



**ASSESSMENT REPORT  
AND VEGETATION MANAGEMENT PLAN  
Great Northern Highway Realignment Port Hedland Airport  
July 2017**

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<b>Report Compilation and Review</b>	<b>Name and Position</b>	<b>Document Revision</b>	<b>Date</b>
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## SUMMARY

### PROJECT INFORMATION

**Project Title:** Great Northern Highway Realignment Port Hedland Airport

**Project location(s):** Great Northern Highway near Port Hedland airport 1610.25-1614.75 SLK, Town of Port Hedland.

**Project purpose / components:** Main Roads Pilbara region is planning to realign Great Northern Highway (GNH) adjacent to Port Hedland airport. The GNH realignment project will occur between H006 1610.25 Straight Line Kilometres (SLK) and 1614.75 SLK.

**Area proposed to be cleared:** 36 hectares (ha).

**Temporary clearing required:** None.

An Assessment Report (AR) of the project was undertaken. The AR outlined the key activities associated with the road project, the existing environment and an assessment of native vegetation clearing. This assessment provided an evaluation of the vegetation clearing impacts associated with the project using the ten clearing principles and strategies used to manage vegetation clearing. Key clearing impact assessment points are listed below.

### KEY CLEARING IMPACT ASSESSMENT ASPECTS

The key impacts of native vegetation clearing that is associated with the project are:

- the project clearing is 'not likely to be at' variance with the 10 Clearing Principles
- the main native vegetation clearing impacts of the project is the removal of up to 36 hectares of native vegetation
- *Goodenia nuda* (Priority 4) and *Pterocaulon intermedium* (Priority 3) individuals will be cleared for the project
- An application for a Bed and Banks permit to clear vegetation growing in association with a watercourse and riparian vegetation within the project area will be submitted to DWER.

The AR identifies one environmental constraint associated with the proposed project activities. Further environmental approvals, permits or licences are needed for implementation of the project.

- An application for a Bed and Banks permit to clear vegetation growing in association with the watercourse and riparian vegetation within the project area will be submitted to DWER.

## KEY VEGETATION MANAGEMENT ACTIONS

Project specific environmental management actions have been developed to manage all clearing impacts and these are outlined in the Vegetation Management Plan (VMP) provided in Appendix C.

- Where possible avoid and limit the amount of clearing within the project area
- Spur drains (or similar), will be used to minimise soil erosion and surface water runoff
- Ensure that previously disturbed areas are cleared rather than areas of vegetation in Excellent to Good condition.

Main Roads State-wide Purpose Clearing Permit CPS 818 will be used to undertake native vegetation clearing for the project. Project clearing will be undertaken in accordance with the conditions of CPS 818 and detailed records of native vegetation clearing will be maintained as required under the permit.

## **1. ASSESSMENT SCOPE**

This preliminary assessment involved a desktop analysis of environmental aspects and impacts, a site investigation and an assessment of native vegetation clearing impacts. The study area is confined to a local area of a 20 km radius. This preliminary assessment determined whether further Clearing Impact Assessment (CIA) is necessary, the need to seek submissions and develop and obtain approvals from the Department of Environment Regulation (DWER) for revegetation plans, vegetation management plans, dieback management plans or offset proposals.

## **2. PROJECT DESCRIPTION**

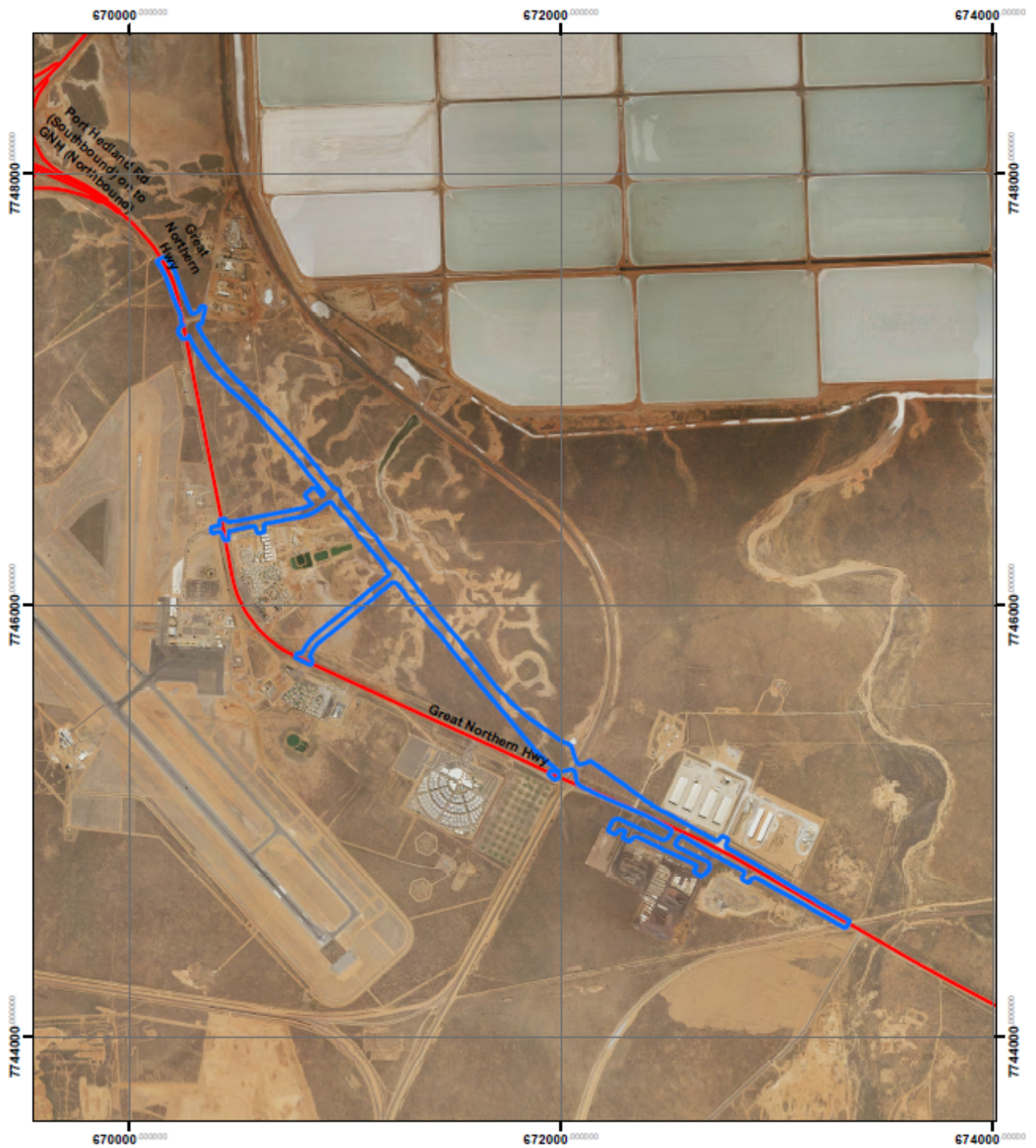
Main Roads Pilbara region is planning to realign Great Northern Highway (GNH) adjacent to Port Hedland airport. The GNH realignment project will occur between H006 1610.25-Straight Line Kilometres (SLK) and 1614.75 SLK.

### **2.1 Project Location**

The project area is located on Great Northern Highway (H006), 1610.25-1614.75 SLK, Town of Port Hedland.

MGA 50  
671066 Easting  
7746036 Northing

The project area is shown in Figure 1:



**Legend**

 Project Area

1 cm = 227 meters



Figure 1 – Project Area

The location and boundaries of the study area (20 km radius) for the project are shown in Figure 2:

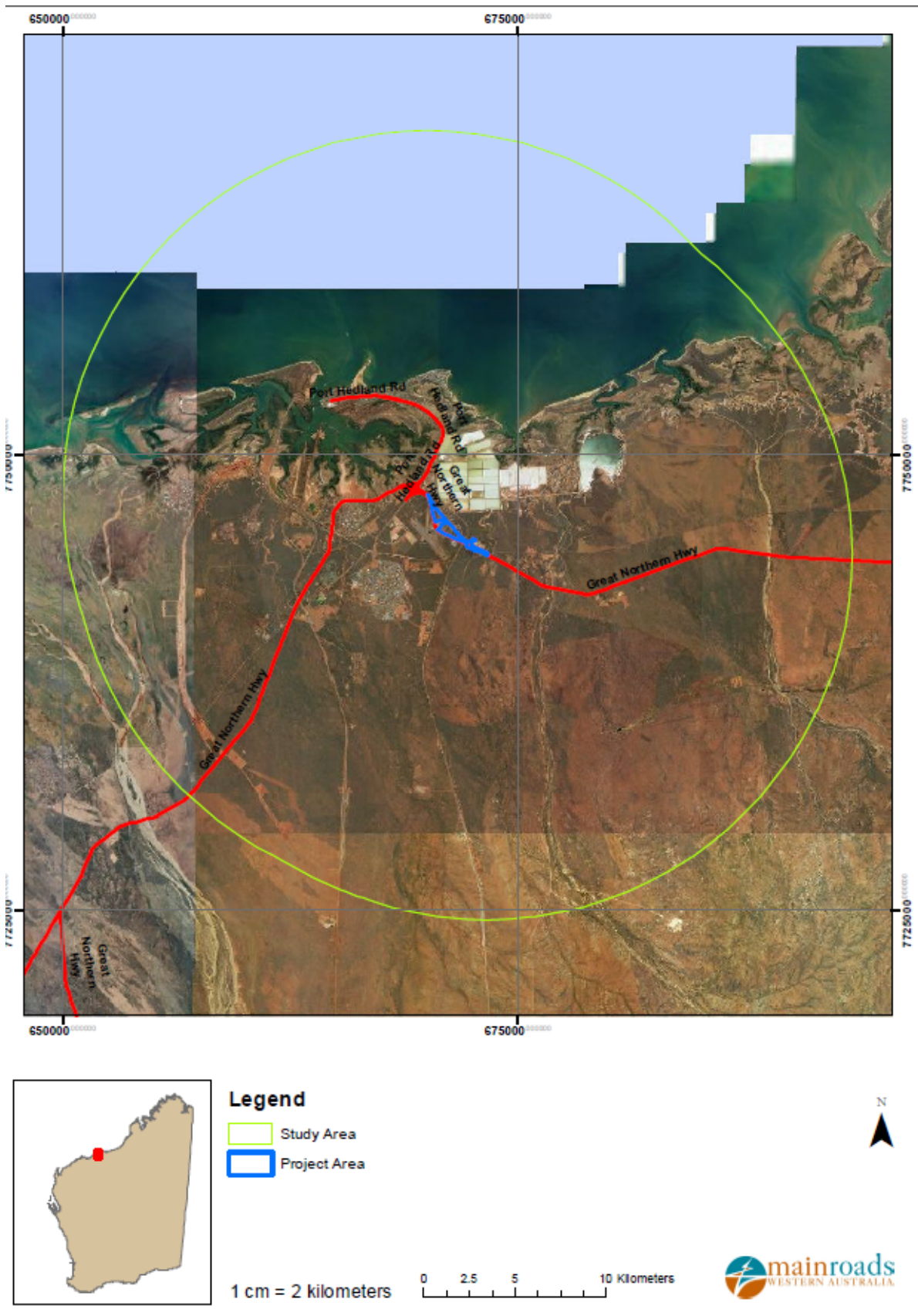


Figure 2 – Project Location and Study Area



### 3. METHODOLOGY

#### 3.1 Preliminary Desktop Study

A preliminary assessment of the project area and an assessment of native vegetation clearing was undertaken by reviewing a number of government agency managed databases, viewing GIS shapefiles and consulting with relevant stakeholders where necessary. Results from searches can be found in the relevant Appendix.

GIS layer viewing and mapping is done using ArcMap and / or Main Roads Integrated Mapping System (IMS) and referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. All Government managed databases that were searched to locate additional info (i.e. further info on Contaminated Sites such as Basic summary of records). Where these databases are searched references are supplied in the reference list with the date accessed.

### 4. CLEARING OF NATIVE VEGETATION

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

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

#### 4.1 Measures to Avoid and Minimise Clearing

Justification for how project design was chosen.

- Feasibility of alignment
- Improved access to the airport.

Clearing impacts have been avoided and minimised by:

- The smallest possible project area will be cleared
- The clearing area will be demarcated prior to the commencement of project activities and prior to the commencement of native vegetation clearing.

#### 4.2 Existing Vegetation Details

##### 4.2.1 Project site vegetation description

Four vegetation types were identified and described from the project area. They include:

- VT1 *Triodia epactia*, *Eragrostis* sp., *Acacia stellaticeps* low shrubland / herbfield
- VT2 *Tecticornia* low shrubland with bare areas
- VT3 *Tecticornia pruinosa* low shrubland
- VT4 *Acacia tumida*, *Acacia trachyandra* tall open shrubland over *Eragrostis* sp.

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

**Table 1: Summary of Project Area’s Mapped Pre-European Vegetation Associations**

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
647; Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex (Government of Western Australia, 2016)	Clearing of up to 36 ha for road realignment on the Great Northern Highway Port Hedland.	Excellent to Completely Degraded (EPA 2016)	Vegetation description and condition determined from GHD biological assessment on 21 to 23 September 2015 and aerial imagery.

**Table 2: Pre-European Vegetation Representation**

Project Area	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
IBRA Region Pilbara	17,808,657.06	17,733,583.90	99.58	10.16
Vegetation Association Statewide Veg Assoc No. 647	195,860.89	191,711.41	97.88	0
Vegetation Association In IBRA region Veg Assoc No. 647 in the IBRA Pilbara region	195,859.95	191,710.92	97.88	0
Local Government Authority Veg Assoc No. 647 in the Town of Port Hedland	180,908.49	176,759.02	97.71	0

### 4.3 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).

The proposed clearing is not likely to be at variance with the 10 Clearing Principles.

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

Comments	Proposed clearing is not likely to be at variance to this Principle
	<p>The pre-European vegetation association 647 occurs within the project area, which is described as Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex. This vegetation association is widespread throughout the Pilbara and is not restricted to the study area.</p> <p>The survey recorded 67 flora taxa representing 29 families and 49 genera. This total comprised 65 native and two introduced (exotic) species.</p> <p>No flora taxa listed under the EPBC Act or WC Act were recorded within the project area.</p> <p>Two DBCA Priority-listed flora species were recorded in the south east of the project area during the survey: <i>Goodenia nuda</i> (Priority 4) and <i>Pterocaulon intermedium</i> (Priority 3). <i>Pterocaulon intermedium</i> was recorded as scattered throughout vegetation type VT1. Approximately 80 plants of <i>Goodenia nuda</i> were recorded predominantly within disturbed areas on tracks and around power poles. Both species are likely to occur in similar abundance in adjacent vegetation / disturbed areas. These species have wide distributions and habitat for these species in similar or better condition occur within the study area and region. Given the nature of the clearing and the wide distribution of these species and their habitat, the projects clearing is unlikely to significantly impact these species.</p> <p>The likelihood of occurrence assessment post-field survey concluded that four taxa, <i>Rothia indica</i> subsp. <i>australis</i> (Priority 1), <i>Heliotropium muticum</i> (Priority 3), <i>Tephrosia</i></p>

	<p><i>rosea</i> var. Port Hedland (Priority 1) and <i>Eragrostis crateriformis</i> (Priority 3) may possibly occur within the project area.</p> <p><i>Rothia indica</i> subsp. <i>australis</i> has previously been recorded within 3.5 km of the project area. This species habitat includes sandy soils, sand hills and sandy flats, with most records adjacent to creeks and rivers. This species has a wide distribution; it has been recorded over three IBRA regions. Some habitat in the form of sandy flats occurs within the project area. Given this species wide distribution and the nature of the clearing (linear), clearing for the project is unlikely to significantly impact this species.</p> <p><i>Tephrosia rosea</i> var. Port Hedland has previously been recorded within 620 m of the project area. This species habitat includes loamy sand to sand soils on coastal dunes, sandy plains and road verges on plains. This species occurs within one IBRA region and is locally common where it is recorded. This species was not sighted during the survey; if it does occur within the project area, it would occur in low large numbers. Clearing for the project is linear in nature and is unlikely to significantly impact this species.</p> <p>Priority 3 species <i>Heliotropium muticum</i>, <i>Eragrostis crateriformis</i> and <i>Gomphrena leptophylla</i> were identified from database searches as possibly occurring within the project area. Some habitat for these species occurs within the project area, however habitat in similar or better condition is located adjacent to the project area and within the study area; clearing for the project is linear in nature and is unlikely to significantly impact these species.</p> <p>ArcMap and the EPBC PMST database searches did not identify any Commonwealth or State listed TECs or PECs within the study area. No Commonwealth or State listed TECs or PECs were identified within the project area during the field survey.</p> <p>Two main fauna habitat types were recorded during the field survey consistent with the vegetation types.</p> <p>Thirty-six fauna species were recorded within the project area including: 23 birds; eight mammals; and five reptiles. Five introduced mammal species were recorded.</p> <p>Database searches identified 56 conservation significant fauna species within the project area. No fauna species of conservation significance were recorded during the field surveys within the project area.</p> <p>A likelihood of occurrence assessment identified the Peregrine Falcon, Barn Swallow, Rainbow Bee-eater and Brush-tailed Mulgara as potentially occurring within the project area. Clearing for the project is linear in nature and as such, clearing for the project is not expected to significantly impact these species.</p> <p>The project area is considered to represent a moderate level of flora, fauna and habitat diversity. Two Priority flora species were recorded within the project area, however the projects clearing is unlikely to have a significant impact on these species. Given the vegetation to be cleared is similar in diversity to adjacent areas and the clearing is linear in nature, clearing for the project is not likely to be at variance to this principle.</p>
<b>Methodology</b>	<p>GHD assessment (21-23/9/2015)          DBCA shapefiles          MRWA GIS Shapefiles          DotEE (2017)          NatureMap (2017)</p>

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

Comments	Proposed clearing is not likely to be at variance to this Principle
	<p>Two main fauna habitat types were recorded during the field survey consistent with the vegetation types.</p> <p>Thirty-six fauna species were recorded within the project area including: 23 birds; eight mammals; and five reptiles. Five introduced mammal species were recorded.</p> <p>Database searches identified 56 conservation significant fauna species within the project area. No fauna species of conservation significance were recorded during the field surveys within the project area.</p> <p>A likelihood of occurrence assessment identified the Peregrine Falcon, Barn Swallow, Rainbow Bee-eater and Brush-tailed Mulgara as potentially occurring within the project area. All of these are highly mobile and are able to move away from disturbance. Given these species high mobility and the nature of the clearing, clearing for the project is not expected to significantly impact these species.</p> <p>The Brush-tailed Mulgara may occur within parts of the project area. This species has a wide distribution. Clearing for the project is linear in nature and as such, clearing for the project is not expected to significantly impact this species.</p> <p>Additional database searches identified two conservation significant species which may occur within the project area (excluding species dependent on aquatic environments). They include <i>Lagostrophus fasciatus</i> subsp. <i>fasciatus</i> (Banded Hare-Wallaby) T and <i>Dasycercus cristicauda</i> (Crest-tailed Mulgara) P4. The Banded Hare-Wallaby is restricted to the Dorre and Bernier Islands and is highly unlikely to occur within the project area. Records for the Crest-tailed Mulgara within the study area are likely to have been misidentified as the Brush-tailed Mulgara. This species occurs in the Little Sandy Desert; this species is unlikely to occur within the project area. Clearing for the project is not expected to impact these species.</p> <p>All habitats within the project area have been impacted to some degree by past and present disturbances including the construction of infrastructure. No habitats were recorded that are considered to be exclusive to the project area and when aligned with the vegetation associations, the habitats of the project area are considered to be well represented at a local and regional scale.</p> <p>The habitats proposed to be cleared are well represented within the study area and region and no conservation significant fauna are considered to be reliant on these habitats. Given this and the linear nature of clearing; the projects clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	<p>DBCA Shapefiles NatureMap (2017) DotEE (2017) GHD assessment (21-23/9/2015)</p>

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

Comments	Proposal is not likely to be at variance to this Principle
	<p>Database searches did not identify any species listed under the EPBC or WC Act within the study area. A likelihood of occurrence assessment did not identify any species listed under the EPBC or WC Act as likely or possibly occurring within the project area. No listed species were recorded during the survey of the project area.</p>

	Given no EPBC or WC Act listed species have been previously recorded within the project area and none are likely to occur within the project area, the clearing for the project is unlikely to impact on threatened/rare flora. As such, the clearing of native vegetation for this project is not likely to be at variance to this Principle.
<b>Methodology</b>	DBCA shapefiles NatureMap (2017) GHD assessment (21-23/9/2015) DotEE (2017)

**(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.**

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	Database searches did not identify any EPBC Act and/or State listed TECs within the study area. No EPBC Act or State listed TECs were identified within the project area during the survey. The nearest TEC to the project area is located approximately 350 km south of the project area.  Given no TECs are likely to occur within the project area and the distance from the nearest known TEC, this project is not likely to be at variance to this Principle.
<b>Methodology</b>	DBCA shapefiles GHD assessment (21-23/9/2015)

**(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.**

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>																									
	<p>This project proposes to clear up to 36 ha of native vegetation in Excellent to Completely Degraded condition. The project area is mapped as pre - European vegetation association 647; Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex.</p> <p><b>Table 2: Pre-European Vegetation Representation</b></p> <table border="1"> <thead> <tr> <th>Project Area</th> <th>Pre-European (ha)</th> <th>Current Extent (ha)</th> <th>% Remaining</th> <th>% Remaining in DBCA reserves</th> </tr> </thead> <tbody> <tr> <td>IBRA Region Pilbara</td> <td>17,808,657.06</td> <td>17,733,583.90</td> <td>99.58</td> <td>10.16</td> </tr> <tr> <td>Vegetation Association No. 647 Statewide</td> <td>195,860.89</td> <td>191,711.41</td> <td>97.88</td> <td>0</td> </tr> <tr> <td>Veg Assoc No. 647 in the IBRA Pilbara region</td> <td>195,859.95</td> <td>191,710.92</td> <td>97.88</td> <td>0</td> </tr> <tr> <td>Veg Assoc No. 647 in the Town of Port Hedland</td> <td>180,908.49</td> <td>176,759.02</td> <td>97.71</td> <td>0</td> </tr> </tbody> </table> <p>It is evident from the table above that the vegetation in the local area is well represented with more than 97 % of vegetation remaining. As a result, this area does not represent an area that has been extensively cleared.</p> <p>This vegetation is not significant as a remnant as there is a large amount of well represented vegetation within the study area and region. The vegetation is partially fragmented within the study area, however the clearing is linear in nature and clearing for the project is unlikely to significantly reduce ecological functioning or is an area that provides linkages.</p>	Project Area	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves	IBRA Region Pilbara	17,808,657.06	17,733,583.90	99.58	10.16	Vegetation Association No. 647 Statewide	195,860.89	191,711.41	97.88	0	Veg Assoc No. 647 in the IBRA Pilbara region	195,859.95	191,710.92	97.88	0	Veg Assoc No. 647 in the Town of Port Hedland	180,908.49	176,759.02	97.71	0
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	Given the above, this projects clearing is not likely to be at variance to this Principle as the clearing does not represent an area that is significant as a remnant nor is it in an extensively cleared landscape.
<b>Methodology</b>	GHD assessment (21-23/9/2015) Government of Western Australia (2017) Aerial photography

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

<b>Comments</b>	<b>Proposed clearing is not at variance to this Principle</b>
	<p>Numerous major and minor watercourses occur within the study area. One minor non perennial watercourse intersects the south east of the project area at six locations.</p> <p>One lake occurs 13 km south of the project area. Clearing for the project is not expected to impact the lake.</p> <p><i>Tecticornia</i> shrublands were recorded during the survey within the project area. These shrublands are (saline) wetland dependent and as such, are considered riparian vegetation. The shrublands cover approximately a quarter of the project area.</p> <p>The project involves clearing riparian vegetation and clearing within a minor non perennial watercourse which intersects the project area. An application for a permit to interfere with a Bed and Banks will be obtained for the clearing of vegetation within the project area. As a Bed and Banks permit will obtained for the project, the clearing of vegetation associated with a riparian area and watercourse will be undertaken under the Bed and Banks permit and therefore is not at variance to this Principle.</p>
<b>Methodology</b>	DWER shapefiles GHD assessment (21-23/9/2015)

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

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>The ASRIS Acid Sulfate Soils (ASS) database indicates that the project area occurs in areas classified as having an 'extremely low probability of occurrence'.</p> <p>A search of the Natural Resource Management (NRM) Shared Land Information Platform (SLIP) database shows no known flood, water logging or erosion, wind erosion or salinity risks within the project area.</p> <p>One minor non perennial watercourse intersects the south east of the project area at six locations. Clearing of vegetation within the watercourse areas may cause some areas to erode. Control measures to manage the risks of erosion will need to be undertaken within the project area. These controls are addressed within the vegetation management plan.</p> <p>Control measures to manage potential erosion within the project area will reduce the risk of land degradation occurring. There will be vegetation remaining in the surrounding area,</p>

	<p>and as only a narrow section of vegetation will be cleared for the project area, the risk of land degradation is low within the project area.</p> <p>Clearing of native vegetation is unlikely to cause appreciable land degradation, and as such, the projects clearing is not likely to be at variance to this clearing principle.</p>
<b>Methodology</b>	<p>GHD assessment (21-23/9/2015)  ASRIS (2017)  Natural Resource Management SLIP Soil Systems (Accessed 25/7/2017)</p>

**(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.**

<b>Comments</b>	<b>Proposed clearing is not likely to be at to this Principle</b>
	<p>No conservation areas are located within the study area. The nearest conservation area is North Turtle Island Nature Reserve which is located 60 km north of the project area. Given the distance to the nearest conservation area and the nature of the project activities it is unlikely that any conservation area will be directly or indirectly impacted by the project.</p> <p>Given the above the proposed clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	DBCA shapefiles

**(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.**

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>The climate of the Pilbara is described as arid-tropical with two distinct seasons. Rainfall in the Pilbara is highly variable and may occur during both seasons. Average long term annual rainfall for the area is 315.5 mm (Port Hedland Airport, station number 4032) which can occur in heavy localised falls (BoM 2017). Based on very high annual evaporation rates, any surface runoff resulting from rainfall events is likely to be relatively short lived. In addition the project area is largely surrounded by native vegetation and it is likely that a large proportion of runoff will be absorbed by this natural environment.</p> <p>The NRM SLIP database identified that there are no known risks of flooding, water logging or salinity to occur within the project area.</p> <p>A search of Department of Water and Environmental Regulation (DWER) database has confirmed that the project area occurs within the Pilbara Groundwater Area and the Pilbara Surface Water Area as listed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act). The nearest Public Drinking Water Source Area is the Yule River Water Reserve located approximately 40 km from the project area. Clearing for the project will not impact the Water Reserve.</p> <p>One minor non perennial watercourse intersects the south east of the project area at six locations. Clearing of vegetation within the watercourse area may cause some areas to erode. Control measures will need to be in place to manage the risks of erosion within the project area. These controls are addressed within the vegetation management plan.</p> <p>The ASRIS mapping indicates that the project area occurs in an area that has an extremely low probability of Acid Sulphate Soils (ASS) occurring, and therefore any native vegetation clearing is unlikely to result in ASS.</p> <p>The clearing of native vegetation within the watercourse areas in the project area may cause some erosion. Measures to control erosion are provided in the vegetation management plan (Appendix C). With the low levels of rainfall, erosion control measures and the high evaporation rates, clearing of native vegetation within the project area is</p>

	unlikely to cause appreciable deterioration in the quality of surface or underground water and is therefore not likely to be at variance with this clearing principle.
<b>Methodology</b>	DWER shapefiles BOM (2017)

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

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>This project proposes to clear up to 36 ha of vegetation across a linear area where there is surrounding vegetation. As such, the removal of vegetation for the project makes it unlikely that the incidence or intensity of flooding will increase.</p> <p>The NRM SLIP database identified that there are no known risks of flooding or water logging to occur within the project area. Given the nature of the clearing (up to 36 ha across a linear area), it is unlikely that flooding / water logging will occur during heavy localised rainfall events.</p> <p>Given the amount of vegetation remaining in the surrounding area, and the nature of the clearing (narrow area) it is unlikely that this project will cause or exacerbate the incidence or intensity of flooding. Therefore this project clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	GHD assessment (21-23/9/2015) Natural Resource Management SLIP Soil Systems (Accessed 25/7/2017)



## 5. ADDITIONAL ACTIONS REQUIRED

The following table summarises what further clearing impact assessment and vegetation management is required in accordance with Main Roads State-wide vegetation Clearing Permit CPS 818.

**Table 3: Summary of Additional Management Actions Required by Permit CPS 818**

Impact of Clearing	Yes/No or NA	Further Action Required
1. The AR indicates that the clearing is 'Seriously at Variance', At Variance' or 'May be at Variance' with one or more of the clearing principles.	No	No further action required.
2. The AR indicates that the 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.	No	No further action required.
3. The project involves clearing for temporary works (as defined by the permit under Condition 11 of CPS 818).	No	No further action required.
4a. The project is in part of a region that has annual rainfall greater than 400mm and is south of the 26 <sup>th</sup> parallel of latitude.  4b. The project will require movement of soil in conditions other than dry conditions.	No  No	4a. No further action required.  4b. No further action required.
5. The proposal requires referral to either the WA EPA or the Commonwealth DotEE.	No	No further action required.

## 6. VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan has been developed to manage and minimise vegetation clearing for the project (refer Appendix C).

## 7. STAKEHOLDER CONSULTATION

No stakeholder consultation was required for this project.

## 8. REFERENCES

Australian Soil Resource Information System (ASRIS) (2017). *Australian Soil Resource Information System Maps*. Available online from <http://www.asris.csiro.au/> Accessed 25/7/2017.

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## Appendix A

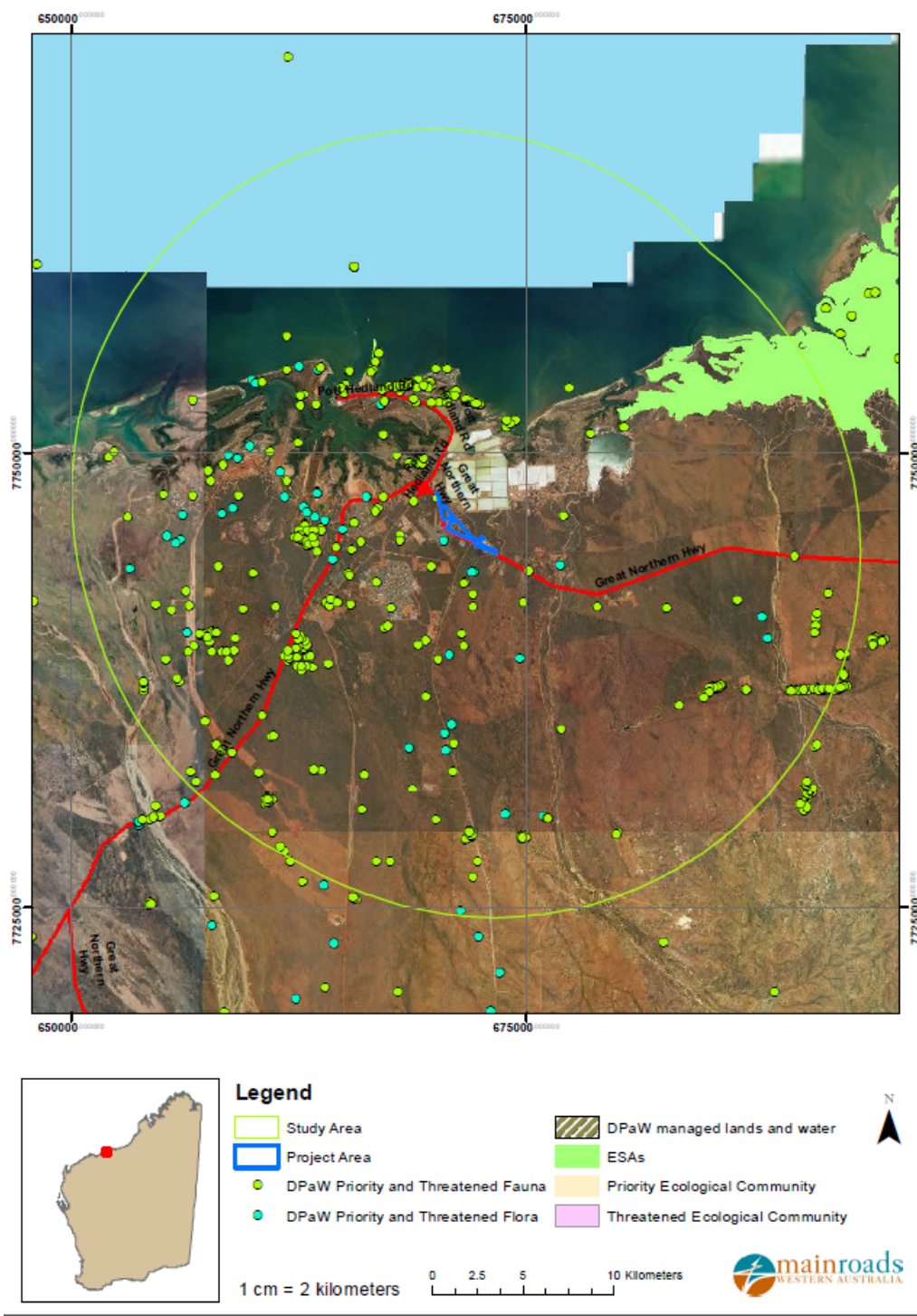
### **Biological Assessment Report**

Refer to GHDs report:

GHD Pty Ltd. (2017). *Great Northern Highway Realignment, Port Hedland Airport Biological Survey*. Unpublished report for Main Roads Western Australia.

# Appendix B

## DBCA Threatened Flora and Fauna Database Searches



## Appendix C

# Vegetation Management Plan

## Great Northern Highway Realignment Port Hedland Airport

### Introduction

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the project. In specified circumstances, Main Roads VMP is required to be approved by DWER as a condition of Main Roads Statewide Clearing Permit CPS 818.

### Scope of the Vegetation Management Plan

The VMP highlights the key project management issues and provides actions required to be undertaken by Main Roads before, during and following project completion. The aim of the VMP is to provide actions to manage the clearing impacts, to allocate areas of responsibility required for the implementation of management actions identified and to provide mechanisms to report on compliance with those actions. Timeframes for the completion of actions and monitoring are also provided.

When preparing the VMP an emphasis has been placed on management actions regarding the native vegetation clearing impacts, being determined by the variance level to the clearing principles ('Seriously at Variance', 'At Variance' and 'May be at Variance').

The VMP actions will be incorporated into the project specific Environmental Management Plan (EMP). Construction contractors are also required to comply with Main Roads' standard environmental management contract specifications (required for Type C and D projects).

Vegetation clearing activities are required to be undertaken in accordance with the environmental management measures detailed in Main Roads Specifications 204 (Environment), 301 (Clearing) and 302 (Earthworks), 304 (Revegetation and Landscaping). All revegetation activities should be completed in accordance with Main Roads *Environmental Guideline Revegetation Planning and Techniques*. Topsoil will also be managed according to Main Roads *Topsoil Management Guideline*.

### Scope of the Project Activities

Main Roads Pilbara region is planning to realign Great Northern Highway (GNH) adjacent to Port Hedland airport. The GNH realignment project will occur between H006 1610.25-Straight Line Kilometres (SLK) and 1614.75 SLK.

### Communication

Native vegetation clearing and vegetation management will be communicated at induction, toolbox and/or contract meetings. Information located in the VMP will be communicated to all project and construction personnel, (including sub-contractors) prior to the commencement of project activities and during all phases of project implementation. Where necessary, Main Roads will liaise with the DWER to obtain further advice regarding vegetation management

**VMP Accountability**

<b>PERSONS NAME</b>	<b>PERSONS ROLE</b>	<b>CONTACT DETAILS</b>
Gaynor Owen	Environment Officer	9323 6293 Gaynor.owen@mainroads.wa.gov.au
Sardar Khan	Project Manager	91728889 sardar.khan@mainroads.wa.gov.au

VEGETATION MANAGEMENT PLAN				
Project Component	Management Action	Monitoring/Maintenance Program	Responsible Person	Completion Timeframe
<b>Standard Vegetation Clearing and Fauna Management</b>				
<b>Avoid and manage project clearing</b>	<ul style="list-style-type: none"> <li>Minimise vegetation clearing within the approved clearing envelope where possible and by utilising existing cleared area where possible.</li> </ul>	<ul style="list-style-type: none"> <li>Extent of clearing for project is recorded within one week and entered in CERR or EOS, once it is available.</li> </ul>	Environment Officer	Within one week once clearing has been completed
	<ul style="list-style-type: none"> <li>At the pre-start meeting (or equivalent) – Provide clear maps (and spatial data) indicating the areas approved to be cleared (limited to the project area described in the Assessment Report) to the crew undertaking the clearing works.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur prior to clearing. Record sheet will be signed at the pre-start meeting by all personnel and emailed to the Environment Officer.</li> </ul>	Project Manager	Prior to clearing commencing
	<ul style="list-style-type: none"> <li>Have on site, and implement the actions of the VMP</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur prior to clearing.</li> </ul>	Project Manager / Environment Officer	Prior to clearing commencing
	<ul style="list-style-type: none"> <li>All vegetation proposed to be cleared will be demarcated on site prior to the commencement of project activities.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur prior to clearing. Site will be driven / walked to ensure site is marked out and is ready for clearing.</li> </ul>	Project Manager / Environment Officer	Prior to clearing commencing
	<ul style="list-style-type: none"> <li>Vegetation shall be conserved as far as practicable, and shall not be disturbed for such temporary works as side tracks, access tracks, temporary storage areas, campsites, spoil areas or site offices.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur within two weeks once clearing has been completed. The project area will be driven/walked to ensure the extent of clearing was not exceeded and where possible/safe mature trees retained.</li> </ul>	Project Manager / Environment Officer	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> <li>Any over clearing shall be recorded and reported immediately to Environment Branch.</li> <li>Any damage caused (beyond the extent of approvals) during the construction to vegetation, landforms, or fauna habitat shall be rehabilitated to the pre-clearing condition in consultation with the Environment Officer.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur within one week once clearing has been completed. The project area will be driven to ensure no damage to vegetation, landforms or habitats occurred during construction.</li> </ul>	Project Manager / Environment Officer	Within one week once clearing has been completed
	<ul style="list-style-type: none"> <li>Burning of cleared vegetative materials or burning within the road reserve will not be permitted under any circumstances.</li> <li>Cleared vegetation will be used during any rehabilitation activities and either mulched or respread according to the TDP/Revegetation Plan.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur within two weeks once clearing has been completed. The project area will be driven to ensure the extent of clearing was not exceeded.</li> </ul>	Project Manager / Environment Officer	Within two weeks once clearing has been completed
	<ul style="list-style-type: none"> <li>Clearing activities must be completed in accordance with Main Roads Specifications: 204 (Environment), 301 (Clearing), 302 (Earthworks). Specifications are available from iRoads link.</li> </ul>	<ul style="list-style-type: none"> <li>One compliance inspection will occur within one week of the commencement of clearing. The project area will be examined to ensure clearing activities comply with MRWA specifications.</li> </ul>	Project Manager / Environment Officer	Within two weeks once clearing has been completed

**VEGETATION MANAGEMENT PLAN**

<b>Project Component</b>	<b>Management Action</b>	<b>Monitoring/Maintenance Program</b>	<b>Responsible Person</b>	<b>Completion Timeframe</b>
<b>Avoid and manage impacts to fauna.</b>	<ul style="list-style-type: none"> <li>No pets, traps or firearms are allowed within the project area.</li> <li>Fauna are not to be fed or intentionally harmed or killed.</li> <li>In the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring will be undertaken through the corporate audit process and remedial actions managed through Main Roads internal incident management process.</li> </ul>	Management Action - Project Manager  Monitoring Program – Environment Branch	Project lifespan/ ongoing
<b>Weed Control</b>	<ul style="list-style-type: none"> <li>Declared weeds controlled prior to clearing commencement</li> <li>Remove or kill any serious environmental weeds growing in project area that are likely to spread and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.</li> </ul>	<ul style="list-style-type: none"> <li>EO to undertake compliance audit</li> <li>One annual compliance inspection undertaken to manage spread of weeds.</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Prior to clearing</li> <li>On-going weed maintenance program</li> </ul>
<b>Principle (g) – Land Degradation</b>	<ul style="list-style-type: none"> <li>Spur drains (or similar), will be placed along the alignment to minimise soil erosion and surface water runoff.</li> <li>Remedial action(s) will be complete in the event that soil erosion continues to occur, including re-stabilisation of the area, the installation of additional drains /re-positioning of effective drains.</li> <li>Ensure that soil erosion does not cause appreciable land degradation.</li> </ul>	<ul style="list-style-type: none"> <li>Spur drains (or similar) will be monitored within three months of project completion/following a heavy rainfall event.</li> <li>One surveillance audit will be completed within two weeks of clearing. The audit will involve driving the length of the cleared area and recording evidence of soil erosion.</li> </ul>	Project Manager	Upon clearing completion or following a heavy rainfall event.
<b>Standard Record Keeping Management</b>				
<b>Record Keeping - Clearing</b>	Maintain the following records for the areas cleared: <ul style="list-style-type: none"> <li>a map and an ESRI Shapefile showing the location of the areas cleared (clearing of 0.5 hectares or less will only require a single GPS coordinate);</li> <li>the size of the area cleared (in hectares); and</li> <li>the dates on which the clearing was done in day/month/year format.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring will be undertaken through the corporate audit process and remedial actions managed through Main Roads internal incident management process.</li> </ul>	Environment Officer	Records maintained during construction and finalised within 4 weeks of the completion of clearing.



**VEGETATION MANAGEMENT PLAN**

<b>Project Component</b>	<b>Management Action</b>	<b>Monitoring/Maintenance Program</b>	<b>Responsible Person</b>	<b>Completion Timeframe</b>
<b>Record Keeping – VMP</b>	Maintain the following records for the project area: <ul style="list-style-type: none"> <li>• the location of the area to which the VMP has had action applied;</li> <li>• an ESRI Shapefile showing the locations of the areas of clearing for project activities;</li> <li>• a description of the management actions implemented; and</li> <li>• the size of the area to which the management actions were applied (in hectares).</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring will be undertaken through the corporate audit process and remedial actions managed through Main Roads internal incident management process.</li> </ul>	Environment Officer	Records maintained during vegetation management activities and finalised within 4 weeks of all management plan actions being completed.



mainroads  
WESTERN AUSTRALIA

# Clearing Assessment Report – CPS 818

*We're working for  
Western Australia.*

Great Northern Highway  
Realignment Port Hedland Airport

October 2021

EOS#2045

Printed copies are uncontrolled unless marked  
otherwise. Refer to iRoads for current version.

D21#1041113

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# Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environment Officer	Draft v1	15/5/2020
Reviewer:	Senior Environment Officer	Rev 0	30/07/2020
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Reviewer:	Senior Environment Officer	Draft v2	15/10/2020
Author:	Environment Officer	Draft v3	11/11/2020
Reviewer:	Senior Environment Officer	Draft v3	19/11/2020
Author:	Environment Officer	Draft v4	04/03/2021
Reviewer:	Senior Environment Officer	Draft v4	08/03/2021
Author:	Environment Officer	Draft v5	19/10/2021
Reviewer:	Senior Environment Officer	Draft v5	28/10/2021

## 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 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, and the strategies used to manage vegetation clearing.

## 2 SCOPE

### 2.1 Project Scope

**Project Name:** Great Northern Highway Realignment Port Hedland Airport

**Project Purpose / Components:** Main Roads Pilbara region is planning to realign Great Northern Highway (GNH) adjacent to Port Hedland airport. The GNH realignment project will occur between H006 1610.93 Straight Line Kilometre's (SLK) and 1615.08 SLK. The project is in the development stages, and the resultant vehicle access modifications that are required for local business, airport and industry are yet to be confirmed.

Approvals have been granted for part of the project (see PCIA D17#347550, clearing of up to 36 ha) however due to design changes and the need to extract material out of the project area for construction further approvals are required outside the original boundaries.

Realignment of the existing road is required for safety reasons. Alternative alignments were considered and all involved clearing of native vegetation. The extent of native vegetation clearing will be minimised where possible by utilising already cleared areas and degraded areas.

**Area Proposed to be Cleared:** up to 55 ha within a development envelope of 112 ha (current project area excluding previously approved area and riparian vegetation).

**Temporary Clearing Required:** none

Key clearing impact assessment points are listed below.

- the project clearing is 'not likely to be at' variance with the 10 Clearing Principles
- the main native vegetation clearing impacts of the project (2020 extension) is the removal of up to 55 hectares of native vegetation (under CPS 818)
- No more than 42 individuals of *Tephrosia rosea* var. Port Hedland (P1) will be removed.
- No more than 70 individuals of *Goodenia nuda* (P4) will be removed.
- No more than 1 individual of *Abutilon* sp. Pritzelianum (P3) will be removed.
- A Bed and Banks permit to clear vegetation growing in association with a watercourse and riparian vegetation within the project area has been obtained from DWER.

Main Roads Statewide Purpose Clearing Permit CPS 818 will be used to undertake native vegetation clearing for the project. Project clearing will be undertaken in accordance with the conditions of CPS 818 and detailed records of native vegetation clearing will be maintained as required under the permit.

**Project Location(s):** Great Northern Highway near Port Hedland airport 1610.25-1614.75 SLK, Town of Port Hedland.

The project area is located on Great Northern Highway (H006), 1610.25-1614.75 SLK, Town of Port Hedland as shown in Figure 1.

MGA 50  
671066 Easting  
7746036 Northing

## 2.2 Assessment Report Scope

This clearing impact assessment involved a desktop analysis of environmental aspects and impacts, a site investigation, and an assessment of native vegetation clearing impacts. The study area is confined to a local area of a 40 km radius shown in Figure 2.

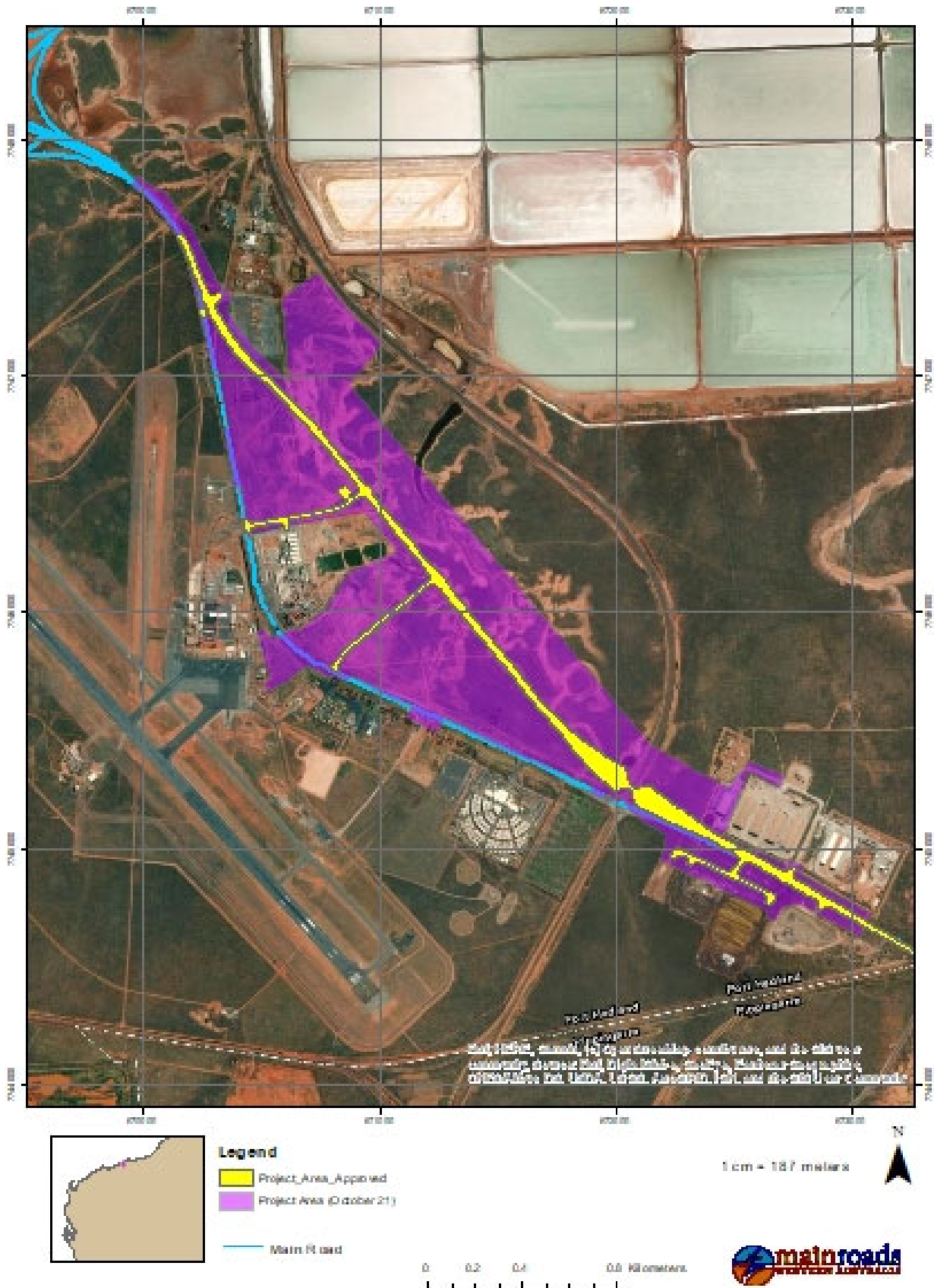


Figure 1. Project Area

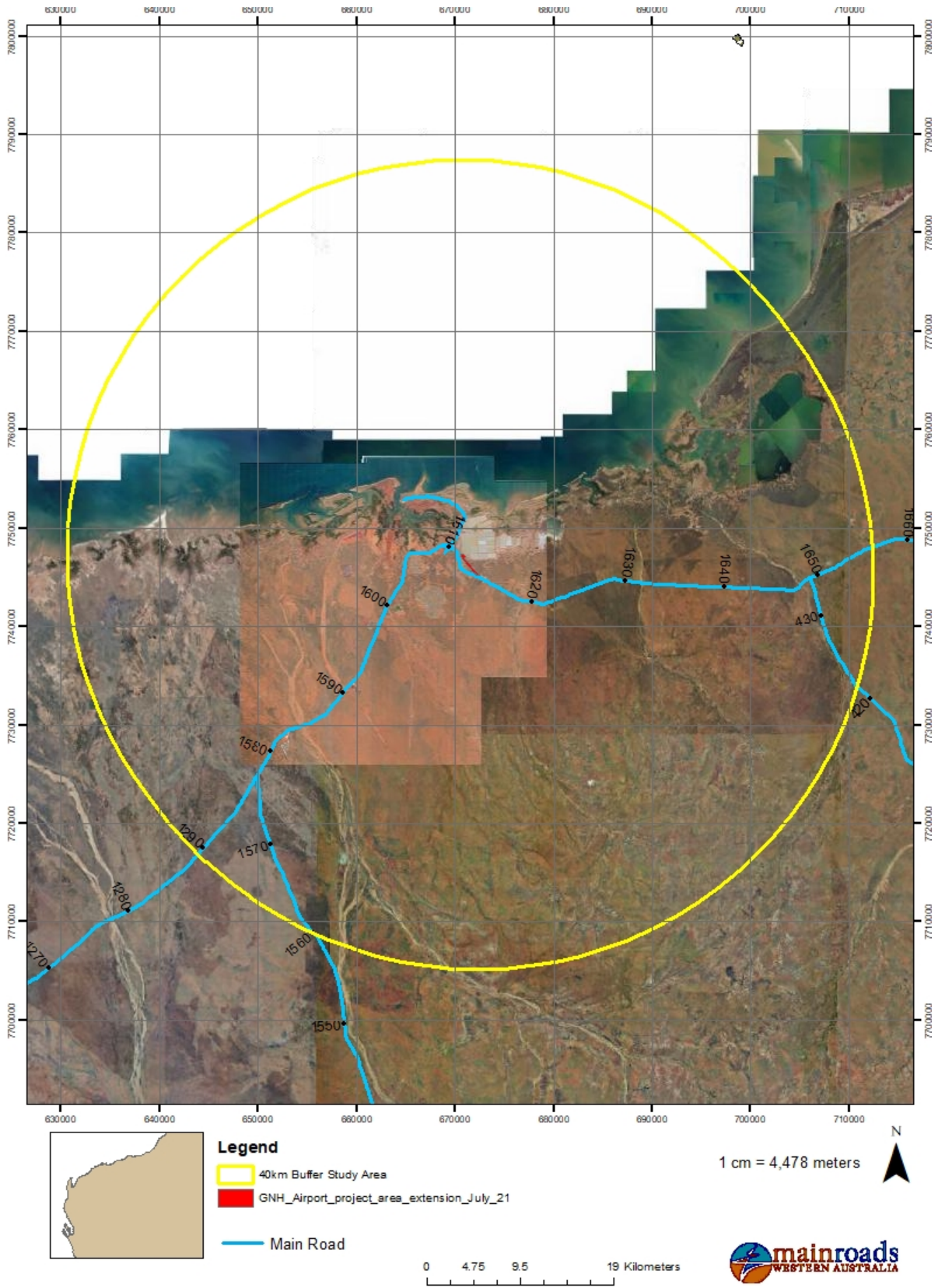


Figure 2. Project Location and Study Area



### **2.3 Alternatives to clearing**

Realignment of the existing road is required for safety reasons. Alternative alignments were considered and all involved clearing of native vegetation. The extent of native vegetation clearing will be minimised where possible by utilising already cleared areas and degraded areas.

### **2.4 Measures to Avoid, Minimise, Mitigate and Manage Project Clearing Impacts**

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

- The clearing area will be demarcated prior to the commencement of project activities and prior to the commencement of native vegetation clearing
- Survey has been undertaken to assess biological impacts on design which resulted in no significant issues identified.
- Pre cleared and degraded areas are being utilised to reduce clearing.

**Table 1. Justification of Avoiding, Minimising, Mitigating and Managing Project Clearing Impacts**

<b>Design or Management Measure</b>	<b>Applied to Current Design</b>	<b>Discussion and Justification</b>
<b>Steepen batter slopes</b>	No	Due to the traffic volumes, vehicle type (haul trucks) and posted speeds these batters cannot be changed significantly.
<b>Installation of safety barriers</b>	Yes	Standard barriers will be implemented at various location where batters are steepened and around lighting near the eastern end.
<b>Alignment to one side of existing road</b>	No	As there are no significant environmental factors or remanent vegetation the alignments have been designed primarily on safety needs.
<b>Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas</b>	Yes	Realignment away from the current route has been identified due to safety measures the existing alignment will be kept where possible.
<b>Installation of kerbing</b>	Yes	Kerbing has been considered and implemented in the design where possible.
<b>Simplification of design to reduce number of lanes and/or complexity of intersections</b>	No	The widening scope of works cannot be further simplified whilst retaining the necessary safety benefits.
<b>Preferential use of existing cleared areas for access tracks, construction storage and stockpiling</b>	Yes	Further project clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas.
<b>Drainage modification</b>	Yes	Appropriate drainage and culverts if required are currently being designed to ensure there is no deviation to surface hydrology.

## 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
- Aboriginal Heritage Act 1972 (WA)
- Town Planning and Development Act 1928

### **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 GHD 2015

GHD undertook a biological survey of 120 ha for the GNH realignment project (SLK 1610.93-1615.08) in 2015. Key results were following:

- Four vegetation associations:
  - VT1 *Triodia epactia*, *Eragrostis* sp., *Acacia stellaticeps* low shrubland / herbfield
  - VT2 *Tecticornia* low shrubland with bare areas
  - VT3 *Tecticornia pruinosa* low shrubland
  - VT4 *Acacia tumida*, *Acacia trachyandra* tall open shrubland over *Eragrostis* sp.
- No Threatened or Priority ecological communities.
- Vegetation condition mostly Excellent (113.1 ha) with small areas in Degraded and Completely Degraded condition.
- 67 flora taxa including two introduced taxa recorded in the field, including no Declared Pest species of Weeds of National Significance.
- No Threatened flora species were recorded.
- 70 plants of *Goodenia nuda* (Priority 4) and unknown number of *Pterocaulon intermedium* (then Priority 3, but no longer listed) were recorded. Four significant taxa were considered 'may possibly occur' (*Tephrosia rosea* var Port Hedland Priority 1, *Heliotropium muticum* Priority 3, *Rothia indica* subsp. *australis* Priority 3, and *Eragrostis crateriformis* Priority 3).
- Two fauna habitat type:
  - Native grasslands with scattered *Acacia* (corresponding to VT1 and VT4)
  - Low Samphire (*Tecticornia* sp.) shrubland and low lying/saline drainage areas (corresponding to VT2 and VT3)
- 36 fauna species, including five introduced species were recorded in the field. No significant species were recorded but four were considered likely to occur (Peregrine Falcon, Barn Swallow, Rainbow Bee-eater, Brush-tailed Mulgara).

### 3.2 Pilbara Environmental 2020

Pilbara Environmental undertook a biological survey of 13.5 ha for the GNH realignment project (SLK 1610.25 - 1614.75) in 2015. Key results were following:

- The same four vegetation associations mapped by GHD in 2015 as well as a fifth association consisting of disturbance species occurring on highly disturbed landforms.
- No Threatened or Priority ecological communities.
- Vegetation condition range from Good to Completely Degraded.
- Three significant flora species were recorded in the survey area:
  - 9 individuals of *Tephrosia rosea* var. Port Hedland (P1)
  - 20 individuals of *Gomphrena leptophylla* (P3)
  - 1 individual of *Abutilon* sp. Pritzelianum (P3)
- No Declared Pests or Weeds of National Significance were recorded.
- The same fauna habitat types recorded by GHD in 2015.
- No significant fauna species were recorded but four were considered likely to occur (Peregrine Falcon, Barn Swallow, Rainbow Bee-eater, Brush-tailed Mulgara).

### 3.3 Pilbara Environmental 2021

Pilbara Environmental undertook a biological survey of 55.29 ha for the GNH realignment project (SLK 1610.93 – 1615.08) in 2015. Key results were following:

- Three vegetation associations:
  - *Acacia stellaticeps* low sparse shrubland over *Triodia epactia*, *Triodia secunda* low hummock grassland over *Eriachne obtusa* low open tussock grassland (AsTeTsEo)
  - *Tecticornia auriculata*, *Tecticornia indica* subsp. *leiostachya*, *Tecticornia halocnemoides* subsp. *tenuis* low open samphire shrubland over *Frankenia ambita* low sparse shrubland over *Eragrostis falcata* low sparse tussock grassland (TaTilThtFaEf)
  - *Acacia trachycarpa*, *Acacia ancistrocarpa* tall sparse shrubland over *Triodia epactia*, *Triodia secunda* open low hummock grassland over \**Cenchrus ciliaris* low tussock grassland (AtAaTeTsCc).
- No Threatened or Priority ecological communities.
- Vegetation condition range from Very Good to Poor.
- 8 individuals of *Tephrosia rosea* var. Port Hedland (P1) but not other significant flora.
- No Declared Pests or Weeds of National Significance were recorded.
- Two fauna habitat types:
  - Native grassland with scattered low *Acacia* shrubland on sandy plain (FH1)
  - Samphire open shrubland on saline flowlines (FH2)
- No significant fauna species were recorded but four were considered likely to occur (Barn Swallow, Rainbow Bee-eater, Brush-tailed Mulgara).

## 4 Vegetation Details

### 4.1 Project Site Vegetation Description

In total eight vegetation types have been identified and described from the project area (GHD 2015, Pilbara Environmental 2020 and 2021). They include:

- VT1 *Triodia epactia*, *Eragrostis* sp., *Acacia stellaticeps* low shrubland / herbfield
- VT2 *Tecticornia* low shrubland with bare areas
- VT3 *Tecticornia pruinosa* low shrubland
- VT4 *Acacia tumida*, *Acacia trachyandra* tall open shrubland over *Eragrostis* sp.
- VT5 Disturbance species occurring on highly disturbed landforms
- AsTeTsEo *Acacia stellaticeps* low sparse shrubland over *Triodia epactia*, *Triodia secunda* low hummock grassland over *Eriachne obtusa* low open tussock grassland
- TaTilThtFaEf *Tecticornia auriculata*, *Tecticornia indica* subsp. *leiostachya*, *Tecticornia halocnemoides* subsp. *tenuis* low open samphire shrubland over *Frankenia ambita* low sparse shrubland over *Eragrostis falcata* low sparse tussock grassland
- AtAaTeTsCc *Acacia trachycarpa*, *Acacia ancistrocarpa* tall sparse shrubland over *Triodia epactia*, *Triodia secunda* open low hummock grassland over \**Cenchrus ciliaris* low tussock grassland.

Clearing of *Tecticornia* shrublands (VT2 ,VT3 and TaTilThtFaEf) will be undertaken under a separate Bed and Banks permit and not under CPS 818.

Tables 3 and 4 provide details of the Pre-European Vegetation Associations with the project area and the remaining extents of these associations.

**Table 3. Summary of Project Area's Mapped Pre-European Vegetation Associations**

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 647 described as a Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex	Clearing of up to 55 ha for road realignment	Excellent to Completely Degraded	Vegetation description and condition determined from GHD biological assessment on 21 to 23 September 2015 and aerial imagery.

**Table 4. Pre-European Vegetation Representation**

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
<b>Veg Assoc No.</b> 647	<b>Statewide</b> 647	195,860.89	191,711.41	97.88	0
	<b>IBRA Bioregion</b> Pilbara	195,859.95	191,710.92	97.88	0
	<b>IBRA Sub-region</b> Roebourne Pil4	188,901.32	184,774.70	97.82	0
	<b>Local Government Authority</b> Town of Port Hedland	180,908.49	176,759.02	97.71	0

## 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 1986, Schedule 5).

Each principle has been assessed in accordance with 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 10 clearing principles.

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

Comments	Proposed clearing is not likely to be at variance to this Principle
	<p>The pre-European vegetation association 647 occurs within the project area, which is described as Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex. This vegetation association is widespread throughout the Pilbara and is not restricted to the study area.</p> <p>The field surveys conducted within the project area recorded 67 flora taxa representing 29 families and 49 genera. This total comprised 65 native and two introduced (exotic) species.</p> <p>No flora taxa listed as threatened under the EPBC Act or BC Act were recorded within the project area.</p> <p>Three currently DBCA Priority-listed flora species were recorded in the project area <i>Tephrosia rosea</i> var. <i>Port Hedland</i> (P1), <i>Goodenia nuda</i> (P4) and <i>Abutilon</i> sp.</p>

*Pritzelianum* (P3). *Gomphrena leptophylla* (P3) records (Pilbara Environmental 2020) are located outside the current project area and will not be impacted.

Approximately 70 individuals of *Goodenia nuda* (P4) were recorded in the south east of the project area (GHD 2015). This species has a wide distribution (Gascoyne, Little Sandy Desert, Pilbara bioregions), with 109 known records in FloraBase, including more than 400 individuals. Suitable habitat for the species in similar or better condition occur within the study area and region. The clearing of up to 70 *Goodenia nuda* will be less than 20% of known recorded individuals of the species. Given the linear nature of the clearing, the relatively small clearing area and the wide distribution of the species and its habitat, the project clearing is unlikely to significantly impact the species.

42 individuals of *Tephrosia rosea* var. Port Hedland (P1) were found within the project area (Pilbara Environmental 2020, Pilbara Environmental 2021). *Tephrosia rosea* var. Port Hedland has previously been recorded within 620 m of the survey area. This species habitat includes loamy sand to sand soils on coastal dunes, sandy plains and road verges on plains. This species occurs within one IBRA region and is locally common where it is recorded. Recent Main Roads biological surveys for the Buttweid Rd project found approximately 2000 individuals approximately 2.5km south. Buttweid Rd surveys indicates that the species is a disturbance specialist. Due to the large locally known population, the clearing for the project is minor (up to 42 individuals) and is unlikely to significantly impact this species conservation.

One individual of *Abutilon* sp. *Pritzelianum* (P3) was located on the edge of the project area (Pilbara Environmental 2020). The species is known to be locally abundant with 96 known records within the 40 km study area (DBCA Shapefiles). Clearing of up to one individual will not significantly impact the species.

The likelihood of occurrence assessment post-field survey concluded that five taxa, *Rothia indica* subsp. *australis* (Priority 3), *Heliotropium muticum* (Priority 3) and *Eragrostis crateriformis* (Priority 3) may possibly occur within the project area, however these species have not been observed in any of the three field surveys.

*Rothia indica* subsp. *australis* has previously been recorded within 3.5 km of the project area. This species habitat includes sandy soils, sand hills and sandy flats, with most records adjacent to creeks and rivers. This species has a wide distribution; it has been recorded over three IBRA regions. Some habitat in the form of sandy flats occurs within the project area. Given this species wide distribution and the nature of the clearing (linear), clearing for the project is unlikely to significantly impact this species.

Some suitable habitat for *Heliotropium muticum* and *Eragrostis crateriformis* occurs within the project area, however habitat in similar or better condition is located adjacent to the project area and more widely locally and regionally; clearing for the project is linear in nature and is unlikely to significantly impact these species.

ArcMap and the EPBC PMST database searches did not identify any Commonwealth or State listed TECs or PECs within the study area. No Commonwealth or State listed TECs or PECs were identified within the project area during the field survey.

Two main fauna habitat types were recorded during the field survey consistent with the vegetation types.

Thirty-six fauna species were reported within the project area including: 23 birds; eight mammals; and five reptiles. Five introduced mammal species were recorded.

Database searches identified 66 conservation significant fauna species within the study area. No fauna species of conservation significance were recorded during the field surveys within the project area.

A likelihood of occurrence assessment identified the Peregrine Falcon, Barn Swallow, Rainbow Bee-eater and Brush-tailed Mulgara and Bilby as potentially occurring within the project area. As clearing for the project is linear in nature and similar or better quality

	<p>habitat is readily available in the local area, the clearing for the project is not expected to significantly impact these species.</p> <p>The project area is considered to represent a moderate level of flora, fauna and habitat diversity, with surrounding areas comprising similar or higher biodiversity values. Three Priority flora species were recorded within the project area, however the projects clearing is unlikely to have a significant impact on these species. Given the vegetation to be cleared is similar in diversity to adjacent areas, the clearing is linear in nature and the clearing area is not large in local context, the clearing for the project is not likely to be at variance to this principle.</p>
<b>Methodology</b>	<p>GHD assessment (2015)</p> <p>Pilbara Environmental (2020, 2021)</p> <p>DBCA shapefiles</p> <p>MRWA GIS Shapefiles</p> <p>NatureMap (2020)</p> <p>FloraBase (WA Herbarium 2020)</p>

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

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>Two main fauna habitat types were recorded during the field survey consistent with the vegetation types: native grasslands and low Samphire (<i>Tecticornia</i> sp.). Clearing of the Samphire habitat will occur under a separate Bed and Banks permit.</p> <p>Thirty-six fauna species were recorded within the project area including: 23 birds; eight mammals; and five reptiles. Five introduced mammal species were recorded.</p> <p>Database searches identified 66 conservation significant fauna species within the project area. No fauna species of conservation significance were recorded during the field surveys within the project area.</p> <p>A likelihood of occurrence assessment identified the Peregrine Falcon (S), Barn Swallow (IA), Rainbow Bee-eater (T), Brush-tailed Mulgara (P4) and Bilby (T) as potentially occurring within the project area. All of these other than Bilby and Brush-tailed Mulgara are highly mobile and are able to move away from disturbance.</p> <p>Taking into consideration that the area has a high portion of infrastructure including the adjacent airport and large amounts of traffic, noise and lights, it is unlikely Bilby would utilise the habitat within the project area. Given the narrow linear nature of the clearing and availability of similar or better quality habitat in the local area, the clearing for the project is not expected to significantly impact Bilby.</p> <p>The Brush-tailed Mulgara may occur within parts of the project area. This species has a wide distribution. As clearing for the project is linear in nature and similar or better quality habitat is available in the local area, clearing for the project is not expected to significantly impact this species.</p> <p>Additional GIS database searches identified two conservation significant species which may occur within the project area (excluding species dependent on aquatic environments). They include <i>Lagostrophus fasciatus</i> subsp. <i>fasciatus</i> (Banded Hare-Wallaby, T) and <i>Dasycercus cristicauda</i> (Crest-tailed Mulgara, P4). The Banded Hare-Wallaby is restricted to the Dorre and Bernier Islands and is highly unlikely to occur within the project area. Records for the Crest-tailed Mulgara within the study area are likely to have been misidentified as the Brush-tailed Mulgara. This species occurs in the Little Sandy Desert and is therefore unlikely to occur within the project area. Clearing for the project is not expected to impact these species.</p>



	<p>All habitats within the project area have been impacted to some degree by past and present disturbances including the construction of infrastructure. No habitats were recorded that are considered to be exclusive to the project area and when aligned with the vegetation associations, the habitats of the project area are considered to be well represented at a local and regional scale.</p> <p>The habitats proposed to be cleared are well represented within the study area and region and no significant fauna are considered to be reliant on the clearing area. Given this and the linear nature of clearing; the project clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	<p>DBCA Shapefiles NatureMap (2020) GHD assessment (21-23/9/2015) Pilbara Environmental (2020, 2021)</p>

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

<b>Comments</b>	<b>Proposal is not at variance to this Principle</b>
	<p>Database searches did not identify any threatened flora species listed under the <i>Biodiversity Conservation Act 2016</i> (BC Act) within the 40 km study area. A likelihood of occurrence assessment did not identify any species listed under the BC Act as likely or possibly occurring within the project area. No listed species were recorded during the surveys of the project area.</p> <p>Given no BC Act listed Threatened species have been previously recorded within the project area and none are likely to occur within the project area, the clearing for the project is unlikely to impact on threatened/rare flora. As such, the clearing of native vegetation for this project is not at variance to this Principle.</p>
<b>Methodology</b>	<p>DBCA shapefiles NatureMap (2020) GHD assessment (21-23/9/2015) Pilbara Environmental (2020, 2021)</p>

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

<b>Comments</b>	<b>Proposed clearing is not at variance to this Principle</b>
	<p>Database searches did not identify any State listed TECs within the study area. No State listed TECs were identified within the project area during the surveys. The nearest TEC to the project area is located approximately 350 km south of the project area.</p> <p>Given no TECs are likely to occur within the project area and the distance from the nearest known TEC, this project is not at variance to this Principle.</p>
<b>Methodology</b>	<p>DBCA shapefiles GHD assessment (21-23/9/2015) Pilbara Environmental (2020, 2021)</p>

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

Comments	Proposed clearing is not at variance to this Principle																									
	<p>This project proposes to clear up to 55ha of native vegetation in Excellent to Completely Degraded condition. The project area is mapped as pre - European vegetation association 647; Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex.</p> <p><b>Table 2: Pre-European Vegetation Representation</b></p> <table border="1"> <thead> <tr> <th>Project Area</th> <th>Pre-European (ha)</th> <th>Current Extent (ha)</th> <th>% Remaining</th> <th>% Remaining in DBCA reserves</th> </tr> </thead> <tbody> <tr> <td>IBRA Region Pilbara</td> <td>195,860.89</td> <td>191,711.41</td> <td>97.88</td> <td>0</td> </tr> <tr> <td>Vegetation Association No. 647 Statewide</td> <td>195,859.95</td> <td>191,710.92</td> <td>97.88</td> <td>0</td> </tr> <tr> <td>Veg Assoc No. 647 in the IBRA Pilbara region</td> <td>188,901.32</td> <td>184,774.70</td> <td>97.82</td> <td>0</td> </tr> <tr> <td>Veg Assoc No. 647 in the Town of Port Hedland</td> <td>180,908.49</td> <td>176,759.02</td> <td>97.71</td> <td>0</td> </tr> </tbody> </table> <p>It is evident from the table above that the vegetation in the local area is well represented with more than 97 % of pre-European vegetation remaining. As a result, this area does not represent an area that has been extensively cleared.</p> <p>This vegetation is not significant as a remnant as there is a large amount of well represented vegetation within the study area and region. The vegetation is partially fragmented within the study area, however the proposed clearing is not expected to significantly reduce ecological functioning or impact linkages.</p> <p>Given the above, this proposed clearing is not at variance to this Principle as the clearing does not represent an area that is significant as a remnant nor is it in an extensively cleared landscape.</p>	Project Area	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves	IBRA Region Pilbara	195,860.89	191,711.41	97.88	0	Vegetation Association No. 647 Statewide	195,859.95	191,710.92	97.88	0	Veg Assoc No. 647 in the IBRA Pilbara region	188,901.32	184,774.70	97.82	0	Veg Assoc No. 647 in the Town of Port Hedland	180,908.49	176,759.02	97.71	0
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<b>Methodology</b>	<p>GHD assessment (21-23/9/2015)  Pilbara Environmental (2020, 2021)  Government of Western Australia (2020)  Aerial photography</p>																									

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

Comments	Proposed clearing is not at variance to this Principle
	<p>Numerous major and minor watercourses occur within the 40 km study area. One lake occurs 13 km south of the project area. Clearing for the project is not expected to impact the lake.</p> <p>One minor non-perennial watercourse intersects the project area in multiple locations. Associated saline <i>Tecticornia</i> shrublands are considered riparian vegetation. The clearing of vegetation associated with a riparian area and watercourse will be undertaken under a Bed and Banks permit and not under CPS 818.</p> <p>The clearing proposed under CPS 818 is not at variance to this Principle.</p>
<b>Methodology</b>	<p>DWER shapefiles  GHD assessment (21-23/9/2015)  Pilbara Environmental (2020, 2021)</p>

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

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>The clearing of vegetation associated with a watercourse will be undertaken under the Bed and Banks permit and not under CPS 818 and the assessment below will cover clearing under CPS 818 only.</p> <p>The clearing area under CPS 818 occurs within Uaroo System (281Ua) soil subsystem and is described as broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered Acacia shrubs.</p> <p>According to available databases, the clearing area is not within an area subject to inundation. Based on the mapped land degradation risk, the application area has a relatively low likelihood of salinity and subsurface acidification (Schoknecht et al. 2004). The ASRIS Acid Sulfate Soils (ASS) database indicates that the project area occurs in areas classified as having an 'extremely low probability of occurrence'.</p> <p>Wind erosion is considered a potential risk but the linear nature of the project and retention of native vegetation in surrounding areas reduce this risk. Further, the CEMP will cover erosion and will ensure no appreciable land degradation will occur.</p> <p>Based on the above, the project clearing is not likely to be at variance to this clearing principle.</p>
<b>Methodology</b>	<p>GHD assessment (21-23/9/2015)</p> <p>Pilbara Environmental (2020, 2021)</p> <p>ASRIS (2020)</p> <p>Natural Resource Management SLIP Soil Systems</p>

**(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.**

<b>Comments</b>	<b>Proposed clearing is not at variance to this Principle</b>
	<p>No conservation areas are located within the 40km study area. The nearest conservation area is North Turtle Island Nature Reserve which is located 60 km north of the project area (offshore). Given the distance to the nearest conservation area and the nature of the project activities it is unlikely that any conservation area will be directly or indirectly impacted by the project.</p> <p>Given the above the proposed clearing is not at variance to this Principle.</p>
<b>Methodology</b>	<p>DBCA shapefiles</p>

**(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.**

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>The climate of the Pilbara is described as arid-tropical with two distinct seasons. Rainfall in the Pilbara is highly variable and may occur during both seasons. Average long-term annual rainfall for the area is 319.3 mm (Port Hedland Airport, station number 4032) which can occur in heavy localised falls (BoM 2020). Based on very high annual evaporation rates, any surface runoff resulting from rainfall events is likely to be relatively short lived. In addition the project area is largely surrounded by native vegetation and it is likely that a large proportion of runoff will be absorbed by this natural environment.</p>

	<p>The NRM SLIP database identified that there are no known risks of flooding, water logging or salinity to occur within the clearing area under CPS 818.</p> <p>A search of Department of Water and Environmental Regulation (DWER) database has confirmed that the project area occurs within the Pilbara Groundwater Area and the Pilbara Surface Water Area as listed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act). The nearest Public Drinking Water Source Area is the Yule River Water Reserve located approximately 40 km from the project area. Clearing for the project will not impact the Water Reserve.</p> <p>One minor non-perennial watercourse intersects the project area at multiple locations. Clearing of vegetation associated with the watercourse area will be undertaken under a Bed and Banks permit.</p> <p>Control measures will be in place to manage the risks of erosion within the project area. Measures to control erosion will be covered in the CEMP.</p> <p>With the low levels of rainfall, erosion control measures and the high evaporation rates, the limited linear clearing of native vegetation in a mostly vegetated setting is unlikely to cause appreciable deterioration in the quality of surface or underground water and is therefore not likely to be at variance with this clearing principle.</p>
<b>Methodology</b>	DWER shapefiles BOM (2020)

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

<b>Comments</b>	<b>Proposed clearing is not likely to be at variance to this Principle</b>
	<p>The NRM SLIP database identified that there are no known risks of flooding or water logging to occur within the clearing area under CPS 818. This project proposes to clear up to 55 ha of vegetation across a narrow linear area where there is surrounding vegetation. It is unlikely that the proposed clearing would increase the incidence or intensity of flooding.</p> <p>Therefore this project clearing is not likely to be at variance to this Principle.</p>
<b>Methodology</b>	GHD assessment (21-23/9/2015) Natural Resource Management SLIP Soil Systems (Accessed 25/5/2020)

## 6 ADDITIONAL ACTIONS REQUIRED

Table 6 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

**Table 6. Summary of Additional Management Actions Required by Permit CPS 818**

Impact of Clearing	Yes/No or NA	Further Action Required
<p><b>1.</b> The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.</p> <p>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:</p> <ul style="list-style-type: none"> <li>(i) a minor non-perennial watercourse(s);</li> <li>(ii) a wetland(s) classed as a multiple use management category wetland(s); and/or</li> <li>(iii) a wetland that is not a defined wetland;</li> </ul> <p>the preparation of an Assessment Report, as required by condition 6(e), is not required.</p>	<b>No</b>	No further action required.
<p><b>2.</b> The CAR indicates that the 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.</p>	<b>No</b>	No further action required
<p><b>3.</b> The project involves clearing for temporary works (as defined by CPS 818).</p>	<b>No</b>	No further action required.
<p><b>4 a.</b> Project is within Region that:</p> <ul style="list-style-type: none"> <li>- Has rainfall greater than 400mm and</li> <li>- Is South of the 26<sup>th</sup> parallel and</li> <li>- Works are in 'Other than dry conditions' and</li> <li>- Works have potential for <b>uninfested</b> areas to be impacted</li> </ul>	<b>No</b>	<b>4a.</b> No further action required.
<p><b>4b.</b> Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?</p>	<b>No</b>	<b>4b.</b> No further action required.

<p><b>5.</b> 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</p>	<p><b>No</b></p>	<p>No further action required.</p>
<p><b>6.</b> 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</p>	<p><b>No</b></p>	<p>No further action required.</p>

## 7 STAKEHOLDER CONSULTATION

No stakeholder consultation required for the proposed clearing in accordance with CPS 818/15.

## 8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan is not required for this project as there is no variance to the clearing principles. Vegetation management will be addressed under Construction Environmental Management Plan.

## 9 REFERENCES

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