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WESTERN AUSTRALIA

# Clearing Assessment Report – CPS 818

*We're working for  
Western Australia.*

Manuwarra Red Dog Highway Stage 4  
Geotechnical Investigation for Material Pits (initial 10km)  
Pilbara  
1813

D23#459283  
May 2023

# Contents

|          |                                                                                        |           |
|----------|----------------------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>PROPOSAL .....</b>                                                                  | <b>4</b>  |
| 1.1      | Purpose and Justification.....                                                         | 4         |
| 1.1.1    | Main Roads Approach to Road Safety and the Environment .....                           | 4         |
| 1.2      | Proposal Scope .....                                                                   | 4         |
| 1.3      | Proposal Location .....                                                                | 5         |
| 1.4      | Clearing Details.....                                                                  | 5         |
| 1.5      | Alternatives to Native Vegetation Clearing Considered During Proposal Development..... | 12        |
| 1.6      | Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts .....         | 12        |
| 1.7      | Approved Policies and Planning Instruments .....                                       | 13        |
| <b>2</b> | <b>SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT REPORT .....</b>                       | <b>14</b> |
| 2.1      | Report Terminology and Sources .....                                                   | 14        |
| 2.2      | Desktop Assessment .....                                                               | 14        |
| 2.3      | Surveys and Assessments .....                                                          | 15        |
| <b>3</b> | <b>SUMMARY OF SURVEYS.....</b>                                                         | <b>16</b> |
| 3.1      | Overview of Surveys .....                                                              | 16        |
| 3.2      | Summary of Flora and Vegetation Surveys.....                                           | 17        |
| 3.3      | Summary of Fauna Surveys.....                                                          | 17        |
| <b>4</b> | <b>VEGETATION DETAILS .....</b>                                                        | <b>18</b> |
| 4.1      | Proposal Site Vegetation Description .....                                             | 18        |
| <b>5</b> | <b>ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES .....</b>                            | <b>20</b> |
| <b>6</b> | <b>COMPLIANCE WITH CPS 818.....</b>                                                    | <b>27</b> |
| <b>7</b> | <b>STAKEHOLDER CONSULTATION .....</b>                                                  | <b>29</b> |
| <b>8</b> | <b>REFERENCES .....</b>                                                                | <b>30</b> |
| <b>9</b> | <b>APPENDICES .....</b>                                                                | <b>32</b> |
|          | Appendix 1: Vegetation Management Plan.....                                            | 32        |
|          | Appendix 1.1: Vegetation Management .....                                              | 33        |
|          | Table 1: Clearing PEMR.....                                                            | 36        |
|          | Table 2: Erosion and Sedimentation Control PEMR .....                                  | 37        |
|          | Table 3: Fauna Management PEMR.....                                                    | 38        |
|          | Table 4: Machinery and Vehicle Management PEMR .....                                   | 39        |
|          | Table 5: Mulch and Topsoil Management PEMR.....                                        | 40        |
|          | Table 6: Pegging and Flagging PEMR.....                                                | 41        |
|          | Table 7: Water Drainage Management PEMR .....                                          | 42        |
|          | Table 8: Weed Management PEMR.....                                                     | 43        |

## List of Figures

|                                                         |   |
|---------------------------------------------------------|---|
| Figure 1. Material Pit Locations.....                   | 6 |
| Figure 2. Vegetation within Material Pit Locations..... | 9 |

## List of Tables

|                                                                                                        |    |
|--------------------------------------------------------------------------------------------------------|----|
| Table 1. Measures Undertaken to Avoid, Minimise, Reduce and Manage the Proposal Clearing Impacts ..... | 12 |
| Table 2. Summary of Biological and Targeted Surveys Relevant to the Proposal .....                     | 16 |
| Table 3. Summary of Vegetation Types within Clearing Area .....                                        | 18 |
| Table 4. Pre-European Vegetation Representation .....                                                  | 18 |
| Table 5. Summary of Additional Management Actions Required by CPS 818.....                             | 27 |

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# 1 PROPOSAL

## 1.1 Purpose and Justification

As part of the Manuwarra Red Dog Highway (MRDH) Stage 4 Project, three material pits have been identified from which material for construction of the initial 10km of MRDH Stage 4 will be sourced. Geotechnical sampling and testing of material from these pits is required to confirm it is suitable to be used in construction. Vegetation clearing will be required to access the sampling locations and to provide a safe working environment.

### 1.1.1 Main Roads Approach to Road Safety and the Environment

Main Roads is committed to minimising the environmental impacts of all of its activities, and manages the State road network to achieve balanced economic, social, safety and environmental benefits for the community. Main Roads recognises that Western Australia's environment is significant from a global perspective and the unique conservation values that are contained within its road reserve. Main Roads road network often adjoins natural areas and, in some locations, the reserve itself hosts remnant vegetation with high environmental values. Although the reserves were not established for this purpose, Main Roads recognises that it has a responsibility to conserve the environmental values that occur within the State's road network and minimise the impact its proposals have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting and enhancing the natural environment.

In accordance with National and State Government road safety policies, Main Roads is also committed to substantially reducing road trauma on the road network through Safe System principles. The Safe System approach acknowledges that more than two thirds of all serious crashes are due to human error rather than deliberate risk taking (e.g. speeding or drink driving) and seeks to improve behaviour through education and enforcement while managing the safety of vehicles, speeds and the road and road infrastructure. It is shown that improving sub-optimal road formation will substantially reduce the likelihood and severity of road crashes. For example, according to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

As the statutory authority responsible for providing and managing a safe and efficient main road network in Western Australia, Main Roads focuses on improving road safety by thoroughly considering all environmental, economic and community benefits and impacts. It operates on a hierarchy of avoiding, minimising, reducing and then, if required, offsetting our environmental impacts. This has been achieved through changes in proposal scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for proposals, steepening batters, installing barriers, establishing borrow pits in cleared paddocks and avoiding temporary clearing for storage, stockpiles and turn around bays to avoid and minimise its impacts.

Further details on measures to avoid, minimise and reduce are provided in Section 1.5.

## 1.2 Proposal Scope

Main Roads are proposing to commence construction of the first 10km of the MRDH Stage 4. Vegetation clearance is required to facilitate the Geotechnical Investigation (GI) program of the proposed material pits, which is being undertaken to confirm the suitability of the material for use in construction.

The following material pits are part of the scope of this assessment (Figure 1):

- PMPSB02 (two discrete areas)
- PMPSB03
- PMPSB04

| Material Pit | Area (ha) | Easting (centre point) | Northing (centre point) |
|--------------|-----------|------------------------|-------------------------|
| PMPSB02a     | 119       | 550318                 | 7599364                 |
| PMPSB02b     | 108       | 550795                 | 7598256                 |
| PMPSB03      | 76        | 539936                 | 7603613                 |
| PMPSB04      | 49        | 536517                 | 7604061                 |

The investigations require sampling of soils and subsoils for geotechnical analysis. It is expected that sampling will occur to a maximum depth of 2m.

Ecological and heritage surveys have been conducted across the material pits. One hectare (ha) of clearing will be required within each material pit, a total of 3.0 ha. Clearing will be required for access to the sample locations and to allow for sampling to occur. Samples will be taken using an excavator or similar machinery.

### 1.3 Proposal Location

The Clearing Areas are located on MRDH Coolawanyah Section – Northern Limit, Shire of Ashburton, in the Pilbara region of Western Australia as shown on Figure 1. The clearing areas for the GI will be within the proposed material pit boundaries identified on Figure 1.

### 1.4 Clearing Details

#### **Proposed Clearing to be undertaken using CPS 818:**

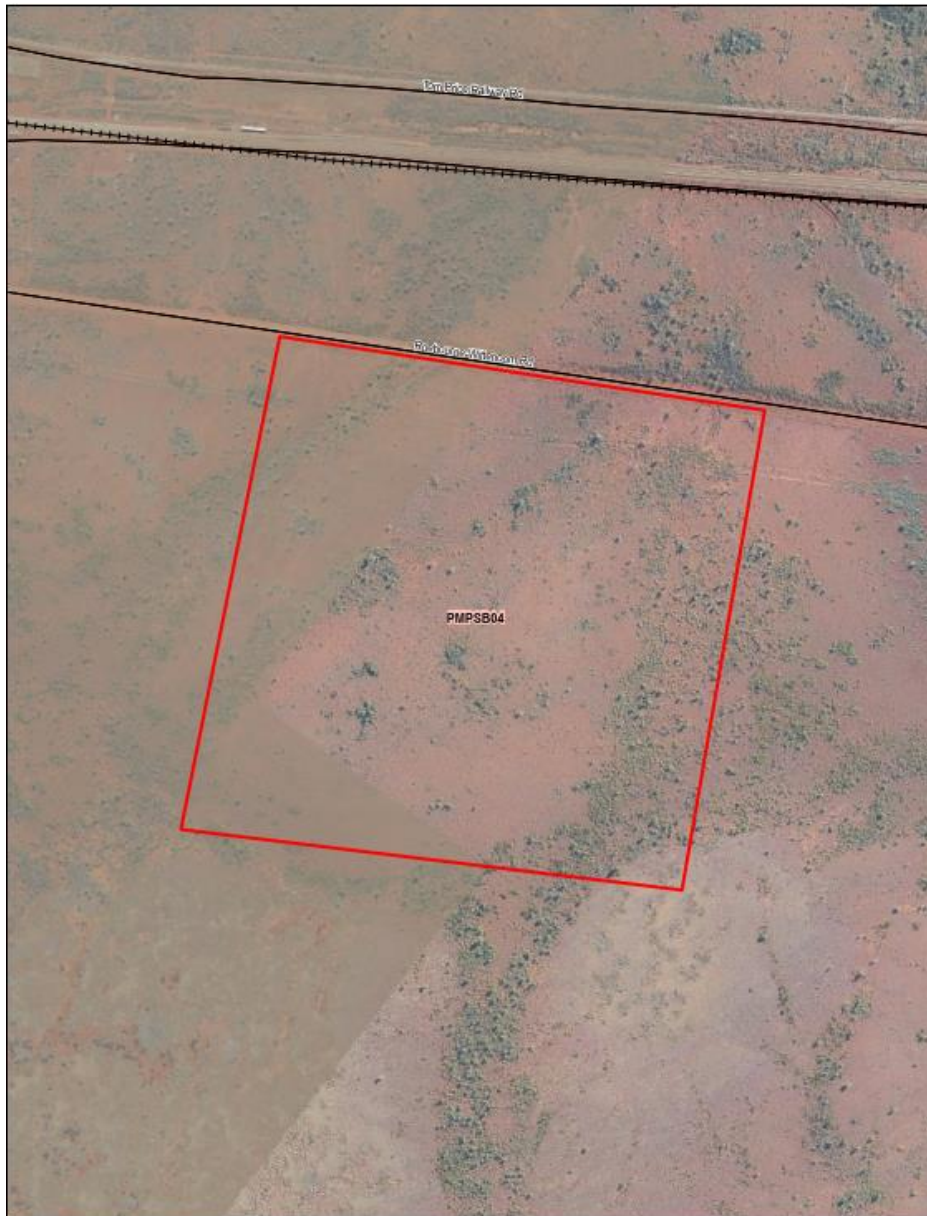
The Proposal will require the clearing of up to 3 ha of native vegetation within the material pit locations.

#### **Areas of Native Vegetation Clearing:**

The proposed material pit locations are shown on Figures 1 and 2. The areas of native vegetation to be cleared will be within these material pit boundaries, associated with GI work and accesses, totalling approximately 1 ha per material pit.

#### **Type of Native Vegetation:**

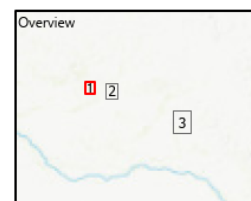
The type of vegetation within the three material pit areas and that will be cleared under this Proposal has been mapped by Biota (2023) as *Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland (vegetation unit code P2), as shown on Figure 2.

**Figure 1. Material Pit Locations****Figure 1 - MRDH Proposed Material Pit Locations**

Page 1 of 3

**Legend**

- Roads
- + Railways
- Material Pits



0 50 100 200  
Metres



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**Figure 1 - MRDH Proposed Material Pit Locations**

Page 2 of 3

#### Legend

- Roads
- Railways
- Material Pits



0 70 140 280  
Metres



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**Figure 1 - MRDH Proposed Material Pit Locations**

Page 3 of 3

**Legend**

- Roads
- + Railways
- Material Pits



0 100 200 400  
Metres



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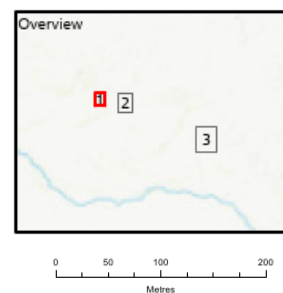
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**Figure 2. Vegetation within Material Pit Locations****Figure 2 - Vegetation within the Clearing Areas**

Page 1 of 3

**Legend**

- Roads
- Railways
- Material Pits
- Removed from the Material Pit Boundary
- Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland. (P2)



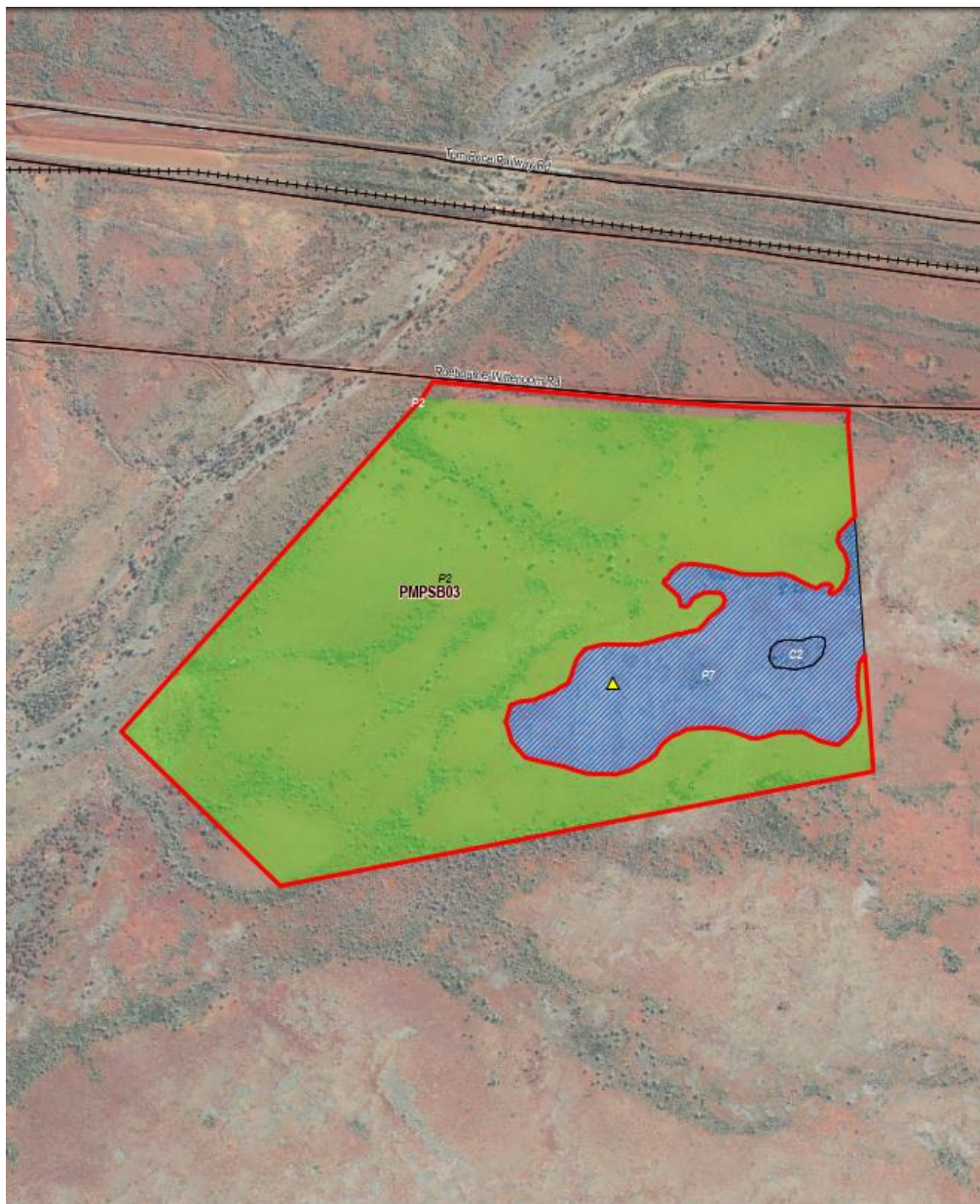
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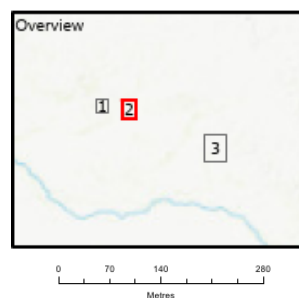


**Figure 2 - Vegetation within the Clearing Areas**

Page 2 of 3

#### Legend

- Significant Flora (*Dolichocarpa* sp. Hamersley Station P3)
- Roads
- Railways
- Material Pits
- Removed from the Material Pit Boundary
- Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland. (P2)



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**Figure 2 - Vegetation within the Clearing Areas**

Page 3 of 3

**Legend**

- Roads
- Railways
- Material Pits
- Removed from the Material Pit Boundary
- *Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland. (P2)



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## 1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

The following alternatives to clearing were considered during the development of the proposal:

- Location of the material pits have been preferentially sited in areas of less dense existing vegetation where possible to avoid extensive native vegetation clearance requirements.
- Material pit PMPSB03 has been modified to exclude areas mapped as Vegetation Type P7 (*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses.) and the location of a Priority flora species.
- Material Pit PMPSB02 has been modified to exclude areas mapped as supporting potential habitat for Threatened fauna (MDE - *Eucalyptus* fringed major drainage lines and associated tributaries: Open *Eucalyptus victrix*/*E. camaldulensis*).
- The specific position of the GI locations and access tracks within the proposed material pit areas will seek to avoid clearing of trees and areas of dense vegetation as far as practicable.

## 1.6 Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts

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

**Table 1. Measures Undertaken to Avoid, Minimise, Reduce and Manage the Proposal Clearing Impacts**

| Design or Management Measure                                                                 | Discussion and Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Use of existing cleared areas for access tracks, construction storage and stockpiling</b> | Due to the surrounding environment, there were no substantial areas of existing cleared or disturbed vegetation available for use that would be sufficient size for the material pit requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Avoidance of dense native vegetation</b>                                                  | <p>In siting the GI locations within the material pit boundaries, areas of bare ground will be preferentially utilized as far as possible to avoid existing native vegetation and flora species of significance, and reduce clearance requirements. The GI will include:</p> <ul style="list-style-type: none"> <li>• Observation of surface ground conditions within the investigation area and specific field work locations.</li> <li>• 50 metre (m) x 50 m geo gridding will be undertaken to determine the extremities of target material using a backhoe to excavate to a maximum depth of approximately 2 m. (No water or gravel material is required to be imported for these works to be undertaken and minimal clearing of tracks is required when moving between excavation sites.)</li> <li>• Each site will be logged, systematically or randomly sampled and backfilled for safety.</li> <li>• Each excavation site will have a clearing footprint of approximately 25 m<sup>2</sup>.</li> </ul> |

## 1.7 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, Main Roads has also had regard to the below instruments where relevant.

### **Other Legislation potentially relevant 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).

### **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 (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 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.
- Environmental Factor Guideline – Flora and Vegetation (EPA 2016a).

A Development Application is not required for these works.

## 2 SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT REPORT

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using the Main Roads Statewide Clearing Permit CPS 818.

To comply with CPS 818, Main Roads must prepare a Clearing Assessment Report (CAR).

The CAR outlines the key activities associated with the Proposal, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Proposal using the ten Clearing Principles listed under s51 of the *Environmental Protection Act 1986* (EP Act) and strategies used to manage vegetation clearing.

### 2.1 Report Terminology and Sources

The following terms are used in this Clearing Report

- **Native Vegetation Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the GI sampling locations and associated GI access requirements and, typically, a nominal buffer to allow for the safe movement of machinery during construction.
- **Development Envelope** – The maximum extent within which the Clearing Area will be located (the material pit boundaries in this case). This envelope is larger than the Clearing Area and the Proposal Area to allow for minor changes to the Proposal footprint as the GI program is designed and undertaken, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area.
- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current understanding of the GI program requirements and is less than the development envelope. It usually includes a buffer to allow for constructability and the movement of machinery during construction.
- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 40km radius.
- **Survey Area** – Area covered by the biological survey carried out by Biota in 2022 (Biota, 2023). The survey was undertaken over the entire material pit boundaries.

### 2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary.

GIS layer viewing was done using QGIS, and relevant maps created using ArcGIS. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle.

Government managed databases were searched to locate additional information, which are found under References in Section 8.

## 2.3 Surveys and Assessments

The following surveys/assessments were undertaken to inform this CAR:

- *Reconnaissance and targeted flora and vegetation survey (Biota, 2023).*
- *Basic fauna survey (Biota, 2023).*

A summary of the methodology and the results of the above surveys are provided in Section 3.

### 3 SUMMARY OF SURVEYS

#### 3.1 Overview of Surveys

Biological and targeted surveys conducted for the proposal are outlined in Table 2. A summary of the findings in these reports are presented in Sections 3.2 and 3.3.

**Table 2. Summary of Biological and Targeted Surveys Relevant to the Proposal**

| Consultant & Survey Name                                                                                                                | Survey Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biota (2023)</b><br>Manuwarra Red Dog Highway<br>Stage 4: Borrow Pits and<br>Realignment Areas (SLK: 136 -<br>245) biological survey | <p><b>Survey Area:</b> Survey area comprised the boundary of the proposed three northern material pits (PMPSB02; PMPSB03; and PMPSB04) approximately 352 ha in area, located close to the Coolawanyah Section – Northern limit of the MRDH Stage 4. Indicative sites were selected prior to the field survey, based on the broad habitats and vegetation types apparent. Once in the field, the actual locations of the sites were adjusted as necessary (e.g. to be placed in an area more representative of the broader vegetation type, to avoid recently burnt areas, etc.).</p> <p>Sampling sites were established as either:</p> <ol style="list-style-type: none"> <li>1. Quadrats: bounded floristic sampling sites. The standard for the Pilbara bioregion comprises a 50 m x 50 m square (or a modified shape with an equivalent area). Quadrats were measured out using optical squares and measuring tapes, and permanently marked with a steel fence dropper at each corner; or</li> <li>1. Relevés: unbounded floristic sampling sites with a similar search area to a quadrat. Relevés were typically used where the target vegetation was too small or too narrow to effectively establish a quadrat. The relevés during the current survey were thoroughly surveyed for flora but were not permanently marked.</li> </ol> <p>The fauna surveys involved describing and mapping fauna habitats and undertaking selective low-intensity sampling.</p> <p><b>Type:</b> Reconnaissance and targeted flora and vegetation survey and a basic fauna survey to verify the findings of the desktop study. The survey identified and mapped the dominant vegetation units, assessed vegetation condition and completed opportunistic searches for conservation significant ecological communities and flora and fauna taxa.</p> <p><b>Timing:</b> Fieldwork conducted from 25<sup>th</sup> – 27<sup>th</sup> April 2022; 4<sup>th</sup> – 9<sup>th</sup> June 2022; and 27<sup>th</sup> – 30<sup>th</sup> July 2022.</p> <p><b>Survey Results Shapefile TRIM Ref:</b> D23#459099</p> <p><b>Document TRIM Ref:</b> D23#221839</p> |

### 3.2 Summary of Flora and Vegetation Surveys

A quadrat or relevés sampling method was utilized to survey the extent of the three material pits (PMPSB02; PMPSB03; and PMPSB04). The boundary of PMPSB02 was amended to exclude areas mapped as supporting habitat for Threatened fauna (MDE - *Eucalyptus* fringed major drainage lines and associated tributaries: Open *Eucalyptus victrix*/*E. camaldulensis* identified as potential habitat for Northern Quoll, Pilbara Leaf-nosed Bat and Ghost Bat), and the boundary of PMPSB03 was modified to exclude areas mapped as Vegetation Type P7 (*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses) and the location of a Priority flora species (*Dolichocarpa* sp. Hamersley Station P3). As such, no significant vegetation types were recorded within the relevant material pit areas. In addition, no Threatened flora species listed under State or Commonwealth legislation, or State-listed Priority flora species, were recorded within the material pit areas.

The vegetation type recorded within the material pit boundaries (same vegetation unit was mapped in all three material pit areas) is *Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland (vegetation unit code P2), as shown on Figure 2. This vegetation type was found on gently undulating plains supporting minor drainages, throughout the survey area concentrated in the northern section. The shrub layer comprised a mixture of *Acacia* species, including *A. ancistrocarpa*, *A. atkinsiana* and *A. trachycarpa*. *Triodia epactia* was the dominant hummock grass, however *T. wiseana* was also present in sparse patches. This vegetation type was mapped as occurring across 352 ha of the broader survey area.

The vegetation condition was recorded as excellent throughout all three material pits.

### 3.3 Summary of Fauna Surveys

Various methods were used to target significant fauna species identified as potentially occurring in the survey area, including the deployment of passive recording equipment such as ultrasonic automated recording units (ARUs) and motion cameras. Traverses were also conducted on foot through each survey area to search for evidence of significant species. No vertebrate fauna species were recorded in the three material pit areas during the field survey.

The fauna habitats defined for the survey area aligned broadly with the landforms present. All three material pit areas consist of *Corymbia* trees with mixed *Acacia* shrublands over *Triodia epactia* on stony substrates (Habitat type ASM). Species expected to occur in this habitat include those with particular associations to spinifex (e.g. mammals that forage on seeds, such as *Pseudomys hermannsburgensis* and *P. desertor*), or with associations to stony flats (e.g. the dragon species *Tympanocryptis fortescuensis*, *T. diabolicus* and *Diphoriphora valens*), along with a wide range of species that utilise shrubs and spinifex for cover and/or foraging.

The Western Pebble-mound Mouse (Priority 4) was recorded from similar habitat elsewhere in the survey area (approximately 60 km south), however no active mounds were recorded in the material pit areas and no previous records within 40km.

Some shrublands support *Acacia* species that contain root-dwelling larvae, an important food resource for the threatened Bilby (*Macrotis lagotis*), however the substrates in the survey area are not considered optimal for burrowing by the Bilby.

The habitat quality within the material pit locations was recorded as excellent.

## 4 VEGETATION DETAILS

### 4.1 Proposal Site Vegetation Description

The clearing associated with the proposed GI locations and accesses will be situated within the wider material pit boundaries (totalling 1 ha per material pit). The vegetation condition was recorded as excellent and found on gently undulating plains supporting minor drainages, throughout the survey area. The shrub layer comprised a mixture of *Acacia* species, including *A. ancistrocarpa*, *A. atkinsiana* and *A. trachycarpa*. *Triodia epactia* was the dominant hummock grass, however *T. wiseana* was also present in sparse patches. No weed infestation or evidence of historical disturbance was recorded.

Table 3 and Table 4 provide details of the vegetation types and their condition within the Proposal and the remaining extents of these associations. The vegetation associations occurring within the material pits are largely intact (close to 100% or 100% of pre-European extent remaining) and well represented outside of the material pit areas.

For a full description of the existing vegetation, refer to the Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023) found at D23#221839.

Table 3. Summary of Vegetation Types within Clearing Area

| Vegetation Type                                                                                                                       | Extent within Clearing Area (ha) | Total Extent Mapped (ha) within Survey Area |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------|
| P2 - <i>Corymbia hamersleyana</i> low open woodland over mixed <i>Acacia</i> shrubland over <i>Triodia epactia</i> hummock grassland. | 3 ha                             | 352 ha                                      |

Table 4. Pre-European Vegetation Representation

| Pre-European Vegetation Association | Scale                                   | Pre-European Extent (ha) | Current Extent (ha) | % Remaining | % Current Extent in DBCA Managed Land (proportion of pre-European Extent) |
|-------------------------------------|-----------------------------------------|--------------------------|---------------------|-------------|---------------------------------------------------------------------------|
| Veg Assoc No. 607                   | Statewide                               | 120,789                  | 120,600             | 99.8        | 12.84                                                                     |
|                                     | IBRA Bioregion<br>Pilbara               | 120,789                  | 120,600             | 99.8        | 12.84                                                                     |
|                                     | IBRA Sub-region<br>Chichester (PIL 1)   | 119,022                  | 118,833             | 99.8        | 13.03                                                                     |
|                                     | Local Government Authority<br>Ashburton | 120,789                  | 120,560             | 99.8        | 12.84                                                                     |

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| Pre-European Vegetation Association | Scale                                          | Pre-European Extent (ha) | Current Extent (ha) | % Remaining | % Current Extent in DBCA Managed Land (proportion of pre-European Extent) |
|-------------------------------------|------------------------------------------------|--------------------------|---------------------|-------------|---------------------------------------------------------------------------|
| <b>Veg Assoc No.</b><br>646         | <b>Statewide</b>                               | 47,556                   | 47,556              | 100         | 26.88                                                                     |
|                                     | <b>IBRA Bioregion</b><br>Pilbara               | 47,547                   | 47,547              | 100         | 26.89                                                                     |
|                                     | <b>IBRA Sub-region</b><br>Chichester (PIL 1)   | 18,625                   | 18,625              | 100         | 1.45                                                                      |
|                                     | <b>Local Government Authority</b><br>Ashburton | 47,556                   | 47,556              | 100         | 26.88                                                                     |

## 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '[A Guide to the Assessment of Applications to Clear Native Vegetation](#)' (Department of Environment Regulation, 2014) and other relevant clearing permit application 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 at variance to this Principle.

##### Assessment

The proposed vegetation clearing area associated with the GI is relatively small in extent (3 ha total across the three material pits) and comprises *Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland. The area is regarded as being in excellent vegetation condition.

A biological survey report completed by Biota (2023), which included the proposed vegetation clearing areas noted the dominant native plant families and genera recorded from the survey area are typical of species lists from this region. The survey also did not identify any Priority Ecological Communities (PECs), Threatened Ecological Communities (TECs), or Threatened, priority listed, or range restricted flora species within or immediately adjacent to the proposed vegetation clearing area.

The area is also not located within an area identified as being a biodiversity hotspot for priority action, as identified by the Commonwealth Threatened Species Scientific Committee.

It is not anticipated that the proposed vegetation clearing would decrease the quantity of significant fauna habitat and is not considered to reduce the level of biological diversity.

##### Methodology

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- DCCEE Protected Matters Search Tool Report
- NatureMap (Accessed 2020)
- Statewide Vegetation Statistics (Government of Western Australia 2019)

**(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 at variance to this Principle.**

**Assessment**

No significant fauna species were recorded during the biological survey within the proposed clearing areas, however the habitat has the potential to support Western Pebble-mound Mouse (*Pseudomys chapmani*). No sign of pebble mounds were recorded within the boundaries of the material pits during the field survey.

The habitat type recorded across the three material pit areas was mixed *Acacia* shrublands (ASM). The proposed vegetation clearing area associated with the GI is relatively small in extent (3 ha across the three material pits) and areas of dense vegetation will be preferentially avoided in siting the specific GI locations. The clearance areas will be sited to maintain ecological linkages as far as possible and leave large areas of intact habitat.

It is not anticipated that the required clearing would be at variance to this Principle given the low likelihood of occurrence of significant fauna within the area to be cleared.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- DCCEEW Protected Matters Search Tool Report
- NatureMap (Accessed 2020)

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

**Proposal is not at variance to this Principle.**

**Assessment**

No Threatened flora species have been identified within or in the immediate vicinity of the proposed vegetation clearing areas, or within the wider survey area.

As such it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- DCCEEW Protected Matters Search Tool Report
- NatureMap (Accessed 2020)
- Statewide Vegetation Statistics (Government of Western Australia 2019)

**(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 at variance to this Principle.**

**Assessment**

No Threatened Ecological Communities are located within or in the immediate vicinity of the proposed vegetation clearing areas. The closest Priority Ecological Community occurrence is located approximately 12 km west of the far northern material pit (PMPSB04). The vegetation unit mapped as occurring over the material pits was not considered representative of any potentially occurring PECs.

As such it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)

**(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.**

**Assessment**

The material pit areas are mapped as vegetation associations 607 and 646 in the Pilbara bioregion, described as 'hummock grasslands, low tree steppe; snappy gum and bloodwood over soft spinifex and *Triodia wiseana*' and 'hummock grasslands, shrub steppe; snakewood over *Triodia basedowii*' respectively. The proposal intends to clear up to 1 ha of VA 607 (which has over 99% of its pre-European extent remaining within the Pilbara bioregion) and 2 ha of VA 646 (which has 100% of its pre-European extent remaining within the Pilbara bioregion).

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30% or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia 2001) except in constrained areas (Perth & Peel) where 10% representation should be maintained.

**Summary of Proposal Area's Mapped Pre-European Vegetation Associations**

| Vegetation Type                                                                                                                       | Extent within Clearing Area (ha) | Total Extent Mapped (ha) within Survey Area | Comments                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
| P2 - <i>Corymbia hamersleyana</i> low open woodland over mixed <i>Acacia</i> shrubland over <i>Triodia epactia</i> hummock grassland. | 3 ha                             | 352 ha                                      | Vegetation description and condition determined from biological survey (Biota, 2023). |

**Pre-European Vegetation Representation**

| <b>Pre-European Vegetation Association</b> | <b>Scale</b>                                   | <b>Pre-European Extent (ha)</b> | <b>Current Extent (ha)</b> | <b>% Remaining</b> | <b>% Current Extent in DBCA Managed Land (proportion of pre-European Extent)</b> |
|--------------------------------------------|------------------------------------------------|---------------------------------|----------------------------|--------------------|----------------------------------------------------------------------------------|
| <b>Veg Assoc No.</b><br>607                | <b>Statewide</b>                               | 120,789                         | 120,600                    | 99.8               | 12.84                                                                            |
|                                            | <b>IBRA Bioregion</b><br>Pilbara               | 120,789                         | 120,600                    | 99.8               | 12.84                                                                            |
|                                            | <b>IBRA Sub-region</b><br>Chichester (PIL 1)   | 119,022                         | 118,833                    | 99.8               | 13.03                                                                            |
|                                            | <b>Local Government Authority</b><br>Ashburton | 120,789                         | 120,560                    | 99.8               | 12.84                                                                            |
| <b>Veg Assoc No.</b><br>646                | <b>Statewide</b>                               | 47,556                          | 47,556                     | 100                | 26.88                                                                            |
|                                            | <b>IBRA Bioregion</b><br>Pilbara               | 47,547                          | 47,547                     | 100                | 26.89                                                                            |
|                                            | <b>IBRA Sub-region</b><br>Chichester (PIL 1)   | 18,625                          | 18,625                     | 100                | 1.45                                                                             |
|                                            | <b>Local Government Authority</b><br>Ashburton | 47,556                          | 47,556                     | 100                | 26.88                                                                            |

Given the percentage of the pre-European vegetation extent remaining for both VA 607 and VA 646 across the bioregion far exceeds the 30% retention target, and the relatively small area of clearing required for the GI works (up to 3 ha), the proposed clearing area is not considered to be a significant remnant of vegetation. The areas of clearing will avoid dense vegetation as far as possible and areas of bare ground will be utilized to minimize impacts on existing vegetation and ensure existing habitat linkages are maintained.

In addition, the biological survey results indicate that the vegetation unit P2 which occurs across all three material pits is well represented locally, with 352 ha mapped within the survey area. Clearing of up to 3 ha associated with the GI works is unlikely to significantly impact this vegetation unit.

As such it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Aerial photography
- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- Statewide Vegetation Statistics (Government of Western Australia 2018)

**(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.**
**Assessment**

The area of proposed vegetation clearing does not comprise riparian vegetation, however PMPSB02 is situated adjacent to minor drainages or creeks. The areas of vegetation associated with these creeks (F2 and F3) have been excluded from the material pit boundaries to minimise any potential impact on the surface waterbodies. Given the scale of vegetation removal associated with the proposed GI sampling, the Proposal is not anticipated to alter the local hydrology.

As such it is considered that the required clearing would not be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**
**Proposed clearing is not at variance to this Principle.**
**Assessment**

The Proposal is situated within both the Boolgeeda and Hooley Land systems. The Boolgeeda land system comprises stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands. Hooley land system comprises alluvial clay plains supporting a mosaic of snakewood shrublands and tussock grasslands.

The soil degradation risk for both soil types recorded within the material pit areas have been determined to be very low for wind and water erosion. Given the topography of the material pit areas is relatively flat, the removal of the relatively small amount of vegetation associated with the GI works are not anticipated to exacerbate erosion in the surrounding area or influence processes that result in salination or acidification of soils (such as water table rise). Acid Sulphate Soil Risk is considered to be low.

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**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- Government GIS Shapefiles:
  - Soil landscape Mapping – Best Available

### **(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.**
**Assessment**

No conservation reserves or environmentally sensitive areas are in the immediate vicinity of the proposed vegetation clearing. The nearest reserve is the Millstream-Chichester National Park, which is located approximately 16 km north of the northern-most material pits and intersects the wider study area boundary.

Given the distance between the clearing and the closest reserve it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- [Environmental Offsets Register](#)

### **(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 at variance to this Principle.**
**Assessment**

The area of proposed vegetation clearing does not comprise riparian vegetation, however PMPSB02 is situated adjacent to minor drainages or creeks. The areas of vegetation associated with these creeks (F2 and F3) have been excluded from the material pit boundaries to minimise any potential impact on the surface waterbodies. Given the scale of vegetation removal associated with the proposed GI sampling, the Proposal will not significantly alter the hydrology of the area.

Appropriate pollution prevention control measures will be implemented and adhered to throughout the GI and site access establishment to minimise the potential risk of spill accidents. This will limit the potential for pollution of surface water runoff or groundwater. Given the

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relatively small amount of clearing required, it is not anticipated that the clearing would contribute to issues such as groundwater level rise, mobilisation of salts within soils or dryland salinity. Test pits for the GI will be excavated to a maximum depth of approximately 2m and backfilled and therefore no impact to groundwater is anticipated. The GI works are also unlikely to result in increased sediment runoff into water courses.

As such it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)

**(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 at variance to this Principle.**

**Assessment**

The Proposal includes clearance of up to 3 ha of native vegetation within three discrete material pit areas (approximately 1 ha per pit) situated outside of any existing floodway. The removal of a relatively small, localised area of vegetation is unlikely to increase the incidence or intensity of flooding or significantly alter surface water hydrology in the surrounding area.

As such it is not anticipated that the required clearing would be at variance to this Principle.

**Methodology**

- Manuwarra Red Dog Highway Stage 4: Borrow Pits and Realignment Areas (SLK: 136 - 245) Biological Survey Report (Biota, 2023)
- BoM Website (Accessed 2023)
- Government GIS Shapefiles:
  - Soil Mapping (Accessed 2023)

## 6 COMPLIANCE WITH CPS 818

The clearing associated with the proposal is unlikely or not at variance with the Clearing Principles. Additional management actions under CPS 818 are detailed in Table 5.

**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.                                                                                                                                                                                                      | <b>No</b>    | 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.                                                                                                                                                         | <b>No</b>    | No further action required.                                                                                                                        |
| 3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality and (j) the incidence of flooding.                                                                                                                                                                              | <b>No</b>    | No further action required.                                                                                                                        |
| 4. The Proposal involves clearing for temporary works (as defined by CPS 818).                                                                                                                                                                                                                                                    | <b>Yes</b>   | CPS 818 Condition 9 Revegetation and Rehabilitation requirements will be implemented.                                                              |
| 5a. Proposal is within a Region that: <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 necessary in 'Other than dry conditions'; and,</li> <li>works have potential for <b>uninfested</b> areas to be impacted.</li> </ul> | <b>No</b>    | No further action required.                                                                                                                        |
| 5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?                                                                                                                                                                                                                        | <b>No</b>    | No further action required.                                                                                                                        |
| 6. 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.                                                                                                                                                                               | <b>No</b>    | No further action required.                                                                                                                        |
| 7. Weeds are likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.                                                                                                                                                                                    | <b>No</b>    | Standard Vehicle and Plant management actions from Principal Environmental Management Requirements (PEMRs) and Hygiene Checklists will be applied. |

## OFFICIAL

| Impact of Clearing                                                                                                                                                     | Yes/No or NA | Further Action Required                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8. Did an environmental specialist conduct the survey or field assessment?                                                                                             | Yes          | The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience.                                                                                               |
| 9. Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal? | Yes          | The Environmental Specialist preparing the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience. |

## 7 STAKEHOLDER CONSULTATION

Main Roads will undertake/has undertaken stakeholder consultation in accordance with CPS 818 condition 8.

Table 6 details the key issues raised and Main Roads response to these key issues.

**Table 6. Summary of Main Roads Responses to Stakeholder Submissions**

| Name of Stakeholder | Date of Consultation | Key Issue/Comment                                          | Main Roads Response/Comment                                                                                                                                                                                                                                                                                                                                                        | TRIM Ref of Consultation |
|---------------------|----------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Water Corp / DWER   | May/June 2023        | Material pits are situated within Water Corp managed land. | Main Roads are in the process of entering into a license and indemnity agreement with Water Corp for undertaking the geotechnical investigations within the Water Corp / DWER managed land. This is being undertaken through the Main Roads Lands and Property Branch. A similar agreement was obtained recently on the project geotechnical investigations on the main alignment. | D23#519402               |

## 8 REFERENCES

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## 9 APPENDICES

### Appendix 1: Vegetation Management Plan

#### MANUWARRA RED DOG HIGHWAY STAGE 4 – GEOTECHNICAL INVESTIGATION FOR MATERIAL PITS

##### 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 Manuwarra Red Dog Highway Stage 4 – Geotechnical Investigation for Material Pits.

Main Roads are proposing to commence construction of the first 10km of the MRDH Stage 4. Vegetation clearance is required to facilitate the geotechnical investigation of the proposed material pits, which is being undertaken to confirm the suitability of the material for use in construction.

The following material pits are part of the scope of this assessment:

- PMPSB02 (two discrete areas)
- PMPSB03
- PMPSB04

The investigations require sampling of soils and subsoils for geotechnical analysis. It is expected that sampling will occur to a maximum depth of 2m.

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

##### Action

Appendix 1.1 references the standard Principal Environmental Management Requirements (PEMRs) (Tables 1 to 8) that will be utilised for all proposals that involve clearing to avoid, mitigate and manage the environmental impacts of the Proposal.

Actions will be undertaken in accordance with those described in the relevant PEMR.

##### Timeframes

Specifies actions to be undertaken during pre-commencement of works, during works or after the works.

##### 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 1.1: Vegetation Management

| VMP Requirement                          | Standard Management Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Specific Environmental Management Actions |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Clearing</b>                          | <p>Refer to Table 1: Clearing PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> <li>• Specification 301 Vegetation Clearing and Demolition</li> <li>• Environment Measurement and Evaluation Checklist (for release of HOLD POINTS)</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p> | Not Applicable                            |
| <b>Pegging and Flagging</b>              | <p>Refer to Table 6: Pegging and Flagging PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> <li>• Specification 301 Vegetation Clearing and Demolition</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                                              | Not Applicable                            |
| <b>Erosion and Sedimentation Control</b> | <p>Refer to Table 2: Erosion and Sedimentation Control PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                                                                                                 | Not Applicable                            |

## OFFICIAL

| VMP Requirement                         | Standard Management Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Specific Environmental Management Actions |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Fauna Management</b>                 | <p>Refer to Table 3: Fauna Management PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                                                                                   | Not Applicable                            |
| <b>Machinery and Vehicle Management</b> | <p>Refer to Table 4: Machinery and Vehicle Management PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                                                                   | Not Applicable                            |
| <b>Mulch and Topsoil Management</b>     | <p>Refer to Table 5: Mulch and Topsoil Management</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> <li>• Specification 301 Vegetation Clearing</li> <li>• Specification 304 Revegetation and Landscaping</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p> | Not Applicable                            |
| <b>Water Drainage Management</b>        | <p>Refer to Table 7: Water Drainage Management PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> </ul>                                                                                                                                                                                                                                                                                                                        | Not Applicable                            |

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| VMP Requirement        | Standard Management Actions                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Specific Environmental Management Actions |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Weed Management</b> | <p>Refer to Table 8: Weed Management PEMR</p> <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                                  | Not Applicable                            |
| <b>Monitoring</b>      | <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Construction Environmental Management Plan</li> <li>• Superintendent's Contract Management Plan &amp; Environmental Measurement and Evaluation Checklist.</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p> |                                           |
| <b>Auditing</b>        | <ul style="list-style-type: none"> <li>• Specification 204 Environmental Management</li> <li>• Superintendent's Contract Management Plan &amp; Environmental Measurement and Evaluation Checklist.</li> </ul> <p>Contract Tender Documents available at <a href="https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/">https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</a></p>                                                       |                                           |

# Principal Environmental Management Requirements (PEMR's)

**Table 1: Clearing PEMR**

| <b>STANDARD MANAGEMENT REQUIREMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PRE WORKS</b></p> <ol style="list-style-type: none"><li>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.</li><li>2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible.</li></ol> |
| <p><b>DURING WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident.</li><li>2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works.</li><li>3. The Contractor must undertake the clearing in accordance with the Fauna PEMR.</li></ol>                                                 |
| <p><b>POST WORKS</b></p> <p>NIL</p>                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**Table 2: Erosion and Sedimentation Control PEMR**

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| <p><b>PRE WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must develop, implement and maintain processes and procedures to ensure that:<ol style="list-style-type: none"><li>a. The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas;</li><li>b. Prevent water and wind soil erosion within and adjacent to the works areas;</li><li>c. Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area;</li><li>d. Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated;</li><li>e. Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion;</li><li>f. Minimise exposed soil working surfaces or protect them from stormwater erosion;</li><li>g. Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion; and,</li><li>h. Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.</li></ol></li></ol> |
| <p><b>DURING WORKS</b></p> <ol style="list-style-type: none"><li>1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>POST WORKS</b></p> <ol style="list-style-type: none"><li>1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates.</li><li>2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**Table 3: Fauna Management PEMR**

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PRE WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must ensure that fauna management requirements are communicated to the crew undertaking the clearing works during the induction and pre-start meeting.</li><li>2. Where active nests, burrows or dens are identified, works must not proceed until the Contractor obtains the Superintendents approval of the management of active nests, burrows or dens adheres to the Superintendents advice.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>DURING WORKS</b></p> <ol style="list-style-type: none"><li>2. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;<ol style="list-style-type: none"><li>a. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate; and,</li><li>b. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.</li></ol></li><li>3. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident.</li><li>4. The Contractor must ensure that:<ol style="list-style-type: none"><li>a. No pets, traps or firearms are brought into the project area;</li><li>b. Fauna are not fed;</li><li>c. Fauna are not intentionally harmed or killed; and,</li><li>d. Fauna that venture into the work area are encouraged to leave in a manner that does not harm the animal or operator (loud noise, slowly approaching in a vehicle etc.).</li></ol></li><li>5. The Contractor must ensure that 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. The Contractor must maintain records of any animal taken to a wildlife carer.</li></ol> |
| <p><b>POST WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must provide any records of fauna impact to the Superintendent.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**Table 4: Machinery and Vehicle Management PEMR**

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| <b>PRE WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor must ensure that all areas associated with the storage, parking, servicing, wash down and refuelling of all vehicles, plant and machinery is located within the Limits of Clearing and approved by the Superintendent.</li><li>2. The Contractor must ensure that all vehicles, machinery and plant are clean on entry (i.e. free of all soil and vegetation material) and comply with the requirements of 204.B.32.</li><li>3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent.</li><li>4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities.</li></ol> |
| <b>DURING WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>POST WORKS</b> <p>NIL</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 5: Mulch and Topsoil Management PEMR**

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| <b>PRE WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor must ensure that the movement of soil and vegetation is only undertaken in dry conditions unless otherwise approved and / or directed by the Superintendent.</li><li>2. The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>DURING WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds.</li><li>2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction.</li><li>3. The Contractor must ensure that Dieback and weed infected topsoil and mulch vegetation must be handled separately to minimise the risk of spreading dieback and weed species across the site and stockpiles.</li><li>4. The Contractor must ensure that stockpiling operations must occur in a manner to ensure that the properties of the topsoil are not degraded and the topsoil made unsuitable for use in revegetation are not degraded and the topsoil made unsuitable for use in revegetation.</li></ol> |
| <b>POST WORKS</b> <p>Nil</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 6: Pegging and Flagging PEMR**

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| <b>PRE WORKS</b> <ol style="list-style-type: none"><li>1. Pegging must be done in accordance with the requirements detailed in Specification 301.</li><li>2. The Contractor must clearly communicate, either at the pre-start meeting or equivalent, to the crew undertaking the clearing works, through clear maps and other additional means, what the Pegging represents.</li></ol>                      |
| <b>DURING WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor must peg the Limits of Clearing by PINK flagging tape.</li><li>2. The Contractor must peg/demarcate vegetation proposed to be retained by WHITE flagging tape.</li><li>3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas.</li></ol> |
| <b>POST WORKS</b> <ol style="list-style-type: none"><li>1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once proposal works are completed.</li></ol>                                                                                                                                                                                                             |

**Table 7: Water Drainage Management PEMR**

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| <b>PRE WORKS</b> <ol style="list-style-type: none"><li>1. Use pollution control and containment strategies for proposal activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>DURING WORKS</b> <ol style="list-style-type: none"><li>1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted.</li><li>2. Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work.</li><li>3. Maintain these drainage systems in proper working order at all times.</li><li>4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.</li><li>5. Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts.</li></ol> |
| <b>POST WORKS</b> <ol style="list-style-type: none"><li>1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).</li><li>2. Prior to backfilling the completed pipe work, certify that the entire system is flushed clean and tested.</li><li>3. Disturbed areas will be stabilised soon after construction activities are completed.</li><li>4. Culvert and drainage structures will be free of all grass, weeds, silt and debris.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                              |

**Table 8: Weed Management PEMR**

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| <p><b>PRE WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must remove or kill any weeds growing in proposal 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><li>2. The Contractor must develop, implement and maintain procedures to identify and control declared and invasive weed species within the Contract areas, to the satisfaction of the Superintendent.</li><li>3. The Contractor must prepare a weed control program, for nominated weed species for control and disposal, to the satisfaction of the Superintendent.</li><li>4. The Contractor must undertake weed management in Stockpiles as directed by the Superintendent.</li></ol> |
| <p><b>DURING WORKS</b></p> <ol style="list-style-type: none"><li>1. The Contractor must implement the weed control procedures and management plan and record and manage records of its implementation.</li><li>2. The Contractor must treat nominated weed infestations as many times as necessary to control and eradicate the weed species in accordance with the approved weed control program.</li><li>3. The contractor must ensure that no known weed, pest or diseased affected soil, mulch, fill or other material is brought into the Site.</li></ol>                                                                                                                                                                                                               |
| <p><b>POST WORKS</b></p> <ol style="list-style-type: none"><li>1. The relevant <u><a href="https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/">Vegetation Maintenance Record Forms</a></u> available at:<br/><u><a href="https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/">https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/</a></u><br/>must be completed and sent to the Superintendent.</li></ol>                                                                                                                                                                                                                                                                               |