browed Babbler Western Wheatbelt subspecies (<i>Pomatostomus superciliosus ashbyi</i>) (Priority 4) • Southern Brown Bandicoot (<i>Isodon obesulus fusciventer</i>) (Priority

5)

- Peregrine Falcon (*Falco peregrinus*) (Schedule 4)
- Australian Bustard (*Ardeotis australis*) (Priority 4)
- Bush Stone-curlew (*Burhinus grallarius*) (Priority 4)
- Rainbow Bee-eater (*Merops ornatus*) (Marine and Migratory – See Section 7)
- Fork-tailed Swift (*Apus pacificus*) (Marine and Migratory – See Section 7)
- Woma (*Aspidites ramsayi*) (Schedule 4)
- Western Spiny-tailed Skink (*Egernia stokesii badia*), (Endangered and Schedule 1)

The White-browed Babbler may occur in the region, and prefers mulga and Acacia thickets and scrub, and the shrubland understorey (Gannet and Crowley, 2000) of Eucalyptus forests, Casuarina woodlands and mallee (Johnstone and Storr, 2004). While the White-browed Babbler was recorded during the survey, determination to the subspecies level was not possible. Habitat suitable for this species has been mapped inside the project envelope and is also present extensively in the survey area. The project is not considered to be key habitat for this species due to the lack of shrubby thick understorey in the majority of the project envelope. Management measures to minimise impacts are included in the EMP.

The Southern Brown Bandicoot has not been recorded in the project area since 1980 and the vegetation in the project envelope is not considered dense enough to provide significant habitat for this species.

The Peregrine Falcon occurs across much of mainland Australia occupying diverse habitats, from rainforest to arid scrubland. It relies on abundant prey, secure nest sites and a lack of human interference (Pizzey & Knight, 2007). This species was not recorded during the survey; however the species still may be an infrequent visitor to the area. Assuming the species does use the area, given the linear nature of the proposal, the species is unlikely to be significantly impacted.

The Australian Bustard occupies open dry woodlands of mulga, mallee, heath, tussock grasslands, spinifex, and arid scrub (Morcombe 2003). It was last recorded in the area in 2008, south of Watheroo National Park. While habitat for this species does occur within the survey area, the majority is fragmented and therefore the likelihood of this species occurring is low and the project is not considered to be significant habitat.

The Bush Stone-curlew occupies woodlands, mallee and mulga and within these habitats it requires some groundcover of small sparse shrubs, grass or twig litter (Morcombe 2003). While the survey area contains York Gum Woodland and some areas of Eucalyptus Tree Mallee, these habitats do not contain suitable groundcover for this species and therefore is unlikely to occur within the project envelope.

The Woma is found in woodlands, heaths and shrublands; often associated with spinifex and is known to utilise soil cracks, monitor and mammal burrows for shelter (Wilson & Swan 2010). During the 2012 field investigation of the survey area, few suitable burrows were observed. The Woma has been recorded previously in the project area, however due to the

	<p>linear nature of the proposal, and limited number of suitable burrows/shelters, this species is unlikely to be impacted.</p> <p>The Western Spiny-tailed Skink can persist in woodland patches as small as one hectare and completely surrounded by wheat fields. This species typically relies on Salmon Gum woodland to provide large logs for habitation, but York Gum woodland also has the potential to provide suitable habitat. While 10.5 ha of York Gum Woodland is proposed to be cleared, no suitable large logs were identified in the project envelope. The Western Spiny-tailed Skink is sensitive to disturbance and typically rare in landscapes that are subject to predation by foxes or habitat fragmentation caused by roads and agriculture. In addition, the last record of this species in the project area was in 1922. Given this, the species is considered unlikely to occur in the project envelope.</p> <p>Carnaby's Black Cockatoo have been previously recorded in 2003 in Dalwallinu, south of Walebing. This species has been known to occupy the Wheatbelt during the breeding and non-breeding season and may nest in hollows of Wandoo and York Gum and feed on proteaceous species. Approximately 13.56 ha of suitable foraging habitat will be cleared, which varied in condition. The majority was in either Good or Degraded condition. 56 trees and 1 hollow are within the project envelope. The hollow recorded was not of sufficient size to be of current use. An additional fifteen trees, one with a hollow, are within 3 m of the project, however have been removed from the project envelope and are not expected to be impacted. No Carnaby's Black Cockatoos have been recorded in the project envelope in any of the field visits or surveys. Large stands of feeding habitat occur near and adjacent to the survey area, and as such, the species may utilize this in preference to the survey area which is more degraded, however the project contains suitable habitat and it is assumed that Black Cockatoo may utilise this area. An assessment under the Significance Guidelines 1.1 is included in Appendix E.</p> <p>The project is considered to be at variance to this principle.</p>
Methodology	<p>DPAW Shapefiles Keighery (1994) MRWA Site Inspection (May 2015) Biological Survey (2012) Targeted Flora Survey (2014) MRWA GIS Shapefiles NatureMap Protected Matters Search Tool Government of WA (2013)</p>

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments	Proposal is at variance to this Principle
	<p>The project will result in the removal of one Priority 1 and two Priority 3 species. Two DRF were identified in the AECOM targeted survey and are discussed below.</p> <p><i>Eremophila viscida</i> prefer brown, sandy-loam or red brown clay-loam soils, in open woodland in association with <i>Eucalyptus loxophleba</i> and scrub vegetation (Mollemans et al. 1993). This species appears to prefer areas</p>

	<p>that are associated with granite and salt lake systems and plants are particularly frequent in runoff areas, including drainage lines or ephemeral creeks connected to granite outcrops. There are currently 16 populations containing 816 mature plants currently known between Merredin and Mullewa. One population of <i>Eremophila viscida</i> was recorded during the targeted survey (AECOM 2014). This population was located approximately 100m outside the project area, north of Damboring West Road. The population contained a total of four individuals. Other salt lake habitats throughout the survey area were searched. As <i>Eremophila viscida</i> is a large shrub to 2 m, it is relatively easy to spot from a distance, therefore it was considered all populations were captured during the survey. Four plants of <i>Eremophila viscida</i> were recorded outside the project envelope and will not be directly impacted. Indirect impacts to this species are also not expected as it is not within 50 m of the project envelope.</p> <p><i>Frankenia conferta</i> prefer clayey soils on the edge of salt lakes. Within the project envelope it occurred in loamy clay above salt lake fringes. <i>Frankenia conferta</i> is widely distributed between Koorda, Dalwallinu, Perenjori and Coorow (Luu and Brown, 2008). 232 plants were recorded in the 2014 survey, extending over 200 m outside the Project envelope, occurring along salt lake fringes above the high water mark. None of these were recorded inside the project area. Of the 232 recorded, only 50 plants were located within 50 m of the project, approximately 3 m outside the edge of the project area at SLK 140.5. A subsequent site visit by the Main Roads Wheatbelt Environment Officer in the following year at the location of the 50 recorded plants identified a further 100 plants nearby the salt lake edge, these are considered to be one population. These plants were recorded at the end of summer and verified by the Herbarium.</p> <p>The key threat to the <i>Frankenia conferta</i> is disrupted hydrology as a result of extensive clearing for agricultural purposes, causing rising salinity and waterlogging (DotE 2007). Fencing will be installed to prevent direct impacts to this species, and the batters in the project design have been steepened to prevent the removal of these plants. The road will be widened and include drainage structures to capture runoff and channel it to existing culverts to minimise disruption to hydrological regimes. There is a culvert located approximately 85 m north of this population. In addition, dust will be managed to prevent impacts to this species. A total of 0.06 ha of habitat suitable for this species may be impacted by the project, assuming all plants within 50 m of the project will be impacted from localised changes to hydrology regimes. Records obtained from the DPaW and the WA Herbarium indicates that there are 32 known populations of <i>Frankenia conferta</i> in WA. This data was last updated in 2009, and correspondence from DPaW is that there are likely to be additional populations that are not included in the public data. Further, correspondence with the DPaW (Appendix B) identified that this species is widespread in Western Australia and is potentially eligible for delisting.</p> <p>A table with the location of these species, including which species are within the project area, 20 m and 50 m of the project is included in Appendix C.</p>
Methodology	<p>DPaW shapefiles Biological Survey (2012) Targeted Flora Survey (2014)</p>

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments	Proposal is not at variance to this Principle
	No threatened ecological communities were recorded within the project envelope, either on desktop investigations or field survey. There is no known TECs within 5 km of the project.
Methodology	DPAW shapefiles Biological Survey (2012)

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments	Proposal is at variance to this Principle															
	<p>The project crosses four Beard Vegetation Associations:</p> <table border="1"> <thead> <tr> <th>Project Vegetation Complex</th> <th>Project Clearing Description</th> <th>Project Vegetation Condition</th> </tr> </thead> <tbody> <tr> <td>Beard Vegetation Association 142 described as Medium woodland; York gum & salmon gum (Government of Western Australia, 2013)</td> <td>Clearing of up to 6.65 ha for road widening.</td> <td>Varies between Very Good to Degraded (Keighery, 1994).</td> </tr> <tr> <td>Beard Vegetation Association 1024 described as Shrublands; mallee & casuarina thicket (Government of Western Australia, 2013)</td> <td>Clearing of up to 3.22 ha for road widening.</td> <td>Excellent to Good (Keighery, 1994).</td> </tr> <tr> <td>Beard Vegetation Association 988 described as Succulent steppe with thicket; <i>Melaleuca thyoides</i> over samphire (Government of Western Australia, 2013)</td> <td>Clearing of up to 11.57 ha for road widening.</td> <td>Very Good to Good (Keighery, 1994).</td> </tr> <tr> <td>Beard Vegetation Association 125 described as Bare areas; salt lakes (Government of Western Australia, 2013)</td> <td>Clearing of up to 0.518 ha for road widening.</td> <td>Very Good where vegetation is present.</td> </tr> </tbody> </table> <p>Two of these are below the 30% state threshold of concern, Beard Vegetation Association 142 and 1024. Vegetation in these areas is considered representative of the Beard Vegetation Associations. In addition, while Vegetation Association 125 is above 90% on a state level, in the IBRA region this Vegetation Association has only 9.77% remaining and is therefore also considered to be of concern. Vegetation Association 988, which is the majority of the project, is not considered to be of concern as it is above 30% on a State level and almost 30% on an IBRA region level.</p> <p>This project is considered to be at variance with this principle due to clearing in an extensively cleared landscape.</p>	Project Vegetation Complex	Project Clearing Description	Project Vegetation Condition	Beard Vegetation Association 142 described as Medium woodland; York gum & salmon gum (Government of Western Australia, 2013)	Clearing of up to 6.65 ha for road widening.	Varies between Very Good to Degraded (Keighery, 1994).	Beard Vegetation Association 1024 described as Shrublands; mallee & casuarina thicket (Government of Western Australia, 2013)	Clearing of up to 3.22 ha for road widening.	Excellent to Good (Keighery, 1994).	Beard Vegetation Association 988 described as Succulent steppe with thicket; <i>Melaleuca thyoides</i> over samphire (Government of Western Australia, 2013)	Clearing of up to 11.57 ha for road widening.	Very Good to Good (Keighery, 1994).	Beard Vegetation Association 125 described as Bare areas; salt lakes (Government of Western Australia, 2013)	Clearing of up to 0.518 ha for road widening.	Very Good where vegetation is present.
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(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments	Proposal is not at variance to this Principle
	<p>According to the AECOM report, the project landscape is flat and the ancient river valleys have become filled with sediment (DEC, 2005). Rivers in these ancient valleys are typically reduced to chains of salt lakes that only link up and flow after exceptionally high rainfall (DEC, 2005). In most years rainfall is insufficient to cause systems to flow and the high rates of evaporation mean that the lakes and pools are dry for much of the year (DEC, 2005). The chain of salt lakes that intersects the survey area is an example of an ancient river valley that has been reduced to a chain of interconnecting salt lakes. There are two chains of saline lakes that intersect the survey area, the largest of which is Damboring Lake.</p> <p>A search of ArcGIS shapefiles identified the project is in the Avon River System Proclaimed Surface Water Area. Approximately thirty four culverts along the road will be upgraded for the road widening, in the same locations as existing culverts to maintain surface water flows for the salt lake chain. A further six new culverts will be installed for the two realignments. Two watercourses will be impacted by the works, located at SLK 144.9 and 145.5. The culverts currently servicing the two watercourses will be upgraded to wider culverts to allow for the road widening. In addition, up to two minor salt lakes (depending on alignment chosen) will require some infill to facilitate the realignment of the road between SLK 136.82 to 139.57 due to safety standards. Fill material for the salt lakes will be sourced from the local region and culverts will be installed to manage overland flows for the salt lake chain.</p> <p>The project will result in the clearing of 6.35 ha of salt lake vegetation. A Bed and Banks Permit has been obtained for the works, both the culverts and the impacts to the salt lakes and associated salt lake vegetation. This is included in Appendix G. Clearing of saltlake vegetation will be undertaken using Main Roads Section 17 approval under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act) in accordance with Clearing Regulation 5 Item 16.</p>
Methodology	DoW and DPAW shapefiles Biological Survey (2012) MRWA Site Inspection (May 2014)

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments	Proposal is not likely to be at variance to this Principle
	<p>The clearing of native vegetation in the Wheatbelt region and replacement with crops has resulted in a rise in salinity and associated land degradation (DEC, 2005). Given the current levels of clearing (approximately 95%) that have occurred in the West Mortlock Catchment (Cummins, 2003), there is the potential for additional clearing to increase land degradation. However, the potential clearing of remnant vegetation associated with the proposed road upgrade in the context of the catchment would be unlikely to trigger significant land degradation as a result of increasing salinity (AECOM 2012).</p> <p>The main soil types in the survey area which include freely drained sandy</p>

	<p>earths and shallow loamy duplex soils on valley floors may be susceptible to the following land degradation issues; soil acidification, structural decline, wind and water erosion and subsoil compaction (Cummins, 2003). There may be some minor impacts from wind and water erosion which the sandy soil is susceptible to, however given the adjacent land use and limited amount of clearing expected to be carried out it is unlikely that the proposal will cause 'appreciable' land degradation.</p> <p>Further, appropriate controls will be put in place during construction to prevent degradation, dust and erosion.</p>
Methodology	AECOM (2012)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments	Proposal is not at variance to this Principle
	<p>The nearest conservation area is the Lake Damboring Nature Reserve which is approximately 500 metre west of the road reserve. Lake Damboring is associated with a chain of saline lakes which are relatively continuous, but intersected by the current Northam-Pithara Road, pipeline infrastructure and rail corridor. Given the current intersection of the salt lake chain by the road, rail and pipeline, is unlikely that any additional clearing associated with the road upgrade, which is likely to be narrow and linear in nature, would have a significant impact on the Lake Damboring Nature Reserve.</p>
Methodology	DPAW shapefiles Keighery (1994) AECOM (2012)

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments	Proposal is not likely to be at variance to this Principle
	<p>Surface Water</p> <p>The Wheatbelt landscape is flat and the ancient river valleys have become filled with sediment (DEC, 2005). Rivers in these ancient valleys are typically reduced to chains of salt lakes that only link up and flow after exceptionally high rainfall (DEC, 2005). In most years rainfall is insufficient to cause systems to flow and the high rates of evaporation mean that the lakes and pools are dry for much of the year (DEC, 2005). The chain of salt lakes that intersects the survey area is an example of an ancient river valley that has been reduced to a chain of interconnecting salt lakes.</p> <p>Culvert upgrade is part of the proposed project, with forty two culverts along the road to be upgraded in the same locations as existing culverts. Two watercourses will be impacted by the works, located at SLK 144.9 and 145.5. The culverts currently servicing the two watercourses will be upgraded to wider culverts to allow for the road widening. In addition, up to two minor salt lakes will require partial infill to facilitate the realignment of the road between SLK 136.82 to 139.57 due to safety standards. Both salt lakes only contain water after high rainfall events in winter. Culverts will be installed to manage overland flows for the salt lake chain.</p>

	<p>Given the sporadic surface water flows of these channels, it is unlikely that the clearing of native vegetation would cause deterioration of surface water quality. Surface water quality will be managed via the project design and in the installation of upgraded culverts.</p> <p>Ground Water The clearing of native vegetation in the Wheatbelt region and its replacement with shallow rooted, annual cropping species has resulted in the rising water tables and salinity (DEC, 2005). The topography of the site (broad flat valleys) is such that the groundwater would be expected to be close to the surface and evidence of this occurring is noted within the survey area where vegetation shows sign of stress or decline in areas adjacent to salt lakes. As proposed disturbance is likely to involve the clearing of relatively narrow bands of vegetation, it is considered unlikely that this will cause any further deterioration in the quality or levels of ground water (AECOM 2012).</p>
Methodology	AECOM (2012) DoW and DPAW shapefiles

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments	Proposal is not at variance to this Principle
	As the proposed clearing is likely to involve the clearing of relatively narrow bands of vegetation, and drainage of run-off would be managed as part of the road design it is unlikely that the clearing of native vegetation as part of this proposal would cause or exacerbate the incidence or intensity of flooding.
Methodology	AECOM (2012)

5. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

An assessment of project's impacts on the relevant Matters of NES was undertaken. The assessment and site investigation was used to determine the project impacts on a Matter of NES. Refer to Appendix B for EPBC Act Protected Matters Search Tool Report.

The project was determined by the Commonwealth Department of the Environment (DotE) to be a 'Controlled Action' under the *Environment Protection Biodiversity Act 1999* (EPBC Act) (EPBC referral no. 2015/7454) due to impacts on Carnaby's Black Cockatoo habitat and potential breeding trees, as well as indirect impacts to Endangered Silky Frankenia (*Frankenia conferta*).

A copy of the correspondence from the DotE is provided in Appendix F.

Table 3: Assessment of Existing Environment, Matters of National Environmental Significance (NES) and Likely Impact.

Matter of NES	Existing Environment and Likely Impact
Nationally listed threatened species or ecological communities	<p>A search of the DotE PMST identified 28 nationally listed threatened species and no ecological communities within the vicinity of the project envelope.</p> <p>Plants:</p> <ul style="list-style-type: none"> • Velvety Spiral Pod Wattle (<i>Acacia cochlocarpa</i> subsp. <i>velutinos</i>) (Critically Endangered)

	<ul style="list-style-type: none"> • Prostrate Flame Pea (<i>Chorizema humile</i>) (Endangered) • Diels' Daviesia (<i>Daviesia dielsii</i>) (Endangered) • Wongan Cactus (<i>Daviesia euphorbioides</i>) (Endangered) • Hinged Dragon Orchid (<i>Drakonorchis drakeoides</i>) (Endangered) • Pinnate-leaf Eremophila (<i>Eremophila pinnatifida</i>) (Endangered) • Varnish Bush (<i>Eremophila viscida</i>) (Endangered) • Silver Mallet (<i>Eucalyptus recta</i>) (Endangered) • Silky Frankenia (<i>Frankenia conferta</i>) (Endangered) • Hook-point Poison (<i>Gastrolobium hamulosum</i>) (Endangered) • Phalanx Grevillea (<i>Grevillea dryandroides</i> subsp. <i>dryandroides</i>) (Endangered) • Hairy Phalanx Grevillea (<i>Grevillea dryandroides</i> subsp. <i>hirsuta</i>) (Endangered) • Pythara Grevillea (<i>Grevillea pythara</i>) (Endangered) • Net-veined Gyrostemon (<i>Gyrostemon reticulatus</i>) (Critically Endangered) • Red Snakebush (<i>Hemiandra gardneri</i>) (Endangered) • Pungent Jacksonia (<i>Jacksonia pungens</i>) (Endangered) • Native Foxglove (<i>Pityrodia axillaris</i>) (Critically Endangered) • Wongan Rhagodia (<i>Rhagodia acicularis</i>) (Vulnerable) • Underground Orchid (<i>Rhizanthella gardneri</i>) (Endangered) • Saltmat (<i>Roycea pycnophylloides</i>) (Endangered) • Bancrofts Symonanthus (<i>Symonanthus bancroftii</i>) (Endangered) • Wongan Featherflower (<i>Verticordia staminosa</i> subsp. <i>staminosa</i>) (Endangered) <p>Reptiles</p> <ul style="list-style-type: none"> • Western Spiny-tailed Skink (<i>Egernia stokesii badia</i>) (Endangered) <p>Birds:</p> <ul style="list-style-type: none"> • Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>) (Endangered) • Malleefowl (<i>Leipoa ocellata</i>) (Vulnerable) • Australian Painted Snipe (<i>Rostratula australis</i>) (Endangered) <p>Mammals:</p> <ul style="list-style-type: none"> • Chuditch (<i>Dasyurus geoffroi</i>) (Vulnerable) <p>Other:</p> <ul style="list-style-type: none"> • Shield-backed Trapdoor Spider (<i>Idiosoma nigrum</i>) (Vulnerable)
<p><i>Justification of likely impact</i></p>	<p>Flora The AECOM targeted report (AECOM 2014) identified two EPBC protected flora species in the study area. These are detailed in Section 4 and summarised below. The remaining species, with the exception of Phalanx Grevillea (<i>Grevillea dryandroides</i> subsp. <i>dryandroides</i>) (Endangered), were not recorded in the targeted survey and are considered unlikely to occur.</p> <p>Phalanx Grevillea (<i>Grevillea dryandroides</i> subsp. <i>Dryandroides</i>) <i>Grevillea dryandroides</i> subsp. <i>dryandroides</i> was recorded in the survey area in the 2012 survey and was extensively search for in the 2014 survey. This species was recorded outside the project envelope in the 2012 survey, approximately 3.5 km south of the project. This species was not within the project envelope in the 2014 survey and therefore is not considered to be impacted by this project.</p>

Varnish Bush (*Eremophila viscida*)

Eremophila viscida prefer brown, sandy-loam or red brown clay-loam soils, in open woodland in association with *Eucalyptus loxophleba* and scrub vegetation (Mollemans et al. 1993). *Eremophila viscida* were recorded outside the project envelope and will not be directly impacted. Indirect impacts to this species are also not expected as it is not within 50 m of the project envelope.

Silky Frankenia (*Frankenia conferta*)

Frankenia conferta prefer clayey soils on the edge of salt lakes. Within the project envelope it occurred in loamy clay above salt lake fringes. 232 plants were recorded extending over 200 m outside the project envelope occurring along salt lake fringes above the high water mark. 50 plants were recorded 3 m from the outside edge of the project area in the AECOM 2014 survey. A return to the project site by Environment Officers from Main Roads the following year identified more than 100 species of *Frankenia conferta* surrounding the salt lake at SLK 140.51, making a total of 150 plants in this population. No *Frankenia conferta* will be removed for the project however may be indirectly impacted by the project. Management measures to prevent hydrological impacts to this species are included in the project EMP (Appendix H).

Fauna**Western Spiny-tailed Skink (*Egernia stokesii badia*)**

As detailed in Section 5, the Western Spiny-tailed Skink may be present in the project envelope however is not considered likely to occur.

The Western Spiny-tailed Skink can persist in woodland patches as small as one hectare and completely surrounded by wheat fields. This species typically relies on Salmon Gum woodland to provide large logs for habitation, but York Gum woodland also has the potential to provide suitable habitat. While 10.5 ha of York Gum Woodland is proposed to be cleared, no suitable large logs were identified in the project envelope. The Western Spiny-tailed Skink is sensitive to disturbance and typically rare in landscapes that are subject to predation by foxes or habitat fragmentation caused by roads and agriculture. In addition, the last record of this species in the project area was 1922. Given this the species is considered unlikely to occur in the project envelope.

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)

Carnaby's Black Cockatoo have been previously recorded in 2003 in Dalwallinu, south of Walebing. This species has been known to occupy the Wheatbelt during the breeding and non-breeding season and may nest in hollows of Wandoo and York Gum and feed on proteaceous species. Approximately 13.56 ha of suitable foraging habitat will be cleared, which varied in condition. The majority was in either Good or Degraded condition.

56 trees and 1 hollow are within the project envelope. The hollow recorded was not of sufficient size to be of current use. An additional fifteen trees, one with a hollow, are within 3 m of the project, however have been removed from the project envelope and are not expected to be impacted. No Carnaby's Black Cockatoos have been recorded in the project envelope in any of the field visits or surveys. Large stands of feeding habitat occur near and adjacent to the survey area, and as such, the species may utilize this in preference to the survey area which is more degraded, however the project contains suitable habitat and it is assumed that Black Cockatoo may utilise this area. An assessment under the Significance Guidelines 1.1 is included below.

Assessment under Significance Guidelines 1.1– Matters of National Environmental Significance (DotE 2013)

Criteria	Assessment
Lead to a long-term decrease in the size of a population	The project is located in an area that has been extensively cleared for agriculture and has an abundance of salt lake vegetation, at the eastern-most edge of known Carnaby's Black Cockatoo breeding range. Approximately 13.56 ha of suitable feeding habitat will be cleared for the project, of a total 80.8 ha mapped within 1 km of the project by AECOM in 2012. Black Cockatoo habitat occurs throughout the Wheatbelt region, with an estimated 2400 ha of suitable vegetation within 10 km of the project envelope. The widening of the road is not considered likely to significantly impact the long term size of the population of Carnaby's Black Cockatoo.
Reduce the area of occupancy of the species	The project will reduce the available habitat within 10 km of the project by 0.56%. The area of occupancy of this species is unlikely to be significantly reduced.
Fragment an existing population into two or more populations	The road is narrow and linear in nature and the widening is unlikely to fragment any existing populations. Black Cockatoos were recorded in large stands of feeding habitat adjacent to the survey area, and it is not considered that the existing road has fragmented habitat, therefore the widening is unlikely to result in fragmentation.
Adversely affect habitat critical to the survival of a species	The habitat in the project envelope is not considered critical for the survival of the species according to the criteria outlined in the Carnaby's Black Cockatoo Recovery Plan (identified as known breeding and nearby feeding habitat, former known breeding habitat that has hollows intact and vegetation that provides habitat for feeding, watering and regular night roosting). While 56 potential future nesting trees are present that fulfil the DBH requirements and one of the trees to be cleared has a hollow, there is no evidence of Black Cockatoo feeding or roosting in the project envelope to date. Alternative feeding and breeding habitat is present within 10km of the project envelope and the clearing proposed is approximately 0.56% of this available habitat.
Disrupt the breeding cycle of a population	The habitat in the project envelope is not considered likely to disrupt the breeding cycle of the Black Cockatoo if cleared. 56 potential future nesting trees are present that fulfil the DBH requirements and one of these contains a hollow, however no evidence of use was identified. The hollow identified (116.670858; -30.455323) was not of suitable size for use as a nest at present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Alternative feeding and breeding habitat is present within 10 km of the project envelope and the clearing proposed is approximately 0.56% of the available habitat. The clearing of the project envelope is not considered likely to cause species decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	No invasive species that are likely to impact Black Cockatoos will be introduced by the project works. Main Roads will apply suitable controls to prevent impacts resulting from weeds and dieback. This will include washing down equipment prior to and upon exit from the project area.
Introduce disease that may cause the species to decline	Introduction of disease that may impact Black Cockatoos is unlikely as a result of the project.
Interfere with the recovery of the species	The recovery of Black Cockatoos is detailed in the Carnaby's Black Cockatoo Recovery Plan. The objective of the Recovery Plan is to "stop further decline in the distribution and abundance of Carnaby's cockatoo by protecting the birds throughout their life stages and enhancing habitat critical for survival throughout their breeding and non-breeding range". The project is not considered critical habitat as there is no known breeding, feeding or roosting occurring in the project envelope. Further, the collision with motor vehicles has been cited in the

		<p>Recovery Plan as a significant impact to this species (DPaW 2013). Vegetation in the project area is close to the road, within 1 metre in some locations, and the project will widen the cleared area around the road thereby reduce the attractiveness of roadside vegetation to this species and potentially reducing vehicle strikes.</p>
	<p>Malleefowl (<i>Leipoa ocellata</i>) The Malleefowl inhabits mallee dominated vegetation which is present within the project envelope. This species makes large conspicuous nesting mounds which were not observed and therefore it is considered unlikely that this species will be impacted.</p> <p>Australian Painted Snipe (<i>Rostratula australis</i>) The Australian Painted Snipe is unlikely to be present in the project envelope as it inhabits wetlands, which do not occur within the project envelope. The salt lakes in the project area are typically dry except during heavy rainfall events.</p> <p>Chuditch (<i>Dasyurus geoffroi</i>) Chuditch are known to occur in disturbed landscapes in the Wheatbelt and inhabit most kinds of wooded habitat including eucalypt forest, dry woodland and mallee shrublands (Serena & Soderquist 1995). Habitat fragmentation is an issue for this species, and only occasional records are obtained for the Wheatbelt where little suitable habitat remains (WA DEC 2007). According to Main Roads records supplied by the Department of Parks and Wildlife, the nearest Chuditch recording is at Moora, 70 km west of the project. The Chuditch has a large home range (Up to 400 ha) and this species could be present in most of the project envelope, with the exception of saltlake scrubland. The project is unlikely to significantly impact or future fragment habitat for this species as it is linear in nature and the widening of an already existing road. The realignments are not present in habitat suitable for this species.</p> <p>Shield-backed Trapdoor Spider (<i>Idiosoma nigrum</i>) The Shield-Backed Trapdoor Spider is known to occur in eucalypt-acacia dry woodlands. This spider burrows in heavy clay soils in areas of open <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i> and <i>E. capillosa</i> woodland, where <i>Acacia acuminata</i> forms a sparse understorey (Avon Catchment Council 2007). Habitat suitable for this species is not present in the project envelope, with soils being typically yellow earths on sandplain with ironstone gravels, hard-setting loam soils on slopes and bottomlands and saline soils in depressions (Beard 1990).</p>	
<p><i>Methodology</i></p>	<p>DotE Protected Matters Search Report. AECOM (2012) AECOM (2014)</p>	

<p>Migratory species</p>	<p>Five Commonwealth listed migratory species were identified from the PMST Report:</p> <ul style="list-style-type: none"> • Fork-tailed Swift (<i>Apus pacificus</i>) • Rainbow Bee-eater (<i>Merops ornatus</i>) • Great Egret (<i>Ardea alba</i>) • Cattle Egret (<i>Ardea ibis</i>) • Painted Snipe (<i>Rostratula benghalensis (sensu lato)</i>)
<p><i>Justification of likely impact</i></p>	<p>The Rainbow Bee-eater is a common species which occupies numerous habitats. It is possible that this species will occupy open woodland areas within the survey area. The Rainbow Bee-eater avoids heavy forest that would hinder its pursuit of its insect prey (Morcombe 2003). The Rainbow Bee-eater is a widespread, common species found all over Australia and has been previously</p>

	<p>recorded in the area. Due to the populous status of the species, and the limited number of suitable breeding banks recorded within the survey area, this species is unlikely to be impacted by the proposal.</p> <p>The Fork-tailed Swift is a regular summer migrant to Australia that utilises a wide range of habitats. Given the mobile nature of this species and linear corridor of impact, there are unlikely to be any impacts on this species.</p> <p>Three wetland species were also identified in the PMST. There are no wetlands identified within the study area, and the salt lakes only contain water in winter months and after intense rainfall. As such it is unlikely that the Great Egret, Cattle Egret or Painted Snipe will find their preferred habitat in the project envelope. They are likely to be “fly over” species and will not be directly or indirectly impacted by the project.</p> <p>Given the above it is unlikely that any migratory species will be impacted by the project activities.</p>
<i>Methodology</i>	<p>DotE Protected Matters Search Report. AECOM (2012) AECOM (2014)</p>

<i>Wetlands of International Importance</i>	No wetlands of international importance were identified from the PMST Report.
<i>Justification of likely impact</i>	As there were no wetlands identified within the study area, it is unlikely that this project will impact any wetlands of international importance.
<i>Methodology</i>	DotE Protected Matters Search Report.

<i>World Heritage Properties</i>	No world heritage properties were identified from the PMST Report.
<i>Justification of likely impact</i>	As no properties were identified within the study area, it is unlikely that this project will impact any world heritage properties.
<i>Methodology</i>	DotE Protected Matters Search Report.

<i>National Heritage Places</i>	No national heritage properties were identified from the PMST Report.
<i>Justification of likely impact</i>	As no properties were identified within the study area, it is unlikely that this project will impact any world heritage properties.
<i>Methodology</i>	DotE Protected Matters Search Report.

<i>Commonwealth Land or Marine Areas</i>	One parcel of Commonwealth land is located within the study area. No marine areas were identified from the PMST Report.
<i>Justification of likely impact</i>	<p>As no marine areas are located within the study area it is unlikely that the minor works associated with this project will directly or indirectly impact any marine areas.</p> <p>The location of the Commonwealth land is unknown however as the works are</p>

	to be completed entirely within the road reserve it is unlikely that any parcel of Commonwealth land will be impacted by the project.
<i>Methodology</i>	DotE Protected Matters Search Report. ArcGIS shapefiles

<i>Nuclear Actions</i>	Not relevant to the proposed activity.
<i>Justification of likely impact</i>	No project actions involve nuclear actions. Therefore no project impact on this matter.
<i>Methodology</i>	DotE Protected Matters Search Report.

<i>Water Resource</i>	Not relevant to the proposed activity.
<i>Justification of likely impact</i>	No project actions involve a water resource. Therefore no project impact on this matter.
<i>Methodology</i>	DotE Protected Matters Search Report.

6. SUMMARY OF BIOLOGICAL SURVEYS

AECOM 2012 Biological Assessment

Main Roads commissioned AECOM to complete a Level 2 flora and vegetation assessment in accordance with EPA Guidance Statement 51 in May 2012. A Level 1 fauna assessment was also undertaken in accordance with EPA Guidance Statement 56. A 100 m corridor (up to the fence line or 100 metres each side of the road if no fence was present) was utilised for this survey.

A total of 113 species from 58 genera and 27 families were recorded within the survey area during the field assessment. The total includes 111 (98%) locally native species, and 2 (2%) introduced (exotic) or naturalised weed species.

The majority of the vegetation in the survey area is in 'Very Good' condition (23.59%), followed by 'Good to Very Good' (17.31%). Approximately 16% of the vegetation is considered to be in 'Very Good to Excellent' condition.

Thirty fauna species were recorded during the May 2012 field survey. This included 24 birds, 5 mammals and 1 reptile. No fauna species recorded were considered to be of conservation significance.

The significant ecological findings from the survey area are:

- One species of Threatened flora recorded (*Grevillea dryandroides* subsp. *dryandroides*)
- Four species of Priority Flora recorded (*Acacia ?scalena*, *A. lirellata* subsp. *compressa*, *A. ?dissona* var. *indoloria*, *Dampiera ?glabrescens*)
- One Priority 3 Priority Ecological Community (PEC) (Eucalyptus Woodlands of the Western Australian Wheatbelt) recorded covering 74.51 hectares (ha) or 29.77% of the total area assessed.
- 99.22 ha or 39.64% of total area surveyed is considered to be in 'Very Good' or better condition.
- 240.06 ha or 95.91% of total area surveyed falls within vegetation associations that have less than 30% of pre- European extent remaining.
- All vegetation units can be considered to be regionally significant due to a combination of factors including; presence of rare and priority flora, being within a vegetation association with less than 30% pre-European extent remaining and presence of a PEC.
- Six vegetation units can be considered to be locally significant as they make up less than five percent of the total area surveyed.

AECOM 2014 Targeted Flora Assessment

A Targeted flora survey was undertaken by AECOM in September 2014. A 200 m survey buffer around the road centreline was applied. This enabled population boundaries to be extended beyond the project footprint and to provide some flexibility in road design around recorded populations. The survey identified seven DRF and Priority flora species:

- *Eremophila viscida* – DRF
- *Frankenia conferta* – DRF
- *Dampiera glabrescens* – Priority 1
- *Acacia lirellata* subsp. *compressa* – Priority 2
- *Acacia dissona* var. *indoloria* – Priority 3
- *Acacia scalene* – Priority 3
- *Podotheca unisetia* – Priority 3

7. STAKEHOLDER CONSULTATION

Main Roads invited submissions from specified stakeholders in August 2014. Table 2 identifies the stakeholders who were contacted regarding the impacts of the proposed clearing associated with the project.

Table 2: Summary of Submissions Received from Stakeholders

Name	Position	Agency	Submission Received
Jane Clarkson	Manager	DER, Native Vegetation Conservation Branch	Yes
Piers Verstegen	<i>Director</i>	Conservation Council WA	No
	Officer	Department of Water	No
Robert Nixon	President	Shire of Dalwallinu	No
Peter MacNamara	President	Shire of Wongan-Ballidu	No
Andrew Watson	Commissioner	Soil and Land Conservation Commission	No

The only submission received was from the Department of Environment Regulation requesting additional information which is contained within this report.

7.1 Indigenous Consultation

An assessment of the heritage values of the project envelope was undertaken as part of the Environmental Impact Assessment. This identified no Registered heritage sites within the project envelope. One Other Heritage Site 4528 (Pithara South 2 - artefact scatter) is within the project area at the northernmost end of the widening. This site is listed as Stored Data/Not a Site. No other Registered or Other Heritage Places are within the project envelope. Main Roads completed an Aboriginal Heritage Risk Assessment of the project and related activities, to determine whether project activities may have an adverse impact on known or unknown Aboriginal heritage sites. The project envelope has not been previously surveyed according to the Department of Indigenous Affairs database. The risk assessment determined the overall risk rating to be low, based on the disturbed nature of the site. The project will only impact the buffer of Site 4528, which is in an already disturbed area. Therefore it is unlikely that further artefact scatter will be identified. Management measures to prevent impacts to unknown heritage sites are detailed in the EMP. Further consultation was not deemed necessary.

8. SOCIAL AND ECONOMIC BENEFITS

The social benefits of the project are considered to be high, as the road will be widened from a single lane to a double (one in each direction) which will vastly increase road user safety and road usability. Currently the road has substandard geometry and is in disrepair in many sections. Cars, caravans and trucks use this road regularly, with cars and caravans forced off the road when trucks

are oncoming. The road upgrade will allow better servicing of the road between rural communities and safer freight movement. The social costs are considered to be nil due to the remote location of the road.

The economic costs of the project are approximately \$18 million. The project is likely to be funded in sections over several financial years. Improved road safety and usability is expected to positively influence the movement of freight and crops. The project will also improve the capacity and efficiency of the existing road network by providing a heavy vehicle route from Northam to the State's north which will support economic development within the Wheatbelt region.

The construction phase will employ between 30 and 75 persons, dependent upon funding and proposed construction timelines.

9. VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. An Environmental Management Plan has been prepared for this project.

10. REFERENCES

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Appendix A

Site Inspection Report

PROJECT NAME: Northam-Pithara Road Widening 129.12 - 148.8 and 150.85 - 152.25 SLK

DATE: 15 May 2014

ATTENDEES

Rochelle Lupton (MRWA)

Ben Hollyock (MRWA)

Ardeshir Bahmani (MRWA)

ACTIONS UNDERTAKEN

What you did in dot points i.e.

- Met with project manager, went to project area.
- Traversed project area on foot and in the car.
- Took representative site photos.

SITE DESCRIPTION

Five categories of vegetation are present in the project area; salt lake and associated saline vegetation, grevillea scrubland, allocasuarina scrubland, acacia scrubland and eucalyptus woodland.

The project area is dominated by salt lakes and saltlake vegetation, particularly along the realignment areas.

Soils are typically yellow earths on sandplain with ironstone gravels, hard-setting loam soils on slopes and bottomlands and saline soils in depressions (Beard 1990).

Vegetation varied from Excellent to Completely Degraded.

SITE PHOTOS



Photo 1. Looking east. SLK 129.56. Vegetation to be cleared.



Photo 2. Looking north. SLK 129.56 road corridor is wide and minimal clearing is expected.



Photo 3. SLK 131.39 Clearing both sides.



Photo 4. SLK 132.17 Realignment 1 looking North West.



<p>Photo 5. SLK 132.58. Looking South West at Realignment 1.</p>	<p>Photo 6. Looking North SLK 141.4 Clearing both sides</p>
	
<p>Photo 7. SLK 141.40 Looking North</p>	<p>Photo 8. SLK 146.7</p>
	
<p>Photo 9. SLK 147.9 Looking North.</p>	<p>Photo 10. SLK 152.59. Facing south. End of Project.</p>

Appendix B

Protected Matters Search Tool Database Search



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 22/01/15 19:21:58

[Summary](#)

[Details](#)

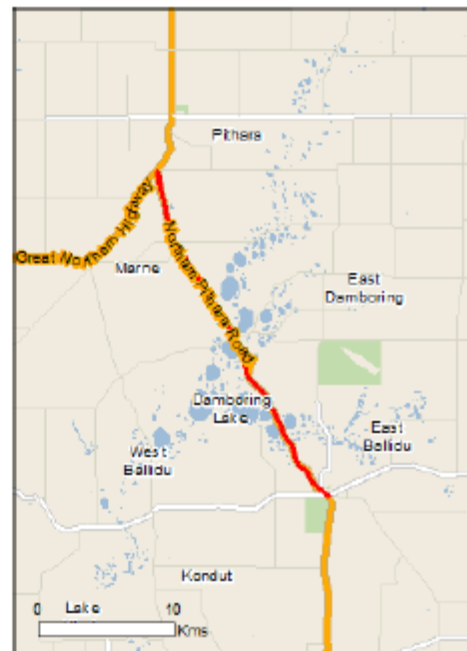
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

[Buffer: 10.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	29
Listed Migratory Species:	5

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As [heritage values](#) of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate.

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	6
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

Place on the RNE:	None
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calyptrorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroi Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Other		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area
Plants		
Acacia cochlocarpa subsp. velutinos Velvety Spiral Pod Wattle [65112]	Critically Endangered	Species or species habitat likely to occur within area
Chorizema humile Prostrate Flame Pea [32573]	Endangered	Species or species habitat likely to occur within area
Dasymalla axillaris Native Foxglove [38829]	Critically Endangered	Species or species habitat may occur within area
Daviesia dielsii Diels' Daviesia [19617]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Daviesia euphorbioides Wongan Cactus [3477]	Endangered	Species or species habitat may occur within area
Drakonorchis drakeoides [67353]	Endangered	Species or species habitat likely to occur within area
Eremophila pinnatifida Pinnate-leaf Eremophila [64894]	Endangered	Species or species habitat likely to occur within area
Eremophila viscida Vamish Bush [2394]	Endangered	Species or species habitat known to occur within area
Eucalyptus recta Silver Mallet [56430]	Endangered	Species or species habitat likely to occur within area
Frankenia conferta Silky Frankenia [6074]	Endangered	Species or species habitat known to occur within area
Gastrolobium hamulosum Hook-point Poison [9212]	Endangered	Species or species habitat may occur within area
Grevillea dryandroides subsp. dryandroides Phalanx Grevillea [64646]	Endangered	Species or species habitat known to occur within area
Grevillea dryandroides subsp. hirsuta Hairy Phalanx Grevillea [64577]	Endangered	Species or species habitat likely to occur within area
Grevillea pythara Pythara Grevillea [64525]	Endangered	Species or species habitat known to occur within area
Gyrostemon reticulatus Net-veined Gyrostemon [8491]	Critically Endangered	Species or species habitat may occur within area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat may occur within area
Jacksonia pungens Pungent Jacksonia [64920]	Endangered	Species or species habitat may occur within area
Rhaqodia acicularis Wongan Rhaqodia [11145]	Vulnerable	Species or species habitat likely to occur within area
Rhizanthella gardneri Underground Orchid, Western Australian Underground Orchid [20109]	Endangered	Species or species habitat likely to occur within area
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat may occur within area
Symonanthus bancroftii Bancrofts Symonanthus [12837]	Endangered	Species or species habitat may occur within area
Verticordia staminosa subsp. staminosa Wongan Featherflower [55825]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence
Reptiles		
Egernia stokesii aethiops [26192]	Vulnerable	Species or species habitat likely to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name

Commonwealth Land -

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species

Name	Threatened	Type of Presence
Thinomis rubricollis Hooded Plover [59510]		habitat may occur within area Species or species habitat known to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Damboring	WA

Invasive Species	[Resource Information]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.	

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within

Name	Status	Type of Presence area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Coordinates

-30.600422 116.771506,-30.592738 116.760519,-30.585645 116.756399,-30.58269
116.750563,-30.571457 116.74713,-30.567615 116.74301,-30.542484 116.72962,-30.533022
116.717604,-30.516756 116.713827,-30.510841 116.708678,-30.503446 116.704214,
-30.455809 116.668852,-30.438051 116.663016,-30.415255 116.657522

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Department of Environment, Climate Change and Water, New South Wales](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment and Natural Resources, South Australia](#)
- [Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts](#)
- [Environmental and Resource Management, Queensland](#)
- [Department of Environment and Conservation, Western Australia](#)
- [Department of the Environment, Climate Change, Energy and Water](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- [Natural history museums of Australia](#)
- [Museum Victoria](#)
- [Australian Museum](#)
- [SA Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence](#)
- [State Forests of NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix C

Declared Rare Flora and Priority Flora in Project Envelope and Surrounds

Species	Status	Latitude	Longitude	Number of individuals	Within project envelope	Within 10 m of project	10-50m of project
<i>Eremophila viscida</i>	DRF – Schedule 1 under the WC Act and Endangered under the EPBC Act	-30.510499	116.7085	4	No	No	No
<i>Frankenia conferta</i>	DRF – Schedule 1 under the WC Act and Endangered under the EPBC Act	-30.513718	116.7124	8	No	No	No
		-30.514944	116.713	40	No	No	No
		-30.509197	116.7103	50	No	Yes	No
		-30.509474	116.7095	100	No	No	No
		-30.50977	116.7091	20	No	No	No
		-30.514171	116.7126	6	No	No	No
<i>Dampiera glabrescens</i>	Priority 1	-30.51399	116.7125	8	No	No	No
		-30.6131	116.7749	3	No	No	No
		-30.6152	116.7744	1	No	No	No
		-30.6059	116.7738	1	No	No	No
		-30.6043	116.7733	1	No	No	No
		-30.6045	116.7733	3	No	No	No
		-30.6072	116.7734	19	No	No	No
		-30.609	116.774	12	No	No	No
		-30.6088	116.7742	17	No	No	No
		-30.6087	116.7741	25	No	No	No
		-30.6085	116.7741	11	No	No	No
		-30.6082	116.774	19	No	No	No
		-30.6077	116.7737	6	No	No	No
		-30.6072	116.7736	15	No	No	No
		-30.607	116.7736	30	No	No	No
		-30.6068	116.7736	50	No	No	No
		-30.6066	116.7736	50	No	No	No
		-30.6143	116.7748	2	No	No	No
		-30.6142	116.7747	6	No	No	No
		-30.6114	116.7749	8	No	No	No
-30.6145	116.7745	4	No	No	No		
-30.6057	116.7737	18	No	No	No		
-30.6055	116.7737	16	No	No	No		

Species	Status	Latitude	Longitude	Number of individuals	Within project envelope	Within 10 m of project	10-50m of project
		-30.6056	116.7736	20	No	No	No
		-30.6052	116.7733	3	No	No	No
		-30.6074	116.7734	9	No	No	No
		-30.609	116.7735	8	No	No	No
		-30.6062	116.7736	3	No	No	No
		-30.6062	116.7737	40	No	No	No
		-30.4286	116.6629	15	No	No	No
		-30.4281	116.6627	4	No	No	No
		-30.4266	116.6623	8	Yes	No	No
<i>Acacia lirellata</i> subsp. <i>compressa</i>	Priority 2	-30.606536	116.7733	2	No	No	No
		-30.606785	116.7734	4	No	No	No
		-30.607534	116.7735	3	No	No	No
		-30.608313	116.7737	3	No	No	No
		-30.608925	116.774	1	No	No	No
		-30.609325	116.7745	1	No	No	No
		-30.608796	116.7742	2	No	No	No
		-30.607786	116.7738	1	No	No	No
		-30.607615	116.7737	1	No	No	No
		-30.607324	116.7734	2	No	No	No
		-30.60842	116.7737	1	No	No	No
		-30.608842	116.7732	1	No	No	No
		-30.60891	116.7734	2	No	No	No
		-30.608492	116.7742	3	No	No	No
-30.608252	116.7741	2	No	No	No		
-30.607968	116.7739	6	No	No	No		
<i>Acacia dissona</i> var. <i>indoloria</i>	Priority 3	-30.426707	116.6626	2	No	Yes	No
		-30.427457	116.6629	3	No	No	No
		-30.427744	116.6628	3	No	No	No
		-30.4269	116.6625	1	No	Yes	No
		-30.427146	116.6626	2	No	Yes	No
		-30.427297	116.6626	1	No	Yes	No
		-30.427526	116.6626	7	No	No	No
		-30.42765	116.6627	3	No	No	No
		-30.428377	116.6629	5	No	No	No
-30.429062	116.6631	2	No	No	No		
-30.429239	116.6632	2	No	No	No		
<i>Acacia scalena</i>	Priority 3	-30.598542	116.7704	4	No	No	No

Species	Status	Latitude	Longitude	Number of individuals	Within project envelope	Within 10 m of project	10-50m of project
		-30.598818	116.7709	1	No	No	No
		-30.598528	116.7702	2	No	No	No
		-30.598433	116.77	1	No	No	No
		-30.592492	116.7631	1	Yes	No	No
		-30.592265	116.7609	1	No	No	No
		-30.592195	116.7608	1	No	No	No
		-30.592488	116.763	2	No	Yes	No
		-30.597726	116.7691	1	No	No	No
		-30.511843	116.712	50	No	No	Yes
		-30.51458	116.7138	10	No	No	No
		-30.494021	116.7	40	No	No	Yes
		-30.494118	116.7003	30	No	Yes	No
		-30.525855	116.7219	40	Yes	No	No
		-30.493892	116.6991	75	No	No	No
<i>Podotheca uniseta</i>	Priority 3						

Appendix D

Biological Assessment

Appendix E

Assessment under Significance Guidelines 1.1– Matters of National Environmental Significance (DotE 2013)

Criteria	Assessment
Lead to a long-term decrease in the size of a population	The project is located in an area that has been extensively cleared for agriculture and has an abundance of salt lake vegetation, at the eastern-most edge of known Carnaby's Black Cockatoo breeding range. Approximately 13.56 ha of suitable feeding habitat will be cleared for the project, of a total 80.8 ha mapped within 1 km of the project by AECOM in 2012. Black Cockatoo habitat occurs throughout the Wheatbelt region, with an estimated 2400 ha of suitable vegetation within 10 km of the project envelope. The widening of the road is not considered likely to significantly impact the long term size of the population of Carnaby's Black Cockatoo.
Reduce the area of occupancy of the species	The project will reduce the available habitat within 10 km of the project by 0.56%. The area of occupancy of this species is unlikely to be significantly reduced.
Fragment an existing population into two or more populations	The road is narrow and linear in nature and the widening is unlikely to fragment any existing populations. Black Cockatoos were recorded in large stands of feeding habitat adjacent to the survey area, and it is not considered that the existing road has fragmented habitat, therefore the widening is unlikely to result in fragmentation.
Adversely affect habitat critical to the survival of a species	The habitat in the project envelope is not considered critical for the survival of the species according to the criteria outlined in the Carnaby's Black Cockatoo Recovery Plan (identified as known breeding and nearby feeding habitat, former known breeding habitat that has hollows intact and vegetation that provides habitat for feeding, watering and regular night roosting). While 56 potential future nesting trees are present that fulfil the DBH requirements and one of the trees to be cleared has a hollow, there is no evidence of Black Cockatoo feeding or roosting in the project envelope to date. Alternative feeding and breeding habitat is present within 10km of the project envelope and the clearing proposed is approximately 0.56% of this available habitat.
Disrupt the breeding cycle of a population	The habitat in the project envelope is not considered likely to disrupt the breeding cycle of the Black Cockatoo if cleared. 56 potential future nesting trees are present that fulfil the DBH requirements and one of these contains a hollow, however no evidence of use was identified. The hollow identified (116.670858; -30.455323) was not of suitable size for use as a nest at present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Alternative feeding and breeding habitat is present within 10 km of the project envelope and the clearing proposed is approximately 0.56% of the available habitat. The clearing of the project envelope is not considered likely to cause species decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	No invasive species that are likely to impact Black Cockatoos will be introduced by the project works. Main Roads will apply suitable controls to prevent impacts resulting from weeds and dieback. This will include washing down equipment prior to and upon exit from the project area.
Introduce disease that may cause the species to decline	Introduction of disease that may impact Black Cockatoos is unlikely as a result of the project.
Interfere with the recovery of the species	The recovery of Black Cockatoos is detailed in the Carnaby's Black Cockatoo Recovery Plan. The objective of the Recovery Plan is to "stop further decline in the distribution and abundance of Carnaby's cockatoo by protecting the birds throughout their life stages and enhancing habitat critical for survival throughout their breeding and non-breeding range". The project is not considered critical habitat as there is no known breeding, feeding or roosting occurring in the project envelope. Further, the collision with motor vehicles has been cited in the Recovery Plan as a significant impact to this species (DPaW 2013). Vegetation in the project area is close to the road, within 1 metre in some locations, and the project will widen the cleared area around the road thereby reduce the attractiveness of roadside vegetation to this species and potentially reducing vehicle strikes.

Appendix F

Correspondence from Department of the Environment



Mr Ardeshir Bahmani
Main Roads WA
PO Box 333
NORTHAM WA 6401

Dear Mr Bahmani

Decision on referral
Northam Pithara road widening and sealing, WA (EPBC2015/7454)

Thank you for submitting a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This is to advise you of my decision about the referral of the proposed action, to clear native vegetation to widen and seal Northam Pithara Road between SLK 129.12 and 152.25, within the Shire of Dalwallinu and the Shire of Wongan-Ballidu, WA.

As a delegate of the Minister for the Environment, I have decided under section 75 of the EPBC Act that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- Listed threatened species and communities (s18 & s18A)

Based on the information available in the referral, the proposed action is likely to have a significant impact on the following matters of national environmental significance, but not limited to:

- The clearing of approximately 15.9 hectares of foraging and potential breeding habitat for the listed endangered Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*); and
- Individuals of the endangered Silky Frankenia (*Frankenia conferta*) and habitat critical to the species survival.

Please note that this decision only relates to the potential for significant impacts on matters protected by the Australian Government under Chapter 2 of the EPBC Act.

A copy of the document recording this decision is enclosed.

At this stage, a decision has not been made on the approach that must be used to assess the project. To assist in determining the most appropriate assessment approach the Department will be contacting the WA Department of Environment Regulation to confirm whether the assessment bilateral agreement between the Commonwealth Government and WA Government will be applied to this proposal.

I have also written to the Office of the Environmental Protection Authority to advise them of this decision.

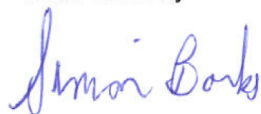
Please note, under subsection 520(4A) of the EPBC Act and the *Environment Protection and Biodiversity Conservation Regulations 2000* your assessment is subject to cost recovery. A fee schedule will be provided to you once the decision on the assessment approach has been determined. Further details on cost recovery are available on the Department's website at: <http://www.environment.gov.au/epbc/cost-recovery>.

Please also note that once a proposal to take an action has been referred under the EPBC Act, it is an offence under section 74AA to take the action while the decision making process is on-going (unless that action is specifically excluded from the referral or other exemptions apply). Persons convicted of an offence under this provision of the EPBC Act may be liable for a penalty of up to 500 penalty units. The EPBC Act is available on line at: <http://www.environment.gov.au/epbc/about/index.html>

The Department has recently published an *Environmental Impact Assessment Client Service Charter* (the Charter) which outlines the Department's commitments when undertaking environmental impact assessments under the EPBC Act. A copy of the Charter can be found at: <http://www.environment.gov.au/epbc/publications/index.html>.

If you have any questions about the referral process or this decision, please contact the project manager, Dionne Cassanell, by email dionne.cassanell@environment.gov.au, or telephone (02) 6274 2114 and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely



Dr Simon Banks
Assistant Secretary
West Assessment Branch

29 May 2015

Appendix G
Bed and Banks Permit



PERMIT TO OBSTRUCT OR INTERFERE (S17)

Granted by the Minister under section 17 of the Rights in Water and Irrigation Act 1914

Permit Holder(s)	Main Roads	
Description of Water Resource	North Mortlock Avon System North Mortlock Avon System	
Location of Water Source	Road Reserve along Northam-Pithara Road - Straight Line Kilometre (SLK) 129.12 to 152.25	
Authorised Activities	Activity	Location of Activity
	Modification of drainage features by upgrading existing culverts and installing new ones, where required, to facilitate the widening and realignment of Northam-Pithara Road SLK 129.12 to 152.25	Road Reserve along Northam-Pithara Road - Straight Line Kilometre (SLK) 129.12 to 152.25
Duration of Permit	From 24 March 2015 to 23 March 2020	

This Permit is subject to the following terms, conditions and restrictions:

- 1 The permit holder must stabilise all sites affected by construction or removal activities using methods described in the Environmental Management Plan, as provided with the application dated 22 January 2015.
- 2 The permit holder is to comply with the Environmental Management Plan and any amendments made by or with the approval of the Department.

End of terms, conditions and restrictions

This Permit is granted subject to the Rights in Water and Irrigation Regulations 2000

Appendix H

Environmental Management Plan

NORTHAM PITHARA SLK 129.12 – 152.25

Introduction

This Environmental Management Plan (EMP) has been developed for the project following the completion of the Clearing Permit Impact Assessment and MNES Report. The aim of this EMP is to minimise the environmental impacts associated with the proposed works as well as to identify areas of responsibilities required for the implementation of management strategies. This EMP includes vegetation management measures.

This EMP addresses specific issues that were identified during the impact assessment. The project management measures identified within this EMP are in addition to the standard environmental management contract specifications used for Category 2 projects. Main Roads' standard environmental contract specifications (Specifications 203, 204, 301, 302 and 304) are to be adhered to where appropriate.

The areas that require special management will be addressed in terms of:

- the timing of the various management actions;
- the topic (e.g. vegetation);
- the objectives for each area;
- the actions that are necessary to minimise the impact; and
- the responsible party for implementing the action.

Communication Plan

Environmental issues specific to the project will be communicated as follows:

Method	Frequency	Participants	Record
Prestart	Prior to construction	Project Personnel	Minutes of Meeting
Induction	Prior to construction	Project Personnel	Induction records
JSEA	Prior to construction	Project Personnel	JSEA paperwork
Toolbox Meetings	Weekly	Project Personnel	Minutes of Meeting
Department of Environment Regulation	As required	Main Roads' Project Manager and Contractor Project Manager	Minutes of meeting

External Communication and Complaints

A complaints register shall be maintained. All complaints received shall be forwarded to the Main Roads' Project Manager for action. Serious complaints shall be investigated within 24 hours of the complaint being received.

Contingency Measures

Should any issues arise, the appropriate Department will be notified and contingency measures negotiated.

Auditing

Compliance with this EMP will be audited by the Project Manager based on the Compliance Checklist. This checklist must be returned to the Environment Officer within 4 weeks of completion of the project.

EMP Accountability

Persons name	Persons Role	Contact details
Rochelle Lupton	Environment Officer	0435 042 502
Peter Mawby	Site Supervisor	0419 903 600

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
<i>Standard Record Keeping Management</i>				
Record Keeping and Inductions	<ul style="list-style-type: none"> Ensure standard record keeping requirements are completed within 1 month of completion of the project activities. 	Post-construction record maintenance.	Site Supervisor	Within 1 month of completion of the project activities.
	<ul style="list-style-type: none"> All construction crew will be inducted into the EMP. Prestart will raise the area containing Priority and DRF species as a particular issue for crew to be aware of and avoid. At prestart the requirements of the EMP will be reviewed. Any tasks required by construction crew in relation to areas with Priority flora or DRF will be included in the JSA. 		Site Supervisor	Prior to works
<i>Project Specific Aspects</i>				
Vegetation	<ul style="list-style-type: none"> The clearing area will be pegged to prevent impacts to adjacent DRF and Priority flora that are outside the limitations of clearing. Priority species in the clearing area will be clearly marked prior to clearing. Fencing will be applied to the species <i>Frankenia conferta</i> located 3 m from the project area, to prevent accidental impacts to this species. The batters will be steepened to prevent the removal of these plants. A 'no go' zone 20 m x 3 m will be applied to <i>Frankenia conferta</i> to prevent impacts during construction. 	One surveillance monitoring will occur prior to clearing.	Site Supervisor	Prior to clearing commencing
	<ul style="list-style-type: none"> Topsoil will be stockpiled and respread after works. 	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor Environment Officer	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> Mulched vegetation will be spread over the backslopes to retain seed bank. 	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor Environment Officer	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> Avoid clearing areas of good vegetation connectivity. 	Avoided as part of project design.	Environment Officer	
	<ul style="list-style-type: none"> Minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared areas where possible. 	NA – clearing footprint minimised during assessment stage.	Environment Officer	Prior to clearing commencing.

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
	<ul style="list-style-type: none"> An Environmental Compliance Document will be provided that includes a map of the clearing area and a copy of this EMP. 		Environment Officer	Prior to clearing commencing
	<ul style="list-style-type: none"> Clearing of vegetation shall not exceed the limits of clearing. 	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor Environment Officer	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> Burning of cleared vegetative materials or burning within the road reserve shall not be permitted under any circumstances 	One surveillance monitoring will occur within two weeks once clearing has been completed.	Site Supervisor	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> Clearing activities must be completed in accordance with Main Roads Specifications: 204 (Environment), 301 (Clearing), 302 (Earthworks). 		Site Supervisor	
Avoid and manage impacts to fauna.	<ul style="list-style-type: none"> A 'soft start' will be implemented prior to clearing to allow animals in the area to move away before clearing activities commence. 		Site Supervisor Environment Officer	Prior to clearing
	<ul style="list-style-type: none"> Minimise impacts on areas of vegetation where significant fauna have been recorded or may potentially occur. 			Project lifespan/ ongoing
	<ul style="list-style-type: none"> Fauna are not to be fed or intentionally harmed or killed. 			
	<ul style="list-style-type: none"> In the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline (08) 9474 9055) will be contacted for assistance. 			Any fauna injured or killed on site will be recorded as an incident.
Dieback and weed management.	<ul style="list-style-type: none"> Clean earth moving machinery of soil and vegetation prior to entry and exit of project area. 	Machinery checked prior to entering project site. No machinery to be outside the approved clearing area.	Site Supervisor	Project lifespan/ ongoing
	<ul style="list-style-type: none"> Restrict movement of machines and other vehicles to the limits of the areas cleared. 			
	<ul style="list-style-type: none"> Identify areas to undertake weed control to stop spread of weeds. 	Undertake weed spraying as required.	Site Supervisor	As required

ENVIRONMENTAL MANAGEMENT PLAN				
Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
Aboriginal Heritage Sites	<ul style="list-style-type: none"> • Ensure on-site construction personnel are aware of the location of the 'Other Heritage Site' and the requirement to report any artefacts if found. • In the event that human skeletal material is discovered, work will cease immediately and the Police will be contacted. If the skeletal remains are determined to be of Aboriginal origin, the Department of Aboriginal Affairs will be contacted as soon as practicable. • In the event that artefacts or material of Aboriginal origin is discovered, work will cease within 25 metres of the material and a qualified archaeologist will investigate the item(s) and take appropriate actions. 		Site Supervisor Environment Officer	Completion of works
Dust	<ul style="list-style-type: none"> • Surface watering, spreading of hydromulch or similar will be used to protect loose surfaces or cleared areas. • Apply dust suppression techniques to sealed roads on or near the project site that are affected by excessive dust. • Water tankers will be made available to dampen exposed surfaces within construction and laydown areas, particularly during ground disturbing activities. • Minimise or cease project activities during periods of high wind or when excessive dust is generated. • Apply water, road sweeping and signage for suitable speed limits will be used during vehicle movement. 	One surveillance monitoring will occur within two weeks of the commencement of clearing.	Site Supervisor Contractor	Completion of works
Pollution and Litter	<ul style="list-style-type: none"> • All waste materials from the project area will be removed from the site upon completion of the project and to the satisfaction of the Project Manager or Site Superintendent. • Construction waste and other rubbish will be contained in bins with lids (where practicable) and removed regularly. • Dust suppression will be applied in the form of water tankers as required to prevent impacts of dust on adjacent vegetation. 	Construction and post-construction maintenance	Contractor	Completion of works

ENVIRONMENTAL MANAGEMENT PLAN

Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
Surface Drainage	<ul style="list-style-type: none"> Vegetation removal and soil disturbance will be minimised, where practicable to prevent impacts to surface drainage. 		Site Supervisor	During works
	<ul style="list-style-type: none"> Disturbed areas will be stabilised soon after construction activities are completed. Stabilisation will be undertaken using bunding or sediment traps or similar, as required. 	Surveillance monitoring will be conducted to ensure water drainage management is being applied during works.		
	<ul style="list-style-type: none"> No on-site storage of fuel, oils and other contaminant materials will be permitted within 100 m of a watercourse or wetland. 	Surveillance monitoring will be conducted to ensure that contaminants are appropriately located.		
	<ul style="list-style-type: none"> Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted during project construction. Existing drainage will be maintained with the upgrade of culverts along the road. Culvert upgrades will be undertaken before the road widening to maintain existing surface water flows. Works will be undertaken progressively with drainage construction conducted at the same time as the road construction in the realignment areas. Vehicle and equipment wash down areas will be located away from environmentally sensitive areas. Works will be undertaken during the dry season so as not to impact surface water flows. 			
Groundwater	<ul style="list-style-type: none"> All spills will be contained immediately and removed within 24 hours to minimise the potential for contaminants to enter groundwater. 	Construction maintenance	Site Supervisor	Completion of works

ENVIRONMENTAL MANAGEMENT PLAN

Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
Fire	<ul style="list-style-type: none"> • No fires shall be lit within the project area. • Machinery will be fitted with approved spark arresting exhaust systems. • All vehicles, plant and equipment to be fitted with fire extinguishers and restricted and to designated cleared areas. • All hot works will be undertaken in accordance with standard safety procedures • Construction personnel will extinguish and report fires occurring within the project area. 	Construction maintenance	Site Supervisor Contractor	During works