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WESTERN AUSTRALIA

Clearing Assessment Report – CPS 818

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Western Australia.*

Newman Road Train Assembly Area
Upgrade & Associated Infrastructure

November 2021

EOS No. 2255

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Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environmental Scientist	Rev A	September 2021
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1 PURPOSE

The purpose of this Clearing Assessment Report (CAR) is to provide a report detailing the assessment of native vegetation clearing that is proposed to be undertaken using the Statewide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

The Project is at concept stage only and the full extent of ground disturbance at this point in time is unknown. Therefore, this document assesses the environmental impact of an 84.6 hectares (ha) Development Envelope. It is anticipated the actual impacts of the Project will be significantly less once final design is determined.

The CAR outlines the key activities associated with the Project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Project using the Ten Clearing Principles (Environmental Protection Act 1986 (EP Act) Schedule 5), and the strategies used to manage vegetation clearing.

2 SCOPE

2.1 Project Scope

Project Name: Newman Road Train Assembly Area (RTAA) Upgrade & Associated Infrastructure.

Project Purpose / Components: The Project will involve the upgrade of the existing RTAA which is currently managed by the Shire of East Pilbara. The Project is comprised of the following components:

- Pavement widening and rehabilitation/overlay of the existing bay
- Construction of turning lanes
- Intersection/access with the GNH
- Deceleration lane
- Acceleration lane
- Drainage improvements
- Installation of lighting, toilet facilities, shelter and rubbish bins.

The proposed clearing undertaking using CPS 818 is: Up to 70.63 ha of native vegetation is required to be cleared within the Development Envelope.

The proposed temporary clearing undertaking using CPS 818 is: Nil.

Project Location(s): Great Northern Highway (GNH) between Straight Line Kilometre (SLK) 1163.5 and 1166.5, within the town of Newman in the Shire of East Pilbara, Western Australia, as shown in Figure 1.

2.2 Assessment Report Scope

The assessment area, see Figure 2, is confined to a local area of a 40 km radius (Study Area).

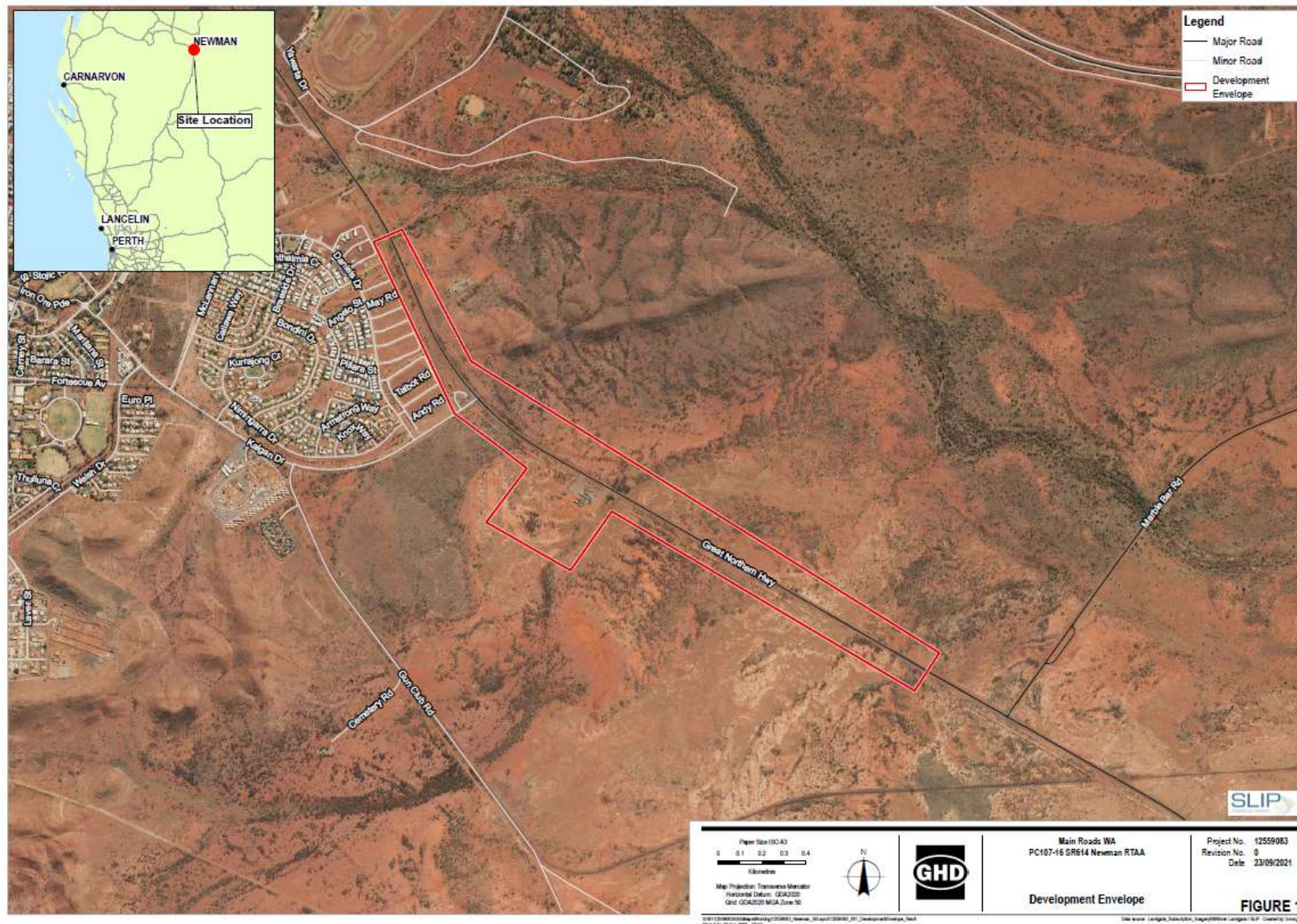


Figure 1. Development Envelope

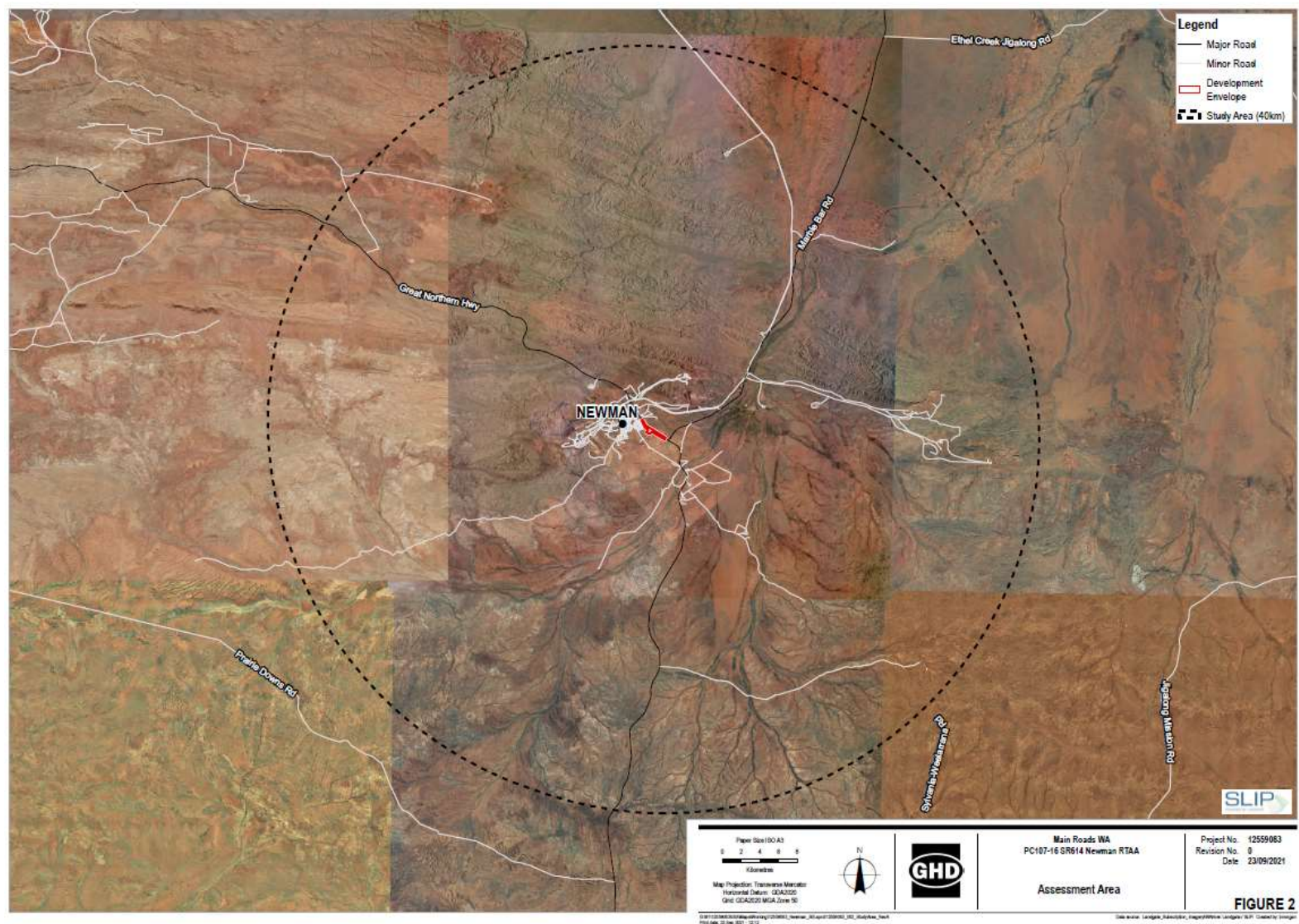


Figure 2. Assessment Area

2.3 Alternatives to clearing

The Project is at concept stage only and the extent of ground disturbance at this point in time is unknown. It is anticipated the actual impacts of extension of the rest area will be significantly less once final design is determined.

Temporary access tracks, construction storage, and storage/stockpile locations will be contained within the Development Envelope to minimise or avoid any unnecessary clearing of vegetation.

2.4 Measures to Avoid, Minimise, Reduce and Manage Project Clearing Impacts

The design and management measures implemented to avoid and minimise the clearing impacts by the Project are provided in Table 1.

Table 1. Measures undertaken to Avoid, Minimise, Reduce and Manage the Project Clearing Impacts

Design or Management Measure	Discussion and Justification
Steepen batter slopes	The design has sought to reduce earthworks as much as possible and to minimise earthworks (fill height/cut depth) in areas of significant vegetation.
Installation of safety barriers	Clearing of vegetation and ground disturbance has been maintained within the existing disturbance footprint as much as possible. Safety barriers were not applicable to the design.
Alignment to one side of existing road	The Development Envelope extends north to south along the Great Northern Highway (GNH); however only the western side of the road reserve will be impacted by the extension of the road train upgrades. Based on the final design, and potential for the Project design to extend beyond the road reserve boundary, there may be a requirement to acquire Freehold land adjacent to the road reserve.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	The Project follows the existing road and is comprised of thin strips of vegetation adjacent to the existing highway. Impact to adjacent native vegetation and environmental aspects have been minimised by the current design to remain mostly within the road reserve (with minor areas intersecting Freehold land).
Installation of kerbing	Kerbing has been considered and implemented in the design where possible.
Simplification of design to reduce number of lanes and/or complexity of intersections	The design has been simplified as much as practicable to minimise impacts to the environment.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Temporary access tracks, construction storage, and storage/stockpile locations have been contained within the Development Envelope, away from native vegetation as much as possible.
Drainage modification	The Project will improve drainage. The location of any additional drains will avoid vegetation as much as possible.

2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), Main Roads has also had regard to the below instruments.

Other Legislation of relevance for assessment of clearing and planning/other matters

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)
- *Aboriginal Heritage Act 1972* (WA)
- *Town Planning and Development Act 1928*.

Environmental Protection Policies

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992
- Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011.

Other Relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (DEC, December 2014)
- Procedure: Native vegetation clearing permits (DWER, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, August 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities
- Approved Recovery Plans for threatened species
- EPBC Act Referral guidelines for the three threatened black cockatoo species
- Strategic advice – EPA.

3 SUMMARY OF SURVEYS

3.1 Biological Survey

Pilbara Environmental Pty Ltd (Pilbara Environmental) conducted a detailed and targeted flora survey and basic fauna survey of the Development Envelope from the 12th to the 15th of May 2021. The survey extent for the Pilbara Environmental (2021) survey did not cover the entire 84.6 ha Development Envelope. Therefore, GHD has extrapolated the remaining area (4.67 ha) utilising the vegetation associations described in the Pilbara Environmental survey and an interrogation of aerial imagery.

Section 3.1.1 contains the summary of the survey and extrapolation undertaken for the Project.

3.1.1 Summary of Biological Survey

Pilbara Environmental (2021)

The 110.10 ha survey area mapped eleven vegetation associations. The Pilbara Environmental survey area was dominated by *Acacia* overstorey over tussock or hummock grass understorey. Interspersed across the survey area were also tussock grasslands over low open herbland on cracking clay habitats. The vegetation condition ranged from 'Very Good' to 'Completely Degraded' across the survey area. Parts of the survey area are cleared and contain no vegetation including sections of Great Northern Highway and the existing road train assembly area.

One additional vegetation type was mapped by Pilbara Environmental (2021) as 'Disturbance species on disturbed landforms' that had no consistent vegetation association/structure but exhibited some native species. Pilbara Environmental (2021) identified 3.58 ha of this vegetation type within their survey area. GHD's interrogation of aerial imagery determined that approximately 10% of this vegetation association comprises native flora species (0.36 ha).

None of the vegetation associations recorded during the Pilbara Environmental survey represented any Commonwealth or State-listed Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs).

Two hundred and twenty-nine flora taxa, including species, subspecies and forms, representing 34 families and 105 genera were recorded from within the Pilbara Environmental survey area during the field survey. This total comprised 217 native taxa and 12 introduced taxa.

Two significant flora were recorded within the Pilbara Environmental survey area and the Development Envelope:

- *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3)
- *Aristida jerichoensis* var. *subspinulifera* (P3).

No Threatened flora were recorded. Aside from the two Priority species recorded, no additional Threatened or Priority species were considered likely or possible to occur within the Pilbara Environmental survey area.

The Pilbara Environmental survey identified seven main fauna habitat types. These habitat types were also found within the Development Envelope. The dominant fauna habitat type within Development Envelope was 'Open *Acacia* shrubland on stony plain'. *Acacia* shrubland on stony/clay loam plain, associated with *Mulga* groves, provides high habitat values due to the protection/shelter the dense stands of *Mulga* provide to birds along with increased leaf litter on the ground. The Minor Flowline

in open shrubland and Minor Flowline in herbland habitat types also provide higher habitat values due to their role as potential ecological linkages.

The habitat types mapped are well represented within the Hamersley IBRA subregion. Due to its small size, the abundance of analogous, contiguous habitat in the surrounding area and presence of the GNH and existing RTAA within the Development Envelope it is considered highly unlikely that the Development Envelope represents key habitat for any significant fauna species.

No significant fauna species, or evidence of fauna species were recorded within the Pilbara Environmental survey. However, the Pilbara Environmental survey identified 10 species of significance that are likely or possible to occur within the survey area.

4 VEGETATION DETAILS

4.1.1 Project Site Vegetation Description

The Development Envelope is located within the Pilbara bioregion and Hamersley (PIL03) subregion. The southern extent of the Development Envelope is situated within 450 m of the Augustus (GAS03) subregion of the Gascoyne bioregion.

The Development Envelope lies within the Hamersley Botanical District of the Eremaean Botanical Province as defined by Beard (1975). There are two vegetation associations within the Development Envelope. The vegetation associations and their extents are presented within Table 2 and 3.

Table 2. Summary of Development Envelope's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 82 described as Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (Government of Western Australia [GoWA] 2018)	Clearing of up to 70.63 ha for road train assembly area upgrades along the GNH	Very Good to Completely Degraded (Pilbara Environmental 2021)	Vegetation description and condition determined from Pilbara Environmental (2021) survey and aerial imagery.
Vegetation Association 18 described as Low woodland; mulga (<i>Acacia aneura</i>) (GoWA 2018)			

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 82	Statewide Western Australia	2,565,901	2,553,206	99.51	11.57
	IBRA Bioregion Pilbara	2,563,583	2,550,888	99.50	11.58
	IBRA Sub-region Hamersley	2,177,573	2,165,224	99.43	13.57
	Local Government Authority Shire of East Pilbara	927,709.76	919,072.17	99.07	0.50
Veg Assoc No. 18	Statewide Western Australia	19,892,306	19,843,148	99.75	6.64
	IBRA Bioregion Pilbara	676,556	671,843	99.30	25.35
	IBRA Sub-region Hamersley	633,833	576,541	99.19	29.54
	Local Government Authority Shire of East Pilbara	359,372	355,446	98.91	1.49

4.1.2 Vegetation Units and Condition

Nine vegetation associations were mapped within the Development Envelope and are presented in Table 4. The total area of native vegetation mapped was 70.63 ha. This also included 0.36 ha mapped as 'Disturbance species on disturbed landforms' that had no consistent vegetation association/structure but exhibited some native species. A total of 10.77 ha of the Development Envelope was cleared and therefore not mapped as vegetation. The dominant vegetation association across the Development Envelope consisted of *Acacia* open and *Senna* open shrublands, with *Acacia aptaneura* and *Senna glutinosa* subsp. *xluerssenii* being the dominant species. Tussock grasses over herbs occurred on cracking clays often as mosaic with other vegetation associations.

Table 4. Vegetation units within the Development Envelope

Vegetation Association	Landform & Soils	Development envelope (ha)
<i>Dichanthium sericeum</i> subsp. <i>humilius</i>, <i>Eragrostis xerophila</i>, <i>Aristida latifolia</i> mid open tussock grassland over <i>Indigofera linifolia</i>, <i>Rhynchosia minima</i>, <i>Sida fibulifera</i> low herbland. Associated Species: <i>Tephrosia</i> sp. clay soils (S. van Leeuwen et al. PBS 0273), <i>Ptilotus gomphrenoides</i>, <i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113), <i>Chrysopogon fallax</i>. <i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) was recorded within this vegetation association.	Cracking Clay on plain	13.88
<i>Acacia aptaneura</i>, <i>Acacia rhodophloia</i>, (<i>Acacia tetragonophylla</i>) tall shrubland over <i>Enneapogon polyphyllus</i>, <i>*Cenchrus ciliaris</i>, <i>Aristida contorta</i> open mid tussock grassland. Associated Species: <i>*Malvastrum americanum</i>, <i>*Bidens bipinnata</i>, <i>Gomphrena kanisii</i> <i>Aristida jerichoensis</i> var. <i>subspinulifera</i> (P3) was recorded within this vegetation association.	Dark red brown clay loam on plain.	7.45
<i>Acacia aptaneura</i>, <i>Acacia rhodophloia</i>, (<i>Acacia tetragonophylla</i>) tall open shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low sparse shrubland over <i>Enneapogon polyphyllus</i>, <i>Aristida contorta</i> open mid tussock grassland. Associated Species: <i>*Cenchrus ciliaris</i>, <i>Chrysopogon fallax</i>, <i>Hakea lorea</i>, <i>Rhagodia eremaea</i>.	Dark red brown clay loam on Stony plain	33.05
<i>Acacia synchronicia</i>, <i>Acacia aptaneura</i>, <i>Acacia tetragonophylla</i> tall sparse shrubland over <i>Senna glutinosa</i> subsp. <i>xluerssenii</i> mid open shrubland.	Dark red brown loam on quartz dominated stony plain	1.95

Associated Species: <i>Acacia paraneura</i> , <i>Triodia pungens</i> , <i>Aristida contorta</i> .		
<i>Acacia sibirica</i> , <i>Acacia aptaneura</i> tall sparse shrubland over <i>Eremophila cuneifolia</i> sparse mid shrubland over <i>Triodia vanleeuwenii</i> , <i>Triodia pungens</i> low open hummock grassland. Associated Species: <i>Acacia synchronicia</i> , <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> .	Dark red brown loam on stony lower slope	3.62
<i>Acacia rhodophloia</i> × <i>sibirica</i> , <i>Acacia aptaneura</i> tall open shrubland over <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> mid sparse shrubland over <i>Triodia pungens</i> open mid hummock grassland.	Dark red, brown loam on stony lower slope on southern side of ridge	6.87
<i>Acacia rhodophloia</i> × <i>sibirica</i> , <i>Acacia inaequilatera</i> tall sparse shrubland over <i>Sida echinocarpa</i> , <i>Indigofera monophylla</i> , <i>Ptilotus auriculifolius</i> mid open herbland over <i>Triodia pungens</i> low sparse hummock grassland. Associated Species: <i>Enneapogon caeruleus</i> , <i>Aristida contorta</i> .	Dark red, brown loam on stony dolerite rise	2.87
<i>Dichanthium sericeum</i> subsp. <i>humilius</i> , <i>Panicum laevinode</i> , <i>Iseilema vaginiflorum</i> mid open tussock grassland over <i>Cullen graveolens</i> , <i>Ptilotus gomphrenoides</i> , <i>Rhynchosia minima</i> low open herbland. Associated Species: <i>Urochloa occidentalis</i> var. <i>occidentalis</i> , <i>Tephrosia</i> sp. clay soils (S. van Leeuwen et al. PBS 0273).	Minor ephemeral flowline on clay loam plain	0.58
Disturbance species on disturbed landforms. Pilbara Environmental (2021) identified 3.58 ha of this vegetation type within the Development Envelope and described the vegetation as “no consistent vegetation structure and does not represent any existing vegetation associations”. GHD’s interrogation of aerial imagery determined that approximately 10% of this vegetation association comprises native flora species. Associated Species: <i>*Cenchrus ciliaris</i> , <i>Aristida contorta</i> , <i>Stylosanthes hamata</i> .	Disturbed landforms	0.36
Total vegetation		70.63

Vegetation within the Development Envelope is in a variable condition, largely due to the presence of the GNH and the existing RTAA. The vegetation condition ranged from 'Very Good' to 'Completely Degraded'. The majority of the Development Envelope was in a 'Very Good' condition (58.5%).

Disturbances impacting the Development Envelope include edge effects from the existing RTAA, clearing, weed infestation (dominated by *Cenchrus ciliaris*), vehicle tracks and historic clearing. Areas of the Development Envelope completely devoid of vegetation including roads, tracks or clearing associated with the RTAA were categorised as 'Cleared' and not assessed for vegetation condition. Vegetation condition rating and extents are listed in Table 5 below.

Table 5. Vegetation Condition (Pilbara Environmental 2021)

Condition	Extent in Development Envelope (ha)*	% of Development Envelope
Excellent	0	0
Very Good	49.52	58.5
Good	17.47	20.7
Degraded	2.93	3.5
Completely Degraded	3.91	4.6
Cleared	10.77	12.7
Total	84.60	100

Note: * Pilbara Environmental (2021) identified 3.58 ha of this vegetation type within the Development Envelope and described the vegetation as "no consistent vegetation structure and does not represent any existing vegetation associations". GHD's interrogation of aerial imagery determined that approximately 10% of this vegetation association comprises native flora species.

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the project's proposed clearing is likely to have a significant impact on the environment, the project was assessed against the Ten Clearing Principles (EP Act, Schedule 5).

Each principle has been assessed in accordance with Department of Water and Environmental Regulation's (DWER's) 'A Guide to the Assessment of Applications to Clear Native Vegetation' and other relevant CPS Decision Reports prepared by DWER.

The proposed clearing is not likely to be at variance with the Ten Clearing Principles.

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

Proposed clearing is not likely to be at variance to this Principle
Comment <u>Vegetation and flora</u> The Development Envelope comprises 70.63 ha of native vegetation ranging in condition from 'Very Good' to 'Completely Degraded' with 58.5% of the Development Envelope assessed as 'Very Good' (Pilbara Environmental 2021). The dominant vegetation association across the Development Envelope consisted of <i>Acacia</i> open and <i>Senna</i> open shrublands, with <i>Acacia aptaneura</i> and <i>Senna glutinosa</i> subsp. <i>xluerssenii</i> being the dominant species. A search of DBCA's PEC database did not identify any PECs within the Development Envelope, however one PEC (and/or its buffer) intersects the wider desktop study area, namely Vegetation of sand dunes of the Hamersley Range/Fortescue Valley. Impacts to the PEC as a result of Project activities is not expected, due to the distance to this PEC. A search of DBCA's TEC database identified one TEC (and/or its buffer) within the Development Envelope. This TEC is the Ethel Gorge aquifer stygobiont community (DBCA: Endangered), comprised of a subterranean community with no flora or vegetation features (Pilbara Environmental 2021). The only known occurrence of this community is on the Fortescue River (located approximately 4.9 km to the east of the Development Envelope) within the Ethel Gorge/Ophthalmia Basin alluvium calcrete aquifer. It is therefore considered likely that the Development Envelope intersects the buffer of this TEC. Primary threats to this community include dewatering and salinization of the aquifer that supports the community (DBCA 2020). Proposed works are unlikely to intercept the groundwater table and groundwater abstraction (if required) will not exceed the current approved allocation under existing licences. The majority of works will occur outside the TEC, but within its associated buffer. Given the nature of proposed works and depth to groundwater, it is unlikely that Project implementation will result in contamination of groundwater, changes to salinity or a change in groundwater flows/levels that could impact upon the Ethel Gorge aquifer stygobiont TEC. Additionally, Main Roads will implement standard measures to avoid contamination of groundwater due to leaks and spills in the Construction Environmental Management Plan (CEMP). A total of 29 Threatened and Priority flora species were identified from desktop searches (PMST, DBCA, NatureMap, Western Australian Herbarium [WAHERB]) as present/potentially present within the assessment area. Most of these flora taxa are associated with specific habitats of the Hamersley Ranges such as hill tops, hill slopes, gorges, gullies and permanent water. These habitats are not present within the Development Envelope. No Threatened flora listed under the EPBC Act or BC Act were recorded within the Development Envelope during the field survey (Pilbara Environmental 2021). Two DBCA Priority listed flora species were recorded within the Development Envelope, namely the Priority 3 <i>Dolichocarpa</i> sp. Hamersley Station (A.A. Mitchell

PRP 1479) and the Priority 3 *Aristida jerichoensis* var. *subspinulifera*. Both species are locally common and are either known from multiple records/locations or have been recorded in large numbers.

Potential impacts to Priority flora species known to occur within the Development Envelope have been estimated by interrogating records on FloraBase (Western Australian Herbarium, 1998-), DBCA records and datasets provided to Main Roads under licence agreements. A total of 161 *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) individuals were recorded across 10 locations within the Development Envelope, occurring as localised clusters within cracking clay habitat. These occurrences represent the south-eastern extent of the current known range of this species. A review of DBCA datasets and *NatureMap* (using current species name and former species name, *Oldenlandia*) search results indicate that population statistics for this species is limited within this area. A search of FloraBase show that there are approximately 30 records of this species within the Pilbara, however, count data of individual plants is not known. FloraBase shows that a majority of previous records of this species are located on the side of roads, within highly disturbed areas. Given the limited survey data of the species in the area, further surveys beyond the Development Envelope may indicate a higher population than currently represented.

One individual of *Aristida jerichoensis* var. *subspinulifera* was recorded within *Acacia aptaneura* shrubland within the Development Envelope. This species has been previously recorded from the Murchison, Gascoyne and Pilbara IBRA bioregions, as well as from the Northern Territory and Queensland. There are eight DBCA records of this species within a 40 km radius of the Development Envelope, with records indicating that the species is common within these locations. Clearing of one individual of *Aristida jerichoensis* var. *subspinulifera* is not expected to significantly impact this species.

Fauna habitat

Seven main habitat types were recorded during the Development Envelope namely:

- Tussock grasses over herbland on cracking clay
- Minor Flowline in open shrubland
- Minor Flowline in herbland
- Acacia shrubland on stony/clay loam plain
- Open Acacia shrubland on stony plain
- Open Acacia shrubland on stony slope
- Open Senna shrubland on stony plain.

The dominant fauna habitat type within Development Envelope was 'Open *Acacia* shrubland on stony plain'. *Acacia* shrubland on stony/clay loam plain, associated with *Mulga* groves, provides high habitat values due to the protection/shelter the dense stands of *Mulga* provide to birds along with increased leaf litter on the ground. The Minor Flowline in open shrubland and Minor Flowline in herbland habitat types also provide higher habitat values due to their role as potential ecological linkages.

The habitat types mapped are well represented within the Hamersley IBRA subregion. The Project will require the clearing of 70.63 ha of fauna habitat, which comprises thin strips adjacent to the existing highway. There is an abundance of analogous, contiguous habitat in the surrounding area. Given the thin, linear nature of the clearing required for the Project, and the proximity of the Project to the GNH and the existing RTAA, it is considered highly unlikely that the Development Envelope represents key habitat for any significant fauna species.

Fauna

Desktop searches (PMST, DBCA, NatureMap) identified the presence/potential presence of 32 significant fauna taxa within the assessment area. No significant fauna species were recorded during the field survey (Pilbara Environmental 2021). No evidence, such as burrows, diggings, tracks and scats, of significant fauna was recorded. A post survey likelihood of occurrence assessment (Pilbara Environmental (2021) identified 10 species of significance as 'possible' or 'likely' to occur within the Development Envelope at some stage and these are discussed further under Principle (b). Habitat for all significant fauna species known or potentially occurring within the Development Envelope (for which data is available) is represented outside of the Development Envelope.

Environmentally Sensitive Areas

The Development Envelope is located within an Environmentally Sensitive Area (ESA), associated with the potential presence of the Ethel Gorge aquifer stygobiont community TEC and/or its buffer. As discussed above, it is unlikely that proposed works will result in contamination of groundwater, changes to salinity or a change in groundwater flows/levels that could impact upon the Ethel Gorge aquifer stygobiont TEC.

Conservation Estates

The Development Envelope is not located within any Commonwealth or State listed conservation reserves or DBCA managed lands. The closest National Park is Collier Range approximately 120 km to the south.

Whilst the Project will result in the loss of up to 70.63 ha native vegetation, the vegetation does not comprise a high biological diversity in a local or regional context. The vegetation and habitat proposed to be cleared is adjacent to the Highway, has been exposed to historical disturbance and edge effects from the existing functioning RTAA. The Contextual Area and wider surrounds will retain large areas of similar native vegetation in good or better condition. Therefore, Project clearing is not likely to be at variance to this Principle.

Methodology

Pilbara Environmental (2021)

DAWE (2021)

DBCA (2021)

EPA (2016)

GIS Database:

- Threatened and Priority Ecological Communities
- Threatened and Priority Flora (WA Herbarium and TPFL)
- Threatened and Priority Fauna
- DBCA Legislated Lands and Waters
- DWER Clearing Regulations - Environmentally Sensitive Areas

(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.

Proposed clearing is not likely to be at variance to this Principle

The proposed clearing will remove up to 70.63 ha of native vegetation within the Development Envelope.

Fauna habitat

Seven main habitat types were recorded during the Development Envelope namely:

- Tussock grasses over herbland on cracking clay
- Minor Flowline in open shrubland
- Minor Flowline in herbland
- Acacia shrubland on stony/clay loam plain
- Open Acacia shrubland on stony plain
- Open Acacia shrubland on stony slope
- Open Senna shrubland on stony plain.

The dominant fauna habitat type within Development Envelope was 'Open *Acacia* shrubland on stony plain'. *Acacia* shrubland on stony/clay loam plain, associated with Mulga groves, provides high habitat values due to the protection/shelter the dense stands of Mulga provide to birds along with increased leaf litter on the ground. The Minor Flowline in open shrubland and Minor Flowline in herbland habitat types also provide higher habitat values due to their role as potential ecological linkages.

Desktop searches (PMST, DBCA, NatureMap) identified the presence/potential presence of 31 significant fauna taxa within the assessment area. Species that are exclusively marine or aquatic have not been included as there is no marine or aquatic habitat within the Development Envelope.

No significant fauna species were recorded during the field survey (Pilbara Environmental 2021). No evidence, such as burrows, diggings, tracks and scats, of significant fauna was recorded. A post survey likelihood of occurrence assessment (Pilbara Environmental (2021) identified 10 species of significance as 'possible' or 'likely' to occur within the Development Envelope at some stage. These species include:

- *Dasyurus hallucatus* (Northern Quoll) – Threatened
- *Macrotis lagotis* (Bilby) – Threatened
- *Rhinonicteris aurantia* (Pilbara) (Pilbara leaf-nosed bat) - Threatened
- *Charadrius veredus* (Oriental Plover) – Listed Migratory Species
- *Falco peregrinus* (Peregrine Falcon) – Specially protected fauna
- *Lerista macropisthopus* subsp. *remota* (unpatterned robust slider) – Priority Two
- *Ctenotus uber* subsp. *johnstonei* (Spotted Ctenotus) – Priority Two
- *Dasymercus blythi* (Brush-tailed Mulgara, Ampurta) – Priority Four
- *Pseudomys chapmani* (Western Pebble-mound Mouse) – Priority Four
- *Sminthopsis longicaudata* (Long-tailed Dunnart) – Priority Four.

Northern Quoll

The field survey did not record any individuals of the Northern Quoll, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). No suitable den habitats (rock crevices, tree holes or occasionally termite mounds) were present within the Development Envelope. Preferred general habitats (dissected rocky escarpments, gorges and boulder piles) were also not present. The Northern Quoll can inhabit major drainage lines which are present in the surrounding area, and potential foraging habitat is present within the Development Envelope. The species has not been previously recorded within 40 km of the Development Envelope. The Development Envelope comprises 70.55 ha of potentially suitable foraging/dispersal habitat for the Northern Quoll.

Bilby

The field survey did not record any individuals of the Bilby, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a historical record of the species (dated 1979) associated with the Coondiner Creek floodplain, which is located 5 km to the south-east of the Development Envelope. No burrows were noted within the Development Envelope and burrows are unlikely due to the stony nature of the plain. It is possible that at times this species may forage within the Development Envelope however there is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 40.34 ha of habitat suitable for the Bilby within the Development Envelope.

Pilbara leaf-nosed bat

The field survey did not record any individuals of the Pilbara leaf-nosed bat, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). The Pilbara Environmental (2021) survey did identify suitable habitat for the species within the wider survey area, however no suitable habitat is within the Development Envelope. The Project is therefore not expected to impact upon potential foraging and roosting habitat for this species.

Oriental Plover

The field survey did not record any individuals of the Oriental Plover, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a historical record from 1978 within 6 km of the Development Envelope. This species is known to forage among short grass or on hard stony bare ground, however there is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Oriental Plover within the Development Envelope.

Peregrine Falcon

The field survey did not record any individuals of the Peregrine Falcon, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There are three records within 5 km of the Development Envelope, with the closest record being within 2 km. No observations of breeding were recorded within the Development Envelope, however this species can forage over a wide range of habitats and can maintain a large home range. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 70.55 ha of habitat suitable for the Peregrine Falcon within the Development Envelope.

Unpatterned Robust Slider

The field survey did not record any individuals of the Unpatterned Robust Slider, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a previous record within 40 km of the Development Envelope. Suitable habitat is provided in the Development Envelope within the leaf litter under *Acacia* shrubs. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Unpatterned Robust Slider within the Development Envelope.

Spotted Ctenotus

The field survey did not record any individuals of the Spotted Ctenotus, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a previous record within 30 km of the Development Envelope during 2018. Habitat preferences of this species are not well known however areas of hard red soils and sparse vegetation within the Development Envelope may provide suitable habitat. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Spotted Ctenotus within the Development Envelope.

Brush-tailed Mulgara

The field survey did not record any individuals of the Brush-tailed Mulgara, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a previous record within 22 km of the Development Envelope (2018). No burrows were observed within the Development Envelope however foraging habitat is present. While the species is known to prefer sandy habitats, it can also forage on rock and pebble covered flat plains. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Brush-tailed Mulgara within the Development Envelope.

Western Pebble Mouse

The field survey did not record any individuals of the Western Pebble Mouse, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There are previous records within 3 km and 6 km of the Development Area. No mounds were recorded in the Development Envelope, however foraging habitat is present. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Western Pebble Mouse within the Development Envelope.

Long-tailed Dunnart

The field survey did not record any individuals of the Long-tailed Dunnart, nor evidence of their presence within the Development Envelope (Pilbara Environmental 2021). There is a previous record within 10 km of the Development Envelope. This species prefers rocky ranges, however, has been recorded in open country with a stony mantle. There is an abundance of similar foraging habitat adjacent and beyond the Development Envelope that would support the species. There is 55.64 ha of habitat suitable for the Long-tailed Dunnart within the Development Envelope.

The habitat types mapped in the Development Envelope are well represented within the Hamersley IBRA subregion and Pilbara Region. Due to the abundance of analogous, contiguous habitat locally and regionally, the vegetation proposed to be cleared is not necessary for the maintenance of local fauna species and is not considered to represent significant habitat. While the Development Envelope may provide some habitat

value for fauna, this habitat is not considered necessary for the maintenance of conservation significant fauna. Therefore, proposed clearing is not likely to be at variance to this principle.

Methodology

Pilbara Environmental (2021)

DAWE (2021)

DBCA (2021)

GIS Database:

- Threatened and Priority Fauna

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

Proposal is not at variance to this Principle

No Threatened flora were identified within the Development Envelope by Pilbara Environmental (2021) and none are considered likely to occur.

The proposed clearing is not at variance to this Principle.

Methodology

Pilbara Environmental (2021)

DAWE (2021)

DBCA (2021)

GIS Database:

- Threatened and Priority Flora (WA Herbarium and TPFL)

(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.

Proposed clearing is not likely to be at variance to this Principle

Pilbara Environmental (2021) did not identify any vegetation associations within the Development Envelope to be representative of State-listed TECs. However, a search of DBCA's TEC database identified one TEC (and/or its buffer) within the Development Envelope. This TEC is the Ethel Gorge aquifer stygobiont community, comprised of a subterranean community with no flora or vegetation features (Pilbara Environmental 2021). The only known occurrence of this community is on the Fortescue River (located approximately 4.9 km to the east of the Development Envelope) within the Ethel Gorge/Ophthalmia Basin alluvium calcrete aquifer. It is therefore considered likely that the Development Envelope intersects the buffer of this TEC.

Proposed works are unlikely to intercept the groundwater table and groundwater abstraction (if required) will not exceed the current approved allocation under existing licences. The majority of works will occur outside the TEC, but within its associated buffer. Given the nature of proposed works and depth to groundwater, it is unlikely that Project implementation will result in contamination of groundwater, changes to salinity or a change in groundwater flows/levels that could impact upon the Ethel Gorge aquifer stygobiont TEC. Additionally, Main Roads will implement standard measures to avoid contamination of groundwater due to leaks and spills in the Construction Environmental Management Plan (CEMP).

The proposed clearing is not likely to be at variance to this Principle.

Methodology

Pilbara Environmental (2021)

DAWE (2021)

GIS Database:

- Threatened and Priority Ecological Communities

(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.

Proposed clearing is not at variance to this Principle

The Project comprises 70.63 ha native vegetation ranging in condition from 'Very Good' to 'Completely Degraded' with 58.5% of the Development Envelope assessed as 'Very Good' (Pilbara Environmental 2021).

The Development Envelope is not located within a "constrained" area. Vegetation Association 82 and Vegetation Association 18 have over 99% pre-European vegetation remaining within the State and within the IBRA region and sub-region.

The Project comprises an upgrade of an existing RTAA area which is already highly disturbed. The vegetation within the Development Envelope is well represented locally and regionally and is not considered significant as a remnant of native vegetation.

Summary of Development Envelope's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 82 described as Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (Government of Western Australia [GoWA] 2018)	Clearing of up to 70.63 ha for road train assembly area upgrades along the GNH	Very Good to Completely Degraded (Pilbara Environmental 2021)	Vegetation description and condition determined from Pilbara Environmental (2021) survey and aerial imagery.
Vegetation Association 18 described as Low woodland; mulga (<i>Acacia aneura</i>) (GoWA 2018)			

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 82	Statewide Western Australia	2,565,901	2,553,206	99.51	11.57
	IBRA Bioregion Pilbara	2,563,583	2,550,888	99.50	11.58
	IBRA Sub-region Hamersley	2,177,573	2,165,224	99.43	13.57
	Local Government Authority Shire of East Pilbara	927,709.76	919,072.17	99.07	0.50
Veg Assoc No. 18	Statewide Western Australia	19,892,306	19,843,148	99.75	6.64
	IBRA Bioregion Pilbara	676,556	671,843	99.30	25.35
	IBRA Sub-region Hamersley	633,833	576,541	99.19	29.54

	Local Government Authority Shire of East Pilbara	359,372	355,446	98.91	1.49
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The Project is not at variance to this Principle.

Methodology

Pilbara Environmental (2021)

Beard (1975)

GoWA (2021)

GIS Database:

- Aerial Imagery
- DPIRD Remnant Vegetation
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is not at variance to this Principle

No rivers or major streamlines intersect the Development Envelope, however, there are minor ephemeral flowlines. The Fortescue River is located approximately 4.9 km to the east of the Development Envelope. A minor river is located approximately 1.55 km to the north of the Development Envelope.

No vegetation communities within the Development Envelope had values associated with wetland or dampland vegetation. No riparian vegetation was recorded during the field survey, however two vegetation associations were associated with minor flowlines (not considered riparian vegetation) (Pilbara Environmental 2021).

A search of the PMST did not identify any Wetlands of International Importance (i.e. RAMSAR wetlands) or Nationally Important Wetlands within the Development Envelope.

The Fortescue River is located approximately 4.9 km to the east of the Development Envelope and a minor river is located approximately 1.55 km to the north of the Development Envelope.

No significant surface water features are present within the Development Envelope and the Project will not result in clearing of vegetation growing in, or in association with, a watercourse or wetland. The Project is not at variance to this Principle.

Methodology

Pilbara Environmental (2021)

GIS Database:

- Aerial Imagery
- Directory of Important Wetlands
- RAMSAR Wetlands
- Hydrography, Linear

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

Proposed clearing is not likely to be at variance to this Principle

The Australian Soil Resource Information System (ASRIS 2021) describes two soil types as occurring within the Development Envelope:

- Fa13 – Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams.
- Oc64 – Low stony hills and dissected pediments on granite with occasional basic dykes: the chief soils are hard alkaline red soils having shallow stony horizons.

Tille (2006) more recently classified Western Australia's rangelands into soil-landscape mapping units. Under this classification the Development Envelope sits within zone 285, described as "Hills and dissected plateaux (with some stony plains and hardpan wash plains) on sedimentary and volcanic rocks of the Hamersley Basin (Ophthalmia Fold Belt). Stony soils with Red shallow loams and some Red/brown non-cracking clays and Red loamy earths. Spinifex grasslands with snappy gum and kanji (and some mulga shrublands)."

Land systems

The Development Envelope is located within the following three land systems (van Vreeswyk et al. 2004):

- Elimunna Land System - Stony plains on basalt supporting sparse *acacia* and *cassia* shrublands and patchy tussock grasslands.
- McKay Land System - Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands with *acacias* and occasional *eucalypts*.
- Rocklea Land System - Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs.

The majority of the Development Envelope is within the Elimunna land system.

The Project will involve the construction of offshoot drains around the periphery of the RTAA which will divert surface water run-off to adjacent vegetated areas. Although the Development Envelope comprises loamy, stony soils which retain water and are not prone to draining easily, surface water management measures will be implemented as part of Project design to maintain existing flow lines. The Project will improve drainage within the area.

The Project is at concept stage only and the final extent of ground disturbance is anticipated to be less than assessed within this Principle. Given the linear nature of the clearing and that the majority of the RTAA upgrade works will be sealed upon completion, the proposed clearing is not likely to lead to an appreciable increase in land degradation to surrounding areas.

Construction activities do have the potential to generate dust, however, Main Roads will implement dust control measures to prevent the smothering of surrounding vegetation and associated land degradation.

Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of wind erosion.

Therefore, the proposed clearing is not likely to be at variance to this Principle.

Methodology

Pilbara Environmental (2021)

GIS Database:

- Soil Systems

- Water Erosion Risk

(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.

Proposed clearing is not at variance to this Principle

The Development Envelope is not located within any conservation reserves or DBCA managed lands. The closest National Park is Collier Range approximately 120 km to the south.

No impact to conservation reserves or DBCA managed lands will occur as a result of the Project.

The proposed clearing is not at variance to this Principle.

Methodology

Pilbara Environmental (2021)

GIS Database:

- DBCA Legislated Lands and Waters

(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.

Proposed clearing is not likely to be at variance to this Principle

The Development Envelope is located within the Pilbara groundwater area which is proclaimed under the RIWI Act and within the Upper Fortescue sub area of the Pilbara groundwater plan area (GoWA 2021). The groundwater resources in the Pilbara are mainly alluvial, sedimentary or fractured rock aquifers. If the Project requires groundwater extraction or installation of a water bore Main Roads will be required to obtain all necessary licenses.

The north-west section of the Development Envelope is located within the Priority 3 Newman Water Reserve Public Drinking Water Source Area (PDWSA). The south-east section of the Development Envelope is located within the Priority 1 Newman Water Reserve PDWSA (GoWA 2021). Dewatering is unlikely to be required for the Project.

The Development Envelope is located within the Pilbara surface water area as proclaimed under the RIWI Act. The surface waters within the Pilbara region are largely restricted to drainage lines, with river pools sustained by local bank or local water table storage. The rivers are dry most of the year, except for the chain of large pools which are common in the river beds of large rivers and which may last through the dry season.

A search of the PMST did not identify any Wetlands of International Importance (i.e., RAMSAR wetlands) within the Development Envelope. No Nationally Important Wetlands are located within or in the vicinity of the Development Envelope.

No significant surface water features were present within the Development Envelope, however, the Fortescue River is located approximately 4.9 km to the east and a minor river is located approximately 1.55 km to the north of the Development Envelope. The potential for contamination of these surface water features to occur during construction of the Project due to the accidental release of hazardous materials, runoff and from contaminated sediments or dust is low, due to the distance to these features.

The Ethel Gorge aquifer stygobiont community and/or its buffer intersects the Development Envelope. The only known occurrence of this community is on the Fortescue River (located approximately 4.9 km to the east of the Development Envelope) within the Ethel Gorge/Ophthalmia Basin alluvium calcrete aquifer. Proposed works are unlikely to intercept the groundwater table and groundwater abstraction (if required)

will not exceed the current approved allocation under existing licences. The majority of works, including installation of ablutions, will occur outside the TEC, but within its associated buffer. Given the nature of proposed works and depth to groundwater, it is unlikely that Project implementation will result in contamination of groundwater, changes to salinity or a change in groundwater flows/levels that could impact upon the Ethel Gorge aquifer stygobiont TEC. Additionally, Main Roads will implement standard measures to avoid contamination of groundwater due to leaks and spills in the CEMP.

Clearing associated with the Project is unlikely to cause deterioration in the quality of surface and/or underground water. Dewatering is unlikely to be required. Therefore, the Project is not likely to be at variance to this Principle.

Methodology

Pilbara Environmental (2021)

DAWE (2021)

GIS Database:

- Public Drinking Water Source Areas
- RIWI Act, Surface Water Areas and Irrigation Districts
- RIWI Act, Groundwater Areas
- Directory of Important Wetlands
- RAMSAR Wetlands
- Hydrography, Linear

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

Proposed clearing is not likely to be at variance to this Principle

Surface water management measures will be implemented as part of Project design to maintain existing flow lines/watercourses and to avoid impact to adjacent native vegetation.

As described under clearing principle (g) the Project will involve improved drainage within the Development Envelope. Although the Development Envelope comprises clay soils which retain water and are not prone to draining easily, surface water management measures will be implemented as part of Project design to maintain existing flow lines/watercourses and to avoid impact to adjacent native vegetation.

Road runoff and storm water will be managed via the CEMP with the objective of maintaining local hydrological regimes through enabling infiltration close to the point of collection. Therefore, proposed clearing is not likely to be at variance to this Principle.

Methodology

Pilbara Environmental (2021)

GIS Database:

- Soil landscape land quality - Flood Risk
- Soil landscape land quality - Water Erosion Risk
- Soil landscape land quality - Waterlogging Risk

6 ADDITIONAL ACTIONS REQUIRED

Table 5 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

Table 5. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or (iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.	No	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	NA	No further action required.
3. The project involves clearing for temporary works (as defined by CPS 818).	No	No further action required.
4 a. Project is within Region that: - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for uninfested areas to be impacted	No	Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists

Impact of Clearing	Yes/No or NA	<i>Further Action Required</i>
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	No	No further action required.
5. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback	No	No further action required.
6. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition	No	No further action required.

7 STAKEHOLDER CONSULTATION

No stakeholder consultation has been undertaken for this Project. As the Project design further develops, Main Roads will undertake stakeholder consultation as necessary

8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. A Construction Environmental Management Plan (CEMP) will be developed which will detail standard environmental management actions to avoid or minimise impact to environmental and heritage aspects.

9 REFERENCES

Australian Soil Resource Information System (ASRIS) 2021, *Australian Soil Resource Information Viewer*, retrieved September 2021, from <http://www.asris.csiro.au/index>.

Beard, JS 1975, *Vegetation Survey of Western Australia: Pilbara*, Western Australia, map and explanatory memoir 1:250,000 series, Applecross, Vegmap Publications.

Department of Agriculture, Water and the Environment (DAWE) 2021, *Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool Results*, retrieved September 2021, from <http://www.environment.gov.au/epbc/pmst/index.html>.

Department of Biodiversity, Conservation and Attractions (2020). *Ethel Gorge aquifer stygobiont community factsheet*. Perth, Western Australia.

Department of Biodiversity, Conservation and Attractions (DBCA) 2021, NatureMap: Mapping WA's Biodiversity, retrieved September 2021, from <http://naturemap.dpaw.wa.gov.au/default.aspx/>.

Department of the Environment 2013,. Matters of National Environmental Significance, Significant Impact Guidelines 1.1, *Environment Protection and Biodiversity Conservation Act 1999*. Canberra, Australian Capital Territory.

Environmental Protection Authority 2016, *Technical Guidance –Flora and Vegetation Surveys for Environmental Impact Assessment*. Gov. of Western Australia, Perth.

Government of Western Australia (GoWA) 2019, 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2018. Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

Government of Western Australia (GoWA) 2021, Data WA, retrieved September 2021, from <https://data.wa.gov.au/>.

Pilbara Environmental Pty Ltd 2021, Newman Road Train Assembly Area Biological Survey. Pilbara, Western Australia.

Tille, P 2006, Soil Landscapes of Western Australia's Rangelands and Arid Interior. Resource Management Technical Report 313. Department of Agriculture and Food, Western Australia.

Van Vreeswyk, A M, Leighton, K A, Payne, A L, and Hennig, P. 2004, An inventory and condition survey of the Pilbara region, Western Australia. Department of Agriculture and Food, Western Australia, Perth. Technical Bulletin 92

Western Australian Herbarium 1998–, FloraBase. Accessed online from: <https://florabase.dpaw.wa.gov.au/>. Accessed September 2021.

10 APPENDICES

Appendix	Title
Appendix 1	Database searches
Appendix 2	Vegetation Management Plan
Appendix 3	Vegetation Management Requirements

Appendix 1: Desktop Searches



Australian Government
Department of Agriculture,
Water and the Environment

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: 03/09/21 18:30:41

[Summary](#)

[Details](#)

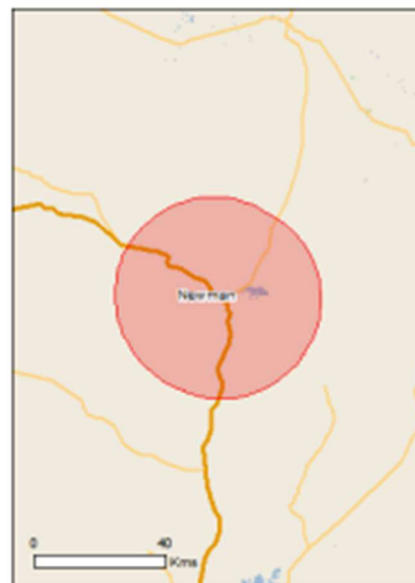
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

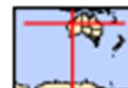
[Acknowledgements](#)



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

Buffer: 30.0Km



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 Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	11
Listed Migratory Species:	9

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. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

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:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	10
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		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Plants		
Pityrodia augustensis Mt Augustus Foxglove [4962]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	Vulnerable	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		
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		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 - Defence - NEWMAN TRAINING DEPOT

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		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species

Name	Threatened	Type of Presence
<i>Calidris ferruginea</i> Curlew Sandpiper [856]	Critically Endangered	habitat may occur within area
<i>Calidris melanotos</i> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<i>Charadrius veredus</i> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<i>Chrysococcyx osculans</i> Black-eared Cuckoo [705]		Species or species habitat known to occur within area
<i>Hirundo rustica</i> Barn Swallow [662]	Endangered*	Species or species habitat may occur within area
<i>Merops ornatus</i> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<i>Motacilla cinerea</i> Grey Wagtail [642]		Species or species habitat may occur within area
<i>Motacilla flaya</i> Yellow Wagtail [644]		Species or species habitat may occur within area
<i>Rostratula benghalensis (sensu lato)</i> Painted Snipe [889]		Species or species habitat may occur within area

Extra Information

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		
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Mammals		
<i>Camelus dromedarius</i> Dromedary, Camel [7]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		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		
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area

NatureMap Species Report

Created By Guest user on 12/03/2021

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 119° 45' 34" E, 23° 21' 52" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthaceae	3	6
Aizoaceae	3	8
Amaranthaceae	32	121
Apiaceae	1	1
Apocynaceae	2	4
Araliaceae	5	9
Asteraceae	54	120
Boraginaceae	10	27
Brassicaceae	11	40
Campanulaceae	1	5
Capparaceae	2	2
Caryophyllaceae	4	10
Celastraceae	4	5
Chenopodiaceae	28	66
Cleomaceae	2	4
Colchicaceae	1	3
Convolvulaceae	16	24
Cucurbitaceae	1	1
Cyperaceae	19	27
Ditrichaceae	1	1
Droseraceae	1	2
Elatinaceae	1	1
Euphorbiaceae	8	19
Fabaceae	120	465
Frankeniaceae	1	5
Geraniaceae	1	1
Goodeniaceae	31	106
Gyrostemonaceae	1	1
Haloragaceae	4	13
Lamiaceae	6	13
Lauraceae	1	1
Loganiaceae	1	1
Loranthaceae	6	9
Lythraceae	2	3
Malvaceae	61	120
Marsileaceae	2	4
Molluginaceae	1	1
Montiaceae	5	8
Myrtaceae	25	97
Nyctaginaceae	3	4
Oleaceae	1	1
Orobanchaceae	1	2
Phrymaceae	2	3
Phyllanthaceae	4	4
Plantaginaceae	2	3
Plumbaginaceae	1	1
Poaceae	104	258
Polygalaceae	1	1
Polygonaceae	1	2
Portulacaceae	5	7
Proteaceae	9	16
Pteridaceae	5	10
Rhamnaceae	1	2
Ricciaceae	1	1
Rubiaceae	4	5
Ruppiaceae	1	1
Santalaceae	2	7
Sapindaceae	4	13
Scrophulariaceae	24	70
Solanaceae	14	28
Thymelaeaceae	1	1
Typhaceae	1	2
Violaceae	1	3
Zygophyllaceae	6	9
TOTAL	677	1808

Name ID Species Name

Naturalised

Conservation Code

¹Endemic To Query Area

NatureMap is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.



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Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Acanthaceae				
1.	7164 <i>Didadanthra forrestii</i>			
2.	7169 <i>Dipteracanthus australasicus</i>			
3.	11320 <i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>			
Aizoaceae				
4.	44241 <i>Trianthema glossostigmum</i>			
5.	44305 <i>Trianthema pilosum</i>			
6.	44362 <i>Trianthema triquetrum</i>			
Amaranthaceae				
7.	2647 <i>Alternanthera angustifolia</i>			
8.	2651 <i>Alternanthera nana</i> (Hairy Joyweed)			
9.	2652 <i>Alternanthera nodiflora</i> (Common Joyweed)			
10.	2653 <i>Alternanthera pungens</i> (Khaki Weed)	Y		
11.	2660 <i>Amaranthus cuspidifolius</i>			
12.	11035 <i>Amaranthus induratus</i>			
13.	2666 <i>Amaranthus mitchellii</i> (Boggabri Weed)			
14.	20018 <i>Amaranthus undulatus</i>			
15.	2676 <i>Gomphrena canescens</i> (Batchelors Buttons)			
16.	2680 <i>Gomphrena cunninghamii</i>			
17.	18367 <i>Gomphrena kanisii</i>			
18.	18372 <i>Gomphrena lanata</i>			
19.	11131 <i>Gomphrena sordida</i>			
20.	2690 <i>Ptilotus aervoides</i>			
21.	2693 <i>Ptilotus aphyllus</i>			
22.	2696 <i>Ptilotus astrolasius</i>			
23.	2698 <i>Ptilotus auriculifolius</i>			
24.	2699 <i>Ptilotus axillaris</i> (Mat Mulla Mulla)			
25.	2704 <i>Ptilotus calostachyus</i> (Weeping Mulla Mulla)			
26.	2706 <i>Ptilotus carinatus</i>			
27.	2711 <i>Ptilotus clementii</i> (Tassel Top)			
28.	2721 <i>Ptilotus exaltatus</i> (Tall Mulla Mulla)			
29.	2725 <i>Ptilotus fusiformis</i>			
30.	2727 <i>Ptilotus gaudichaudii</i>			
31.	2728 <i>Ptilotus gomphrenoides</i>			
32.	2731 <i>Ptilotus helipteroides</i> (Hairy Mulla Mulla)			
33.	2734 <i>Ptilotus incanus</i>			
34.	2746 <i>Ptilotus nobilis</i> (Tall Mulla Mulla)			
35.	2747 <i>Ptilotus obovatus</i> (Cotton Bush)			
36.	2751 <i>Ptilotus polystachyus</i> (Prince of Wales Feather)			
37.	2755 <i>Ptilotus rotundifolius</i> (Royal Mulla Mulla)			
38.	2757 <i>Ptilotus schwartzii</i>			
Apiaceae				
39.	6218 <i>Daucus glochidiatus</i> (Australian Carrot)			
Apocynaceae				
40.	6584 <i>Cynanchum floribundum</i> (Dumara Bush, Tjipa)			
41.	12832 <i>Gymnanthera cunninghamii</i>		P3	
Araliaceae				
42.	6202 <i>Astrotricha hamptonii</i> (Ironplant)			
43.	6265 <i>Trachymene bialata</i>			
44.	6278 <i>Trachymene oleracea</i>			
45.	19043 <i>Trachymene oleracea</i> subsp. <i>oleracea</i>			
46.	19053 <i>Trachymene pilbarensis</i>			
Asteraceae				
47.	19901 <i>Actinobole oldfieldianum</i>			
48.	7854 <i>Bidens bipinnata</i> (Bipinnate Beggartick)	Y		
49.	46339 <i>Bidens subalternans</i> var. <i>araneosa</i>	Y		
50.	46338 <i>Bidens subalternans</i> var. <i>simulans</i>	Y		
51.	45034 <i>Brachyscome rudallensis</i>			
52.	14090 <i>Calocephalus beardii</i>			
53.	48223 <i>Calocephalus pilbarensis</i>			
54.	7903 <i>Calotis hispidula</i> (Bindy Eye)			
55.	7904 <i>Calotis latiuscula</i>			
56.	7905 <i>Calotis multicaulis</i> (Many-stemmed Burr-daisy)			
57.	7906 <i>Calotis plumulifera</i>			
58.	7919 <i>Centipeda minima</i> (Spreading Sneezewood, Kanjirralaa, Inteng-inteng, Karengkal, Kata-palkalpa, Muryu-parnti-parnti)			
59.	19762 <i>Centipeda minima</i> subsp. <i>macrocephala</i>			

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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
60.	7921	<i>Centipeda thespidioides</i> (Desert Sneezewood)			
61.	12612	<i>Chrysocephalum apiculatum</i>			
62.	33516	<i>Chrysocephalum gilesii</i>			
63.	12614	<i>Chrysocephalum pterochaetum</i>			
64.	7939	<i>Conyza bonariensis</i> (Flaxleaf Fleabane)	Y		
65.		<i>Conyza</i> sp.			
66.	35558	<i>Flaveria trinervia</i> (Speedy Weed)	Y		
67.	7988	<i>Gnephosis arachnoidea</i> (Cobwebby-headed Gnephosis)			
68.	8088	<i>Ixochlamys cuneifolia</i>			
69.	8095	<i>Lactuca saligna</i> (Wild Lettuce, Willow-leaf Lettuce)	Y		
70.	19727	<i>Leiocarpa semicalva</i> subsp. <i>semicalva</i>			
71.	8109	<i>Minuria integrissima</i> (Smooth Minuria)			
72.	12635	<i>Olearia fluvialis</i>			
73.	35001	<i>Peripleura virgata</i>			
74.	17817	<i>Pluchea dunlopii</i>			
75.	17816	<i>Pluchea ferdinandi-muelleri</i>			
76.	8168	<i>Pluchea rubelliflora</i>			
77.	8173	<i>Podolepis capillaris</i> (Wiry Podolepis)			
78.	45239	<i>Podolepis eremaea</i>			
79.	8189	<i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
80.	8192	<i>Pterocaulon sphacelatum</i> (Apple Bush, Fruit Salad Plant)			
81.	8193	<i>Pterocaulon sphaeranthoides</i>			
82.	13308	<i>Rhodanthe charsleyae</i>			
83.	13301	<i>Rhodanthe floribunda</i>			
84.	13310	<i>Rhodanthe margarethae</i>			
85.	42011	<i>Rhodanthe polakii</i>			
86.	13251	<i>Rhodanthe propinqua</i>			
87.	13303	<i>Rhodanthe steriliscens</i>			
88.	13254	<i>Rhodanthe stricta</i>			
89.	45178	<i>Roebuckiella similis</i>			
90.	8198	<i>Rutidosis helichrysoides</i> (Grey Wrinklewort)			
91.	17985	<i>Rutidosis helichrysoides</i> subsp. <i>helichrysoides</i>			
92.	8231	<i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
93.	8236	<i>Streptoglossa cylindriceps</i>			
94.	8237	<i>Streptoglossa decurrens</i>			
95.	8238	<i>Streptoglossa liatroides</i>			
96.	8239	<i>Streptoglossa macrocephala</i>			
97.	8240	<i>Streptoglossa odora</i>			
98.	25902	<i>Symphyotrichum squamatum</i> (Bushy Starwort)	Y		
99.	8265	<i>Vittadinia eremaea</i>			
100.	33026	<i>Vittadinia</i> sp. Coondewanna Flats (S. van Leeuwen 4684)		P1	
Boraginaceae					
101.	6688	<i>Halgania erecta</i>			
102.	30258	<i>Halgania solanacea</i> var. <i>Mt Doreen</i> (G.M. Chippendale 4206)			
103.	6706	<i>Heliotropium cunninghamii</i>			
104.	6712	<i>Heliotropium heteranthum</i>			
105.	17307	<i>Heliotropium inexplicitum</i>			
106.	17309	<i>Heliotropium pachyphyllum</i>			
107.	17315	<i>Heliotropium tanythrix</i>			
108.	6718	<i>Heliotropium tenuifolium</i> (Mamukata)			
109.	6727	<i>Trichodesma zeylanicum</i> (Camel Bush, Kumbalin)			
110.	11750	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>			
Brassicaceae					
111.	3022	<i>Lepidium catapycnon</i> (Hamersley Lepidium)		P4	
112.	3025	<i>Lepidium echinatum</i>			
113.	3032	<i>Lepidium muelleri-ferdinandii</i>			
114.	3033	<i>Lepidium oxytrichum</i>			
115.	3035	<i>Lepidium pedicellosum</i>			
116.	3037	<i>Lepidium phlebopetalum</i> (Veined Peppergrass)			
117.	3038	<i>Lepidium pholidogynum</i>			
118.	3039	<i>Lepidium platypetalum</i> (Slender Peppergrass)			
119.	3075	<i>Stenopetalum decipiens</i>			
120.	3078	<i>Stenopetalum nutans</i>			
121.	3082	<i>Stenopetalum velutinum</i> (Velvet Thread Petal)			
Campanulaceae					
122.	7393	<i>Wahlenbergia tumidiflora</i>			
Capparaceae					
123.	2976	<i>Capparis lasiantha</i> (Split Jack, Balqarda)			

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124.	2982	<i>Capparis umbonata</i> (Wild Orange, Nanggali)			
Caryophyllaceae					
125.	12075	<i>Polycarpaea corymbosa</i> var. <i>corymbosa</i>			
126.	2901	<i>Polycarpaea holtzei</i>			
127.	2902	<i>Polycarpaea involucrata</i>			
128.	2903	<i>Polycarpaea longiflora</i>			
Celastraceae					
129.	4728	<i>Macgregoria racemigera</i> (Snow Flower)			
130.	19500	<i>Maytenus</i> sp. Mt Windell (S. van Leeuwen 846)			
131.	4731	<i>Stackhousia intermedia</i>			
132.	18405	<i>Stackhousia</i> sp. swollen gynophore (W.R. Barker 2041)			
Chenopodiaceae					
133.	2453	<i>Atriplex codonocarpa</i> (Flat-topped Saltbush)			
134.	2476	<i>Atriplex semilunaris</i> (Annual Saltbush)			
135.	2502	<i>Dysphania kalpari</i> (Rat's Tail, Kalpari)			
136.	33479	<i>Dysphania melanocarpa</i> (Black Crumbweed)			
137.	11653	<i>Dysphania rhadinostachya</i> subsp. <i>inflata</i>			
138.	11890	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>			
139.	12064	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)			
140.	2538	<i>Maireana carnosae</i> (Cottony Bluebush)			
141.	2544	<i>Maireana georgei</i> (Satin Bluebush)			
142.	2551	<i>Maireana melanocoma</i> (Pussy Bluebush)			
143.	2556	<i>Maireana planifolia</i> (Low Bluebush)			
144.	2560	<i>Maireana pyramidata</i> (Sago Bush)			
145.	2566	<i>Maireana thesioides</i> (Lax Bluebush)			
146.	2567	<i>Maireana tomentosa</i> (Felt Bluebush)			
147.	2571	<i>Maireana villosa</i>			
148.	2582	<i>Rhagodia eremaea</i> (Thorny Saltbush)			
149.	20168	<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)		P3	
150.	30434	<i>Salsola australis</i>			
151.	2602	<i>Sclerolaena convexula</i>			
152.	2603	<i>Sclerolaena cornishiana</i> (Cartwheel Burr)			
153.	2604	<i>Sclerolaena costata</i>			
154.	2606	<i>Sclerolaena cuneata</i> (Yellow Bindii)			
155.	2607	<i>Sclerolaena densiflora</i>			
156.	2609	<i>Sclerolaena diacantha</i> (Grey Copperburr)			
157.	2619	<i>Sclerolaena lanicuspis</i> (Spinach Burr)			
158.	2623	<i>Sclerolaena minuta</i>			
159.	2631	<i>Sclerolaena tetragona</i>			
160.	31492	<i>Tecticornia disarticulata</i>			
Cleomaceae					
161.	2985	<i>Cleome oxalidea</i>			
162.	2988	<i>Cleome viscosa</i> (Tickweed, Tjinduwadhu)			
Colchicaceae					
163.	1392	<i>Wurmbea deserticola</i>			
Convolvulaceae					
164.	11167	<i>Bonamia erecta</i>			
165.	44782	<i>Bonamia pilbarensis</i>			
166.	6609	<i>Bonamia rosea</i> (Felt Bellflower)			
167.	6612	<i>Convolvulus clementii</i>			
168.	31274	<i>Duperreya commixta</i>			
169.	11416	<i>Evolvulus alsinoides</i> var. <i>decumbens</i>			
170.	11200	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>			
171.	6624	<i>Ipomoea costata</i> (Rock Morning Glory, Kanti)			
172.	6631	<i>Ipomoea lonchophylla</i> (Cowvine)			
173.	6633	<i>Ipomoea muelleri</i> (Poison Morning Glory, Yumbu)			
174.	11312	<i>Ipomoea pes-caprae</i> subsp. <i>brasiliensis</i>			
175.	6636	<i>Ipomoea plebeia</i> (Bellvine)			
176.	6639	<i>Ipomoea racemigera</i>		P2	
177.	6651	<i>Operculina aequiseptala</i>			
178.	6655	<i>Polymeria calycina</i>			
179.		<i>Polymeria</i> sp.			
Cucurbitaceae					
180.	48838	<i>Citrullus amarus</i>	Y		
Cyperaceae					
181.	750	<i>Bulbostylis barbata</i>			

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182.	752 <i>Bulbostylis turbinata</i>			
183.	12799 <i>Cyperus betchei</i> subsp. <i>commiscens</i>			
184.	774 <i>Cyperus bifax</i> (Downs Nutgrass)			
185.	786 <i>Cyperus cunninghamii</i>			
186.	12811 <i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>			
187.	798 <i>Cyperus iria</i>			
188.	799 <i>Cyperus ixiocarpus</i>			
189.	807 <i>Cyperus pulchellus</i>			
190.	814 <i>Cyperus squarrosus</i>			
191.	816 <i>Cyperus tenuiflorus</i> (Scaly Sedge)	Y		
192.	818 <i>Cyperus vaginatus</i> (Stiffleaf Sedge)			
193.	828 <i>Eleocharis pallens</i> (Pale Spikerush)			
194.	851 <i>Fimbristylis dichotoma</i> (Eight Day Grass)			
195.	854 <i>Fimbristylis eremophila</i>			
196.	862 <i>Fimbristylis microcarya</i>			
197.	12159 <i>Fimbristylis simulans</i>			
198.	<i>Fimbristylis</i> sp.			
199.	48362 <i>Schoenoplectiella laevis</i>			
Ditrichaceae				
200.	32348 <i>Eccremidium arcuatum</i>			
Droseraceae				
201.	43544 <i>Drosera finlaysoniana</i>			
Elatinaceae				
202.	5184 <i>Bergia pedicellaris</i>			
Euphorbiaceae				
203.	35303 <i>Euphorbia australis</i> var. <i>subtomentosa</i>			
204.	4619 <i>Euphorbia biconvexa</i>			
205.	4620 <i>Euphorbia boophthona</i> (Gascoyne Spurge)			
206.	9048 <i>Euphorbia careyi</i>			
207.	4623 <i>Euphorbia coghlanii</i> (Namana)			
208.	42860 <i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>		P2	
209.	42869 <i>Euphorbia porcata</i>			
210.	12097 <i>Euphorbia tannensis</i> subsp. <i>eremophila</i> (Desert Spurge)			
Fabaceae				
211.	3198 <i>Acacia acradenia</i>			
212.	11215 <i>Acacia adoxa</i> var. <i>adoxo</i>			
213.	44585 <i>Acacia adoxa</i> var. <i>adoxo</i> x <i>spondylophylla</i>			
214.	3205 <i>Acacia adsurgens</i>			
215.	3209 <i>Acacia amplexiceps</i>			
216.	3214 <i>Acacia ancistrocarpa</i> (Fitzroy Wattle)			
217.	37260 <i>Acacia aptaneura</i>			
218.	3223 <i>Acacia arida</i>			
219.	3228 <i>Acacia atkinsiana</i>			
220.	3232 <i>Acacia ayesiana</i>			
221.	3241 <i>Acacia bivenosa</i>			
222.	23524 <i>Acacia catenulata</i> subsp. <i>occidentalis</i>			
223.	3260 <i>Acacia citrinoviridis</i>			
224.	19504 <i>Acacia clelandii</i>			
225.	17013 <i>Acacia colei</i> var. <i>colei</i>			
226.	17014 <i>Acacia colei</i> var. <i>ileocarpa</i>			
227.	3270 <i>Acacia coriacea</i> (Wirewood)			
228.	13502 <i>Acacia coriacea</i> subsp. <i>pendens</i>			
229.	49085 <i>Acacia corusca</i> (Shimmer Wattle)		P1	Y
230.	3280 <i>Acacia cuspidifolia</i> (Bohemia)			
231.	3300 <i>Acacia dictyophleba</i> (Sandhill Wattle, Ngarkalya)			
232.	16174 <i>Acacia elachantha</i>			
233.	3326 <i>Acacia eriopoda</i> (Broome Pindan Wattle)			
234.	36781 <i>Acacia fuscaneura</i>			
235.	3360 <i>Acacia hamersleyensis</i>			
236.	3370 <i>Acacia hilliana</i>			
237.	3377 <i>Acacia inaequilatera</i> (Baderi)			
238.	36418 <i>Acacia incurvaneura</i>			
239.	3399 <i>Acacia kempeana</i> (Witchetty Bush, Ilykuwara)			
240.	37240 <i>Acacia macraneura</i>			
241.	3434 <i>Acacia maitlandii</i> (Maitland's Wattle)			
242.	19305 <i>Acacia melleodora</i>			
243.	3447 <i>Acacia monticola</i> (Gawar, Liwardi)			
244.	36416 <i>Acacia mulganeura</i>			

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	Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
245.	3475	<i>Acacia pachyacra</i>			
246.	3476	<i>Acacia pachycarpa</i>			
247.	15724	<i>Acacia paraneura</i>			
248.	3500	<i>Acacia pruinocarpa</i> (Gidgee)			
249.	36800	<i>Acacia pteraneura</i>			
250.	3501	<i>Acacia ptychophylla</i>			
251.	29016	<i>Acacia pyrifolia</i> var. <i>morrisonii</i>			
252.	29015	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>			
253.	3519	<i>Acacia rhodophloia</i>			
254.	44584	<i>Acacia rhodophloia</i> x <i>sibirica</i>			
255.	13078	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>			
256.	29135	<i>Acacia sericophylla</i>			
257.	8949	<i>Acacia sibirica</i> (Bastard Mulga)			
258.	29997	<i>Acacia</i> sp. <i>Jimblebar</i> (S. van Leeuwen 1342)			Y
259.	3553	<i>Acacia spondylophylla</i>		P3	
260.	23528	<i>Acacia subtiliformis</i>			
261.	13070	<i>Acacia synchronicia</i>			
262.	3573	<i>Acacia tenuissima</i>			
263.	3577	<i>Acacia tetragonophylla</i> (Kurara, Wakalpuka)			
264.	23521	<i>Acacia trudgeniana</i>			
265.	20319	<i>Acacia tumida</i> var. <i>pilbarensis</i>			
266.	3595	<i>Acacia victoriae</i> (Bramble Wattle, Ngatunpa)			
267.	3598	<i>Acacia wanyu</i>			
268.	39781	<i>Aenictophyton reconditum</i> subsp. <i>macrophyllum</i>			
269.	20179	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>			
270.	14859	<i>Crotalaria smithiana</i>		P3	
271.	17117	<i>Cullen cinereum</i>			
272.	17436	<i>Cullen graveolens</i>			
273.	17439	<i>Cullen lachnostachys</i>			
274.	17118	<i>Cullen leucanthum</i>			
275.	17119	<i>Cullen leucochaetes</i>			
276.	17120	<i>Cullen pogonocarpum</i>			
277.	48642	<i>Desmanthus virgatus</i>	Y		
278.	3852	<i>Desmodium campylocaulon</i>			
279.	3853	<i>Desmodium filiforme</i>			
280.	3938	<i>Glycine canescens</i> (Silky Glycine)			
281.	41245	<i>Gompholobium oreophilum</i>			
282.	3973	<i>Indigofera colutea</i> (Sticky Indigo)			
283.	3974	<i>Indigofera georgei</i> (Bovine Indigo)			
284.	17716	<i>Indigofera gilesii</i>		P3	
285.	3982	<i>Indigofera monophylla</i>			
286.	3985	<i>Indigofera rugosa</i>			
287.	3989	<i>Isotropis atropurpurea</i> (Poison Sage)			
288.	17790	<i>Isotropis parviflora</i>		P2	
289.	48615	<i>Isotropis</i> sp. <i>Arid zone</i> (G. Byrne 2775)			
290.	3996	<i>Jacksonia aculeata</i>			
291.	4043	<i>Kennedia prorepens</i>			
292.	4061	<i>Lotus cruentus</i> (Redflower Lotus)			
293.	4097	<i>Mirbelia ramulosa</i>			
294.	4105	<i>Mirbelia viminalis</i>			
295.	4111	<i>Muelleraanthus trifoliolatus</i>			
296.	3614	<i>Neptunia dimorphantha</i> (Sensitive Plant)			
297.	3674	<i>Petalostylis cassioides</i>			
298.	3675	<i>Petalostylis labicheoides</i> (Slender Petalostylis)			
299.	4190	<i>Rhynchosia australis</i> (Rhynchosia)			
300.	4191	<i>Rhynchosia minima</i> (Rhynchosia)			
301.	17645	<i>Senna artemisioides</i>			
302.	12276	<i>Senna artemisioides</i> subsp. <i>filifolia</i>			
303.	12279	<i>Senna artemisioides</i> subsp. <i>helmsii</i>			
304.	12280	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>			
305.	17558	<i>Senna artemisioides</i> subsp. <i>x artemisioides</i>			
306.	12283	<i>Senna artemisioides</i> subsp. <i>x sturtii</i>			
307.	18443	<i>Senna ferraria</i>			
308.	18449	<i>Senna glaucifolia</i>			
309.	12307	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>			
310.	12309	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>			
311.	12308	<i>Senna glutinosa</i> subsp. <i>x luerseii</i>			
312.	18451	<i>Senna hamersleyensis</i>			
313.	12312	<i>Senna notabilis</i>			
314.	10848	<i>Senna occidentalis</i>	Y		

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Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
315.	14578 <i>Senna sp. Billabong</i> (J.D. Alonzo 721)			
316.	14577 <i>Senna sp. Meekatharra</i> (E. Bailey 1-26)			
317.	18445 <i>Senna stricta</i>			
318.	12319 <i>Senna venusta</i>			
319.	4223 <i>Swainsona decurrens</i>			
320.	4233 <i>Swainsona leana</i>			
321.	49016 <i>Tephrosia densa</i>			
322.	41986 <i>Tephrosia oxalidea</i>			
323.	41825 <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H. Brooker 2186)			
324.	42442 <i>Tephrosia sp. NW Eremaean</i> (S. van Leeuwen et al. PBS 0356)			
325.	42225 <i>Tephrosia sp. Newman</i> (A.A. Mitchell PRP 29)			
326.	44719 <i>Tephrosia sp. Willowra</i> (G.M. Chippendale 4809)			
327.	40060 <i>Tephrosia sp. clay soils</i> (S. van Leeuwen et al. PBS 0273)			
328.	43963 <i>Tephrosia sp. deserts</i> (J.R. Maconochie 1403)			
329.	4285 <i>Tephrosia supina</i>			
330.	31391 <i>Vigna sp. Hamersley Clay</i> (A.A. Mitchell PRP 113)			
Frankeniaceae				
331.	5212 <i>Frankenia setosa</i> (Bristly Frankenia)			
Geraniaceae				
332.	4335 <i>Erodium cygnorum</i> (Blue Heronsbill)			
Goodeniaceae				
333.	7413 <i>Brunonia australis</i> (Native Cornflower)			
334.	15885 <i>Brunonia australis</i> var. <i>A Kimberley Flora</i> (K.F. Kenneally 5452)			
335.	19070 <i>Brunonia sp. Long hairs</i> (D.E. Symon 2440)			
336.	7424 <i>Dampiera candidans</i>			
337.	7426 <i>Dampiera cinerea</i>			
338.	7490 <i>Goodenia armitiana</i>			
339.	20523 <i>Goodenia azurea</i> subsp. <i>hesperia</i>			
340.	12512 <i>Goodenia berrinbinensis</i>		P4	
341.	7509 <i>Goodenia forrestii</i>			
342.	18638 <i>Goodenia hartiana</i> (Hart's Goodenia)		P2	
343.	7521 <i>Goodenia lamprosperma</i>			
344.	7526 <i>Goodenia microptera</i>			
345.	12552 <i>Goodenia muelleriana</i>			
346.	7530 <i>Goodenia nuda</i>		P4	
347.	12574 <i>Goodenia prostrata</i>			
348.	7544 <i>Goodenia ramellii</i>			
349.	29381 <i>Goodenia sp. East Pilbara</i> (A.A. Mitchell PRP 727) (O'Meara's Goodenia)		P3	
350.	29673 <i>Goodenia sp. Sandy Creek</i> (R.D. Royce 1653)			
351.	7550 <i>Goodenia stellata</i>			
352.	10982 <i>Goodenia stobbsiana</i>			
353.	7556 <i>Goodenia tenuiloba</i>			
354.	7558 <i>Goodenia triodiophila</i>			
355.	7560 <i>Goodenia vilmoriniae</i>			
356.	12578 <i>Scaevola acacioides</i>			
357.	12579 <i>Scaevola browniana</i>			
358.	13150 <i>Scaevola browniana</i> subsp. <i>browniana</i>			
359.	13172 <i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>			
360.	25786 <i>Scaevola sp. Mt Nameless</i> (P.A.S. Wurm 1443)			
361.	7644 <i>Scaevola spinescens</i> (Currant Bush, Maroon)			
362.	7654 <i>Velleia connata</i> (Cup Velleia)			
363.	7660 <i>Velleia glabrata</i> (Pee the Bed)			
Gyrostemonaceae				
364.	2778 <i>Codonocarpus cotinifolius</i> (Native Poplar, Kundurangu)			
Haloragaceae				
365.	6151 <i>Gonocarpus ephemerus</i>			
366.	6174 <i>Haloragis gossei</i>			
367.	23465 <i>Haloragis gossei</i> var. <i>gossei</i>			
368.	20669 <i>Haloragis maierae</i>			
Lamiaceae				
369.	13692 <i>Clerodendrum floribundum</i> var. <i>angustifolium</i>			
370.	6754 <i>Dicrastylis cordifolia</i>			
371.	31838 <i>Dicrastylis kumarinensis</i>			
372.	6786 <i>Newcastelia cephalantha</i>			
373.	6791 <i>Newcastelia hexarrhena</i> (Lambs' Tails)			
374.	20252 <i>Newcastelia sp. Hamersley Range</i> (S. van Leeuwen 4264)			



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Lauraceae				
375.	2949 <i>Cassytha capillaris</i>			
Loganiaceae				
376.	6519 <i>Mitrasacme connata</i>			
Loranthaceae				
377.	13700 <i>Amyema bifurcata</i>			
378.	2372 <i>Amyema fitzgeraldii</i> (Pincushion Mistletoe)			
379.	11614 <i>Amyema gibberula</i> var. <i>gibberula</i>			
380.	2374 <i>Amyema hilliana</i>			
381.	2383 <i>Amyema preissii</i> (Wireleaf Mistletoe)			
382.	2396 <i>Lysiana casuarinae</i>			
Lythraceae				
383.	5278 <i>Ammannia multiflora</i>			
384.	5285 <i>Rotala diandra</i>			
Malvaceae				
385.	4886 <i>Abutilon amplum</i>			
386.	4889 <i>Abutilon cryptopetalum</i>			
387.	9080 <i>Abutilon cunninghamii</i>			
388.	4891 <i>Abutilon fraseri</i> (Lantern Bush)			
389.	4895 <i>Abutilon lepidum</i>			
390.	4898 <i>Abutilon macrum</i>			
391.	4899 <i>Abutilon malvifolium</i> (Bastard Marshmallow)			
392.	4901 <i>Abutilon otocarpum</i> (Desert Chinese Lantern)			
393.	4902 <i>Abutilon oxycarpum</i> (Flannel Weed)			
394.	43020 <i>Abutilon oxycarpum</i> subsp. <i>Prostrate</i> (A.A. Mitchell PRP 1266)			
395.	42920 <i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618)			
396.	14113 <i>Abutilon</i> sp. <i>Pilbara</i> (W.R. Barker 2025)			
397.	40917 <i>Androcalva loxophylla</i>			
398.	40910 <i>Androcalva luteiflora</i> (Yellow-flowered Rulingia)			
399.	13560 <i>Corchorus crozophorifolius</i>			
400.	4857 <i>Corchorus elachocarpus</i>			
401.	13659 <i>Corchorus laniflorus</i>			
402.	17405 <i>Corchorus lasiocarpus</i>			
403.	18409 <i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>			
404.	18408 <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>			
405.	4864 <i>Corchorus sidoides</i> (Flannel Weed)			
406.	18415 <i>Corchorus sidoides</i> subsp. <i>sidoides</i>			
407.	20242 <i>Corchorus</i> sp. <i>Hammersley Range hilltops</i> (S. van Leeuwen 3826)			
408.	17661 <i>Corchorus tectus</i>			
409.	4865 <i>Corchorus tridens</i>			
410.	4918 <i>Gossypium robinsonii</i> (Wild Cotton)			
411.	11559 <i>Gossypium sturtianum</i> var. <i>sturtianum</i>			
412.	4921 <i>Hibiscus arenicola</i>			
413.	29317 <i>Hibiscus austrinus</i> var. <i>austrinus</i>			
414.	4923 <i>Hibiscus brachysiphonius</i>			
415.	4924 <i>Hibiscus burtonii</i>			
416.	48312 <i>Hibiscus campanulatus</i>		P1	
417.	4925 <i>Hibiscus coatesii</i>			
418.	4931 <i>Hibiscus haynaldii</i>			
419.	4942 <i>Hibiscus sturtii</i> (Sturt's Hibiscus)			
420.	11385 <i>Hibiscus sturtii</i> var. <i>grandiflorus</i>			
421.	11893 <i>Hibiscus sturtii</i> var. <i>truncatus</i>			
422.	43081 <i>Hibiscus verdcourtii</i>			
423.	4962 <i>Malvastrum americanum</i> (Spiked Malvastrum)	Y		
424.	46816 <i>Seringia elliptica</i> (Showy fire-bush)			
425.	46821 <i>Seringia nephrosperma</i> (Free carpal fire-bush)			
426.	4966 <i>Sida arenicola</i>			
427.	31758 <i>Sida arsinata</i>			
428.	4969 <i>Sida brownii</i>			
429.	4970 <i>Sida calyxhymenia</i> (Tall Sida)			
430.	4971 <i>Sida cardiophylla</i>			
431.	4976 <i>Sida echinocarpa</i>			
432.	31759 <i>Sida ectogama</i>			
433.	4977 <i>Sida fibulifera</i> (Silver Sida)			
434.	4986 <i>Sida platycalyx</i> (Lifesaver Burr)			
435.	31854 <i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)			
436.	48867 <i>Sida</i> sp. <i>L</i> (A.M. Ashby 4202)			
437.	33698 <i>Sida</i> sp. <i>Pilbara</i> (A.A. Mitchell PRP 1543)			

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438.	16993	<i>Sida</i> sp. Rabbit Flat (B.J. Carter 626)			
439.	20253	<i>Sida</i> sp. Shovelanna Hill (S. van Leeuwen 3842)			
440.	16617	<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)			
441.	18144	<i>Sida</i> sp. tiny glabrous fruit (A.A. Mitchell PRP1152)			
442.	16923	<i>Sida trichopoda</i>			
443.	4879	<i>Triumfetta leptacantha</i>			
444.	14942	<i>Triumfetta maconochieana</i>			
445.	5107	<i>Waltheria virgata</i>			
Marsileaceae					
446.	75	<i>Marsilea exarata</i>			
447.	76	<i>Marsilea hirsuta</i> (Nardoo)			
Molluginaceae					
448.	48203	<i>Hypertelis cerviana</i>			
Montiaceae					
449.	2864	<i>Calandrinia ptychosperma</i>			
450.	2868	<i>Calandrinia reticulata</i>			
451.	2869	<i>Calandrinia schistothiza</i>			
452.	2870	<i>Calandrinia stagnensis</i>			
453.	2872	<i>Calandrinia tepperiana</i>			
Myrtaceae					
454.	5446	<i>Calytrix carinata</i>			
455.	17073	<i>Corymbia aspera</i>			
456.	16783	<i>Corymbia candida</i>			
457.	16780	<i>Corymbia candida</i> subsp. <i>dipsodes</i>			
458.	17083	<i>Corymbia deserticola</i> subsp. <i>deserticola</i>			
459.	17077	<i>Corymbia ferritcola</i>			
460.	17093	<i>Corymbia hamersleyana</i>			
461.	17092	<i>Corymbia opaca</i>			
462.	35345	<i>Eucalyptus camaldulensis</i> subsp. <i>obtus</i> (Blunt-budded River Red Gum)			
463.	35343	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>			
464.	5641	<i>Eucalyptus ewartiana</i> (Ewart's Mallee)			
465.	5655	<i>Eucalyptus gamophylla</i> (Twin-leaf Mallee, Warlu)			
466.	5684	<i>Eucalyptus kingsmillii</i> (Kingsmill's Mallee)			
467.	5698	<i>Eucalyptus leucophloia</i> (Snappy Gum, Migum)			
468.	18088	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>			
469.	5703	<i>Eucalyptus lucasii</i> (Barlee Box)			
470.	18058	<i>Eucalyptus repullulans</i>			
471.	5773	<i>Eucalyptus socialis</i> (Red Mallee, Altarpa)			
472.	19576	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i>			
473.	29733	<i>Eucalyptus trivalva</i> (Victoria Spring Mallee)			
474.	14548	<i>Eucalyptus victrix</i>			
475.	15592	<i>Eucalyptus xerothermica</i>			
476.	5846	<i>Lamarchea sulcata</i>			
477.	5879	<i>Melaleuca bracteata</i> (River Teatree)			
478.	5915	<i>Melaleuca glomerata</i>			
Nyctaginaceae					
479.	2770	<i>Boerhavia coccinea</i> (Tar Vine, Wituka)			
480.	2772	<i>Boerhavia gardneri</i>			
481.	2774	<i>Boerhavia repleta</i>			
Oleaceae					
482.	12059	<i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)			
Orobanchaceae					
483.	12492	<i>Striga squamigera</i>			
Phrymaceae					
484.	7082	<i>Mimulus gracilis</i>			
485.	7091	<i>Peplidium maritimum</i>			
Phyllanthaceae					
486.	17626	<i>Phyllanthus erwinii</i>			
487.	4680	<i>Phyllanthus maderaspatensis</i>			
488.	4687	<i>Phyllanthus virgatus</i>			
489.	48206	<i>Synstemon rhytidospermus</i>			
Plantaginaceae					
490.	7098	<i>Stemodia grossa</i> (Marsh Stemodia, Mindjaara)			
491.	7102	<i>Stemodia viscosa</i> (Pagurda)			



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Plumbaginaceae				
492.	6491 <i>Plumbago zeylanica</i> (Native Plumbago)			
Poaceae				
493.	34836 <i>Alloteropsis cimicina</i>			
494.	196 <i>Amphipogon caricinus</i> (Long Greybeard Grass)			
495.	19835 <i>Amphipogon sericeus</i>			
496.	204 <i>Aristida burbridgeae</i>			
497.	207 <i>Aristida contorta</i> (Bunched Kerosene Grass)			
498.	12063 <i>Aristida holathera</i> var. <i>holathera</i>			
499.	212 <i>Aristida inaequiglumis</i> (Feathertop Threeawn)			
500.	17918 <i>Aristida jerichoensis</i> var. <i>subspinulifera</i>		P3	
501.	215 <i>Aristida latifolia</i> (Feathertop Wiregrass)			
502.	216 <i>Aristida lazaridis</i>		P2	
503.	218 <i>Aristida obscura</i> (Brush Threeawn)			
504.	<i>Aristida</i> sp.			
505.	227 <i>Astrebula elymoides</i> (Weeping Mitchell Grass)			
506.	229 <i>Astrebula pectinata</i> (Barley Mitchell Grass)			
507.	17246 <i>Austrostipa nitida</i>			
508.	258 <i>Cenchrus ciliaris</i> (Buffel Grass)	Y		
509.	29721 <i>Cenchrus setiger</i> (Birdwood Grass)	Y		
510.	269 <i>Chloris pectinata</i> (Comb Chloris)			
511.	270 <i>Chloris pumilio</i>			
512.	<i>Chloris</i> sp.			
513.	272 <i>Chloris virgata</i> (Feathertop Rhodes Grass)	Y		
514.	273 <i>Chrysopogon fallax</i> (Golden Beard Grass)			
515.	279 <i>Cymbopogon ambiguus</i> (Scentgrass)			
516.	282 <i>Cymbopogon procerus</i> (Lemon Grass)			
517.	46558 <i>Cynodon convergens</i>			
518.	283 <i>Cynodon dactylon</i> (Couch)	Y		
519.	46555 <i>Cynodon prostratus</i>			
520.	290 <i>Dactyloctenium radicans</i> (Button Grass)			
521.	303 <i>Dichanthium fecundum</i> (Curly Bluegrass)			
522.	13741 <i>Dichanthium sericeum</i> subsp. <i>humilius</i>			
523.	11964 <i>Dichanthium sericeum</i> subsp. <i>sericeum</i>			
524.	308 <i>Digitaria ammophila</i> (Silky Umbrella Grass)			
525.	310 <i>Digitaria brownii</i> (Cotton Panic Grass)			
526.	313 <i>Digitaria ctenantha</i> (Comb Finger Grass)			
527.	48380 <i>Diplachne fusca</i> subsp. <i>muelleri</i>			
528.	328 <i>Echinochloa colona</i> (Awnless Barnyard Grass)	Y		
529.	355 <i>Elytrophorus spicatus</i> (Spikegrass)			
530.	356 <i>Enneapogon avenaceus</i> (Bottle Washers)			
531.	357 <i>Enneapogon caeruleus</i> (Limestone Grass)			
532.	360 <i>Enneapogon lindleyanus</i> (Wiry Nineawn, Purple-head Nineawn)			
533.	365 <i>Enneapogon polyphyllus</i> (Leafy Nineawn)			
534.	20377 <i>Enneapogon robustissimus</i>			
535.	368 <i>Enteropogon ramosus</i> (Windmill Grass, Curly Windmill Grass)			
536.	375 <i>Eragrostis cumingii</i> (Cuming's Love Grass)			
537.	378 <i>Eragrostis dielsii</i> (Mallee Lovegrass)			
538.	379 <i>Eragrostis elongata</i> (Clustered Lovegrass)			
539.	380 <i>Eragrostis eriopoda</i> (Woollybutt Grass, Wangurnu)			
540.	387 <i>Eragrostis lanipes</i> (Creeping Wanderrie)			
541.	388 <i>Eragrostis leptocarpa</i> (Drooping Lovegrass)			
542.	17608 <i>Eragrostis olida</i>			
543.	393 <i>Eragrostis setifolia</i> (Neverfail Grass)			
544.	395 <i>Eragrostis speciosa</i> (Handsome Lovegrass)			
545.	398 <i>Eragrostis tenellula</i> (Delicate Lovegrass)			
546.	399 <i>Eragrostis xerophila</i> (Knotty-butt Neverfail)			
547.	400 <i>Eriachne aristidea</i>			
548.	403 <i>Eriachne benthamii</i> (Swamp Wanderrie)			
549.	408 <i>Eriachne flaccida</i> (Claypan Grass)			
550.	13660 <i>Eriachne lanata</i>			
551.	413 <i>Eriachne mucronata</i> (Mountain Wanderrie Grass)			
552.	414 <i>Eriachne obtusa</i> (Northern Wandarrrie Grass)			
553.	16485 <i>Eriachne pulchella</i> subsp. <i>dominii</i>			
554.	16486 <i>Eriachne pulchella</i> subsp. <i>pulchella</i>			
555.	421 <i>Eriachne tenuiculmis</i>			
556.	426 <i>Eriochloa pseudoacrotricha</i> (Perennial Cupgrass)			
557.	11011 <i>Eulalia aurea</i>			
558.	458 <i>Iseilema dolichotrichum</i>			
559.	459 <i>Iseilema eremaeum</i>			

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Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
560.	464 <i>Iseilema membranaceum</i> (Small Flinders Grass)			
561.	465 <i>Iseilema vaginiflorum</i> (Red Flinders Grass)			
562.	471 <i>Leptochloa digitata</i> (Whorled Cane Grass)			
563.	490 <i>Monachather paradoxus</i>			
564.	503 <i>Panicum decompositum</i> (Native Millet, Kaltu-kaltu)			
565.	504 <i>Panicum effusum</i> (Hairy Panic Grass)			
566.	515 <i>Paraneurachne muelleri</i> (Northern Mulga Grass)			
567.	518 <i>Paspalidium clementii</i> (Clements Paspalidium)			
568.	519 <i>Paspalidium constrictum</i> (Knobbybutt Grass)			
569.	523 <i>Paspalidium rarum</i> (Rare Paspalidium)			
570.	546 <i>Perotis rara</i> (Comet Grass)			
571.	599 <i>Schizachyrium fragile</i> (Senale Redgrass)			
572.	606 <i>Setaria dielsii</i> (Diels' Pigeon Grass)			
573.	612 <i>Setaria surgens</i> (Pigeon Grass)			
574.	613 <i>Setaria verticillata</i> (Whorled Pigeon Grass)	Y		
575.	619 <i>Sorghum plumosum</i> (Plume Canegrass)			
576.	628 <i>Sporobolus actinocladus</i> (Ray Grass, Katoora)			
577.	629 <i>Sporobolus australasicus</i> (Fairy Grass)			
578.	17820 <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)		P3	
579.	17819 <i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471)			
580.	673 <i>Themeda triandra</i>			
581.	676 <i>Thyridolepis xerophila</i>			
582.	678 <i>Tragus australianus</i> (Small Burrgrass)			
583.	679 <i>Triodia angusta</i>			
584.	680 <i>Triodia basedowii</i> (Lobed Spinifex)			
585.	681 <i>Triodia brizoides</i>			
586.	690 <i>Triodia longiceps</i> (Giant Grey Spinifex)			
587.	17877 <i>Triodia melvillei</i>			
588.	696 <i>Triodia pungens</i> (Soft Spinifex)			
589.	17873 <i>Triodia schinzii</i>			
590.	19534 <i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739)		P3	
591.	48463 <i>Triodia vanleeuwenii</i>			
592.	704 <i>Triodia wiseana</i> (Limestone Spinifex)			
593.	706 <i>Triraphis mollis</i> (Needle Grass)			
594.	717 <i>Urochloa piligera</i>			
595.	730 <i>Xerochloa imberbis</i> (Rice Grass)			
596.	11894 <i>Yakirra australiensis</i> var. <i>australiensis</i>			

Polygalaceae

597. 41365 *Polygala glaucifolia*

Polygonaceae

598. 2443 *Rumex vesicarius* (Ruby Dock)

Y

Portulacaceae

599. 2879 *Portulaca cyclophylla*
 600. 43981 *Portulaca decipiens*
 601. 2881 *Portulaca filifolia*
 602. 2882 *Portulaca intraterranea*
 603. 2884 *Portulaca oleracea* (Purslane, Wakati)

Proteaceae

604. 15845 *Grevillea juncifolia* subsp. *juncifolia*
 605. 2079 *Grevillea pyramidalis* (Caustic Bush, Tjunga)
 606. 2096 *Grevillea stenobotrya*
 607. 2099 *Grevillea striata* (Beefwood)
 608. 13440 *Grevillea wickhamii* subsp. *aprica*
 609. 19478 *Grevillea wickhamii* subsp. *hispidula*
 610. 2138 *Hakea chordophylla*
 611. 19137 *Hakea lorea* subsp. *lorea*
 612. 2196 *Hakea preissii* (Needle Tree, Dandjin)

Pteridaceae

613. 32 *Cheilanthes brownii*
 614. 37 *Cheilanthes lasiophylla* (Woolly Cloak Fern)
 615. 12815 *Cheilanthes sieberi* subsp. *pseudovellea*
 616. 12818 *Cheilanthes sieberi* subsp. *sieberi*
 617. 8462 *Cheilanthes tenuifolia* (Rock Fern)

Rhamnaceae

618. 16189 *Cryptandra monticola*

Ricciaceae

619. *Riccia crinita*

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Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Rubiaceae				
620.	7338 <i>Oldenlandia crouchiana</i>			
621.	7339 <i>Oldenlandia galioides</i>			
622.	18154 <i>Psydrax latifolia</i>			
623.	13575 <i>Spermacoe brachystema</i>			
Ruppiaceae				
624.	116 <i>Ruppia polycarpa</i>			
Santalaceae				
625.	2333 <i>Anthobolus leptomerioides</i>			
626.	2357 <i>Santalum lanceolatum</i> (Northern Sandalwood, Yarnguli)			
Sapindaceae				
627.	12023 <i>Diplopeltis stuartii</i> var. <i>stuartii</i> (Desert Pepperflower)			
628.	4759 <i>Dodonaea coriacea</i>			
629.	11406 <i>Dodonaea lanceolata</i> var. <i>lanceolata</i>			
630.	4772 <i>Dodonaea pachyneura</i>			
Scrophulariaceae				
631.	15167 <i>Eremophila canaliculata</i>			
632.	48231 <i>Eremophila capricornica</i>		P1	
633.	7189 <i>Eremophila clarkei</i> (Turpentine Bush)			
634.	7192 <i>Eremophila cuneifolia</i> (Pinyuru, Tiranju)			
635.	7205 <i>Eremophila exilifolia</i>			
636.	15052 <i>Eremophila forrestii</i> subsp. <i>forrestii</i>			
637.	16696 <i>Eremophila fraseri</i> subsp. <i>fraseri</i>			
638.	29532 <i>Eremophila galeata</i>			
639.	17519 <i>Eremophila jucunda</i> subsp. <i>pulcherrima</i>			
640.	7228 <i>Eremophila lachnocalyx</i> (Woolly-calyxed Eremophila)			
641.	16940 <i>Eremophila lanceolata</i>			
642.	17597 <i>Eremophila latrobei</i> subsp. <i>filiformis</i>			
643.	17576 <i>Eremophila latrobei</i> subsp. <i>latrobei</i>			
644.	7234 <i>Eremophila longifolia</i> (Berrigan, Tulypurpa)			
645.	16363 <i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)			
646.	16362 <i>Eremophila maculata</i> subsp. <i>maculata</i>			
647.	14893 <i>Eremophila magnifica</i> subsp. <i>magnifica</i>		P4	
648.	14894 <i>Eremophila magnifica</i> subsp. <i>velutina</i>		P3	
649.	7239 <i>Eremophila margarethae</i> (Sandbank Poverty Bush)			
650.	48950 <i>Eremophila platycalyx</i> subsp. <i>Neds Creek (N.H. Speck 1228)</i>			
651.	15031 <i>Eremophila rigida</i>		P3	
652.	40643 <i>Eremophila</i> sp. <i>Hammersley Range (K. Walker KW 136)</i>		P3	
653.	16040 <i>Eremophila youngii</i> subsp. <i>lepidota</i>		P4	
654.	17158 <i>Myoporum montanum</i> (Native Myrtle)			
Solanaceae				
655.	6971 <i>Nicotiana benthamiana</i> (Tjuntiwari)			
656.	6976 <i>Nicotiana occidentalis</i> (Native Tobacco)			
657.	11331 <i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>			
658.	6977 <i>Nicotiana rosulata</i> (Rosetted Tobacco)			
659.	11734 <i>Nicotiana rosulata</i> subsp. <i>rosulata</i>			
660.	42547 <i>Solanum austroceum</i>			
661.	6995 <i>Solanum centrale</i> (Desert Raisin, Kampurarpa)			
662.	6998 <i>Solanum cleistogamum</i>			
663.	42544 <i>Solanum elatius</i>			
664.	7016 <i>Solanum lachnophyllum</i>			
665.	7018 <i>Solanum lasiophyllum</i> (Flannel Bush, Mindjulu)			
666.	9258 <i>Solanum morrisii</i>			
667.	7022 <i>Solanum nigrum</i> (Black Berry Nightshade)	Y		
668.	42546 <i>Solanum piceum</i>			
Thymelaeaceae				
669.	5245 <i>Pimelea forrestiana</i>			
Typhaceae				
670.	98 <i>Typha domingensis</i> (Bulrush, Djandjid)			
Violaceae				
671.	5215 <i>Hybanthus auranthiacus</i>			
Zygophyllaceae				
672.	4374 <i>Tribulus astrocarpus</i>			
673.	14379 <i>Tribulus eichlerianus</i>			
674.	4377 <i>Tribulus hirsutus</i>			

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Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
675.	4379 <i>Tribulus macrocarpus</i>			
676.	18072 <i>Tribulus suberosus</i>			
677.	4383 <i>Tribulus terrestris</i> (Caltrop)	Y		

Conservation Codes
 T - Rare or likely to become extinct
 X - Presumed extinct
 IA - Protected under international agreement
 S - Other specially protected fauna
 1 - Priority 1
 2 - Priority 2
 3 - Priority 3
 4 - Priority 4
 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Appendix 2: Vegetation Management Plan

NEWMAN ROAD TRAIN ASSEMBLY AREA UPGRADE & ASSOCIATED INFRASTRUCTURE

Purpose and Scope

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the Project

The Project will involve the upgrade of the existing RTAA which is currently managed by the Shire of East Pilbara. The Project is comprised of the following components:

- Pavement widening and rehabilitation/overlay of the existing bay
- Construction of turning lanes
- Intersection/access with the GNH
- Deceleration lane
- Acceleration lane
- Drainage improvements
- Installation of lighting, toilet facilities, shelter and rubbish bins.

In specified circumstances, Main Roads VMP is required to be approved by Department of Water and Environmental Regulation (DWER) as a condition of Main Roads Statewide Clearing Permit CPS 818.

Action

Appendix 3 references the standard Principal Environmental Management Requirements (PEMRs) (Table's 1 to 9) that will be utilised for all projects that involve clearing to avoid, mitigate and manage the environmental impacts of the project.

Project Specific Environmental Management Requirements are contained in Table 1.

Timeframes

Actions shall be undertaken in accordance with those described in the relevant PEMR and the Project Specific Environmental Management Requirements.

Responsibilities

It is the responsibility of the Superintendent's Contract Management Team to ensure that the requirements are implemented by the Contractor. This shall be done by adhering to the Environmental Measurement and Evaluation Checklist.

Appendix 3: Vegetation Management Requirements

VMP Requirement	Standard Management Action	Specific Management Action
Clearing	Refer to Table 1: Clearing PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition • Environment Measurement and Evaluation Checklist (for release of HOLD POINTS) Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	• Demarcate the Limits of Vegetation Clearing boundary prior to clearing by qualified surveyor. • The pegged clearing line will be inspected by the MRWA Environment Officer prior to clearing commencing. • During clearing activities, conduct daily pre-start meetings with clearing crews to review and discuss approved clearing areas and controls.
Dieback Management	Refer to Table 2: Dieback PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Erosion and Sedimentation Control	Refer to Table 3: Erosion and Sedimentation Control PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Fauna	Refer to Table 4: Fauna PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Machinery and Vehicle Management	Refer to Table 5: Machinery and Vehicle Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable

VMP Requirement	Standard Management Action	Specific Management Action
Mulch and Topsoil Management	Refer to Table 6: Mulch and Topsoil Management • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing • Specification 304 Revegetation and Landscaping Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Pegging and Flagging	Refer to Table 7: Pegging and Flagging PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Water Drainage Management	Refer to Table 8: Water Drainage PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan	Not Applicable
Weed Management	Refer to Table 9: Weed Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Monitoring	• Specification 204 Environmental Management • Construction Environmental Management Plan • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Auditing	• Specification 204 Environmental Management • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at	Not Applicable

VMP Requirement	Standard Management Action	Specific Management Action
	https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	

Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

STANDARD MANAGEMENT ACTIONS

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery does not occur outside of the Limits of Vegetation Clearing. This must include all turnaround areas. 2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible.
DURING WORKS 1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident. 2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works 3. The Contractor must undertake the clearing in accordance with the Fauna PEMR.
POST WORKS 1. NIL