# Clearing Assessment Report – CPS 818

We're working for Western Australia.

## Bridge #500 Refurbishment and Widening over Kent River on Muir Hwy Rocky Gully

February 2021

EOS 1839



D21#132278

# Contents

# 1 PURPOSE

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

The CAR outlines the key activities associated with the project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the project using the ten Clearing Principles, and the strategies used to manage vegetation clearing.

# 2 SCOPE

## 2.1 Proposal Scope

Bridge #500 Refurbishment and Widening over Kent River on Muir Hwy Rocky Gully.

**Proposal Purpose / Components:** Bridge 500 is located on Muir Hwy at 112.2 SLK over Kent River about 15km east of Rocky Gully. The bridge is seven spans, and is narrow in width. Some of the piles/piers require repair/replacement. The bridge is proposed to be widened to 10m to improve user safety. As a new concrete deck is to be installed on the bridge, a side track is required to enable the road to remain open during bridgeworks.

**The proposed clearing undertaking using CPS 818 is:** 0.25ha within a 0.32 ha disturbance footprint.

**The proposed temporary clearing under CPS 818:** None.

**Proposal Location(s):** The proposal area is located on M024 Muir Hwy at 112.2 SLK over Kent River about 15km east of Rocky Gully within the Shire of Plantagenet as shown in Figure 1.

- Latitude: -34.556
- Longitude: 117.173

The location of the proposed works is at Figure 1.

## 2.2 Assessment Report Scope

The assessment area, see Figure 2, is confined to a local area of a 5 km radius.

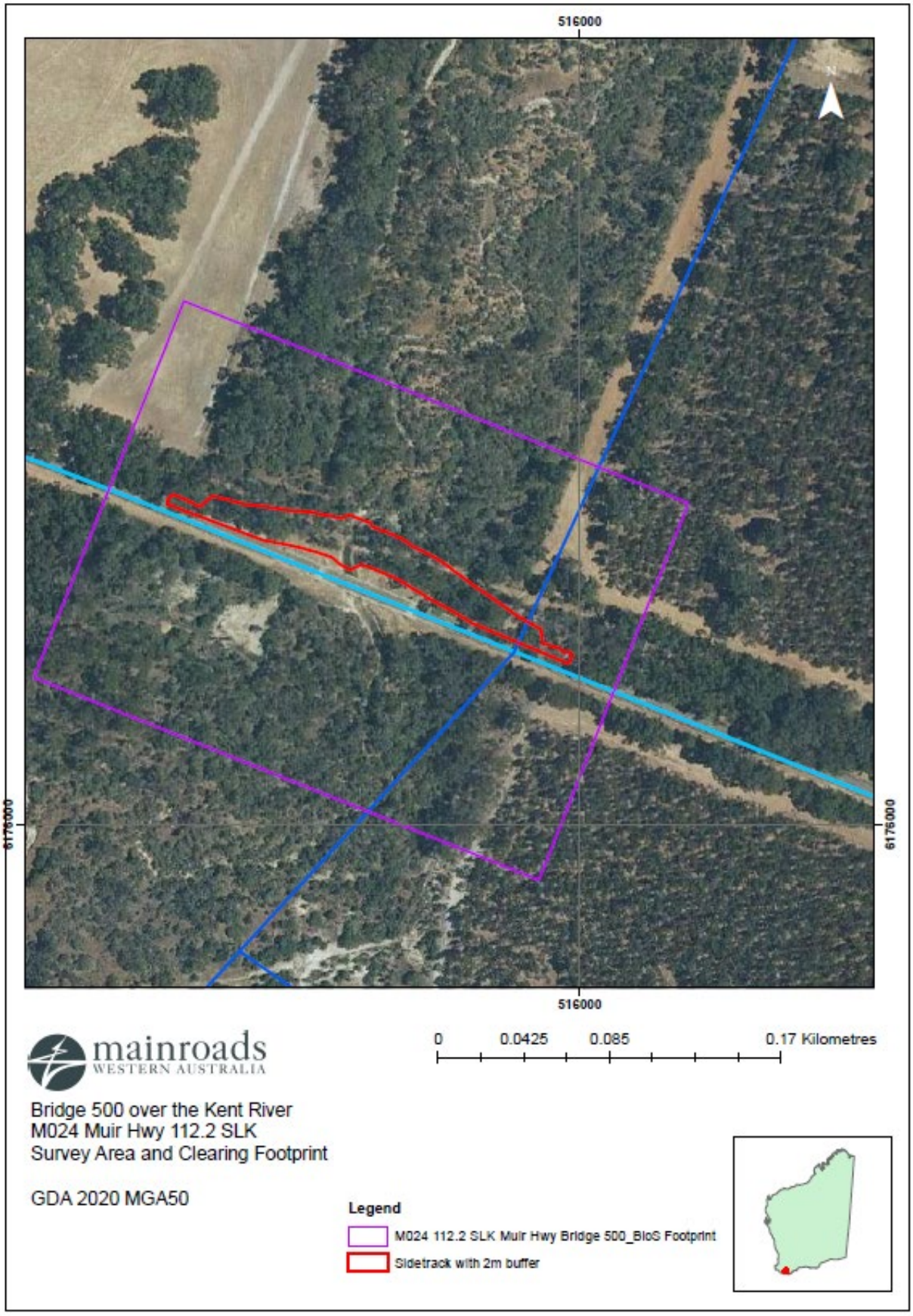


**Figure 1. Proposal Area**

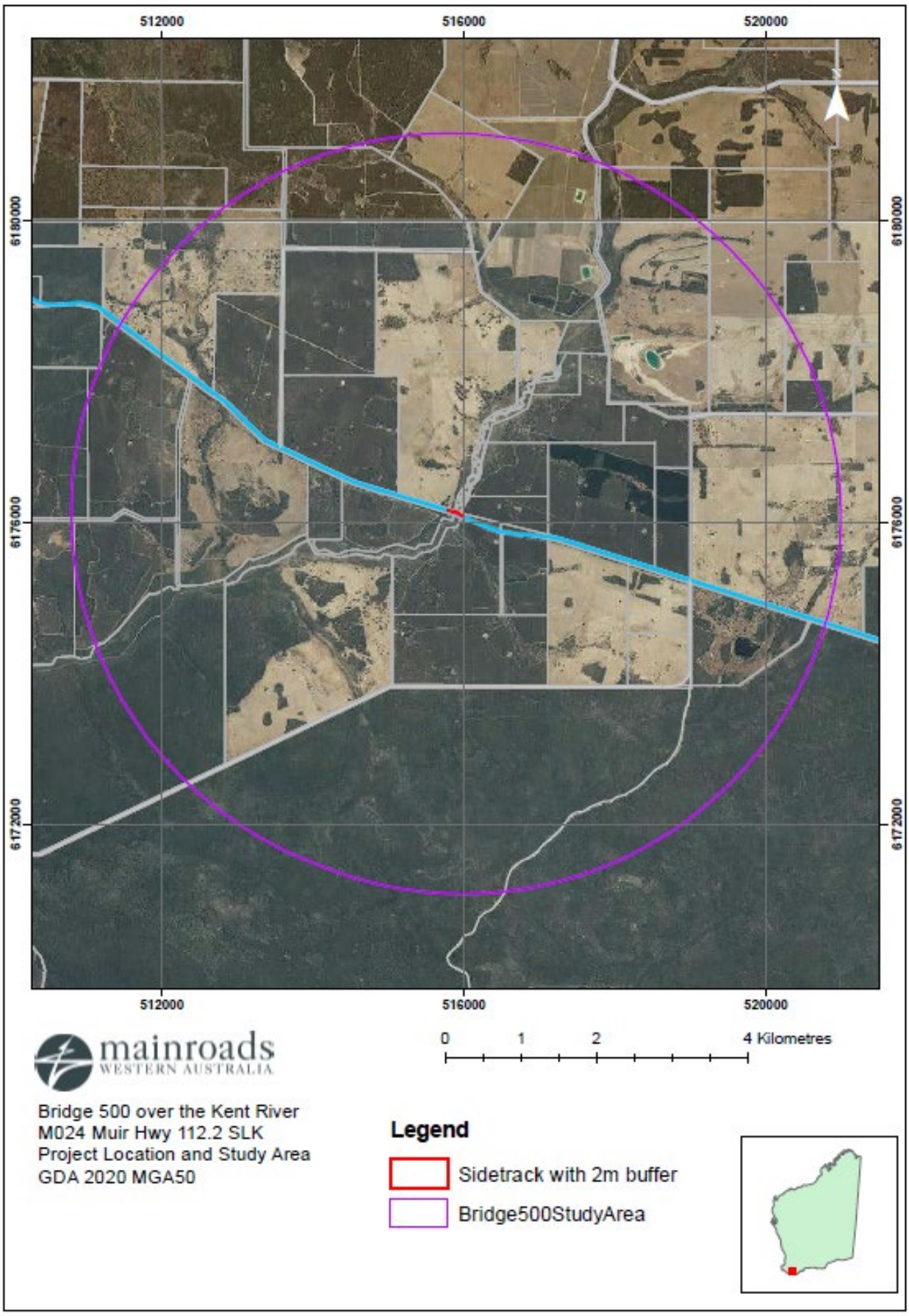


**Figure 2. Assessment Area**

## 2.3 Alternatives to clearing

Due to the bridge deck being replaced, a side track is required. Given the topography of the site, the required amount of clearing and the presence of a track on the northern side of the bridge (possibly the original road alignment), a side track on the northern side of the road was considered to be the best option. The temporary bridge over the Kent River is proposed to remain, to allow for a local farmer to use this bridge to drive his stock from one side of the river to the other without using the main road bridge.

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

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

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

| Design or Management Measure | Discussion and Justification |
|---|---|
| **Steepen batter slopes** | Not applicable with this proposal. Batter slopes have been steepened on the temporary side track. |
| **Installation of safety barriers** | Not applicable with this proposal. |
| **Alignment to one side of existing road** | Due to the topography of the site and the presence of a track on the northern side of the bridge (possibly original road alignment), a side track on the northern side of the road was considered to be the best option. |
| **Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas** | Not applicable with this proposal. The proposal is to widen the existing bridge.<br>Clearing will occur as a result of side track construction. |
| **Installation of kerbing** | Not applicable with this proposal. |
| **Simplification of design to reduce number of lanes and/or complexity of intersections** | The side track on the northern side of the bridge (original road alignment) will be single lane, reducing the disturbance footprint. |
| **Preferential use of existing cleared areas for access tracks, construction storage and stockpiling** | The side track on the northern side of the bridge occurs along part of the original road alignment which is already cleared. |
| **Drainage modification** | The proposal is to widen the existing bridge pavement, which will not modify the drainage. The side track will temporarily affect drainage, but as the works are scheduled for summer months, it is unlikely that this temporary impact will have any significant changes to the drainage. |

## 2.5 Approved Policies and Planning Instruments

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

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

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

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

**Environmental Protection Policies**

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

**Other Relevant policies and guidance documents:**

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

# 3 SUMMARY OF SURVEYS

## 3.1 Biological Survey

Biologic Environmental Survey (Biologic, 2020a) undertook a detailed flora and vegetation survey over a 5.4 ha survey area in November 2019.

Biologic (2020b) undertook a targeted aquatic fauna survey in the pool beneath Bridge 500 in November 2019.

Bio Diverse Solutions (2020) undertook a targeted flora survey in November 2020 on the northern side of Muir Highway, approximately 100 m either side of the bridge (the proposed location of the side track).

Section 3.1.1 contains summaries of the surveys.

### 3.1.1 Summary of Biological Survey

Biologic (2020a)
Main Roads commissioned Biologic Environmental Survey to undertake a spring biological survey for the Project, comprising a single season Detailed flora and vegetation survey, a Level 1 fauna survey and a targeted flora and black cockatoo survey. The surveys were completed over a 5.4 ha area around Bridge 500, approximately 100 m from each abutment and 100 m wide on either side of the bridge (survey area). A desktop assessment was completed for a 5 km buffer around the survey area.

A preliminary database review was undertaken by Main Roads which indicated the presence of the conservation significant tall donkey orchid (*Diuris drummondii* - Vulnerable under the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) from one location within the survey area.

Threatened fauna species including Carnaby's cockatoo (*Calyptorhynchus latirostris* – Endangered under the EPBC Act and BC Act), Forest Red-tailed black cockatoo (*Calyptorhynchus banksii naso* – Vulnerable under the EPBC Act and BC Act) and the Muir's corella (*Cacatua pastinator pastinator* – Conservation Dependent under the BC Act) were also been recorded within 5 km of the survey area. The survey was undertaken over two trips on the 14th and 15th, and the 25th of November 2019. The vegetation was sampled with nine quadrats (10 m x 10 m) and two relevés to record the broad vegetation communities and their condition, and an inventory of flora species was collected. A total of 111 vascular flora taxa were recorded, comprising 88 native and 23 introduced taxa from 36 different families. Two conservation significant flora taxa (*Stylidium lepidum* [P3], and *Diuris drummondii* [T]) were recorded in the survey area during the field survey.

Vegetation occupied approximately 4.4 ha (81.0%) of the 5.4 ha survey area, including plantation areas of **Eucalyptus globulus*. The remainder of the survey area comprised cleared sections, a swamp area, and an open waterbody. Fourteen vegetation units and other land cover categories were described and delineated from the survey area, with the most dominant (0.73 ha) containing an upper stratum of *Corymbia calophylla* and *Eucalyptus marginat*a over *Xanthorrhoea preissii*, *Hakea prostrata* and *Melaleuca densa* shrubland over an open sedgeland. No Threatened or Priority Ecological Communities were identified within or near the survey area. The vegetation condition within the survey area ranged from completely degraded to very good, while areas such as the roads and tracks were mapped as cleared.

Four broad vertebrate fauna habitats were recorded and mapped from the survey area, comprising; Eucalypt woodland, Melaleuca shrubland, Wetland and a Waterbody. The Eucalypt woodland and Melaleuca shrubland are known to support vertebrate fauna species listed under the EPBC Act, BC Act and/or as Priority fauna listed by the Department of Biodiversity, Conservation and Attraction, and are therefore regarded as being of moderate significance to vertebrate fauna. The water features are highly saline and are therefore, unlikely to be a suitable drinking source.

A total of 42 conservation listed fauna species were identified as potentially occurring with the survey area based on previous records and distribution mapping as identified during the desktop assessment. Three of these species were recorded within the survey area during the survey; the Carnaby's cockatoo, Forest Red-tailed black cockatoo and Quenda. The survey area contains suitable habitat for a further nine of the 42 conservation significant species identified in the desktop review. This includes two species considered highly likely to occur, two species considered likely to occur and five species considered possible to occur. The fauna habitat present has connectivity extending outside of the survey area in the broader vicinity, and the habitats present are not restricted to the survey area. Therefore, while the 12 conservation significant species confirmed or deemed possible to highly likely to occur in the survey area may utilise the habitat types present within the survey area, they are unlikely to be solely reliant on the survey area itself. Based on species' distribution and ecology, previous records and the habitat present within the survey area, the remaining 30 species identified in the desktop review are considered unlikely to occur.

The survey area falls within the modelled breeding range for the Carnaby's cockatoo and the Baudin's cockatoo, and within the modelled likely distribution for the Forest Red-tailed black cockatoo. Database searches did not record the presence of any known black cockatoo roosts or nests within 12 km of the survey area. A total of five potential breeding trees, as defined by DoEE, were recorded within the survey area, none of which appeared to contain hollows suitable for black cockatoo breeding. A further four potential breeding trees were opportunistically recorded within 200 m of the survey area. The potential for the survey area to support black cockatoo breeding is considered low. A pair of Carnaby's cockatoo were observed resting in one jarrah tree located 200 m from the survey area for several hours, and numerous old feathers were observed under the tree. Therefore, this tree potentially represents a roosting tree in the vicinity of the survey area. Foraging evidence from the Forest Red-tailed black cockatoo was recorded on the border of the survey area and known foraging species (marri, jarrah and Hakea sp.) were recorded within the Eucalypt woodland habitat type. In consideration of this, 0.66 ha (12.2 %) of the survey area is considered suitable foraging habitat for all three species of black cockatoo.

Biologic (2020b)

Main Roads Western Australia (Main Roads) are investigating the potential to refurbish and widen the existing bridge 500 on Muir Highway over Kent River at SLK 112.2, in the Shire of Plantagenet (the Project), south-west Western Australia. As part of the environmental assessment and approvals process, a preliminary database review was undertaken by Main Roads which indicated the presence of the conservation significant western mud minnow *Galaxiella munda* (Vulnerable under the Biodiversity Conservation Act 2016; Near Threatened IUCN Redlist of Threatened Species) from two locations in the vicinity of the Project, the closest of which is 150 m from the bridge. Therefore, Main Roads required a desktop assessment to identify habitat requirements and suitable habitat values within the Study Area (a 5 km radius around the Project) and an aquatic survey specifically targeting the mud minnow.

In November 2019, Biologic undertook an aquatic survey within the Kent River, specifically targeting the conservation significant western mud minnow. Six fyke nets and ten box traps were deployed in the Kent River upstream and downstream of bridge 500, covering a 600 m Survey Area. Additional sampling of inundated backwaters, including the last known record of the western mud minnow within the Study Area, was also undertaken.

Despite the considerable sampling effort over the relatively small area, no western mud minnows were recorded during the survey. Water quality measurements taken *in situ* indicated extreme conductivity, more than 95 times the default ANZECC/ARMCANZ guideline value (DGV) for the protection of lowland rivers in south-western Australia. The saline conditions would preclude the presence of the salt-sensitive conservation significant western mud minnow in this reach of the Kent River. The historic records of *G. munda* in the Kent River are more than 20 years old, when the river in this area would have been considerably fresher. It is considered highly unlikely that *G. munda* still persists in this saline reach of the Kent River in the vicinity of Bridge 500.

Non-target aquatic fauna were recorded from the Kent River within the Survey Area, and comprised relatively salt-tolerant species, western minnow (*Galaxias occidentalis*), common koonac (*Cherax preisii*), and introduced mosquitofish (*Gambusia holbrooki*). Although both the western minnow and common gilgie are south-west endemics, none of these species are listed or of conservation significance. Three south-western snake-necked turtles (*Chelodina colliei*) were also recorded in an off-channel inundated backwater. The conservation significance of this species is unclear, due to historical taxonomic changes. Two species of snake-necked turtle had historically been synonymised, and all individuals in the south-west incorrectly referred to as *Chelodina oblonga*. The name *C. colliei* was reinstated in 2013, however, most research and literature referring to *C. oblonga*, including conservation listings, likely relate to the south-western species *C. colliei*. There is a listing for *C. oblonga* on the IUCN Redlist as Near Threatened which may to relate to the synonymised species, given the listing was last updated in 1996. Like many other south-western endemics, it is likely that populations of south-western snake-necked turtles are in decline.

Bio Diverse Solutions (2020)

Bio Diverse Solutions undertook a targeted survey on the 11th November 2020 as per the EPA (2016) document *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment*. The timing of the field assessment is considered appropriate for a botanical survey in the Southwest Botanical Province.

The scope for this survey was to provide the client with information on any Threatened or Priority flora species and areas with suitable habitat that are potentially present within the 1.22 ha survey area. During the survey *Stylidium lepidum* (P3) and *Diuris drummondii* (T) were identified within the survey area. The *Stylidium lepidum* consists of clumps of plants in two areas within the survey area, one on the west side and the other on the east side of the Kent River. In both cases the *Stylidium lepidum* plants occur in *Melaleuca rhaphiophylla* and *M. preissiana* shrubland, on moist, grey, light clay with laterite. The *Diuris drummondii* consists of two plants associated with *Eucalyptus occidentalis*, open woodland, over *Melaleuca rhaphiophylla* and *M. preissiana* shrubland on moist to inundated grey clay. No other Threatened or Priority flora species, or other species of interest were identified within the survey area.

## 3.2 Summary of dieback survey

Great Southern Bio Logic (2020) undertook a Phytophthora Dieback Occurrence Survey over an approximately 3 ha survey area in May 2020.

Section 3.2.1 contains the summary of the survey.

### 3.2.1 Summary of Dieback Survey

Main Roads Western Australia (Main Roads) is currently undertaking planning associated with refurbishment and widening of Bridge 500 over the Kent River on the Muir Highway (M024) at SLK 112.2. A project footprint has been developed and forms the Environmental Study Area (Study Area) that is the current focus of planning activities.

As a part of the environmental surveys that will inform project planning there is a requirement to assess the occurrence of Phytophthora Dieback within remnant native vegetation and identify areas within the Study Area that can be protected from the disease.

The Phytophthora Dieback occurrence survey was undertaken using the comprehensive transect survey method that is consistent with the DBCA guideline, *Phytophthora Dieback Interpreters Manual for lands managed by the Department* (2015). The information produced using this method of survey provides operational level disease hygiene information for application across all assessable vegetation within the survey area. Due to the mobility of the disease though autonomous spread and human vectoring, all operational scale disease occurrence data has a limited life of 12 months.

During the desktop assessment and preliminary field visits, it was identified that most of the Study Area consists of remnant native vegetation. The Study Area also covered cleared agricultural land and small areas of timber plantation. These areas were excluded from survey as they cannot be assessed due to the lack of disease indicator species required for disease diagnosis and/or a significant history of site disturbance.

During the field assessment limited numbers of disease indicator species were noted and some mould deaths of the indicator species *Xanthorrhoea platyphylla* were found. However, the number of indicator species and evidence of disease was not sufficient to determine disease presence or absence. Therefore, all assessable vegetation was classified as uninterpretable.

Following application of the protectability criteria, no protectable areas were identified as the Study Area is directly influenced by potentially infested runoff from the Muir Highway which is an uncontrollable high-risk disease vector. It is also considered likely that the disease is already present within the Study Area but cannot be detected due to the lack of disease indicator species.

# 4 VEGETATION DETAILS

### 4.1.1 Project Site Vegetation Description

Biologic (2020a) undertook a detailed flora and vegetation survey in November 2019 over a 5.4 ha survey area. Vegetation occupied approximately 81 % of the survey area, which included plantation areas of *Eucalyptus globulus*.

Biologic reports that the survey area coincides with the Mattiske and Havel (1998) mapped vegetation complexes of Saline Terraces (st) and the Granite Valleys (V5) vegetation complexes. The Saline Terraces are described as shrublands of *Melaleuca* spp. and *Halosarcia* spp. on saline terraces in the subhumid zone and are located in the valleys of the Darling Plateau. The Granite Valleys are described as low open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes and low woodland of *Eucalyptus decipiens* on lower slopes and low woodland of *Melaleuca cuticularis* on valley floors in the subhumid zone in the valleys of the Darling Plateau.

According to Biologic mapping of the 0.32 ha disturbance footprint, the recorded Vegetation Units were:

| Vegetation Units | Description | Area (Percentage) |
|---|---|---|
| CcEm XpHpMd LepTsLa | *Corymbia calophylla* and *Eucalyptus marginata* mid to low sparse woodland over *Xanthorrhoea preissii, Hakea prostrata* and *Melaleuca densa* mid to tall sparse shrubland over *Lepidosperma pubisquameum*, *Tetraria* sp. Jarrah Forest (R. Davis 7391) and *Lepidosperma apricola* open sedgeland | 0.04 (14) |
| CL | Cleared | 0.06 (19) |
| Eo MpMr Mss | *Eucalyptus occidentalis* mid to low scattered trees over *Melaleuca preissiana* and *Melaleuca rhaphiophylla* tall shrubland over *Mesomelaena stygia* subsp. *stygia* open sedgeland | 0.06 (19) |
| Eo MrMp *Lh*Pm | *Eucalyptus occidentalis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubs over **Lolium hordeum* and **Polypogon monspeliensis* grassland | 0.05 (17) |
| Er MrMp HeBj | *Eucalyptus rudis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubland over *Hypolaena exsulca* and *Baumea juncea* sedgeland | 0.01 (3) |
| MrMp He Gc | *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall shrubland over *Hypolaena exsulca* tall rushland over scattered herbs dominated by *Goodenia claytoniacea* | 0.07 (22) |
| WA | Open Waterbody supporting minimal native terrestrial vegetation | 0.01 (3) |

Approximately 19% (0.06 ha) was cleared, 34% (0.11 ha) was in degraded condition, 41% (0.13 ha) was in good condition, 1% (<0.01 ha) was in very good condition and 3% (0.01 ha) was waterbody.

Tables 2 and 3 provide details of the pre-European vegetation associations within the proposal area and the remaining extents of this association.

For a full description of the existing vegetation, refer to the Biologic's report (D20#774077).

**Table 2. Summary of Proposal Area's Mapped Pre-European Vegetation Associations**

| Pre-European Vegetation Association(s) | Clearing Description | Vegetation Condition | Comments |
|---|---|---|---|
| Vegetation Association 27 described as Low woodland; paperbark (Melaleuca sp.) (Government of Western Australia, 2019) | Clearing of up to 0.25 ha for side track construction within the Shire of Plantagenet | Degraded - Good (EPA 2016) | Vegetation description and condition determined from Biologic report |

**Table 3. Pre-European Vegetation Representation**

| Pre-European Vegetation Association | Scale | Pre–European (ha) | Current Extent (ha) | % Remaining | % Remaining in DBCA reserves |
|---|---|---|---|---|---|
| **Veg Assoc No.** 27 | **Statewide** | 130385 | 92501 | 71 | 1.4 |
| | **IBRA Bioregion** Jarrah Forest | 49877 | 36735 | 73 | 80 |
| | **IBRA Sub-region** Southern Jarrah Forest | 49877 | 36735 | 73 | 80 |
| | **Local Government Authority** Shire of Plantagenet | 12910 | 11932 | 92 | 93 |

### 4.1.2 Vegetation Complexes and Representation

For Proposals on the Swan Coastal Plain and Southwest (Perth, Peel and Warren), vegetation has been mapped at a finer scale than Beard's map series of the State. The combined vegetation complex mapping of the southwest and SCP by Havel & Mattiske (2000): Vegetation Mapping of the South West Forest Regions of Western Australia and Heddle, Loneragan & Havel (1980): Vegetation of the Darling System In: Atlas of Natural Resources, Darling System, Western Australia (Joined by the Perth Biodiversity Proposal, 2011) was combined by WALGA's Perth Biodiversity Proposal in 2013.

Table 4 provides details of the pre-European vegetation associations within the proposal area and the remaining extents of these vegetation complexes.

**Table 4. Vegetation Complexes (Heddle/Mattiske) within the Proposal Area**

| Heddle/Mattiske Veg Complex | Pre-European Extent (ha) | 2018 Vegetation Extent (ha) | % Remaining |
|---|---|---|---|
| Saline Terraces | 1519 | 1013 | 66.72 |

# 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the project's proposed clearing is likely to have a significant impact on the environment, the project was assessed against the ten Clearing Principles (Environmental Protection Act 1986, Schedule 5).

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

The proposed clearing is at or may be at variance with one or more of the 10 Clearing Principles.

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

**Proposed clearing may be at variance to this Principle**

The proposal area is mapped as Beard Vegetation Association 27 described as Low woodland; paperbark (Melaleuca sp.) (Government of Western Australia, 2019) and Mattiske and Havel (1998) mapped vegetation complex of Saline Terraces (st).

Biologic (2020a) mapped five Vegetation Units within the proposal's 0.32 ha disturbance footprint, namely:

- *Corymbia calophylla* and *Eucalyptus marginata* mid to low sparse woodland over *Xanthorrhoea preissii, Hakea prostrata* and *Melaleuca densa* mid to tall sparse shrubland over *Lepidosperma pubisquameum*, *Tetraria* sp. Jarrah Forest (R. Davis 7391) and *Lepidosperma* 0.04 ha
- *Eucalyptus occidentalis* mid to low scattered trees over *Melaleuca preissiana* and *Melaleuca rhaphiophylla* tall shrubland over *Mesomelaena stygia* subsp. *stygia* open sedgeland 0.06 ha
- *Eucalyptus occidentalis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubs over **Lolium hordeum* and **Polypogon monspeliensis* grassland 0.05 ha
- *Eucalyptus rudis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubland over *Hypolaena exsulca* and *Baumea juncea* sedgeland 0.01 ha
- *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall shrubland over *Hypolaena exsulca* tall rushland over scattered herbs dominated by *Goodenia claytoniacea* 0.07 ha
- Open Waterbody supporting minimal native terrestrial vegetation 0.01 ha

0.25 ha of vegetation is proposed to be cleared within the disturbance footprint. Vegetation condition is mapped predominantly as in Degraded (34%, 0.11 ha) to Good condition (41%, 0.13 ha), with 19 % of the disturbance area mapped as cleared.

**Flora**

Biologic (2020a) identified 25 conservation significant flora taxa from database searches (within 5–25 km of the survey area). Eight were Threatened taxa under the BC Act. The only likely-known conservation significant flora taxa located in the survey area were:

- *Diuris drummondii* (T) (VUL)
- *Eryngium* sp. Ferox (G.J. Keighery 16034) (P3)
- *Stylidium lepidum* (P3).

Biologic (2020a) identified the presence of 10 patches of 16 individuals of *Diuris drummondii* (T) to the south of Muir Hwy. A follow-up survey by Bio Diverse Solutions in 2020, identified two additional *Diuris drummondii* individuals close to the proposed disturbance footprint for the side track. Main Roads may disturb habitat for these two plants as clearing is within 10 m, however the project will not directly impact these plants.

Biologic (2020a) observed *Stylidium lepidum* (P3) at three locations within the survey area in the 2019 biological survey. Bio Diverse Solutions (2020) located 73 *Stylidium lepidum* individuals (in clumps) in 2020, with 64 *Stylidium* recorded within the disturbance area. This species has a distribution of over five IBRA regions over approximately 300 km and has been previously recorded as 'common' within 5 km of the

disturbance area (Florabase 1998- ). Given this and that it was recorded by Bio Diverse and Biologic outside of the disturbance footprint, impacts to this species are unlikely to be significant.

Neither Biologic or Bio Diverse Solutions observed *Eryngium* sp. Ferox (G.J. Keighery 16034) (P3) within their respective survey areas.

Biologic (2020a) reported that the vegetation units mapped were not representative of, nor close to, any known TECs or PECs.

**Fauna**

Biologic (2020a) identified 42 species of conservation significance during their desktop assessment, including 26 birds, 14 mammals, one reptile and one amphibian. Three vertebrate fauna species of conservation significance were recorded within the survey area during the field survey:

- *Calyptorhynchus banksii subsp. naso (*Forest Red-tailed Black Cockatoo) (T)
- *Calyptorhynchus latirostris* (Carnaby's Cockatoo) (T)
- *Isoodon fusciventer* (Quenda) (P4).

Biologic considered nine species as likely or possibly occurring within the disturbance area. They include:

Likely

- *Phascogale tapoatafa wambenger* (Brush-tailed phascogale)
- *Cacatua pastinator pastinator* (Muir's corella).

Possibly occurring

- *Pseudocheirus occidentalis* (Western Ringtail Possum)
- *Dasyurus geoffroii* (Chuditch)
- *Setonix brachyurus* (Quokka)
- *Notamacropus Irma* (Western brush wallaby).

Biologic (2020b) undertook a Targeted Aquatic Fauna Survey in the pool beneath Bridge 500 in November 2019. No fauna species of conservation significance were found.

Biologic (2020a) recorded three fauna habitats within the disturbance footprint;

- Melaleuca Shrubland (0.19 ha, 61%)
- Eucalypt Woodland (0.04 ha, 14%)
- Waterbody (0.01 ha, 3%).

Both Melaleuca Shrubland and Eucalypt Woodland have moderate habitat significance providing potential roosting habitat for all three black cockatoo species, however no evidence of roosting was observed during the survey. It also provides suitable habitat for a number of conservation significant fauna (including Brush-tailed phascogale, Water Rat, Quenda and Muirs corella). As known foraging species (marri, jarrah and Hakea sp.) were recorded within the Eucalypt Woodland habitat type, it is considered that 0.04 ha (14 %) of the disturbance footprint is considered suitable foraging habitat for black cockatoos.

No potential breeding trees were identified in the disturbance footprint, although five were recorded in the survey area. No trees contained hollows.

Biologic (2020a) reports that the fauna habitat present has connectivity extending outside of the survey area in the broader vicinity, and the habitats present are not restricted to the survey area. Therefore, while the nine conservation significant species confirmed or deemed possible to likely to occur in the survey area may utilise the habitat types present within the survey area, they are unlikely to be solely reliant on the survey area itself.

As the proposed clearing area is limited to largely degraded vegetation adjacent to the existing road, there are no hollow trees, and that there is large tracts of similar or better quality native vegetation in the immediate area (with similar foraging habitat), it is considered that the proposed clearing area does not comprise a high level of biological diversity.

As the proposed clearing area is adjacent to the existing road, linear in nature and is small in area (up to 0.25 ha), it is unlikely that any biodiversity values will be significantly impacted, particularly considering the proximity and abundance of similar vegetation immediately adjacent to the proposal area.

Given the above, this proposal **may** be at variance to this Clearing Principle. DWER in its letter of 23 March 2021 advised that *the proposed clearing **may also be at variance** with principle (a), given the presence of suitable habitat for threatened flora*.

**Methodology**

Bio Diverse Solutions (2020)
Biologic (2020a)
Biologic (2020b)
Main Roads Site Inspection (25/6/2020)
Main Roads GIS Shapefiles
NatureMap (Accessed November 2020)

## (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**

Biologic (2020a) identified 42 species of conservation significance during their desktop assessment, including 26 birds, 14 mammals, one reptile and one amphibian. The nearest records of conservation significant fauna include two records of Forest Red-tailed black cockatoo (~2.5 km west and ~3km east of the survey area) one record of Carnaby's cockatoo (~3 km east of the survey area) and two records of Muir's corella (~3.7 km south west of the survey area). A historical record (1921) of Greater Bilby exists ~2.5 km north of the survey area.

Three vertebrate fauna species of conservation significance were recorded within the survey area during the field survey:

- *Calyptorhynchus banksii* subsp. *naso (*Forest Red-tailed black cockatoo) (T)
- *Calyptorhynchus latirostris* (Carnaby's cockatoo) (T)
- *Isoodon fusciventer* (Quenda) (P4).

Biologic considered nine species as likely or possibly occurring within the disturbance area. They include:

Likely

- *Phascogale tapoatafa wambenger* (Brush-tailed phascogale)
- *Cacatua pastinator pastinator* (Muir's corella).

Possibly occurring

- *Pseudocheirus occidentalis* (Western Ringtail Possum)
- *Dasyurus geoffroii* (Chuditch)
- *Setonix brachyurus* (Quokka)
- *Notamacropus Irma* (Western brush wallaby).

Biologic (2020b) undertook a targeted aquatic fauna survey in the pool beneath Bridge 500 in November 2019. No fauna species of conservation significance were found. It reported that clearing for agriculture has led to salinisation of the upper reaches of the Kent River, with the degraded fringing riparian vegetation showing signs of salinity related impacts.

Biologic (2020a) recorded three fauna habitats occurring within the disturbance footprint;

- Melaleuca Shrubland (0.19 ha, 61%)
- Eucalypt Woodland (0.04 ha, 14%)
- Waterbody (0.01 ha, 3%).

Both Melaleuca Shrubland and Eucalypt Woodland have moderate habitat significance providing potential roosting habitat for all three black cockatoo species, however no evidence of roosting was observed during the survey. It also provides suitable habitat for a number of conservation significant fauna (including Brush-tailed phascogale, Water Rat, Quenda and Muirs corella). As known foraging species (marri, jarrah and Hakea sp.) were recorded within the Eucalypt Woodland habitat type, it is considered that 0.04 ha (14 %) of the disturbance footprint is considered suitable foraging habitat for black cockatoo.

No potential breeding trees were identified in the disturbance footprint, although five were recorded in the survey area. No trees contained hollows.

Biota (2020a) reports that the fauna habitat present has connectivity extending outside of the survey area in the broader vicinity, and the habitats present are not restricted to the survey area. Therefore, while the nine conservation significant species confirmed or deemed possible to likely to occur in the survey area may utilise the habitat types present within the survey area, they are unlikely to be solely reliant on the survey area itself.

As the proposed clearing area is adjacent to the existing road, linear in nature and is small in area (up to 0.25 ha), it is unlikely that any fauna habitat values will be significantly impacted, particularly considering the proximity and abundance of similar habitat immediately adjacent to the proposal area.

Given the above, the proposal area does not comprise the whole or a part of, or is necessary for the maintenance of, a significant habitat for indigenous fauna; it **is not likely** to be at variance to this Clearing Principle.

**Methodology**

Biologic (2020a)
Biologic (2020b)
Main Roads Site Inspection (25/6/2020)
Main Roads GIS Shapefiles

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

**Proposal may be at variance to this Principle**

Biologic (2020a) identified eight Threatened flora from database searches (within 5–25 km of the survey area), of which four may, likely or are confirmed to occur. They include:

- *Diuris drummondii*
- *Caladenia christineae*
- *Drakaea micrantha*
- *Myoporum cordifolium.*

Biologic recorded 10 patches of 16 individuals of *Diuris drummondii* to the south of Muir Hwy. A follow-up survey by Bio Diverse Solutions identified two additional *Diuris drummondii* individuals close to the proposed disturbance footprint for the side track in degraded vegetation. The proposed side track disturbance footprint is approximately 2.2 and 4.2 metres (m) from the edge of the orchids, respectively. As the current mapped disturbance footprint includes a 2m buffer, this means that the orchids are located approximately 4.2m and 6.2m from the edge of the proposed fill batter/clearing line, respectively.

There are 107 records of *Diuris drummondii* listed on NatureMap, occurring between Geraldton and Bremer Bay, with most being recorded in the South West between Perth and Albany. Thirteen records occur within 5km of Bridge 500.

According to FloraBase, *Diuris drummondii* is distributed across the Avon Wheatbelt, Jarrah Forest, Swan Coastal Plain, and Warren IBRA regions.

FloraBase reports 52 records, with over 6500 individuals - the largest (ca 6000) being located south of Frankland, approximately 22 km north west of Bridge 500. Based on these numbers, the potential impact may result in a 0.03% loss in population. It is recognised that the 6000 individual result may be incorrect. Assuming only 500 individuals, the potential impact may result in a 0.4% loss in population.

The possible indirect impact of taking of two individuals is considered to be low at a local context, as they are located in a degraded area, with a larger population (10 patches of 16 individuals) located approximately 100 m south west of the bridge in an area with vegetation in good to very good condition.

It is estimated that there is approximately 0.1 ha of suitable habitat for *Diuris drummondii* within the 0.32 ha disturbance footprint (inclusive of the 2m buffer). There is habitat for this species in adjacent areas in better condition.

As two *Diuris drummondii* individuals are close to the proposed disturbance footprint for the side track and Main Roads will be disturbing habitat within 10 m of their location, Main Roads has received an authorisation from DBCA for a 'Permit to Take' these two plants.

These individuals occur within degraded vegetation adjacent to an existing track. The clearing is unlikely to impact these species directly, however given the clearing is within 10 m of these plants, the clearing **may be at variance** to this Clearing Principle.

**Methodology**

Bio Diverse Solutions (2020)
Biologic (2020a)
Main Roads GIS Shapefiles
Florabase (Accessed November 2020)
NatureMap (Accessed November 2020)
Main Roads Site Inspection (25/6/2020)
WAH (1998-)

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

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

Database searches did not identify any state listed TECs within 5km of the proposal area.

Biologic (2020a) reported that searches of the DoEE database with regard to matters of national environmental significance as listed under the EPBC Act (DAWE, 2020) and the Threatened and Priority Ecological Communities database (Main Roads, 2019) revealed no vegetation communities of conservation significance in or near the survey area or broader study area.

Given the separation distance to the closest TEC (approximately 20 km), it is unlikely that the proposal will directly or indirectly impact any TECs. As such, the proposal **is not likely** to be at variance to this Clearing Principle.

**Methodology**

Main Roads GIS Shapefiles
Biologic (2020a)

## (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**

The national objectives and targets for biodiversity conservation in Australia has a target of retaining at least 30% of the pre-European extent of vegetation communities (Commonwealth of Australia, 2001).

The proposal proposes to clear up to 0.25 ha within a 0.32 ha disturbance footprint and is mapped as containing pre-European vegetation association 27 described as Low woodland; paperbark (Melaleuca sp.) as shown in the table below. The vegetation association is above the 30% threshold at all levels.

The clearing area also coincides with the Mattiske and Havel (1998) mapped vegetation complex of Saline Terraces (st), with greater than 66% of remnant vegetation of this complex remaining, as shown in table below.

| Pre-European Vegetation Association | Scale | Pre–European (ha) | Current Extent (ha) | % Remaining | % Remaining in DBCA reserves |
|---|---|---|---|---|---|
| **Veg Assoc No.** 27 | **Statewide** | 130385 | 92501 | 71 | 1.4 |
| | **IBRA Bioregion** Jarrah Forest | 49877 | 36735 | 73 | 80 |
| | **IBRA Sub-region** Southern Jarrah Forest | 49877 | 36735 | 73 | 80 |
| | **Local Government Authority** Shire of Plantagenet | 12910 | 11932 | 92 | 93 |

| Heddle/Mattiske Veg Complex | Pre-European Extent (ha) | 2018 Vegetation Extent (ha) | % Remaining |
|---|---|---|---|
| Saline Terraces | 1519 | 1013 | 66.72 |

Given the proposed clearing area is adjacent to the existing road, linear in nature, is small in area (up to 0.25 ha), and is not considered significant as a remnant; the proposal **is not likely** to be at variance to this Clearing Principle.

**Methodology**

Biologic (2020a)

EPA (2016)

Government of Western Australia (2019)

Shepherd (2009)

## (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 at variance to this Principle**

The project is located on the major, non-perennial Kent River. Database searches identified a wetland approximately 2 km downstream of the proposal area.

The clearing for a side track impacts on vegetation units characteristic of riparian vegetation (presence of *E. rudis, E. occidentalis* and *Melaleuca* species).

Biologic (2020a) mapped the following units, featuring vegetation associated with the Kent River:

- Eo MpMr Mss*: Eucalyptus occidentalis* mid to low scattered trees over *Melaleuca preissiana* and *Melaleuca rhaphiophylla* tall shrubland over *Mesomelaena stygia* subsp. *stygia* open sedgeland 0.063 ha
- Eo MrMp *Lh*Pm*: Eucalyptus occidentalis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubs over **Lolium hordeum* and **Polypogon monspeliensis* grassland 0.056 ha
- Er MrMp HeBj*: Eucalyptus rudis* mid to low sparse woodland over *Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall open shrubland over *Hyploaena exsulca* and *Baumea juncea* sedgeland 0.011 ha
- MrMp He Gc*: Melaleuca rhaphiophylla* and *Melaleuca preissiana* tall shrubland over *Hypolaena exsulca* tall rushland over scattered herbs domianted by *Goodenia claytoniacea* 0.073 ha.

This equates to an area of 0.204 ha.

Biologic (2020a) reports that the vegetation condition varied from Cleared to Very Good, as shown in the following table. The vegetation associated with the Kent River is predominately (97%) in Degraded to Good condition.

| Row Labels | Degraded | Good | Very Good | Total (ha) |
|---|---|---|---|---|
| Eo MpMr Mss | | 0.062 | 0.002 | 0.064 |
| Eo MrMp *Lh*Pm | 0.038 | 0.018 | | 0.056 |
| Er MrMp HeBj | | 0.011 | | 0.011 |
| MrMp He Gc | 0.070 | | 0.003 | 0.073 |
| Grand Total | 0.108 (52%) | 0.092 (45%) | 0.005 (3%) | 0.204 |

Biologic (2020a) reports that the Kent River is more than 100 km long with a catchment area of 1,830 square kilometres ($km^2$). In its upper reaches, the flat drainage is scattered with salt lakes, swamps and areas of internal drainage. Clearing for agriculture has led to salinisation of the upper reaches of the river, with the degraded fringing riparian vegetation showing signs of the impacts of salinisation.

Although approximately 0.2 ha of riparian vegetation occurs in the disturbance footprint, it is widely distributed in the adjacent Unallocated Crown Land (UCL) stream reserve up and downstream of the bridge along the Kent River. Clearing of this vegetation is unlikely to pose a significant impact, even at a local level.

The proposed clearing **is at variance** to this Clearing Principle. Although Main Roads has an exemption under CP818 for the clearing of up to 0.5 ha of riparian vegetation, this only applies to watercourses that are classed as minor non-perennial with degraded vegetation. In this case, the Kent River is classed as a major non-perennial, and the vegetation is not all completely degraded.

**Methodology**

Main Roads GIS Shapefiles

Biologic (2020a)

## (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**

Biologic (2020a) reports that the survey area lies completely within the lower rejuvenated section of the Ravensthorpe Ramp, where the landscape is characterised by undulating hills of granitic rocks alternating with broad, swampy corridors, forming a pattern of ridges.

According to the Atlas of Australian Soils (Northcote *et al.*, 1960-1968) the survey area is located within the broad soil landscape unit, Tf6 which consists of undulating to hilly portions of dissected lateritic plateau at moderate elevation. Chief soils are hard acidic and neutral yellow mottled soils. The ASRIS Soil Map indicates that topsoil is 65% sand.

According to the DPIRD Soil Landscape Mapping, the proposal area is described as a Broad floor of upper Kent River, usually saline; granitic basement rock; Saline wet soil with duplex sandy gravel soil.

Biologic (2020b) confirmed that the high salinity of this section of the Kent River is likely a result of secondary salinisation and the clearing of native vegetation for agriculture.

As the proposed side track formation is elevated from the adjacent land (river valley), and the side track alignment will utilise part of an existing cleared track, this will reduce the required amount of clearing and amount of soil disturbance, reducing the potential for the area to become waterlogged.

The proposal area (15km west of Rocky Gully) is in a moderate rainfall area, receiving 705mm of average annual rainfall (Bureau of Meteorology Australia, 2020), occurring generally in winter months.

According to the DAFWA Water and Wind Erosion and Flood Risk shapefiles, the proposal area is located in a map unit that has a 10-30% high to extreme water/wind erosion risk and 30-50% moderate to high flood risk. However, due to the nature of the soil, the topography of the proposal area (being gently undulating in an area sheltered by adjacent native over-storey and *E. Globulus* plantation) and the minor clearing of 0.25 ha, the clearing for the project is unlikely to lead to water or wind erosion or flood risk.

The ASRIS ASS Map indicates that part of the proposal area is located within an area with a high probability of occurrence. Outside this area, there is an extremely low probability of occurrence (Appendix 2). Minimal excavation and no dewatering will be required for the project, as material will be imported to site to construct the side track. Accordingly, ASS is unlikely to be a significant issue. An ASS Management Plan will be developed if predicted disturbance exceeds DWER trigger levels.

Given the small area of clearing (0.25 ha), the proposal area's low relief, the good drainage, and the existing salinisation in the area, it is unlikely that clearing this vegetation will cause appreciable land degradation.

Accordingly, this proposal **is not likely** to be at variance to this Clearing Principle.

**Methodology**

Biologic (2020a)

Biologic (2020b)

Main Roads GIS Shapefiles

Natural Resource Management SLIP Soil Systems (Accessed November 2020)

Bureau of Meteorology Australia (2020)

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

There are a number of DBCA reserves within 5km of the Proposal Area. The closest reserve (Mount Roe National Park) is located approximately 2.3 km south of the Proposal Area.

UCL is located either side of the road reserve adjacent to the Kent River. The UCL is not a mapped Crown Reserve. As the Proposal Area is contained within the road reserve, this land is unlikely to be impacted.

Given the distance to the nearest conservation area, it is unlikely that this proposal will impact on the environmental values of nearby conservation areas.

Given the above, this proposal **is not likely** to be at variance to this Clearing Principle.

**Methodology**
Main Roads GIS Shapefiles
Landgate Shapefiles

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

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

The Proposal Area is outside of a Proclaimed Groundwater Area, Public Drinking Water Source Area, Waterways Conservation Act Management Area, Water and Rivers Act Waterways Management Area or a Surface Water Proclaimed Area.

The works will involve the driving of piles into the ground/river bed, and the construction of a side track with a culverted bridge. Minimal clearing will occur adjacent to the river as this area is predominantly cleared.

The works are planned to occur in summer, reducing the potential for rain generated runoff to flow into the Kent River. Further, works are planned to occur when river flows have ceased. If the disturbance area does contain water (pool), then appropriate silt curtains will be installed to reduce impacts outside of the immediate disturbance area.

No surface water will be taken for this proposal and due to the minor nature of the works, it is unlikely that there will be a significant impact on the water quality of this area. Given the small scale of clearing and that no dewatering or major drainage modifications are required, no deterioration of underground water level or quality is expected.

Given the above, it is unlikely that this proposal will cause deterioration in the quality of surface or underground water and **is not likely** to be at variance to this Clearing Principle.

**Methodology**
Main Roads GIS Shapefiles
Biologic (2020b)

## (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**

The proposal area crosses the Kent River. A side track, including a culverted crossing will be installed to allow traffic to bypass bridge works.

The proposal area (15km east of Rocky Gully) is in a moderate rainfall area, receiving 705mm of average annual rainfall (Bureau of Meteorology Australia, 2020).

Biologic (2020a) reports that according to the Atlas of Australian Soils (Northcote *et al.*, 1960-1968) the survey area is located within the broad soil landscape unit, Tf6, which consists of undulating to hilly portions of dissected lateritic plateau at moderate elevation. Chief soils are hard acidic and neutral yellow mottled soils. The ASRIS Soil Map indicates that topsoil is 65% sand.

According to the DAFWA Flood Risk shapefile, the proposal area is located in a map unit that has a 30-50% moderate to high flood risk. However, due to the nature of the soil, the topography of the proposal area (being gently undulating in an area sheltered by adjacent native over-storey and *E. Globulus* plantation) and the minor clearing of 0.25 ha, clearing for the project is unlikely to cause or exacerbate the incidence or intensity of flooding.

According to the DPIRD Soil Landscape Mapping, the proposal area is described as Broad floor of upper Kent River, usually saline; granitic basement rock; Saline wet soil with duplex sandy gravel soil.

As the proposed side track formation is elevated from the adjacent land (river valley), and the side track alignment will utilise part of an existing cleared track, this will reduce the required amount of clearing, reducing the potential incidence or intensity of flooding.

Further, as works are proposed to be undertaken during the summer months, this will further reduce the potential for flooding.

Given that the proposal area occurs on soils with reasonable infiltration capacity, and the small amount of clearing (0.25 ha) proposed, this proposal is unlikely to cause, or exacerbate, the incidence or intensity of flooding and **is not likely** to be at variance to this Clearing Principle.

**Methodology**

Biologic (2020a)

Natural Resource Management SLIP Soil Systems (Accessed November 2020)

Bureau of Meteorology Australia (2020)

# 6 ADDITIONAL ACTIONS REQUIRED

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

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

| Impact of Clearing | Yes/No or NA | *Further Action Required* |
|---|---|---|
| **1.** The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.<br><br>Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to:<br>(i) a minor non-perennial watercourse(s);<br>(ii) a wetland(s) classed as a multiple use management category wetland(s); and/or<br>(iii) a wetland that is not a defined wetland;<br>the preparation of an Assessment Report, as required by condition 6(e), is not required. | **Yes** | **1.** Submissions will be sought from relevant parties, including the LGA, in accordance with Condition 8 of CPS 818/15 published on the website.<br>**2.** VMP has been completed, refer to Appendix 1.<br>**3.** An offset proposal for approval by DWER is required where clearing is 'at variance'. The offset proposal must be approved prior to undertaking clearing of the area to which the offset is related.<br>DWER in its letter of 23 March 2021, advised *in accordance with conditions 7(n) and 11(a) of CPS 818/15, I advise that MRWA is not required to seek further submissions or implement an offset for the project.* |
| **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. | **No** | No further action required. |
| **3.** The project involves clearing for temporary works (as defined by CPS 818). | **No** | No further action required. |
| **4 a.** Project is within Region that:<br>- Has rainfall greater than 400mm and<br>- Is South of the 26th parallel and<br>- Works are in 'Other than dry conditions' and<br>- Works have potential for **uninfested** areas to be impacted | **Yes** | Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists. |

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

# 7 STAKEHOLDER CONSULTATION

In accordance with CPS 818/15 Condition 8 Main Roads will undertake stakeholder consultation regarding the proposed clearing. Due to the remoteness of the location, initial stakeholder consultation was focused on groups potentially directly or indirectly affected by the proposal, namely the local farmer (who uses the bridge to move stock) and Department of Biodiversity Conservation and Attractions(DBCA) due to proximity of Threatened flora to the proposal footprint.

Main Roads has consulted with the local farmer who is supportive of the proposed bridgeworks. As the farmer currently uses the existing highway bridge to move stock when the river is flowing, Main Roads considers this to be a safety risk, and plans to leave the culverted sidetrack river crossing to enable off highway movement of stock.

Main Roads has consulted with the Regional Manager, DBCA Walpole Office regarding the proposed clearing adjacent to Threatened flora. DBCA requested that an application for a 'Permit to Take' (s40 authorisation) be provided to the Community and Species Branch to allow it to assess the potential impact on the Threatened flora. DBCA issued the s40 authorisation on the 1st of February 2021.

In addition to the above consultation, the Proposal was advertised on the Main Roads website on 8 February 2021, with submissions closing on 1 March 2021. No submissions were received.

# 8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan (VMP) has been developed to manage and minimise vegetation clearing for the project (refer to Appendix 1).

# 9 REFERENCES

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# 10 APPENDICES

| Appendix | Title |
|---|---|
| **Appendix 1** | Vegetation Management Plan |

# Appendix 1: Vegetation Management Plan

## Bridge #500 Refurbishment and Widening over Kent River on Muir Hwy Rocky Gully

### 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 Bridge #500 Refurbishment and Widening over Kent River on Muir Hwy Rocky Gully project.

Bridge 500 is located on Muir Hwy at 112.2 SLK over Kent River about 15km east of Rocky Gully. The bridge is seven spans, and is narrow in width. Some of the piles/piers require repair/replacement. The bridge is proposed to be widened to 10m to improve user safety. As a new concrete deck is to be installed on the bridge, a side track is required to enable the road to remain open during bridgeworks.

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

### Action

Appendix 1.2 references the standard Principal Environmental Management Requirements (PEMRs) (Table's 1 to 9) that will be utilised for all projects that involve clearing to avoid, mitigate and manage the environmental impacts of the project.

Project Specific Environmental Management Requirements are contained in Table 1.

### Timeframes

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

### Responsibilities

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

## Appendix 1.1: Vegetation Management

| VMP Requirement | Standard Management Action | Specific Management Action |
|---|---|---|
| Clearing | Refer to Table 1: Clearing PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>• Specification 301 Vegetation Clearing and Demolition<br>• Environment Measurement and Evaluation Checklist (for release of HOLD POINTS)<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2. Further, the Contractor must also provide environmental training of staff to advise them that they are working in an area with Threatened flora and adjacent to a waterbody and the need to not disturb the area where the Threatened flora occurs (flagged with orange tape) – and by providing location maps and pictures to contractors during inductions/Toolbox meetings.<br>Contractor must comply with conditions 1 to 3 of the Authorisation to Take Threatened Flora (TFL 101-2021). |
| Dieback Management | Refer to Table 2: Dieback PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2 |
| Erosion and Sedimentation Control | Refer to Table 3: Erosion and Sedimentation Control PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2 |
| Fauna | Refer to Table 4: Fauna PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2 |
| Machinery and Vehicle Management | Refer to Table 5: Machinery and Vehicle Management PEMR<br>• Specification 204 Environmental Management | Refer to Appendix 1-2 |

| VMP Requirement | Standard Management Action | Specific Management Action |
|---|---|---|
| | • Construction Environmental Management Plan<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | |
| Mulch and Topsoil Management | Refer to Table 6: Mulch and Topsoil Management<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>• Specification 301 Vegetation Clearing<br>• Specification 304 Revegetation and Landscaping<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2<br>Further, the Contractor should minimise the 2m clearing line buffer as much as practical to increase the distance from the disturbance footprint to the location of the Threatened flora (flagged with orange tape). The Contractor must return topsoil and mulched vegetation as close to the area from where it was removed as practical (consistent with boundaries of each vegetation community). |
| Pegging and Flagging | Refer to Table 7: Pegging and Flagging PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>• Specification 301 Vegetation Clearing and Demolition<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2 |
| Water Drainage Management | Refer to Table 8: Water Drainage PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan | Refer to Appendix 1-2 |
| Weed Management | Refer to Table 9: Weed Management PEMR<br>• Specification 204 Environmental Management<br>• Construction Environmental Management Plan<br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | Refer to Appendix 1-2 |
| Monitoring | • Specification 204 Environmental Management<br>• Construction Environmental Management Plan | |

| VMP Requirement | Standard Management Action | Specific Management Action |
|---|---|---|
| | • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist.<br><br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | |
| Auditing | • Specification 204 Environmental Management<br>• Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist.<br><br>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/ | |

## Appendix 1.2: Principal Environmental Management Requirements (PEMR's)

## Table 1: Clearing PEMR

**STANDARD MANAGEMENT ACTIONS**

| **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>1. NIL |

## Table 2: Dieback PEMR

**STANDARD MANAGEMENT ACTIONS**

| **STANDARD MANAGEMENT REQUIREMENTS** |
|---|
| **PRE WORKS**<br>1. Contractor's Pre-starts must detail the requirements from the DMP/HMP, where relevant, dieback management areas and the requirements of each area, maps of infested and uninfected locations, and hygiene requirements<br>2. Where relevant a copy of the DMP/HMP must be onsite. This plan will include maps of management areas and obligatory control actions<br>3. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works.<br>4. Use the Plant, Vehicle and Equipment Hygiene Checklist or equivalent Hygiene form to check that all machinery and vehicles are clean on entry (i.e. free of soil and vegetation). |
| **DURING WORKS**<br>1. If required, locations of dieback infested or dieback free areas and hygiene control locations marked on site in accordance with contract HMP or DMP.<br>2. Hygiene works to be undertaken as per the HMP or DMP, where required.<br>3. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing.<br>4. Ensure no known weed affected soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing.<br>5. Ensure cleared materials are stockpiled or disposed at waste at the locations approved by the Superintendent. |
| **POST WORKS**<br>1. Record that the project was undertaken in dry soil conditions (unless an approved DMP authorises otherwise).<br>2. Use the Plant, Vehicle and Equipment Hygiene Checklist to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation). |

## Table 3: Erosion and Sedimentation

**PRE WORKS**

1. The Contractor must develop, implement and maintain processes and procedures to ensure that:
   - The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas.
   - Prevent water and wind soil erosion within and adjacent to the works areas.
   - Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area.
   - Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated.
   - Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion.
   - Minimise exposed soil working surfaces or protect them from stormwater erosion.
   - Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.
   - 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 4: Fauna

**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**

1. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;
   i. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate.
   ii. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.
2. 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.
3. The Contractor must ensure that;
   i. No pets, traps or firearms are brought into the project area.
   ii. Fauna are not fed
   iii. Fauna are not intentionally harmed or killed
   iv. 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.)
4. 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.

**POST WORKS**

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

## Table 5: Machinery and Vehicle Management

**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.

**DURING WORKS**

1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.

**POST WORKS**

## Table 6: Mulch and Topsoil Management

**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 and mulched vegetation 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 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.
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.

**POST WORKS**

## Table 7: Pegging and Flagging

**PRE WORKS**

1. Pegging must be done in accordance with the requirements detailed in Specification 301.
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**

1. The Contractor must peg the Limits of Clearing by PINK flagging tape.
2. The Contractor peg/demarcate vegetation proposed to be retained is demarcated by WHITE flagging tape.
3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas.

**POST WORKS**

1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once project works are completed.

## Table 8: Water Drainage

**PRE WORKS**

1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary

**DURING WORKS**

1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted.
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.
3. Maintain these drainage systems in proper working order at all times.
4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.
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.

**POST WORKS**

1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).

2. Prior to backfilling the completed pipe work certify that the entire system is flushed clean and tested
3. Disturbed areas will be stabilised soon after construction activities are completed.
4. Culvert and drainage structures will be free of all grass, weeds, silt and debris

## Table 9: Weed Management

**PRE WORKS**

1. The Contractor must remove or kill any weeds growing in project area that are likely to spread and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.
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 Sheets available at: https://www.mainroads.wa.gov.au/BuildingRoads/Contracting/Pages/ReportingForms.aspx must be completed and sent to the Superintendent.