# Clearing Assessment Report – CPS 818

We're working for Western Australia.

Bromus Material Extraction 2023
Coolgardie Esperance Highway (H010)
Goldfields Esperance Region
EOS: 1188



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# Document Control

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# 1 PROPOSAL

## 1.1 Purpose and Justification

Main Roads Western Australia (MRWA) proposes to extract approximately 200,000m3 of gravel from the Bromus material extraction pit (the Proposal) following material investigations undertaken across the site in May 2021. These investigations were undertaken to determine the presence and quality of road construction material for the Goldfields Esperance Region (GER) to use in various road projects as required over the coming years.

The Proposal consists of a 57.6ha site (Development Area) off the Coolgardie Esperance Highway (H010) at [REDACTED] SLK, located between the towns of Norseman and Salmon Gums, spanning the Shire of Dundas to the north and the Shire of Esperance to the south of the site.

Coolgardie Esperance Highway is a strategic freight, tourist and inter-town route. The efficiency and reliability of Coolgardie Esperance Highway is vital to the mining and agricultural sectors of the Wheatbelt, Goldfields-Esperance and Great Southern regions.
Having readily available access to quality road building materials is vital to the maintenance and upgrade of the State road networks in the Goldfields Esperance region.

### *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 0.

## 1.2 Proposal Scope

Main Roads proposes to use a D9 or D10 bulldozer to progressively clear vegetation, stockpile topsoil material and gravel materials and extract material via the access haul road for future road construction projects in the Goldfields Esperance region, as needed.

Approximately 200,000m3 of gravel is expected to be stockpiled. No processing or screening of material extracted from this pit will be undertaken as part of this Proposal. Should the material require screening at a later date, then additional approvals will be sought.

The clearing of 53.3 hectares (ha) of native vegetation (the Clearing Area) within a 57.6 ha Development Envelope is proposed as part of these works. The clearing of native vegetation will be undertaken utilising Main Roads' State-wide Clearing Permit, CPS 818.

## 1.3 Proposal Location

The Proposal is located on Coolgardie Esperance Highway (H010) at [REDACTED] SLK between the towns of Norseman and Salmon Gums, spanning across the Shire of Dundas and the Shire of Esperance. The Proposal location is shown in Figure 1 and the Proposal study area is shown in Figure 2.

## 1.4 Clearing Details

**Proposed Clearing to be undertaken using CPS 818:**
53.3 hectares

**Areas of Native Vegetation Clearing:**
The areas of native vegetation to be cleared are shown in Figure 1.

**Type of Native Vegetation:**
The types of vegetation to be cleared under this Proposal are described as Clay-loam Plain; Eucalyptus Forests and Woodlands (vegetation codes CLP-EW1 and CLP-EW2) and Sand-loam Plain; Mallee Woodlands and Shrublands (vegetation code SLP-MWS1). These mapped vegetation types are shown in Figure 3.

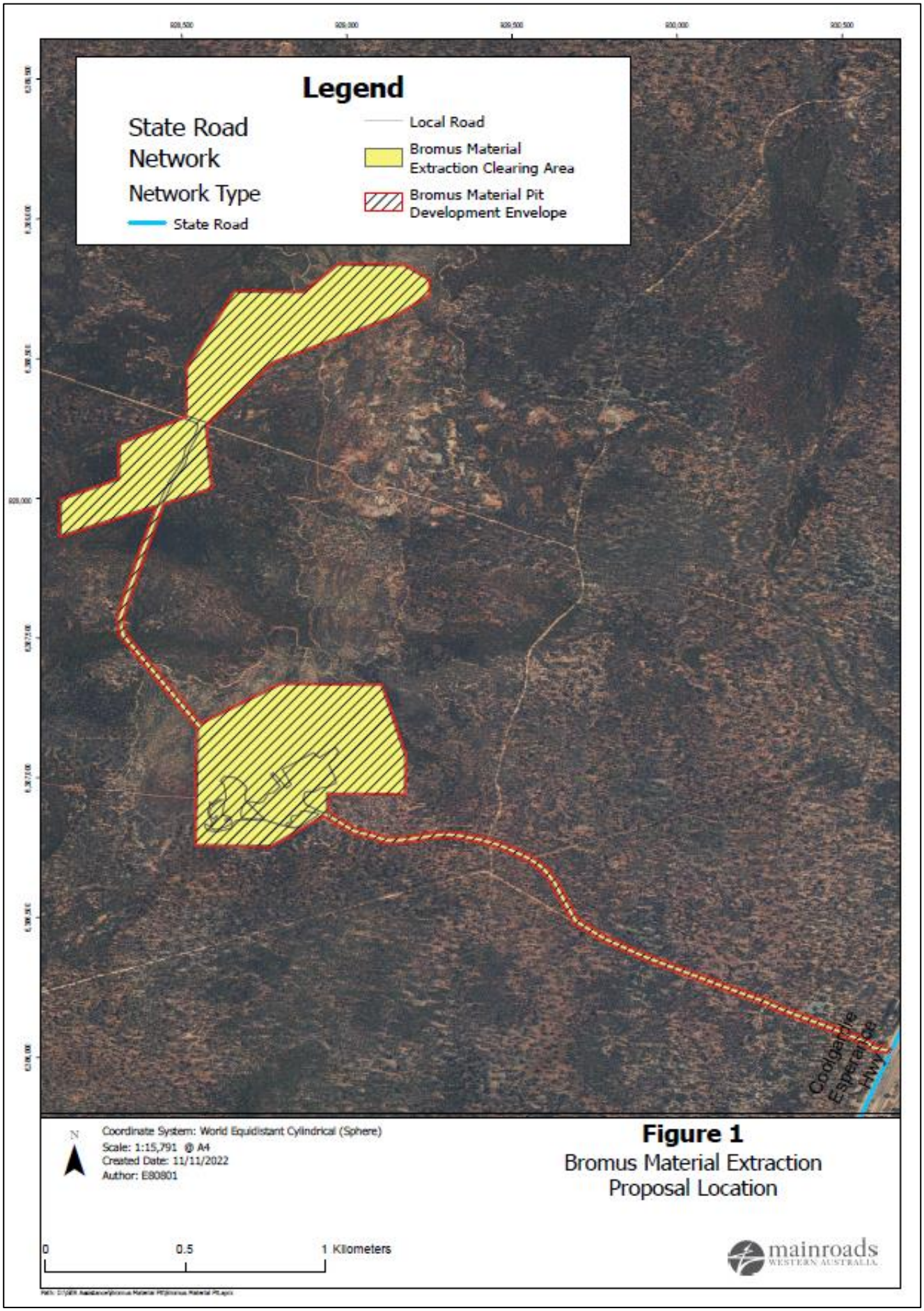


**Figure 1: Proposal location**

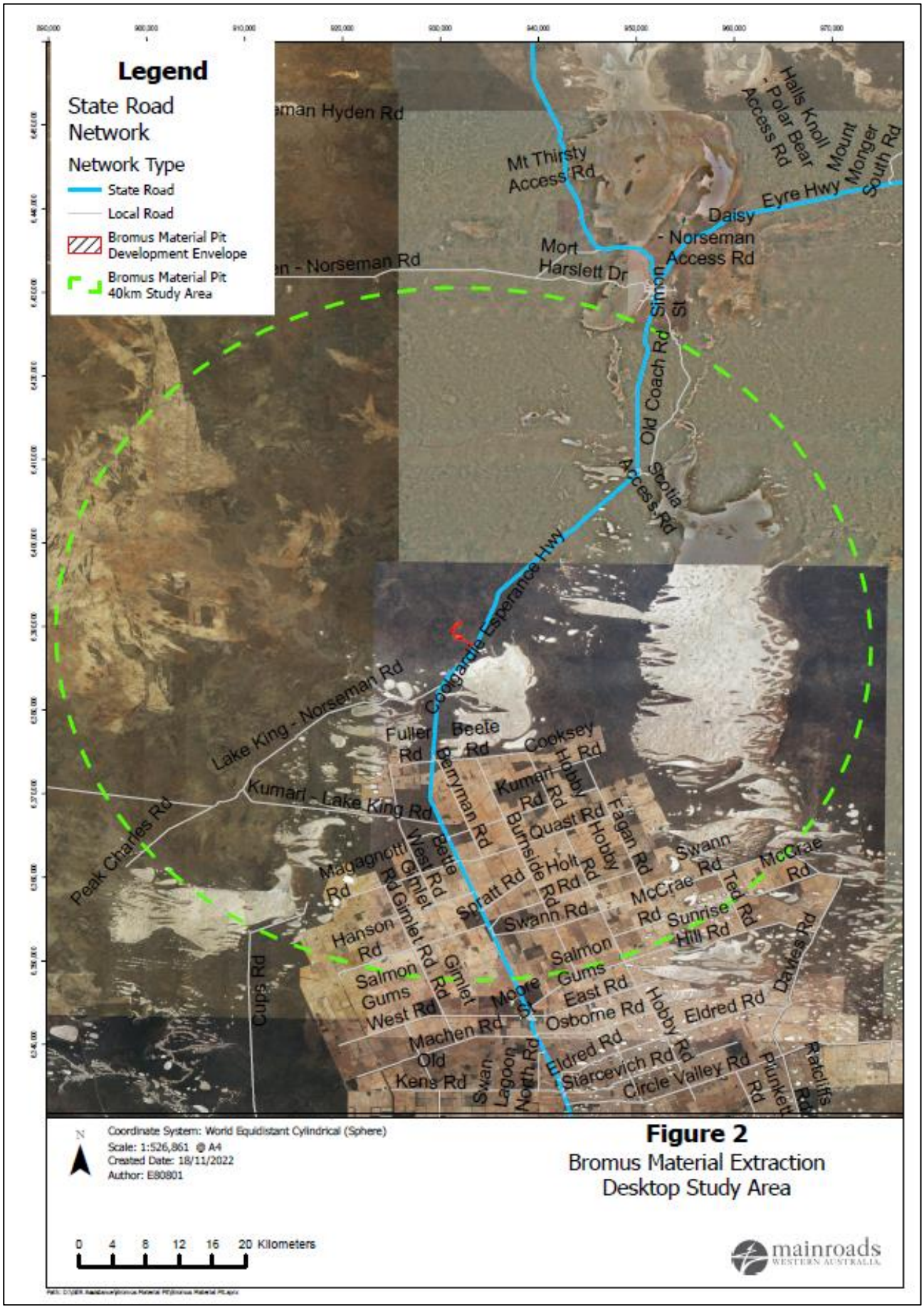


**Figure 2: Proposal Study Area**

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

The Proposal area is an expansion of a previously disturbed site. Main Roads WA undertook material investigations at the Proposal site in 2021 with results indicating the area contains good quality road building material. The Proposal boundary was developed and refined to avoid known Aboriginal heritage sites and to stay within the area that was biologically surveyed in 2021 (Botanica, 2021).

Main Roads WA investigated the use of commercial sources of material and existing cleared areas with gravel potential. However, none were identified within 50 km of this section of Coolgardie Esperance Highway that would make such sources economically viable.

## 1.5 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 |
|---|---|
| **Alignment to one side of existing road** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Alternative alignment located within pasture or degraded areas** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Simplification of design to reduce number of lanes and/or complexity of intersections** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Steepen batter slopes** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Installation of barriers** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Installation of kerbing** | Not relevant to this type of project. The Proposal is for material extraction and stockpiling. |
| **Use of existing cleared areas for access tracks, construction storage and stockpiling** | The Proposal is utilising previously disturbed areas for stockpiling purposes. The existing access track will also be used for access from Coolgardie Esperance Highway. |

## 1.6 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.

# 2 SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT

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:

- **Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction.

- **Development Envelope (Proposal Area)**– The maximum extent within which the Clearing Area will be located. This envelope is larger than the Clearing Area and the Proposal Area to account for minor and unexpected changes that may occur during construction, 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. A 5m buffer on the Clearing Area has been applied to create the Development Envelope.

- **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 2021 Biological Survey, which is the same as the Development Envelope for this Proposal.

## 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 and mapping is done using ArcPro. 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 survey was undertaken to inform this CAR:

1. Botanica Consulting (2021) Bromus Material Pit Biological Survey.

# 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 the report are presented in Sections 3.2, 3.3 and 3.4.

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

| Consultant & Survey Name | Survey Details |
|---|---|
| Botanica Consulting (2021) Bromus Material Pit Biological Survey | **Survey Area:** Survey area comprised approximately 57.6ha off Coolgardie Esperance Highway at SLK [REDACTED].<br>**Type:** Desktop assessment within a 40km radius of the biological survey area<br>Basic fauna survey<br>Targeted flora survey and detailed flora and vegetation survey<br>**Timing:** Fieldwork conducted on 21st October 2021<br>**Survey Area:** 57.6 ha |

## 3.2 Summary of Flora and Vegetation Survey

A 57.6 ha area was surveyed at Bromus Material Pit area, accessed via the Coolgardie Esperance Highway at [REDACTED] SLK (Botanica, 2021). The survey area is located approximately 145 km north of Esperance and 50 km south-west of Norseman.

The survey mapped three vegetation types within the Development Envelope, which were representative of three pre-European vegetation associations (vegetation association 524, 936 and 3106). The Botanica (2021) survey area identified the Development Envelope was dominated by Eucalyptus Woodlands (4.8 ha) and Mallee Woodlands and Shrublands. (50.5 ha) The vegetation condition ranged from degraded to excellent condition with 7.8 ha considered degraded due to existing access roads and previously rehabilitated material pits.

The desktop assessment identified nine Priority Flora taxa (as listed by the DBCA) as possibly occurring within the Botanica (2021) survey area based on their broad habitat requirements. None of the priority flora in the desktop assessment were mapped within the survey area and no Priority flora were recorded during the field survey. Based on the field assessment, all Priority Flora identified as possible to occur from the desktop assessment was considered unlikely to occur within the survey area.

The DBCA's Priority/ Threatened Ecological Communities Database Search did not identify any Threatened Ecological Community (TEC) listed under the Commonwealth EPBC Act or BC Act as occurring within the desktop survey area. One Priority Ecological Community (PEC), referred to as '*Allocasuarina globosa* assemblages on greenstone rock', was identified as occurring within the 40km desktop study area (Botanica, 2021).
No Threatened or Priority ecological communities were considered likely or possibly occurring as a result of the Botanica (2021) survey.

## 3.3 Summary of Fauna Surveys

Two fauna habitats were identified within the Botanica (2021) survey area; Eucalypt woodlands and Mallee woodlands and shrublands (refer Figure 5). Results of the literature review identified 6 amphibians, 8 mammals, 181 bird and 41 reptile species as having been previously recorded in the desktop study area, some of which have the potential to occur within the Survey Area.

No Threatened fauna or other specially protected species as listed under the Western Australian BC Act or the Commonwealth EPBC Act were identified within the Survey Area. No Priority fauna as listed by DBCA were recorded within the Survey Area. However, a targeted survey for these species was not conducted as it is outside the scope of the requirements for a basic fauna survey. Suitable habitat for Malleefowl (*Leiopa ocellata*) and the Western Rosella (inland) (*Platycercus icterotis xanthogenys*) was observed within the survey area, and these species are considered likely to occur within the Survey Area. No individual sightings of these species were recorded in the Survey Area. The Peregrine Falcon (*Falco peregrinus*), was assessed as possibly occurring, being a potential visitor to the area as part of its larger home range but unlikely to breed within the survey area due to a lack of suitable nesting sites.

A total of three significant fauna were identified in the desktop assessment as potentially occurring within the Biological survey area based on their habitat preferences including Mallee woodland and Eucalypt woodland:

- Peregrine Falcon (*Falco peregrinus)* – Other Specially Protected Species (BC Act);
- Malleefowl (*Leipoa ocellata*) – Vulnerable (EPBC Act and BC Act);
- Western Rosella (Inland) (*Platycercus icterotis xanthogenys)* – Priority 4 (DBCA).

## 3.4 Summary of Wetland Field Assessment

There were no wetlands of international importance (Ramsar Wetlands) or national importance (Australian Nature Conservation Agency Wetlands) identified during the Biological survey (Botanica, 2021).

# 4 VEGETATION DETAILS

## 4.1 Proposal Site Vegetation Description

The vegetation in the Clearing Area consists of a total of three vegetation types (not including rehabilitated vegetation) with the dominant vegetation type being Mallee Woodlands and Shrublands. Vegetation in the Clearing Area is represented by a total of 23 families, 42 genera and 61 taxa. The vegetation condition ranges from Degraded to Excellent condition with the majority of the vegetation in Excellent condition (EPA, 2016a). Disturbance in the Clearing Area is a result of an existing material pit (currently experiencing immature regrowth of Vegetation Community SLP-MWS1), access roads and recent fires (Botanica, 2021).
Only one introduced species (*Carpobrotus aequilaterus*; Pigface) was identified during the 2021 biological survey, which is not listed as a Declared Pest or a Weed of National Significance (Botanica, 2021).

Table 3 and Table 4 provide details of the vegetation types within the Proposal area and the remaining extents of these associations, respectively.

**Table 3. Summary of Vegetation Types within Clearing Area**

| NVIS Major Vegetation Group | Vegetation Type | Total Extent within Clearing Area (ha) |
|---|---|---|
| Eucalyptus Woodlands (MVG 6) | Mid woodland of *Eucalyptus salmonophloia, E. salubris* and *E. transcontinentalis* over mid shrubland of *Melaleuca pauperiflora* subsp. *pauperiflora, Beyeria sulcata* and *Exocarpos aphyllus* over low shrubland of *Cratystylis conocephala* and *Eremophila caperata* on clay-loam plain (Vegetation Code: CLP-EW1) | 1.8 ha |
| Eucalyptus Woodlands (MVG 6) | Mid woodland of *Eucalyptus dundasii* and *E. urna* over mid shrubland of *Melaleuca quadrifaria, M. pauperiflora* subsp. *pauperiflora* over low shrubland of *Cratystylis conocephala* and *Eremophila caperata* on clay-loam plain (Vegetation Code: CLP-EW2) | 1.0 ha |
| Mallee Woodlands and Shrublands (MVG 14) | Mid mallee woodland of *Eucalyptus phaenophylla* and *E. platycorys* over mid shrubland of *Allocasuarina campestris, Acacia enervia* subsp. *enervia* and *Melaleuca hamata* over low shrubland of *Leptospermum erubescens, Phebalium filifolium* and *Westringia cephalantha* var. *cephalantha* on sand-loam plain (Vegetation Code: SLP-MWS1) | 50.5 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. 3106** Medium Woodland; salmon gum & Dundas blackbutt | **Statewide** | 52661 | 51603 | 98 | 8 |
| | **IBRA Bioregion** Coolgardie | 52660 | 51602 | 98 | 8 |
| | **IBRA Sub-region** Eastern Goldfield | 52660 | 51602 | 98 | 8 |
| | **Local Government Authority** Shire of Esperance | 20635 | 19733 | 96 | 15 |
| **Veg Assoc No. 551** Shrublands; Allocasuarina campestris thicket | **Statewide** | 302424 | 83685 | 28 | 7 |
| | **IBRA Bio region** Coolgardie | 31710 | 27171 | 86 | 50 |
| | **IBRA Sub-region** Eastern Goldfield | 844 | 844 | 100 | 0 |
| | **Local Government Authority** Shire of Esperance | 591 | 591 | 100 | 0 |
| | **Local Government Authority** Shire of Dundas | 680 | 680 | 100 | 0 |
| **Veg Assoc No. 128** Bare areas; rock outcrops | **Statewide** | 329836 | 288814 | 88 | 21 |
| | **IBRA Bio region** Coolgardie | 184550 | 183891 | 100 | 19 |
| | **IBRA Sub-region** Eastern Goldfield | 26872 | 26854 | 100 | 7 |
| | **Local Government Authority** Shire of Esperance | 28431 | 24829 | 87 | 37 |

# 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 likely to be at variance to this Principle.**

### Assessment

The Proposal requires the clearing of 53.3 ha of native vegetation across three vegetation types mapped during the 2021 survey (excluding the areas mapped as rehabilitated vegetation), at [REDACTED] SLK Coolgardie Esperance Highway in the Goldfields Region (Figure 3).

The three vegetation types identified within the Clearing Area were:
CLP-EW1:
Mid woodland of *Eucalyptus salmonophloia, E. salubris* and *E. transcontinentalis* over mid shrubland of *Melaleuca pauperiflora* subsp. *pauperiflora, Beyeria sulcata* and *Exocarpos aphyllus* over low shrubland of *Cratystylis conocephala* and *Eremophila caperata* on clay-loam plain.

CLP-EW2:
Mid woodland of *Eucalyptus dundasii and E. urna* over mid shrubland of *Melaleuca quadrifaria, M. pauperiflora* subsp. *pauperiflora* over low shrubland of *Cratystylis conocephala* and *Eremophila caperata* on clay-loam plain.

SLP-MWS1:
Mid mallee woodland of *Eucalyptus phaenophylla* and *E. platycorys* over mid shrubland of *Allocasuarina campestris, Acacia enervia* subsp. *enervia* and *Melaleuca hamata* over low shrubland of *Leptospermum erubescens, Phebalium filifolium* and *Westringia cephalantha* var. *cephalantha* on sand -loam plain.

The Biological survey (Botanica, 2021) mapped all of the vegetation unit Mallee woodlands and shrublands (SLP-MWS1) as being in Excellent condition, with the remaining two vegetation types (Eucalyptus woodlands; CLP-EW1 and CLP-EW2) being in either Excellent or Very good condition. Refer to Figure 4 for vegetation condition mapping. Disturbance within the Botanica (2021) survey area is as a result of an existing material pit and access roads and recent fires.

No Priority flora species were identified during the flora survey (Botanica, 2021). Based on the results of the field survey, nine Priority Flora species identified in the desktop assessment as 'possible to occur' were considered as 'unlikely to occur' following the survey and are listed below. A targeted flora search focused on *Acacia hystrix* subxp. *continua* (P1) which occurs on clay-loam soils. Within the 2021 survey area, these areas comprised 2.8 ha (4.8%), predominantly along the access track, and are represented by vegetation communities CLP-EW1 and CLP-EW2. These areas were searched intensively for the presence of *Acacia hystrix* subsp. *continua*. Areas of sand-plain were considered unlikely to contain significant flora species and were surveyed to confirm field decisions (Botanica, 2021).

1. *Acacia truculenta* (P3) – unlikely to occur

Preferred habitat of sand and loam soils near salt lakes were not present within the survey area. It was actively searched for during the field survey and not found.

1. *Bossiaea aurantiaca* (P1) - unlikely to occur
   Preferred habitat of low-lying, winter-damp sites were not present within the survey area. It was actively searched for during the field assessment and not located.
2. *Bossiaea flexuosa* (P3) - unlikely to occur
   Preferred habitat of deep sandy soils were not present within the survey area. It was actively searched for during the field assessment and not located.
3. *Cyathostemon* sp. Salmon Gums (B. Archer 769) (P3) – unlikely to occur
   Preferred habitat of dry riverbeds and near claypan were not present within the survey area. It was actively searched for during the field assessment and not located.
4. *Eremophila succine*a (P3) - unlikely to occur
   Preferred habitat of clay soils, also with a covering of sand, which were present within the survey area. The nearest DBCA records of this taxon is located 17 km north of the survey area. It is a non-cryptic perennial species that was actively searched for during the field assessment and not located.
5. *Goodenia laevis* subsp. *laevis* (P3) - unlikely to occur
   Preferred habitat of sandy loam, which was present within the survey area. The nearest DBCA record of this taxon is located approximately 15 km south of the survey area. It is a non-cryptic perennial species that was actively searched for during the field assessment and not located.
6. *Pityrodia chrysocalyx* (P3)- unlikely to occur
   Preferred habitat of sandy soils, which were not present within the survey area. It is a non-cryptic perennial species that was actively searched for during the field assessment and not located.
7. *Verticordia* sp. *Dundas* (C.A. Gardner 2848) (P1)- unlikely to occur
   Preferred habitat of red granitic soil, which was not present within the survey area. It was actively searched for during the field assessment and not located.

Two broad scale terrestrial fauna habitats were identified within the survey area, excluding areas mapped as rehabilitated/cleared. Regrowth in these previously cleared areas consist of immature stands of vegetation community SLP-MWS1 and consists mainly of juvenile Eucalyptus spp. approximately 3-5 years old. This area is unlikely to offer any significant value as fauna habitat due to disturbance and immature nature of the vegetation. The two fauna habitats identified in the survey area are identified in Table 5 below and Figure 5.

| Fauna Habitat | Description | Representative Fauna Attributes | Significant Species that possibly occur in habitat | Representative Vegetation Communities |
|---|---|---|---|---|
| Clay-loam Plain<br><br>Eucalyptus Woodlands<br><br>Area= 2.8 ha (4.8%) | *Eucalyptus* woodland over *Melaleuca* shrubland over *Cratystylis conocephala* low shrubland | • → Ground not especially suited to burrowing species.<br>• → Moderately diverse vegetation strata supporting diverse avifauna assemblage.<br>• → Low to moderate vegetation density and moderate leaf litter. | Malleefowl<br>*Leipoa ocellata*<br><br>Peregrine Falcon<br>*Falco peregrinus*<br><br>Western Rosella (Inland)<br>*Platycercus icterotis xanthogenys* | CLP-EW1<br><br>CLP-EW1 |
| Sand-Loam Plain<br><br>Mallee Woodland and Shrubland<br><br>Area= 50.5 ha (87.7%) | *Eucalyptus* mallee woodland over *Allocasuarina*, *Acacia* and *Melalaleuca* shrubland | • → Substrate well suited for burrowing small mammals and reptiles.<br>• → Moderately diverse vegetation strata supporting diverse avifauna assemblage.<br>• → Moderate vegetation density and leaf litter. | Malleefowl<br>*Leipoa ocellata*<br><br>Peregrine Falcon<br>*Falco peregrinus*<br><br>Western Rosella (Inland)<br>*Platycercus icterotis xanthogenys* | SLP-MWS1 |

**Table 5: Main terrestrial fauna habitats**

A desktop assessment of the Clearing Area identified a total of 236 fauna species as potentially occurring. Of these, 6 are amphibians, 41 are reptiles, 181 are birds and 8 are mammals (Botanica, 2021).
Based on the habitats present and/or recent nearby records, the field assessment of potentially occurring significant species identified two taxa as 'likely' to occur and one taxa as 'possibly' occurring in the survey area. These are listed below:

- Peregrine Falcon (*Falco peregrinus*) – Other Specially Protected Species (BC Act)
- Malleefowl (*Leipoa ocellata*) – Vulnerable (EPBC Act and BC Act)
- Western Rosella (Inland) (*Platycercus icterotis xanthogenys*) – Priority 4 (DBCA).

While the Malleefowl is considered likely to utilise the survey area due to suitable breeding and foraging habitat being present within the survey area and the observation of an inactive nesting mound approximately 250 m east of the Survey Area, the Proposal area represents a smaller area of the broader representation of vegetation structure and condition across the survey area that may be used by the Malleefowl. Appropriate management techniques such as flagging and raising contractor awareness through pre-start meetings for example, will be incorporated into the CEMP and PEMR's to ensure Malleefowl mounds are not impacted.

While the Western Rosella is considered likely to utilise the Survey Area due to the presence of favourable habitat, specifically Eucalyptus woodland (Botanica, 2021), the favourable habitat present in the Survey Area is considered to be of moderate quality, with no direct observations or other evidence of their presence identified during the 2021 survey. As this is a mobile avian species it will be able to readily remove itself from impact areas to the adjacent areas where vegetation and habitat is more broadly represented. It is therefore considered unlikely to be directly impacted by the Proposal.

None of these species were identified in the Clearing Area during the 2021 biological survey (Botanica, 2021). The proposed clearing is in an area that contains large tracts of intact connected vegetation similar in

structure and condition. The Proposal is highly unlikely to clear significant fauna habitat or sever ecological linkages that prevent fauna moving across the landscape (Botanica, 2021).

The Priority/Threatened Ecological Communities ArcGIS shapefile search did not identify any Threatened Ecological Community (TEC) listed under the Commonwealth EPBC Act or BC Act as occurring within the desktop survey area. One Priority Ecological Community (PEC) was identified as occurring approximately 35 km to the north east of the Development Envelope. '*Allocasuarina globosa* assemblages on greenstone rock' (PEC) is shown within the desktop study area in Figure 6. This community is only known from near Norseman and in the Bremer Range and was considered unlikely to occur within the Survey Area during the desktop assessment and no vegetation representing ecological communities was identified within the Survey Area (Botanica, 2021).

Given the above, the Proposal area is not likely to contain a high level of biodiversity and the Proposal is therefore not likely to be at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- BoM Website (Accessed 18/11/2022)
- DCCEEW Protected Matters Search Tool Report (2022)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 10/11/2022)
  - DBCA Threatened and Priority flora database search (Accessed 10/11/2022)
- Natural Resource Management SLIP Soil Systems (Accessed 18/11/2022)
- 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 likely to be at variance to this Principle.**

**Assessment**

A basic fauna survey was undertaken over the Clearing Area (Botanica, 2021). Two fauna habitats were identified (not including cleared/regrowth vegetation). Table 5 (above) describes these two fauna habitats and the significant species that might possibly occur within these habitats (refer also to Figure 5).

Based on the habitats present and recent nearby fauna records identified during the desktop assessment, the following significant species were listed as either likely to occur or possibly occurring within the Clearing Area:

- **Peregrine Falcon *(Falco peregrinus)*** – Other Specially Protected Species (BC Act)

This species potentially occurs aerially over the survey area as part of a much larger home range, though records in this area are rare and therefore it is likely to be present only occasionally. No potential nest sites were observed and is therefore unlikely to breed within the survey area. The nearest DBCA record is 30 km north-east of the survey area and was recorded in 2012. This species was not identified during the 2021 survey.

- **Malleefowl (*Leipoa ocellata)*** –Vulnerable (EPBC Act and BC Act)

The survey area is within the known range of this species, and potential foraging and breeding habitat is present within the survey area. Habitat is considered to be of moderate to high quality. A breeding population of this species may be present in the general area, with an inactive nesting mound observed outside the survey area during the field survey, located approximately 250 m east of the survey area and listed as a DBCA record from 2006. Figure 7 shows the known Malleefowl record present in the DBCA ArcGIS Threatened fauna shapefile. In addition, transient, non-breeding individuals may also occur. No species or nesting mounds were identified within the Clearing Area (Botanica, 2021) and adjacent vegetation provides habitat of similar structure and condition to that of the Proposal area.

- **Western Rosella (Inland) (*Platycercus icterotis xanthogenys*)** –Priority 4 (DBCA)

This species potentially occurs, with suitable habitat (*Eucalyptus* woodland) present within the Clearing Area. Habitat is considered to be of moderate quality. No direct observations or other evidence of their presence was identified during the field survey. The nearest DBCA records are located approximately 23 km north-east of the survey area. As this is a mobile avian species it will be able to readily remove itself from impact areas and is therefore unlikely to be directly impacted by the Proposal.

While the Clearing Area may potentially support Malleefowl and Western Rosella, the Proposal is not considered to be clearing significant habitat for fauna indigenous to Western Australia given neither of these species were identified in the Clearing Area during the 2021 biological survey (Botanica, 2021), and the proposed clearing is in an area that contains large tracts of intact connected vegetation similar in structure and condition. The clearing of native vegetation that is well represented with no recent evidence of utilisation by these species is considered highly unlikely to impact on significant fauna habitat or sever ecological linkages that prevent fauna moving across the landscape (Botanica, 2021). Standard construction management techniques such as creating no-go zones and flagging of known nesting mounds outside of the Clearing Area would ensure the known Mallefowl nesting site and any new sites, are not disturbed.

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

**Methodology**

- Biological Survey (Botanica, 2021)
- DCCEEW Protected Matters Search Tool Report (2022)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed 18/11/2022)
  - Ecological Linkages (Accessed 18/11/2022)
- DCCEEW (2022a)

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

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

**Assessment**

The results of the desktop assessment and literature review undertaken as part of the 2021 biological survey including searches of the DBCA significant flora databases and the DCCEEW Protected Matters Search Tool indicated that no Threatened flora were previously recorded within the Clearing Area (Botanica, 2021). Only one Threatened flora species was identified in the desktop assessment as potentially occurring within the 40 km study area. *Allocasuarina globosa* is a dioecious shrub growing to 1.5m tall that occurs in habitats consisting of Laterite clay loam (Florabase, 2022). The nearest known DBCA record for this species occurs over 20 kms from the proposed Clearing Area and this occurrence is outside the known range for this species (refer Figure 7).

*Allocasuarina globosa* was not recorded in the Clearing Area nor were any other Threated flora species (Botanica, 2021).

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

**Methodology**

- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed 17/11/2022)
- DCCEEW Protected Matters Search Tool Report (2022)
- Florabase (Accessed: 18/11/2022)

## (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 (TEC) were identified as occurring under the Biodiversity Conservation (BC) Act or the Environmental Protection and Biodiversity Conservation (EPBC) Act.
The vegetation types that were assessed as occurring within the Clearing Area are not considered representative of any State of Federal listed TEC (Botanica, 2021).

Based on the above information, the proposed clearing is considered not at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (Accessed 17/11/2022)

## (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 likely to be at variance to this Principle.**

**Assessment**

The Proposal occurs within the Coolgardie IBRA bioregion and the Eastern Goldfield IBRA Sub-region of which approximately 98% and 99%, pre-European extent is remaining, respectively (Government of WA, 2019).
The following pre-European Vegetation Associations have been mapped within the Clearing Area:

- Veg. Assoc. No. 3106: Medium Woodland; salmon gum & Dundas blackbutt;
- Veg Assoc No. 551: Shrublands; Allocasuarina campestris thicket;
- Veg Assoc No. 128: Bare areas; rock outcrops.

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.

| 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. 3106** Medium Woodland; | **Statewide** | 52661 | 51603 | 98 | 8 |
| | **IBRA Bioregion** Coolgardie | 52660 | 51602 | 98 | 8 |
| | **IBRA Sub-region** | 52660 | 51602 | 98 | 8 |

| | | | | | |
|---|---|---|---|---|---|
| salmon gum & Dundas blackbutt | Eastern Goldfield | | | | |
| | **Local Government Authority** Shire of Esperance | 20635 | 19733 | 96 | 15 |
| **Veg Assoc No. 551** Shrublands; Allocasuarina campestris thicket | **Statewide** | 302424 | 83685 | 28 | 7 |
| | **IBRA Bio region** Coolgardie | 31710 | 27171 | 86 | 50 |
| | **IBRA Sub-region** Eastern Goldfield | 844 | 844 | 100 | 0 |
| | **Local Government Authority** Shire of Esperance | 591 | 591 | 100 | 0 |
| | **Local Government Authority** Shire of Dundas | 680 | 680 | 100 | 0 |
| **Veg Assoc No. 128** Bare areas; rock outcrops | **Statewide** | 329836 | 288814 | 88 | 21 |
| | **IBRA Bio region** Coolgardie | 184550 | 183891 | 100 | 19 |
| | **IBRA Sub-region** Eastern Goldfield | 26872 | 26854 | 100 | 7 |
| | **Local Government Authority** Shire of Esperance | 28431 | 24829 | 87 | 37 |

Pre-European Vegetation Associations 128 and 3106 present within the Clearing Area are well represented having over 87% remaining at all scales. Pre-European Vegetation Association 551 has only 28% remaining statewide and 86% in the Bio-region.

Whilst pre-European Vegetation Association No. 551 has only 28% remaining statewide, it is fairly well represented at all other scales with 86% remaining in the IBRA Bio-region and 100% remaining at both IBRA sub-region and LGA scales. The condition of vegetation within Vegetation Association No. 551 in the Proposal Area is classified as being Degraded to Excellent and some areas have been subject to previous clearing and disturbance such as fire (Botanica, 2021) The vegetation proposed to be cleared within this Vegetation Association is not within an extensively cleared landscape as the Proposal area is surrounded by large areas of intact vegetation. The proposed clearing is not expected to significantly impact on connectivity with other remnant vegetation in the local area or reduce the capacity of the remaining vegetation within the local area to act as an ecological linkage.

Taking the above into consideration, the clearing of vegetation associated with this Proposal is considered not likely to be at variance to this Principle.

**Methodology**

- Aerial photography
- Biological Survey (Botanica, 2021)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 17/11/2022)
  - Vegetation complexes (Accessed 17/11/2022)

- Statewide Vegetation Statistics (Government of Western Australia, 2019)

## (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 Clearing Area is not within a Proclaimed surface water area. A search of Arc GIS shapefiles did not identify any surface water features within 1km of the proposed clearing. The nearest significant surface water feature is Lake Gilmore, located approximately 2.5kms to the south east of the Proposal, separated from the Clearing Area by Coolgardie Esperance Highway. Lake Gilmore is a non-perennial lake with major and minor tributaries entering the system. The nearest Lake Gilmore tributary to the Proposal area is a minor, non-perennial watercourse located approximately 1.6kms to the east of the Proposal area (refer Figure 8).

No vegetation within the Clearing Area has been mapped as riparian vegetation. Taking the above into consideration, the Proposal is not at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- Government GIS shapefiles:
  - Geomorphic Wetlands (Accessed 10/11/2022)
  - Ramsar Wetlands (Accessed 10/11/2022)
  - Important Wetlands (Accessed 10/11/2022)
  - Watercourses (Accessed 10/11/2022)
  - RIWI Act Rivers (Accessed 10/11/2022)

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

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

**Assessment**

Acid Sulfate Soils risk mapping indicates the Proposal area is classified as C4 Extremely Low Probability of Occurrence.

The topography in the Clearing Area is described as gently undulating plain with gently undulating rises in the upper landscape with soils described as Alkaline grey shallow sandy duplex with associated pale deep sands and calcareous loamy earths (NRM, 2022).

Natural Resource Management Soil Systems mapping indicates the site drainage as having very poor to poor potential with a moderate to high risk of waterlogging and inundation risk occurring across the area. Clearing will be undertaken progressively across the 53.3 ha on an as needs basis which will considerably reduce the potential for any appreciable land degradation. Retention of a 5 m buffer zone of undisturbed vegetation will be applied to assist in minimising water erosion and runoff from the area. Other standard management techniques will be incorporated in the project CEMP / PEMR to manage any potential waterlogging and flooding risk, including:

- Appropriate stockpiling of overburden to provide drainage control;
- .Surface roughening and benching of bare soil by creating furrows across slopes, terracing or by tracking the soil surface;
- Undertaking clearing during dry conditions only; and
- Ensuring the movement of large equipment over cleared areas is avoided to minimise ground compaction and surface hardening.

Standard erosion and dust management control techniques will also be incorporated in the project CEMP / PEMR to manage the risk of wind erosion. These techniques include:

- Cessation of proposal activities during periods of high wind or when excessive dust is generated;
- Clearing of vegetation only when necessary and when weather conditions minimise dust emissions;
- Dust control and daily weather checks incorporated into daily construction pre-start meetings; and
- Using water tankers as required to dampen exposes surfaces during excavation activities.

The proposed clearing may result in some temporary land degradation via flooding, heavy runoff and wind erosion. Based on high annual evaporation rates, any localised heavy falls and surface runoff resulting from this is likely to be relatively short lived. In addition, the Proposal area is largely surrounded by native, intact vegetation and it is likely that a large proportion of runoff will be absorbed by this natural environment. The area will only be progressively cleared as material is required by the region. Once areas within the Proposal Area have been cleared and material stockpiled, rehabilitation by respreading of topsoil, can be undertaken to prevent large areas of cleared lands with bare soils exposed.

Based on the above, the proposed clearing is considered not likely to be at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- Natural Resource Management (NRM) SLIP Soil Systems Database (Accessed 17/11/2022)
- DPIRD (Accessed 18/11/2022)
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed 17/11/2022)
  - Soil landscape land quality – Water Erosion Risk (Accessed 17/11/2022)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 17/11/2022)
  - Soil landscape land quality – Salinity Risk (Accessed 17/11/2022)
  - Soil landscape land quality – Surface Acidity (Accessed 17/11/2022)
  - Soil landscape land quality – Waterlogging Risk (Accessed 17/11/2022)
  - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed 18/11/2022)

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

**Assessment**

The nearest DBCA managed land in the vicinity of the proposed Clearing Area is an un-named A class Nature Reserve located approximately 2 kms due south. This Reserve is vested with the Conservation Commission of WA. The proposed gradual clearing across the 53.3 ha site for the purpose of material extraction is not expected to remove or diminish any ecological linkages or impact the environmental values of this Reserve.

No other reserves or areas of conservation value are expected to be impacted by this Proposal due to the proximity of the Clearing Area to any other conservation areas.

No environmental offsets are registered near the proposed Clearing Area and as such, there will be no impacts to any registered environmental offsets (Government GIS shapefile).

The nearest RAMSAR Sites and listed Nationally Important Wetlands are the Lake Warden System and the Mortijinup Lake System which are both located approximately 140 kms to the south of the proposed Clearing Area, near the town of Esperance on the south coast of WA (Government GIS shapefiles, 2022). These wetland systems will not be impacted by the proposed clearing.

Based on the above and works limited to within the defined Proposal area, the proposed clearing is not likely to be at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- Environmental Offsets Register
- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 17/11/2022)
  - Geomorphic Wetlands (conservation category wetlands only) (Accessed 04/11/2022)
  - Ramsar Wetlands (Accessed 18/11/2022)
  - Important Wetlands (Accessed 18/11/2022)

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

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

**Assessment**

A search of Arc GIS shapefiles did not identify any significant surface water features within 1km of the proposed clearing. The nearest surface water feature is Lake Gilmore, located approximately 2.5kms to the south-east of the Proposal, on the opposite side of Coolgardie Esperance Highway. Lake Gilmore is a non-perennial lake with major and minor tributaries entering the system. The nearest Lake Gilmore tributary to the Proposal area is a minor, non-perennial watercourse located approximately 1.6kms to the east of the Proposal area.

No surface water will be taken as part of this proposed clearing nor is any dewatering required as part of this Proposal. The material extraction is proposed to commence in January 2023 when riverbeds are likely to be at their driest.

The proposed clearing is not within a Public Drinking Water Source Area.

Taking the above into consideration, it is unlikely that Proposal will cause any deterioration in the quality of surface or underground water.

**Methodology**

- Biological Survey (Botanica, 2021)
- Government GIS Shapefiles:
  - RIWI Act, Groundwater Areas (Accessed 17/11/2022)
  - Soil landscape land quality - Salinity Risk (Accessed 17/11/2022)
  - Soil Mapping (Accessed 18/11/2022)
  - Acid Sulphate Soil risk mapping (Accessed 17/11/2022)
  - Soil landscape land quality - Subsurface Acidification Risk (Accessed 17/11/2022)

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

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

**Assessment**

The soils in the area occur within the Salmon Gums Mallee Zone. The soil landscape is described as Alkaline grey shallow sandy duplex with associated pale deep sands and calcareous loamy earths. The topography is recorded as gently undulating plains with gently undulating rises in the upper landscape (NRM, 2022).

One of the key distinguishing features of this soil type is the loamy surface that appears powdery when dry and therefore makes it highly wind erodible (DPIRD, 2022). This is also susceptible to forming a dry crust following rain events.

The flood risk for the soil type in this area is listed as moderate to high, namely due to the poor drainage potential of the soils. The mean rainfall in the Norseman area is 288.9 mm with the months of May and June typically receiving the highest rainfall amounts (approximately 30 mm) (BOM, 2022). Typically, these rainfall events are not likely to result in major flooding events across the area. The area will only be progressively cleared as material is required by the region. Once areas within the Proposal Area have been cleared and material stockpiled, rehabilitation by respreading of topsoil, can be undertaken to prevent large areas of cleared lands with bare soils exposed.

Taking the above into consideration, the proposed clearing is not likely to be at variance to this Principle.

**Methodology**

- Biological Survey (Botanica, 2021)
- BoM Website (Accessed 18/11/2022)
- Natural Resource Management (NRM) SLIP Soil Systems
- DPIRD website (Accessed 18/11/2022)
- Government GIS Shapefiles:
  - Soil Mapping (Accessed 17/11/2022)
  - Soil landscape land quality - Waterlogging Risk (Accessed 17/11/2022)
  - Soil landscape land quality - Flood Risk (Accessed 17/11/2022)

# 6 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. Standard Principal Environmental Management Requirements (PEMRs) will be utilised for all projects that involve clearing to avoid, mitigate and manage the environmental impacts of the project. Refer to Appendix B for standard PEMR's used to manage clearing of native vegetation.

A Pit Management Plan is currently being developed for the Bromus Material Extraction Proposal. The Pit Management Plan will contain all of the environmental and heritage compliance requirements for the establishment and utilisation of this pit. The compliance requirements contained within the Pit Management Plan will need to be adhered to by the Contractor.

The Pit Management Plan will include (but not be limited to) the following standard management requirements:

- In the event that human skeletal material is uncovered, the Contractor must cease all work at that location and report the incident to Police. The Contractor must cease all work within 50m of the material and must not recommence works in this area until the Superintendent gives approval to proceed.
- Contractor must confirm with the Superintendent that land access permissions and agreements are in place prior to mobilising to site.
- Contractor must develop materials extraction methodologies and incorporate these into the CEMP that prescribes methods for the correct extraction, stockpiling, handling and transport of road building materials.
- The Contractor will establish processes to ensure that movement of plant and machinery does not occur outside of the approved limits of vegetation clearing.
- The Contractor should undertake clearing progressively so that areas of exhausted material are rehabilitated prior to clearing in other areas.
- The Contractor shall report all complaints received regarding dust as environmental incidents in EQSafe.
- The Contractor must not undertake any dewatering or ground water extraction from the site without prior approval of DWER and the Superintendent.
- Appropriate stockpiling of overburden will be undertaken to provide drainage control.
- Surface roughening and benching of bare soil will be undertaken by creating furrows across slopes, terracing or by tracking the soil surface.
- The Contractor shall undertake clearing during dry conditions only.
- The Contractor shall ensure the movement of large equipment over cleared areas is avoided to minimise ground compaction and surface hardening.
- The Contractor shall ensure the cessation of proposal activities during periods of high wind or when excessive dust is generated.
- Clearing of vegetation will be undertaken only when necessary and when weather conditions minimise dust emissions.
- Dust control and daily weather checks shall be incorporated into daily construction pre-start meetings.
- The Contractor will consider the use of water tankers as required, to dampen exposes surfaces during excavation activities.

# 7 COMPLIANCE WITH CPS 818

Table 56 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

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

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **1.** The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. | **No** | No further action required. |
| **2.** Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **or** (j) the incidence of flooding. | **NA** | |
| **3.** Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding. | **NA** | |
| **4.** The Proposal involves clearing for temporary works (as defined by CPS 818). | **No** | No further action required. |
| **5a.** Proposal is within a Region that:<br>• has rainfall greater than 400mm; and,<br>• is South of the 26th parallel; and,<br>• works are necessary in 'Other than dry conditions'; and,<br>• works have potential for **uninfested** areas to be impacted. | **No** | Standard Vehicle and Plant management actions from Principal Environmental Management Requirements (PEMRs) and Hygiene Checklists will be applied |

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **5b.** Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions? | **No** | 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. | **No** | 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. | **No** | No 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 was suitably qualified and had more than three years' experience. |

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# 9 APPENDICES

## Appendix A: Environmental Constraint Mapping

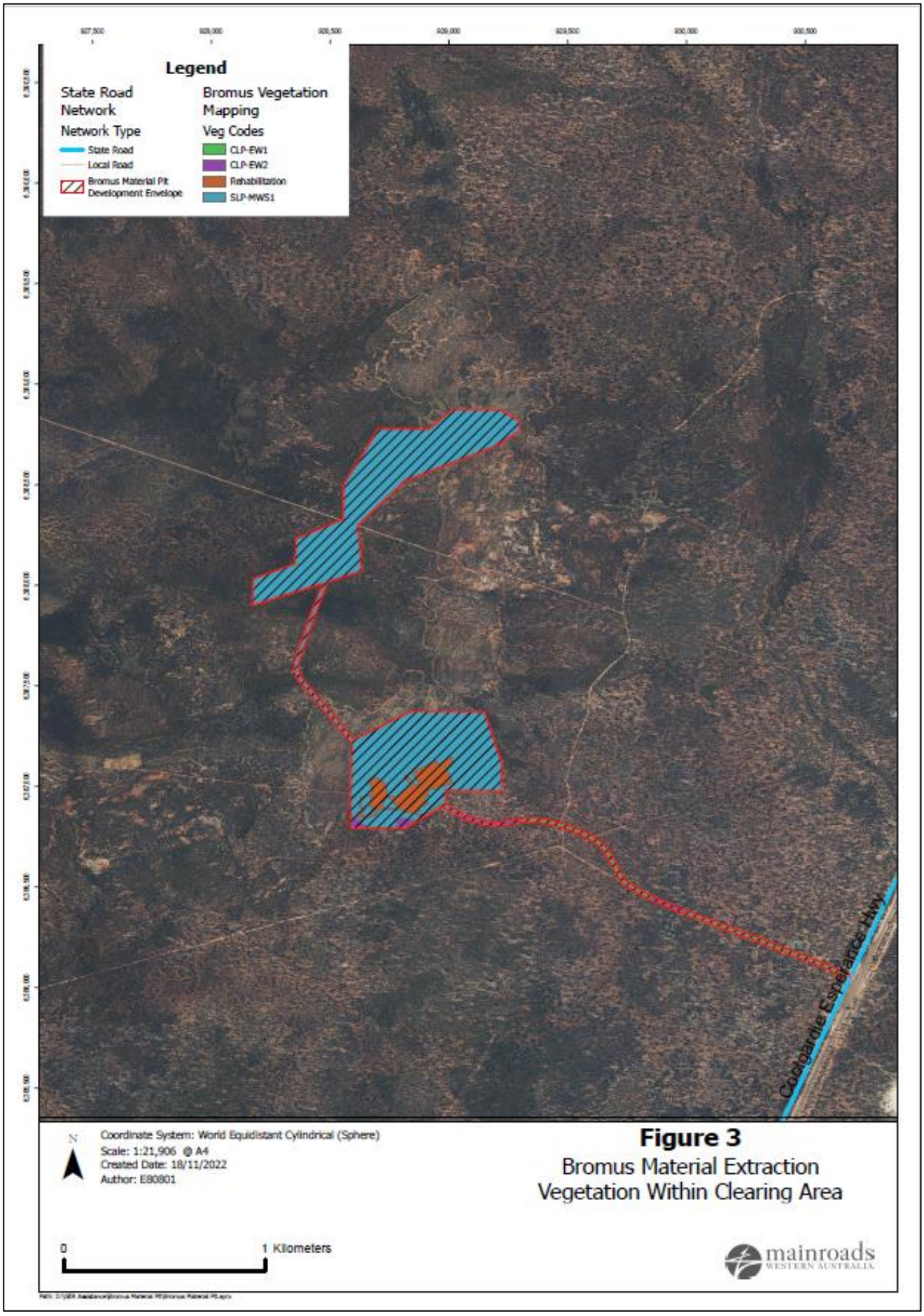


**Figure 3: Vegetation Types within Clearing Area**


**Figure 4: Vegetation Condition Mapping**

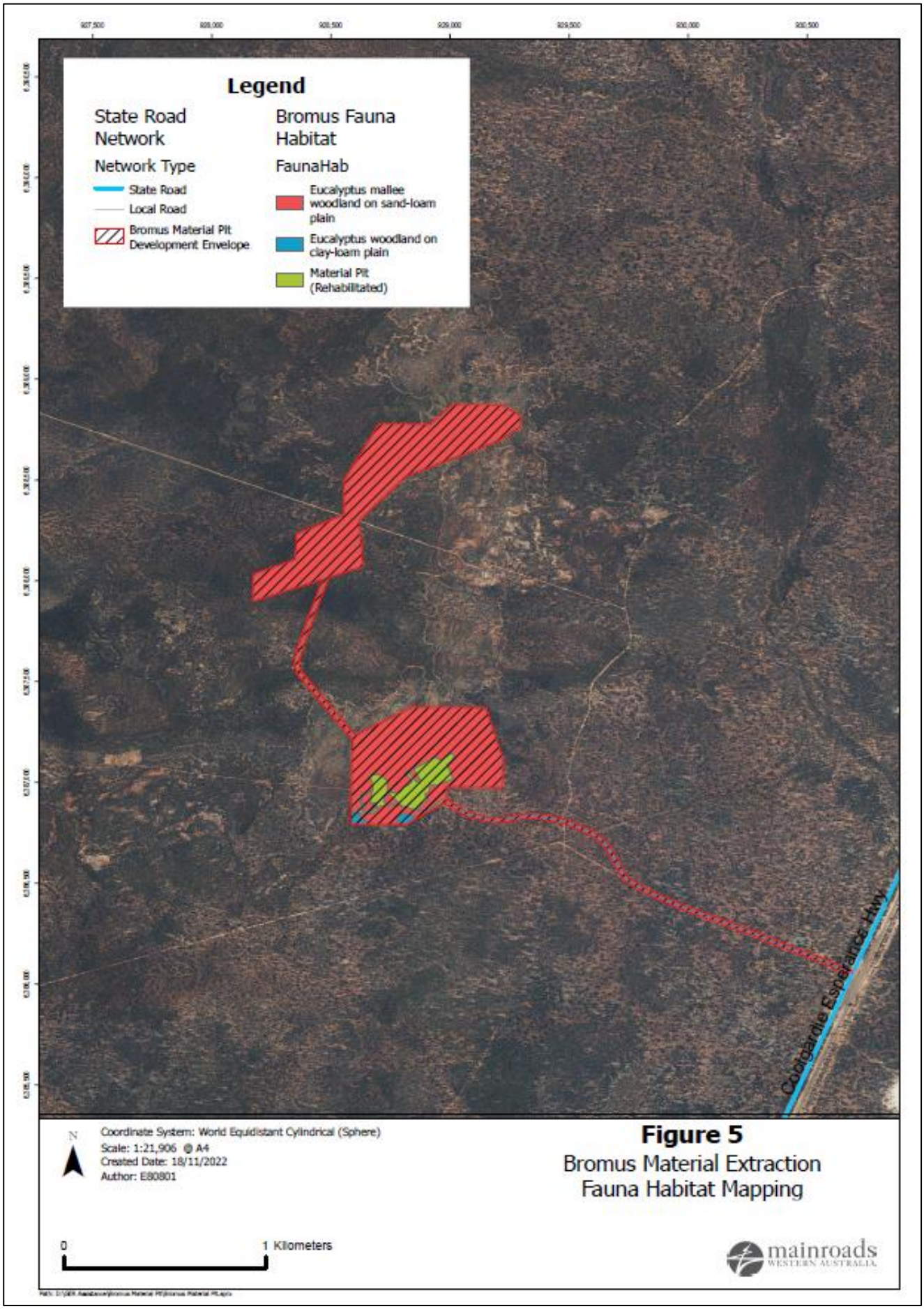


**Figure 5: Fauna Habitat Mapping**

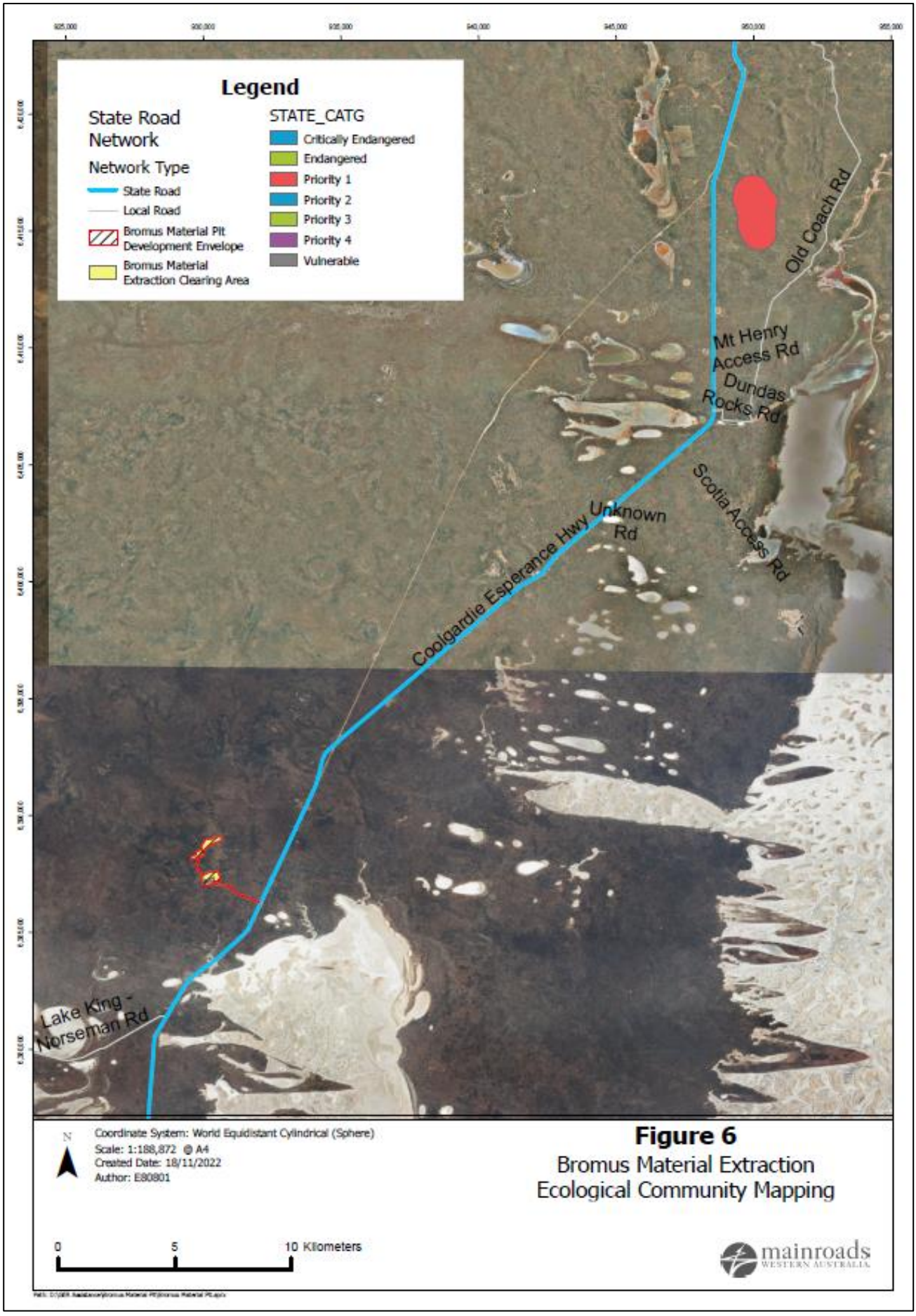


**Figure 6: Ecological Community Mapping**

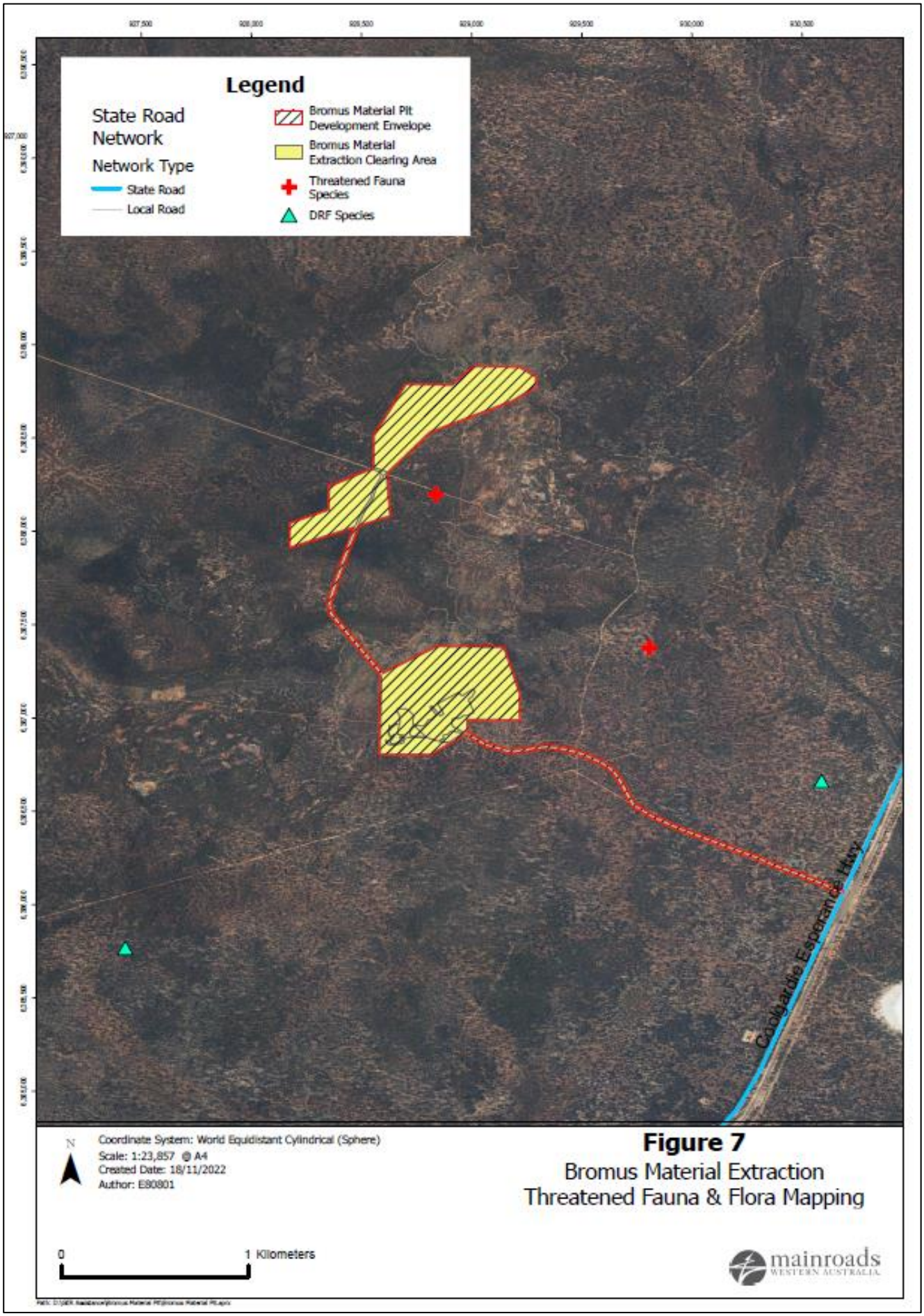


**Figure 7: Threatened Flora and Fauna Mapping**

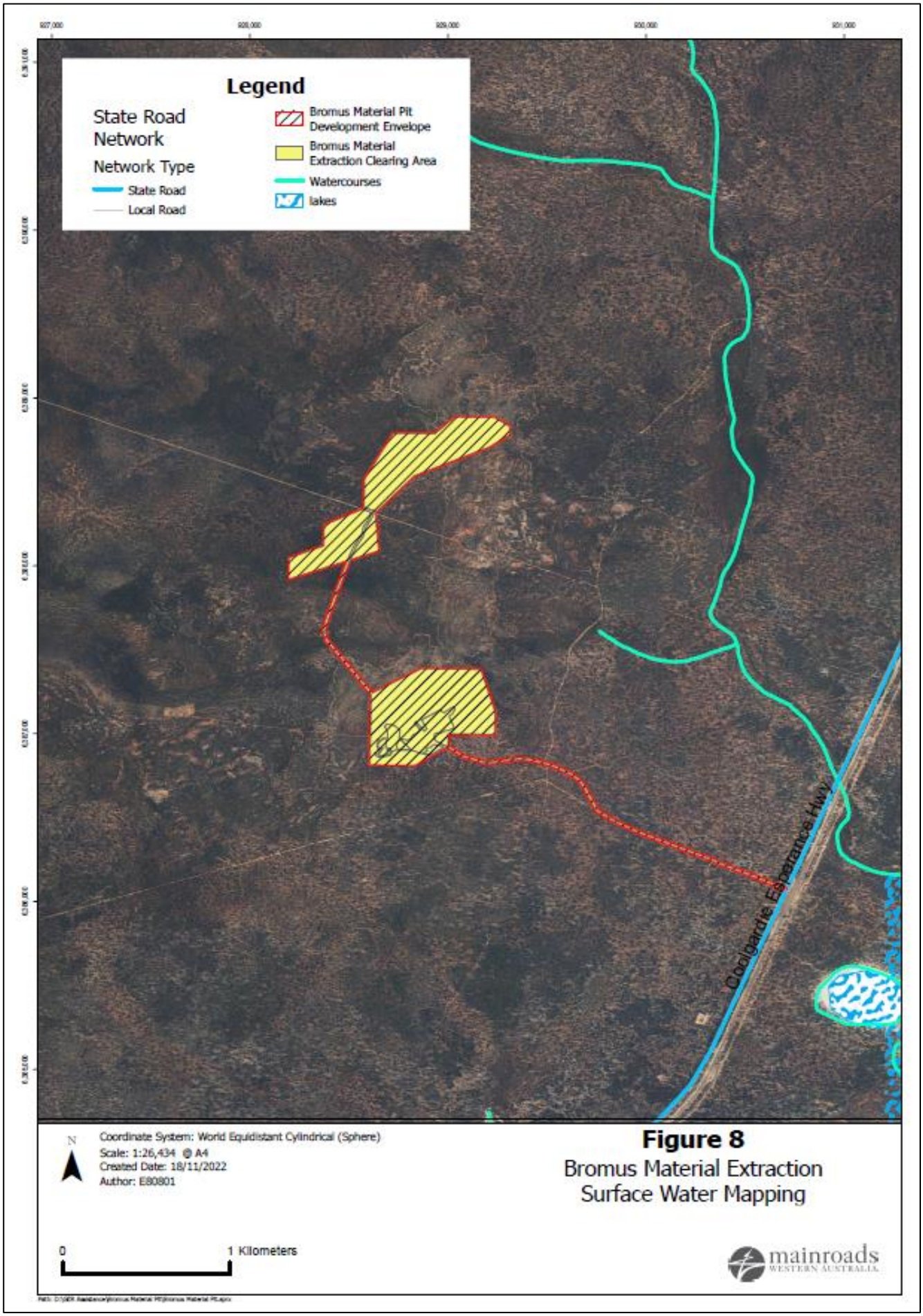


**Figure 8: Surface Water Mapping**

## Appendix B: Principal Environment Requirements (PEMR's)

# Principal Environmental Management Requirements (PEMR's)

## Table 1: Clearing PEMR

| STANDARD MANAGEMENT REQUIREMENTS |
|---|
| **PRE WORKS**<br>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.<br>2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible. |
| **DURING WORKS**<br>1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident.<br>2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works.<br>3. The Contractor must undertake the clearing in accordance with the Fauna PEMR. |
| **POST WORKS**<br>NIL |

## Table 2: Erosion and Sedimentation Control PEMR

**PRE WORKS**

1. The Contractor must develop, implement and maintain processes and procedures to ensure that:
    a. The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas;
    b. Prevent water and wind soil erosion within and adjacent to the works areas;
    c. Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area;
    d. Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated;
    e. Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion;
    f. Minimise exposed soil working surfaces or protect them from stormwater erosion;
    g. Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion; and,
    h. Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.

**DURING WORKS**

1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.

**POST WORKS**

1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates.
2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.

## Table 3: Fauna Management PEMR

**PRE WORKS**

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.
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.

**DURING WORKS**

2. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;
    a. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate; and,
    b. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.
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.
4. The Contractor must ensure that:
    a. No pets, traps or firearms are brought into the project area;
    b. Fauna are not fed;
    c. Fauna are not intentionally harmed or killed; and,
    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.).
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.
6. The Contractor must provide any records of fauna impact to the Superintendent if they occur..

**POST WORKS**

1. The Contractor must provide any records of fauna impact to the Superintendent.

## Table 4: Machinery and Vehicle Management PEMR

**PRE WORKS**

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.
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.
3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent.
4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities.
5.

**DURING WORKS**

1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
2. Ensuring the movement of large equipment over cleared areas is avoided to minimise ground compaction and surface hardening.

**POST WORKS**

NIL

## Table 5: Topsoil Management PEMR

**PRE WORKS**

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.
2. The Contractor must ensure that poor quality topsoil does not contaminate the good quality topsoil and vegetation.

**DURING WORKS**

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.
2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction.
3. The Contractor must ensure that weed infected topsoil must be handled separately to minimise the risk of spreading weed species across the site and stockpiles.
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.

**POST WORKS**

1. The Contractor must progressively rehabilitate cleared areas following the extraction of material, with stockpiled topsoil.

## Table 7: Pegging and Flagging PEMR

| |
|---|
| **PRE WORKS**<br>1. Pegging must be done in accordance with the requirements detailed in Specification 301.<br>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. |
| **DURING WORKS**<br>1. The Contractor must peg the Limits of Clearing by PINK flagging tape.<br>2. The Contractor must peg/demarcate vegetation proposed to be retained by WHITE flagging tape.<br>3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas. |
| **POST WORKS**<br>1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once proposal works are completed. |

## Table 8: Weed Management PEMR

**PRE WORKS**

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.
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.
3. The Contractor must prepare a weed control program, for nominated weed species for control and disposal, to the satisfaction of the Superintendent.
4. The Contractor must undertake weed management in Stockpiles as directed by the Superintendent.

**DURING WORKS**

1. The Contractor must implement the weed control procedures and management plan and record and manage records of its implementation.
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.
3. The contractor must ensure that no known weed, pest or diseased affected soil, mulch, fill or other material is brought into the Site.

**POST WORKS**

1. The relevant Vegetation Maintenance Record Forms available at: https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/ must be completed and sent to the Superintendent.