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WESTERN AUSTRALIA

Clearing Assessment Report – CPS 818

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Western Australia.*

Forrest Highway (H057) & Preston Beach Road
Northbound Acceleration Lane

South West Region
EOS#3107

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1 PROPOSAL

1.1 Purpose and Justification

Main Roads Western Australia proposes to address traffic congestion and safety concerns at the intersection of Forrest Highway (H057) and Preston Beach Road (2090031) through the construction of a 670 m long northbound acceleration lane. The Proposal is part of Main Roads Western Australia's ongoing efforts to improve road infrastructure and ensure the safety of motorists across the South West Region.

The acceleration lane will enhance the efficiency of traffic flow from the townsite of Preston Beach, particularly during heavy northbound traffic periods on Forrest Highway. The Proposal will also help to mitigate the risk of rear end collisions at the intersection, where drivers may pull onto the highway when it is unsafe to do so.

1.1.1 Main Roads Approach to Road Safety and the Environment

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

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

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

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

1.2 Proposal Scope

The Proposal will involve construction of a 670 m long northbound acceleration lane at the intersection of Forrest Highway (H057) and Preston Beach Road (2090031) including a 3.5 m wide lane with a 2.5 m wide sealed shoulder. Raised islands and improved street lighting will also be provided. Construction is to be full limestone pavement with an asphalt wearing course and drainage will be managed through roadside open drains. In order to accommodate the acceleration along Preston Beach Road, three existing power poles for overhead powerlines will be required to be relocated approximately 10 m north into adjacent private property. Main Roads intend to purchase a portion of the northern property abutting Preston Beach Road to relocate power poles. Main Roads will secure all necessary land owner approvals prior to works commencing.

1.3 Proposal Location

The Proposal Area is located on Forrest Highway between 40.75 to 41.45 SLK and Preston Beach Road between 0 to 0.25 SLK, in the Shire of Waroona as shown Figure 1. The Study Area is a 5 km radius of the Proposal Area as is shown on Figure 2.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818: 0.2 ha as shown Figure 3a and 3b.

The proposed temporary clearing undertaking using CPS 818 is: None



Figure 1. Proposal Area



Figure 2. Study Area



Figure 3a. Clearing Area



Figure 3b. Clearing Area

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Do not upgrade the road, however this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. For this project, however, clearing will only be required to accommodate the road formation, with no clear zone being established. Accordingly, the retention of frangible vegetation does not apply to this proposal.
- Reducing the speed limit to minimise clearing requirements, while still balancing safety (driver fatigue) and freight efficiency. Speed Limits are an essential mechanism to ensure the safe and efficient operation of road networks. The application of appropriate speed limits and other traffic management measures is a key mechanism in managing vehicle speeds to achieve desired safety, mobility, traffic management, local amenity, and road user expectations. There are several factors involved in road safety, including road conditions, driver behaviour and overall road design. Except in special situations, reducing speed limits below national standards on state and national roads is not typically supported as it has the potential to contribute to driver frustration, impatience, tiredness and recklessness. The environmental values protected by reducing the speed limit, do not justify the impacts on freight efficiencies nor road user safety. Accordingly, the reduction of the speed limits to avoid clearing of native vegetation for this proposal is not proposed.

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

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

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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	Due to the nature of the works, the acceleration lane can only be aligned to the inside turn pocket at the intersection of Forrest Highway and Preston Beach Road. No clearing within the median of Forrest Highway is proposed.
Alternative alignment located within pasture or degraded areas	There is no appropriate alternate location within pasture or degraded areas of vegetation adjacent to the proposed alignment. Land to the west of the proposed alignment is densely vegetated with some pasture however and any shift in this direction would only increase the required clearing.
Simplification of design to reduce number of lanes and/or complexity of intersections	Due to the significant traffic volumes on Forrest Highway, it is not possible to reduce the number of lanes past this location to use an existing lane as an acceleration lane. Furthermore, due to the size and configuration of heavy vehicles using Forrest Highway, reduction in lane widths to reduce the required pavement construction is also not possible without resulting in significant safety implications.
Steepen batter slopes	Alternative designs and modelling undertaken by Main Roads for steepening batters did not result in any significant reduction in clearing required. Given non-optimal road design and construction and nil to negligible environmental gain, these alternatives are not being pursued.
Installation of barriers	Installation of barriers would allow for construction of 2:1 batters along Forrest Highway (2:1 being the steepest batter than can physically be constructed), however due to the required pavement construction behind the barrier, this would likely increase the clearing footprint a further 400 mm away from the road. Due to the length of the acceleration lane, allowances would also need to be made for a widened shoulder section (emergency stopping location) in front of the barrier, which would again require an increased clearing footprint in that location.
Installation of kerbing	Due to the very flat longitudinal grade on Forrest Highway at this location, installation of kerbing would likely result in pooling water spreading into the acceleration lane in heavy rainfall events (grade too flat for water to flow away to kerb openings quick enough). Kerbing is provided at the corner itself however not longitudinally down Forrest Highway.
Use of existing cleared areas for access tracks, construction storage and stockpiling	All stockpile locations and access tracks into the site are already cleared. No additional clearing is required at all for these purposes.
Other	Following the flora and vegetation survey (Ecoedge 2023), a surveyor was commissioned to undertake a pick-up of the maintenance zone along Preston Beach Road and Forrest Highway. This was specifically undertaken to ensure data accuracy did not result in a net over, or under-estimate of the impact to sensitive environmental aspects.

1.7 Approved Policies and Planning Instruments

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

In addition to the matters considered in accordance with section 51O of the EP Act, Main Roads has also had regard to the below instruments where relevant.

Other Legislation potentially relevant for assessment of clearing and planning/other matters:

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

Environmental Protection Policies:

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

Other relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities.
- Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community (Department of Environment and Energy, 2019).
- EPBC Act referral guidelines for three threatened black cockatoo species (Department of Sustainability, Environment, Water, Populations and Communities, 2012).
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (Department of Parks and Wildlife, 2013)

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:

- **Native Vegetation 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.
- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design and includes a buffer to allow for constructability and the movement of machinery during construction.
- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 5 km radius.
- **Survey Area** – Area covered by the Biological Survey, which is typically larger than the Proposal Area.

2.2 Desktop Assessment

A desktop assessment of the Proposal Area 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 ArcMap and/or Main Roads corporate mapping system known as iMaps. 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 10.

2.3 Surveys and Assessments

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

- Detailed and Targeted Flora and Vegetation Survey (Ecoedge 2023)
- Basic and Targeted Fauna Assessment (Biota 2023).

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

3 SUMMARY OF SURVEYS

In accordance with CPS 818/16 condition 8 (e) (iii), a copy of the relevant sections of the executive summary and report conclusions from the biological survey and/or field assessments are provided in Appendix 1.

3.1 Overview of Surveys

Biological and targeted surveys conducted for the Proposal are outlined in Table 1. A summary of the findings in these reports are presented in Sections 3.2 and 3.3.

Table 1. Summary of Biological and Targeted Surveys Relevant to the Proposal

Consultant & Survey Name	Survey Details
Ecoedge (2023) Detailed and Targeted Flora and Vegetation Survey Forrest Highway (H057) Preston Beach Road Intersection Upgrade	Survey Area: The total surveyed area was approximately 29.44 ha, of which 10.92 ha was native vegetation. The survey was undertaken along a section of Forrest Highway between SLK 39.95 to 43.0 across the Forrest Highway / Preston Beach Road intersection across the Shire of Waroona and the Shire of Harvey. The Survey Area is approximately 100 m wide. Type: The survey for Forrest Highway/ Preston Beach Road included a Detailed and Targeted flora and vegetation survey. Timing: The flora and vegetation survey was undertaken on 27 September, 8 October, 3, 5, 16, November 2021. Shapefile TRIM Ref: D23#502332 Document TRIM Ref: D23#502315
Biota (2023) Preston Beach Acceleration Lane – Basic and Targeted Fauna Assessment	Survey Area: The total surveyed area was a 1.7 km stretch of roadside vegetation adjacent to Forrest Hwy and Preston Beach Road, approximately 9.6 ha in area (of which approximately 7.5 ha is vegetated). Type: The survey included a basic and targeted fauna survey to delineate conservation significant fauna habitat within and directly adjacent to the Proposal Area. Scope included targeted and systematic searches to determine extent and quality of black cockatoo and Western Ringtail Possum (WRP) habitat. Timing: Fieldwork was conducted over a 1.5 day period from 6-8 February 2023. Spotlight searches for WRP were conducted on the evening of 7 February 2023. Shapefile TRIM Ref: D23#320655 Document TRIM Ref: D23#320677

3.2 Summary of Flora and Vegetation Surveys

Ecoedge Environmental Services (Ecoedge) was engaged by Main Roads in July 2021 to undertake a flora and vegetation survey, and targeted flora survey at the Forrest Highway/Preston Beach Road (29.44 ha) intersection.

The flora and vegetation survey was undertaken on 27 September, 8 October, 3, 5, 16 November 2021 in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The total area surveyed was approximately 29.44 ha, of which 10.92 ha was native vegetation.

One hundred and twenty-nine vascular flora taxa were found within the survey area, of which twenty-nine were introduced species. One hundred and fourteen individuals of the Priority 3 taxa, *Lasiopetalum membranaceum* (P3) were recorded within the Survey Area. None were recorded within the Proposal Area. All other Threatened and Priority taxa potentially occurring within the Survey Area were assigned an “Unlikely” post-survey likelihood of occurring. This was mainly because suitable habitat was not present within the Survey Area.

Two vegetation units were identified within the Survey Area, with one 9.008 ha patch of native vegetation representing the Commonwealth-listed TEC and State-listed PEC ‘Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain’ (from a total patch size of 28.326 ha). Of the 9.008 ha of Tuart Woodlands TEC/PEC recorded within the Survey Area, 0.14 ha was recorded within the Proposal Area.

Vegetation condition within the Survey Area was predominately (68%) in Very Good condition. Vegetation within the survey areas forms part of formally mapped regional ecological linkages.

Two vegetation complexes are mapped to occur across the Survey Area, the Yoongarillup Complex and the Bassendean Central and South Complex. The survey area vegetation is characteristic of these complexes in terms of dominant species and structure. The Yoongarillup Complex exceeds the state-wide 30% pre-European extent retention target, whereas the Bassendean Complex - Central and South does not meet the retention target, with 26.87% remaining vegetation. Beard Association 6 is mapped over the survey area. The vegetation units described for the Survey Area are also a reasonable match for the ‘broadly described’ description of the Association. Association 6 has less than 30% of the pre-European extent remaining (23.72%) at a state and IBRA region levels but exceeds the target for the Shire of Harvey and the Shire of Waroona.

The Preston Beach Road Survey Area is intersected at two locations by a Ramsar wetland boundary. The first intersection comprises 0.289 ha, which comprises road and cleared maintenance zone. The second intersection is 0.057 ha in size and comprises 0.009 ha of vegetation Unit C in Very Good condition with the balance (0.048 ha) comprising firebreak.

The buffer of a conservation category dampland wetland [Unique Feature Identifier (UFI): 3014] associated with the Yalgorup wetlands system intersects the Preston Beach Road survey area just west of the Forrest Highway for approximately 84 m along Preston Beach Road. There is no vegetation mapped within this intersection area. It comprises only of road and the cleared road shoulders and maintenance zone. The entire Preston Beach Road Survey Area is encompassed by an ESA associated with the conservation category wetland.

3.3 Summary of Fauna Surveys

Biota Environmental Sciences (Biota) was engaged by Main Roads in February 2023 to undertake a Basic and Targeted Fauna Survey at the Forrest Highway/Preston Beach Road intersection, within the Shire of Harvey and Shire of Waroona.

Fauna habitat assessment yielded three different habitat types within the Survey Area:

- *Eucalyptus marginata* (Jarrah) with *Eucalyptus gomphocephala* (Tuart), *Acacia* sp., and *Agonis flexuosa* (Peppermint) open forest (5.2 ha) south of Preston Beach Road;
- *Agonis flexuosa* (Peppermint) and *Eucalyptus gomphocephala* (Tuart) low closed forest over *Acacia saligna* tall, closed scrub (1.6 ha) immediately north of Preston Beach Road; and
- *Agonis flexuosa* (Peppermint) low open woodland over *Acacia saligna* tall closed scrub (0.7 ha) at the northern extent of the survey area

The remainder of the Survey Area comprised cleared area associated with roads.

Three Western Ringtail Possums were recorded from the Jarrah forest in the southern section of the Survey Area. This habitat type represents core habitat for the species and is continuous with adjacent areas of Yalgorup National Park. The Proposal Area is dominated by *Acacia saligna* shrubland with a sparse cover of Peppermint which does not represent core habitat, although it may represent secondary supporting habitat.

No evidence of any of the three black cockatoo species was recorded during the survey. The targeted assessment identified a total of 83 potential nesting trees, seven of which were hollow-bearing trees, all of which were assessed as being currently unsuitable for breeding. Only one potential nesting tree (no hollows) was recorded within the Proposal Area.

The survey area included foraging resources in the form of Jarrah, Tuart and Peppermint. The survey area was not dominated by foraging plants for any of the species, however, Jarrah represents a preferred foraging plant for Forest Red-tailed Black Cockatoo and Tuart a secondary foraging plant, while both Tuart and Peppermint represent opportunistic foraging plants for Carnaby's Black Cockatoo. Carnaby's Black Cockatoo have previously been recorded within the Survey Area with numerous additional records from the surrounding desktop study area and were assessed as likely to occur as a foraging visitor. There are no records of any of the three Threatened black cockatoo species within the Proposal Area. In contrast, there were very few records of Baudin's Black Cockatoo or Forest Red-tailed Black Cockatoo returned and none from within the survey area, although these species may occur on occasion as foraging visitors.

Potential foraging habitat was assessed using the scoring tool developed by Bamford Consulting Ecologists (2020) and determined that vegetation within the Proposal Area represented either low quality foraging habitat or no value as foraging habitat for all three black cockatoo species. This assessment is supported by the paucity of local records of Baudin's Black Cockatoo and Forest Red-tailed Black Cockatoo and the absence of preferred foraging plants for Baudin's Black Cockatoo. Marri is a preferred food source for all three species, and the lack of Marri present in the Proposal Area and wider survey area lowers the potential value as does the absence of proteaceous species preferred by both Carnaby's Black Cockatoo and Baudin's Black Cockatoo and the fact that Jarrah species within the Proposal Area were largely dead.

In addition, the Peregrine Falcon may occur as a foraging visitor, and three species may occur as resident (Quenda, Western Falsistrelle, Perth Lined Slider).

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

Two vegetation units were identified within the Proposal Area by Ecoedge (2023) which are described in Table 2 including descriptions, condition within the Proposal Area and mapped extent in the wider survey areas. For a full description of the existing vegetation, refer to the Detailed and Targeted Flora and Vegetation Survey Report by Ecoedge (2023) found at D23#502332 and D23#502315.

Table 2. Summary of Vegetation Types within Clearing Area

Vegetation Type	Vegetation Condition within Clearing Area	Extent within Clearing Area (ha)	Total Extent Mapped (ha) within Survey Area
Vegetation unit C. <i>Eucalyptus gomphocephala</i> medium woodland over <i>Agonis flexuosa</i> low open forest over (<i>Acacia saligna</i>) <i>Jacksonia furcellata</i> tall open shrubland over <i>Acacia pulchella</i> var. <i>glaberrima</i> , <i>Bossiaea eriocarpa</i> , <i>Hakea trifurcata</i> , <i>Hibbertia hypericoides</i> , <i>Lasiopetalum membranaceum</i> , <i>Phyllanthus calycinus</i> low/medium shrubland with <i>Hardenbergia comptoniana</i> , <i>Kennedia prostrata</i> open vines over <i>*Avena barbata</i> , <i>*Briza maxima</i> , <i>*B. minor</i> , <i>Microlaena stipoides</i> open grassland and <i>Crassula colorata</i> , <i>*Heliophila pusilla</i> , <i>Trachymene pilosa</i> , <i>*Ursinia anthemoides</i> very open forbland on yellow-brown sand with occasional outcropping limestone.	Degraded (EPA 2016; Ecoedge 2023)	0.05 ha	9.71 ha
Vegetation unit D. <i>Eucalyptus gomphocephala</i> medium woodland over <i>Agonis flexuosa</i> , <i>Banksia littoralis</i> low forest over (<i>Acacia cyclops</i>), <i>A. saligna</i> , (<i>A. cochlearis</i>), <i>Spyridium globulosum</i> , (<i>Templetonia retusa</i>) tall open shrubland over <i>Gahnia trifida</i> , <i>Lepidosperma</i> sp. 'Forrest Beach' sedgeland and <i>Clematis pubescens</i> , <i>Hardenbergia comptoniana</i> , <i>Kennedia coccinea</i> open vines and <i>*Euphorbia peplus</i> , <i>*Lysimachia arvensis</i> , <i>*Pelargonium capitatum</i> open forbland on damp grey sand or sandy loam with occasional limestone outcrops.	Very Good (EPA 2016; Ecoedge 2023)	0.15 ha	1.21 ha

Table 3 provides details of the Pre-European Vegetation Association within the Proposal Area and the remaining extent of this association.

Table 3. 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. 998	Statewide	51,015.33	18,492.63	36.25	48.68
	IBRA Bioregion Swan Coastal Plain	50,867.50	18,492.32	36.35	48.68
	IBRA Sub-region Perth	50,876.50	18,492.32	36.35	48.68
	Local Government Authority Shire of Waroona	5,513.93	3,873.84	70.26	52.93

4.2 Vegetation Complexes and Representation

The following vegetation complex within the Proposal Area and the remaining extent is provided in Table 4.

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

Hedde/Mattiske Veg Complex	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Yoongarillup Complex - 56	27,977.93	10,018.14	35.81

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the Proposal's 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 at variance with Principle (a), (b) and (d) and is not likely to be at variance to the remaining clearing principles. This is based on removal of 0.14 ha of vegetation identified as the Commonwealth-listed TEC and State-listed PEC 'Tuart Woodlands and Forests of the Swan Coastal Plain' (Tuart Woodlands TEC/PEC), as well as 0.2 ha of secondary habitat for Western Ringtail Possum and 0.15 ha of low quality foraging habitat for Threatened black cockatoos. Detailed information is provided under Principle (a), (b) and (d), relating to the context of the Proposal and the impacts to these species and community.

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

Proposed clearing is at variance to this Principle.

Assessment

The area proposed to be cleared is up to 0.2 ha of roadside vegetation, mapped as (Ecoedge, 2023):

- Vegetation Unit C: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa* low open forest over (*Acacia saligna*) *Jacksonia furcellata* tall open shrubland over *Acacia pulchella* var. *glaberrima*, *Bossiaea eriocarpa*, *Hakea trifurcata*, *Hibbertia hypericoides*, *Lasiopetalum membranaceum*, *Phyllanthus calycinus* low/medium shrubland with *Hardenbergia comptoniana*, *Kennedia prostrata* open vines over **Avena barbata*, **Briza maxima*, **B. minor*, *Microlaena stipoides* open grassland and *Crassula colorata*, **Heliophila pusilla*, *Trachymene pilosa*, **Ursinia anthemoides* very open forbland on yellow-brown sand with occasional outcropping limestone.
- Vegetation Unit D: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa*, *Banksia littoralis* low forest over (*Acacia cyclops*), *A. saligna*, (*A. cochlearis*), *Spyridium globulosum*, (*Templetonia retusa*) tall open shrubland over *Gahnia trifida*, *Lepidosperma* sp. 'Forrest Beach' sedgeland and *Clematis pubescens*, *Hardenbergia comptoniana*, *Kennedia coccinea* open vines and **Euphorbia peplus*, **Lysimachia arvensis*, **Pelargonium capitatum* open forbland on damp grey sand or sandy loam with occasional limestone outcrops.

A multivariate analysis was undertaken by Ecoedge (2023). Vegetation units C and D within the Proposal Area qualify as occurrences of the Commonwealth-listed TEC and State-listed PEC 'Tuart Woodlands and Forests of the Swan Coastal Plain' (Tuart Woodlands TEC/PEC) where condition and patch-size criteria are met. Of the 0.2 ha of vegetation in the Proposal Area, Ecoedge (2023) mapped 0.14 ha as the Tuart Woodland TEC/PEC (Figure 4a and 4b). The flora and vegetation survey undertaken by Ecoedge (2023), identified a total of 9.008 ha of Tuart Woodland TEC/PEC within the Survey Area, all of which was assessed as belonging to the same patch. Ecoedge (2023) also surveyed beyond the road reserve and determined that the total patch size was 28.326 ha in size.

A Targeted flora survey was also undertaken as part of the flora and vegetation survey (Ecoedge, 2023). Thirty eight significant species were identified as having known records within the Study Area. Of these, one was considered likely, 11 were considered possible, and 26 were unlikely to occur within the Survey Area. One hundred and fourteen individuals of the Priority 3 taxa, *Lasiopetalum membranaceum* (P3) were recorded within the Survey Area, however, none were located in the Proposal Area. All other Threatened and Priority taxa potentially occurring within the Survey Area were assigned an "Unlikely" post-survey

likelihood of occurring. This was mainly because suitable habitat was not present within the Survey Area. The closest occurrence was a population of five individual *Lasiopetalum membranaceum* (P3) plants to the south of Preston Beach Road along Forrest Highway approximately 150 m south of the Proposal Area (Figure 5).

No conservation significant fauna species were recorded within or adjacent to the Proposal Area by Biota (2023). Three Western Ringtail Possums (WRP), Critically Endangered under BC Act and EPBC Act were recorded within a separate Jarrah forest habitat within Yalgorup National Park south of the Proposal Area and separated by Preston Beach Road. A further seven significant species were assessed as having potential to occur in the Proposal Area given suitable habitat, including:

- Carnaby's Black Cockatoo (*Zanda latirostris*) – Endangered under BC Act 2016 and EPBC Act 1999 – Likely to occur.
- Baudin's Black Cockatoo (*Zanda baudinii*) – Endangered under BC Act 2016 and EPBC Act 1999 – May occur.
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable under BC Act 2016 and EPBC Act 1999 – May occur.
- Peregrine Falcon (*Falco peregrinus*) – Other Specially Protected under BC Act 2016 – May occur.
- Perth Lined Slider (*Lerista lineata*) – Priority 3 (DBCA listing) – May occur
- Western False Pipistrelle (*Falsistrellus mackenziei*) – Priority 4 (DBCA listing) – May occur.
- Quenda (*Isodon fusciventer*) – Priority 4 (DBCA listing) – May occur.

The overall proposed native vegetation clearing of 0.2 ha will result in the removal of vegetation containing black cockatoo habitat as outlined below:

- Up to 0.15 ha of native vegetation within the Proposal Area assessed as low quality foraging habitat (Figure 3a and 3b).
- One tree (tuart – no hollows) with DBH > 500 mm, which is potential breeding habitat (Figure 3a and 3b).
- No trees will be removed that are known roosting sites.
- No trees will be removed that contain hollows.
- No vegetation within 3.4 km of a known black cockatoo roosting site (Biota 2023).
- No vegetation within 6 km of a known black cockatoo nesting site (Biota 2023).

The Proposal Area is within the Western Ringtail Possum (WRP) natural distribution (DPaW 2017). According to Main Roads ArcGIS shapefiles, the species is known from 20 records within the 5 km Study Area, of which five records are within 200 m of the Proposal Area, represented by road kills on Forrest Highway and Preston Beach Road. Nocturnal spotlight searches undertaken by Biota (2023) did not record any evidence of WRP within or adjacent to the Proposal Area. Biota (2023) described the vegetation as representing road reserve passing adjacent to cleared areas and although contains potentially suitable habitat, is isolated habitat due to roads. Biota (2023) concluded that native vegetation within the road reserve (including 0.2 ha of the Proposal Area) lacks continuity with any more significant areas of habitat and thus reduces its likelihood to represent linkage habitat. Furthermore, the Proposal Area is dominated by *Acacia saligna* shrubland with a sparse cover of Peppermint which does not represent core habitat, although it may represent secondary supporting habitat. Three WRP were recorded within Jarrah forest habitat south of the Proposal Area and separated by Preston Beach Road. This area is continuous with the Yalgorup National Park, a historical translocation site for the Western Ringtail Possum (1991 – 2008) and represents some of the northernmost occurrence of the species. Although the Proposal Area is not core habitat, Biota (2023) concluded that given road kills adjacent to this area, the species is either moving up the road reserve at times or it is possible that the deaths represent individuals attempting to cross from the Myalup State Forrest to the east of Forrest Highway.

The remaining bird, two mammal and one reptile species assessed as having some possibility of occurrence, however not recorded, have up to 0.2 ha of potential suitable habitat proposed for removal within the Proposal Area.

Although the Proposal Area contains vegetation with biodiversity values, the remaining native vegetation within the Survey Area (10.72 ha), is of equal or better value to the 0.2 ha proposed for removal. The Proposal will therefore only require the removal of 1.83% of the vegetation mapped within the Survey Area. Further, the Survey Area including the clearing area has similar values to native vegetation occurring more broadly on a local scale, with greater than 50% of the Study Area being vegetated, approximately 40% of which is within DBCA managed land (Figure 6). Furthermore, the removal of 0.2 ha of native vegetation does not sever any local, nor regional ecological linkages.

DWER determined that the proposed clearing is at variance with principle (a) noting that the project area contains 0.14 ha of the Commonwealth listed Threatened Ecological Community (TEC) and State listed Priority Ecological Community (PEC) 'Tuart Woodlands and Forests of the Swan Coastal Plain' (Tuart Woodlands TEC/PEC), as well as 0.2 ha of habitat for conservation significant fauna species. The Approved Conservation Advice for the Tuart Woodlands TEC indicates that any remnants that retain a largely native understory, include mature trees and other habitat features, or are connected to other native vegetation are a high priority for protection and management. The 0.14 ha of native vegetation identified as the TEC within the project area is in 'very good' condition, provides habitat to conservation significant fauna species and is a part of a roadside Tuart TEC. The removal of 0.14 ha of the TEC will further reduce the width of the remnant roadside TEC.

Based on the above, the proposed clearing is at variance with this Clearing Principle.

Methodology

- Basic and Targeted Fauna Survey (Biota 2023)
- Detailed and Targeted Flora and Vegetation Survey (Ecoedge, 2023)
- EPA (2016, 2020)
- WRP Recovery Plan (DPaW 2017)
- SPRAT Database (DCCEEW 2023)
- DBCA website
- DBCA Threatened Flora and Fauna Database Searches shapefiles (Accessed 30/03/2023)
- Main Roads GIS Shapefiles

(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 at variance to this Principle.

Assessment

The Proposal Area contains 0.2 ha of vegetated areas in Degraded to Very Good condition (Ecoedge 2023). The vegetation is suitable habitat for a number of conservation significant fauna species and was identified by Biota (2023) as:

- *Agonis flexuosa* (Peppermint) and *Eucalyptus gomphocephala* (Tuart) low closed forest over *Acacia saligna* tall, closed scrub (0.15 ha)
- *Agonis flexuosa* (Peppermint) low open woodland over *Acacia saligna* tall closed scrub (0.05 ha)

No conservation significant species were recorded within or adjacent to the Proposal Area by Biota (2023). Three WRP were recorded within a separate Jarrah forest habitat within Yalgorup National Park south of the Proposal Area and separated by Preston Beach Road. A further seven significant species were assessed as having potential to occur in the Proposal Area given suitable habitat, including:

- Carnaby's Black Cockatoo (*Zanda latirostris*) – Endangered under BC Act 2016 and EPBC Act 1999 – Likely to occur.
- Baudin's Black Cockatoo (*Zanda baudinii*) – Endangered under BC Act 2016 and EPBC Act 1999 – May occur.
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable under BC Act 2016 and EPBC Act 1999 – May occur.
- Peregrine Falcon (*Falco peregrinus*) – Other Specially Protected under BC Act 2016 – May occur.
- Perth Lined Slider (*Lerista lineata*) – Priority 3 (DBCA listing) – May occur
- Western False Pipistrelle (*Falsistrellus mackenziei*) – Priority 4 (DBCA listing) – May occur.
- Quenda (*Isodon fusciventer*) – Priority 4 (DBCA listing) – May occur.

Reptiles

The Perth Lined Slider potentially has suitable habitat within the Proposal Area (Biota 2023). Perth Lined Slider mostly inhabit very coastal dune habitats to the west however has also been recorded further inland (e.g. near Kemerton Power Station). The nearest known record for Perth Lined Slider is approximately 4.7 km to the west in coastal dune habitat. The removal of up to 0.2 ha of native vegetation, over a 670 m linear strip, adjacent to a busy road and in comparably poorer condition than the intact native vegetation in the Study Area, is not likely to have a significant direct or indirect impact on any populations of Perth Lined Slider or more broadly, the persistence of this species.

Birds

The Proposal Area is within the likely range of Baudin's Black Cockatoo, the known range (including breeding range) for Carnaby's Black Cockatoo and the modelled distribution for the Forest Red-tailed Black Cockatoo. No evidence of any of the three black cockatoo species was recorded during the survey (Biota 2023). The targeted assessment identified a total of 83 DBH trees within the wider survey area, seven of which had hollows which Biota (2023) assessed as being unsuitable for black cockatoos. Only one DBH tree (tuart – no hollows) is located within the Proposal Area and will require removal. Biota (2023) assessed potential foraging habitat using the scoring tool developed by Bamford Consulting Ecologists (2020) and determined that the Proposal Area represented low quality foraging habitat for all three black cockatoo species within the Peppermint, Tuart low closed forest over *Acacia saligna* shrubland habitat (0.15 ha). The Peppermint low open woodland over *Acacia saligna* tall closed shrubland habitat (0.05 ha) was assessed as having no foraging value for all three black cockatoo species. This assessment is supported by the paucity of local records of Baudin's Black Cockatoo and Forest Red-tailed Black Cockatoo and the absence of preferred foraging plants for Baudin's Black Cockatoo. Marri is a preferred food source for all three species, and the lack of Marri present in the Proposal Area and wider survey area lowers the potential value as does the

absence of proteaceous species preferred by both Carnaby's Black Cockatoo and Baudin's Black Cockatoo. In addition, the Jarrah species within the Proposal Area were largely dead (Biota 2023).

The overall proposed native vegetation clearing of 0.2 ha will result in the removal of vegetation containing black cockatoo habitat as outlined below:

- Up to 0.15 ha of native vegetation within the Proposal Area assessed as low quality foraging habitat (Figure 3a and 3b).
- One tree (tuart – no hollows) with DBH > 500 mm, which is potential breeding habitat (Figure 3a and 3b).
- No trees will be removed that are known roosting sites.
- No trees will be removed that contain hollows.
- No vegetation within 3.4 km of a known black cockatoo roosting site (Biota 2023).
- No vegetation within 6 km of a known black cockatoo nesting site (Biota 2023).

Main Roads determined that within a local and regional context the removal of up to 0.15 ha of low quality foraging habitat for black cockatoos is unlikely to have a significant impact to the persistence of these species. As depicted in Figure 6, there are significant quantities (greater than 50%) of native vegetation within the Study Area, approximately 40% of which is within DBCA managed land. The removal of up to 0.15 ha of low quality foraging habitat, over a 670 m linear strip, adjacent to a busy road and in comparably poorer condition than the intact native vegetation in the Study Area, is not likely to have a significant indirect impact on any populations of black cockatoos or more broadly, the persistence of these species. Given there is only 0.15 ha of low quality foraging habitat, no known roosts and no suitable breeding trees that are proposed for removal within the Proposal Area, project activities are also unlikely to have a significant direct impact on any individuals.

Peregrine Falcon can be found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. According to Main Roads ArcGIS shapefiles there are two records of Peregrine Falcon within Yalgorup National Park to the south of the Proposal Area. The Proposal Area contains potentially suitable foraging habitat for the species and therefore Biota (2023) determined that the species may occur. Given the small scale of clearing (up to 0.2 ha) and small scale of the Proposal activities, the works are unlikely to impact any core habitat for this species. Direct impact on individuals is also not anticipated given all species are highly mobile and are not expected to inhabit the works area once works commence. Fauna will be managed through the Construction Environmental Management Plan with specific measures including a suitably qualified fauna specialist present on site during all clearing activities to reduce the risk of potential direct impacts to conservation significant fauna.

DWER determined that the proposed clearing is at variance with principle (b), as the application area contains 0.15 ha of low-quality foraging habitat for threatened Black cockatoos. This habitat has been assessed based upon the following:

- The project area is within the mapped distribution area for *Zanda latirostris* (Carnaby's cockatoo), *Z. baudinii* (Baudin's cockatoo) and *Calyptorhynchus banksia naso* (Forest red-tailed cockatoo) – Threatened under the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Several confirmed breeding sites for the white-tailed black cockatoo species are known from within 6 kilometres (km) of the project area, many of which are within a 1 km radius.
- The Myalup Forest immediately east of the project area is a known breeding area for Carnaby's cockatoo, while five roosting sites are known from within a 12 km radius of the project area. Research provided to the department indicates the strip of land along the coast between the Swan Coastal Plain and southern forest breeding sites is a migration path for breeding Carnaby's cockatoos, meaning that foraging habitat in this area is particularly significant for the species.
- Vegetation within the project area contains *Eucalyptus marginata* (Jarrah) and *E. gomphocephala* (Tuart) which are known foraging sources for threatened black cockatoo species. One of the Tuart trees is a potential habitat tree with a diameter at breast height (DBH) of greater than 500

millimetres. The Recovery Plans for the threatened black cockatoos indicate that foraging resources that support breeding are critical for the survival of chicks.

- While it is noted that vegetation within the project area is directly adjacent to Forrest Highway and is likely to be in poorer condition than vegetation within nearby conservation areas, the vegetation proposed to be cleared is considered significant habitat for threatened black cockatoo species within the context of the breeding, roosting and foraging sites which surround the project area.
- Noting the above, the loss of 0.15 ha of low-quality foraging habitat for black cockatoo species is considered significant.

Mammals

The Proposal Area is within the WRP natural distribution (DPaW 2017). According to Main Roads ArcGIS shapefiles, the species is known from 20 records within the 5 km Study Area, of which five records are within 200 m of the Proposal Area, represented by road kills on Forrest Highway and Preston Beach Road. Nocturnal spotlight searches undertaken by Biota (2023) did not record any evidence of WRP within or adjacent to the Proposal Area. Biota (2023) described the vegetation as representing road reserve passing adjacent to cleared areas and although contains potentially suitable habitat, is isolated habitat due to roads. Biota (2023) concluded that native vegetation within the road reserve (including 0.2 ha of the Proposal Area) lacks continuity with any more significant areas of habitat and thus reduces its likelihood to represent linkage habitat. Furthermore, the Proposal Area is dominated by *Acacia saligna* shrubland with a sparse cover of Peppermint which does not represent core habitat, although it may represent secondary supporting habitat. Three WRP were recorded within Jarrah forest habitat south of the Proposal Area and separated by Preston Beach Road. This area is continuous with the Yalgorup National Park, a historical translocation site for the WRP (1991 – 2008) and represents some of the northernmost occurrence of the species. Although the Proposal Area is not core habitat, Biota (2023) noted that given road kills adjacent to this area, the species may either move up the road reserve at times or it is possible that the deaths represent individuals attempting to cross from the Myalup State Forrest to the east of Forrest Highway.

Whilst the vegetation in the Proposal Area may provide some secondary habitat for WRP, this vegetation is not considered to be habitat critical to WRP survival according to the WRP (*Pseudocheirus occidentalis*) Recovery Plan, noting habitat has sparse cover of Peppermint and lacks continuity with any more significant areas of habitat (Biota 2023). In addition, no WRP individuals were recorded within or adjacent vegetation north of Preston Beach road and the Proposal will not result in fragmentation of habitat critical for WRP.

Main Roads determined that the 0.2 ha of vegetation proposed for removal is considered to be a narrow strip of potential secondary supporting habitat for WRP adjacent to Forrest Highway. Considering the much larger patches of better quality, non-contiguous vegetation within DBCA land to the south and east of the Proposal Area, it is not considered likely that the removal of 0.2 ha of secondary WRP habitat will have a significant direct or indirect impact on any populations of WRP or more broadly, the persistence of the species. Fauna will be managed through the Construction Environmental Management Plan with specific measures including a suitably qualified fauna specialist present on site during all clearing activities to reduce the risk of potential direct impacts to conservation significant fauna.

The Quenda and Western False Pipistrelle, whilst not recorded, both potentially have suitable habitat within the Proposal Area (Biota 2023). Quenda inhabit scrubby, often swampy, vegetation with dense cover up to 1 m high and often feed in adjacent forest and woodland that is burnt on a regular basis. The nearest known record of Quenda is approximately 1.3 km to the west within Yalgorup National Park. Western False Pipistrelle prefer wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts. The nearest known record of Western False Pipistrelle is more than 4.6 km south of the Proposal Area. The removal of up to 0.2 ha of native vegetation, over a 670 m linear strip, adjacent to a busy road and in comparably poorer condition than the intact native vegetation in the Study Area, is not likely to have a significant direct or indirect impact on any populations of Quenda and Western False Pipistrelle or more broadly, the persistence of these species.

DWER determined that that the proposed clearing is at variance with principle (b), as the application area contains 0.2 ha of secondary habitat for *Pseudocheirus occidentalis* (Western Ringtail Possum – Critically Endangered) This habitat has been assessed based on the following:

- Vegetation within the project area contains 0.2 ha of secondary habitat for this species. The vegetation proposed to be cleared is considered critical to WRP survival in accordance with the Western Ringtail Possum Recovery Plan, on the basis that 'any habitat where western ringtail possums occur naturally are considered critical and worthy of protection'. This assessment is further supported by the following:
 - the fauna survey over the project area and surrounds which recorded five WRP individuals in the jarrah forest immediately south of the project area;
 - the proximity of the project area to the Yalgorup National Park – a historical translocation site for WRP;
 - the location of the project within the natural distribution range for this species, in an area of the Swan Coastal Plain where WRP density is high.
- While it is noted that vegetation within the project area contains sparsely distributed peppermint trees, is directly adjacent to Forrest Highway and is likely to be in poorer condition than vegetation further from the road, it is considered to provide a linkage function and refuge for WRP dispersing in the area.
- Any loss of habitat critical to the survival of WRP is considered to have a significant impact to this species.

Methodology

- Basic and Targeted Fauna Survey (Biota 2023)
- Detailed and Targeted Flora and Vegetation Survey (Ecoedge, 2023)
- EPA (2016, 2020)
- WRP Recovery Plan (DPaW 2017)
- SPRAT Database (DCCEEW 2023)
- DBCA Threatened Fauna Database Searches shapefiles (Accessed 30/03/2023)
- DBCA website
- Main Roads GIS Shapefiles

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

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

Assessment

A Targeted Flora Survey undertaken as part of the Flora and Vegetation Survey (Ecoedge, 2023) found no Threatened flora species within the Proposal Area or wider Survey Area and the post-survey likelihood of occurrence classified all Threatened flora species as unlikely to occur within the Proposal Area.

Based on the above, the clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- Flora and Vegetation Survey (Ecoedge, 2023)
- EPA (2016)
- DBCA Threatened Flora Searches shapefiles (Accessed 30/03/2023)

(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 at variance to this Principle.

Assessment

The Ecoedge (2023) survey recorded no State listed Threatened Ecological Communities (TECs) in the proposed clearing area or wider Survey Area and none are considered likely to occur, however, one Commonwealth TEC (State PEC) was recorded within the Survey Area.

A multivariate analysis was undertaken by Ecoedge (2023) which identified that the vegetation in which the quadrats were placed is part of the Commonwealth-listed TEC and State-listed PEC 'Tuart Woodlands and Forests of the Swan Coastal Plain' (Tuart Woodlands TEC/PEC) where condition and patch-size criteria were met. Of the 0.2 ha of vegetation located within the Proposal Area, 0.14 ha was mapped by Ecoedge (2023) as the Tuart Woodlands TEC/PEC (Figure 4a and 4b).

The flora and vegetation survey undertaken by Ecoedge (2023), identified a total of 9.008 ha of Tuart Woodland TEC/PEC within the Survey Area, all of which was assessed as belonging to the same patch. Ecoedge (2023) also surveyed beyond the road reserve and determined that the total patch size was 28.326 ha in size. Out of the total mapped Tuart Woodland TEC/PEC, only 0.14 ha (0.49 %) is proposed for removal. The proposed removal of up to 0.14 ha of Tuart Woodlands TEC/PEC will not have a significant direct impact, particularly as the proposed clearing comprises a number of small separated clearing areas spread across a linear distance of 670 m and only one mature Tuart Tree (DBH>500mm). Main Roads will also ensure the Proposal will not have a significant indirect impact on Tuart Woodlands TEC/PEC through the implementation of Standard and Specific Management Actions specified in the Vegetation Management Plan (Appendix 2.1).

Twenty-nine environmental weeds were located within the survey area, none of these were Declared Pest plants under the *Biosecurity and Agriculture Management Act 2007* or Weeds of National Significance (WONS). Standard management actions will also be included to manage weeds and to ensure they do not spread and result in environmental harm to adjacent areas of native vegetation that are in Good-or-better condition.

The works require the removal of up to 0.14 ha of Tuart Woodlands TEC/PEC within a 1.41 ha Proposal Area. Given a direct impact of 0.14 ha to the Tuart Woodlands TEC/PEC, clearing is at variance with this Principal.

Methodology

- Detailed and Targeted Flora and Vegetation Survey (Ecoedge, 2023)
- DBCA Threatened and Priority Ecological Community database search
- Tuart TEC Conservation Advice (DoEE 2019)
- EPA (2016)

(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 area proposed to be cleared is up to 0.2 ha of roadside vegetation, mapped as (Ecoedge, 2023):

- Vegetation Unit C: 0.05 ha in Degraded condition: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa* low open forest over (*Acacia saligna*) *Jacksonia furcellata* tall open shrubland over *Acacia pulchella* var. *glaberrima*, *Bossiaea eriocarpa*, *Hakea trifurcata*, *Hibbertia hypericoides*, *Lasiopetalum membranaceum*, *Phyllanthus calycinus* low/medium shrubland with *Hardenbergia comptoniana*, *Kennedia prostrata* open vines over *Avena barbata*, *Briza maxima*, *B. minor*, *Microlaena stipoides* open grassland and *Crassula colorata*, *Heliophila pusilla*, *Trachymene pilosa*, *Ursinia anthemoides* very open forbland on yellow-brown sand with occasional outcropping limestone.
- Vegetation Unit D: 0.15 ha in Very Good condition: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa*, *Banksia littoralis* low forest over (*Acacia cyclops*), *A. saligna*, (*A. cochlearis*), *Spyridium globulosum*, (*Templetonia retusa*) tall open shrubland over *Gahnia trifida*, *Lepidosperma* sp. 'Forrest Beach' sedgeland and *Clematis pubescens*, *Hardenbergia comptoniana*, *Kennedia coccinea* open vines and *Euphorbia peplus*, *Lysimachia arvensis*, *Pelargonium capitatum* open forbland on damp grey sand or sandy loam with occasional limestone outcrops.

The works require the removal of up to 0.2 ha of degraded roadside vegetation within a 1.41 ha Proposal Area. The clearing of native vegetation will occur in a previously disturbed environment to facilitate the widening of Preston Beach Road and Forrest Highway for the construction of the acceleration lane. The vegetation mapped within the Proposal Area (Ecoedge, 2023) is representative of the Pre-European Vegetation and Vegetation Complex (Havel and Matisse, 2000) mapping within the Proposal Area, as below.

Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 998 described as a Medium woodland; tuart (Government of Western Australia, 2017)	Clearing of up to 0.2 ha for road widening and construction of an acceleration lane at Forrest Hwy/ Preston Beach Road intersection	Degraded to Very Good condition (EPA 2016; Ecoedge 2023)	Vegetation description and condition determined from Flora and Vegetation Survey (Ecoedge, 2023).

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 998	Statewide	51,015.33	18,492.63	36.25	48.68
	IBRA Bioregion Swan Coastal Plain	50,867.50	18,492.32	36.35	48.68
	IBRA Sub-region Perth	50,867.50	18,492.32	36.35	48.68

	Local Government Authority Shire of Waroona	5,513.93	3,873.84	70.26	52.93
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Vegetation Complexes (Hedde/Mattiske) within the Project Area

Hedde/Mattiske Veg Complex	Pre-European Extent (ha)	2013 Vegetation Extent	% Remaining
Yoongarillup Complex - 56	27,977.93	10,018.14	35.81

According to the Pre-European Vegetation Association and Vegetation Complex mapping, the percentage of vegetation remaining does not fall below the regional threshold of 30%. The minor clearing adjacent to an existing road corridor will not further dissect any local or regional ecological linkage (Figure 2 and Figure 6).

Based on the above, the vegetation proposed to be cleared is not significant as a remnant of native vegetation in an area that has been extensively cleared. Therefore, the proposed clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- Detailed and Targeted Flora and Vegetation Survey (Ecoedge, 2023)
- Statewide Vegetation Statistics (Government of Western Australia 2018)
- EPA (2016)
- Aerial photography

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

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

Assessment

The proposed clearing area does not intersect any watercourses or wetlands. The Ramsar listed Peel-Yalgorup System wetland occurs south of Mandurah and comprises the Peel Inlet, Harvey Estuary, Lake McLarty, Lake Mealup and ten Yalgorup National Park wetlands (Ecoedge 2023). The Ramsar site mapping just touches the Proposal Area (Figure 7) on the northern edge of Preston Beach Road (within the bitumen and road reserve). In addition, the mapping for the dampland CCW [Unique Feature Identifier (UFI) 3014] associated with the Yalgorup wetlands system intersects Preston Beach Road as well as the neighbouring property to the north. The neighbouring property to the north is highly degraded from long term grazing. The mapped wetland within the Proposal Area is not connected hydraulically between the north and south of Preston Beach Road. i.e., there are no watercourses, culverts or drainage channels which would allow water to move in either a north or south direction over Preston Beach Road. In addition, Ecoedge (2023) confirmed that there is no native vegetation remaining within the mapped areas of these wetlands at the Preston Beach Road intersection.

The works will include the addition of an acceleration lane on the northern side of the existing Preston Beach Road and the subsequent relocation of the existing power poles approximately 10 m to the north. All works shown in “mapped wetlands” will be located within the road, road shoulder, maintenance zone or paddock. No removal of native vegetation is required. There is no clearing associated with the proposal that would have a detrimental impact on the CCW or Ramsar wetland. Furthermore, none of the vegetation units proposed to be cleared are of wetland or riparian nature (Ecoedge 2023):

- Vegetation Unit C: 0.05 ha in Degraded condition: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa* low open forest over (*Acacia saligna*) *Jacksonia furcellata* tall open shrubland over *Acacia pulchella* var. *glaberrima*, *Bossiaea eriocarpa*, *Hakea trifurcata*, *Hibbertia hypericoides*, *Lasiopetalum membranaceum*, *Phyllanthus calycinus* low/medium shrubland with *Hardenbergia comptoniana*, *Kennedia prostrata* open vines over **Avena barbata*, **Briza maxima*, **B. minor*, *Microlaena stipoides* open grassland and *Crassula colorata*, **Heliophila pusilla*, *Trachymene pilosa*, **Ursinia anthemoides* very open forbland on yellow-brown sand with occasional outcropping limestone.
- Vegetation Unit D: 0.15 ha in Very Good condition: *Eucalyptus gomphocephala* medium woodland over *Agonis flexuosa*, *Banksia littoralis* low forest over (*Acacia cyclops*), *A. saligna*, (*A. cochlearis*), *Spyridium globulosum*, (*Templetonia retusa*) tall open shrubland over *Gahnia trifida*, *Lepidosperma* sp. ‘Forrest Beach’ sedgeland and *Clematis pubescens*, *Hardenbergia comptoniana*, *Kennedia coccinea* open vines and **Euphorbia peplus*, **Lysimachia arvensis*, **Pelargonium capitatum* open forbland on damp grey sand or sandy loam with occasional limestone outcrops.

Given works will not require the removal of vegetation growing in, or in association with, an environment associated with a watercourse or wetland, the proposed clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- Detailed and Targeted Flora and Vegetation Survey (Ecoedge, 2023)
- Government GIS shapefiles:
 - Geomorphic Wetlands (Accessed 30/03/2023)
 - Ramsar Wetlands (Accessed 30/03/2023)
 - Watercourses (Accessed 30/03/2023)
 - RIWI Act Rivers (Accessed 30/03/2023)

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

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

Assessment

The soil within the Proposal Area is mapped as the Spearwood 211Sp_S4b phase, characterised by flat to gently undulating sandplain with shallow to moderately deep siliceous yellow-brown and grey-brown sands. Construction of the Proposal will require the removal of up to 0.2 ha of roadside vegetation within a 1.41 ha Proposal Area.

The sandy soils known to the Proposal Area are not at risk of flooding due to their well-draining nature. The removal of the vegetation is therefore unlikely to cause waterlogging or water erosion. Whilst the proposed clearing will increase the risk of wind erosion, the scale of this is very small and temporary due to the sealing of the acceleration lane. Therefore, the overall unvegetated areas present within the road reserve will decrease following implementation of the Proposal, therefore reducing the risk of wind erosion.

According to Australian Soil Resource Information Systems (ASRIS) mapping, the Proposal Area is within an area of low risk of acid sulfate soil occurrence. Works do not require any dewatering, nor excavations below the water table. The removal of 0.2 ha of native vegetation will not result in acidification of the Proposal Area or surrounding local environment.

Twenty-nine environmental weeds were located within the survey area, none of these were Declared Pest plants under the *Biosecurity and Agriculture Management Act 2007* or Weeds of National Significance (WONS). Standard management actions will also be included to manage weeds and to ensure they do not spread and result in environmental harm to adjacent areas of native vegetation that are in Good-or-better condition.

The clearing will occur in a previously disturbed, roadside environment and includes the reinstatement of roadside drainage. The proposed clearing is very minor in scale and located in a highly modified environment and is therefore not likely to cause appreciable land degradation. Given this the proposed clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- Flora and Vegetation Survey (Ecoedge, 2023)
- ASRIS (Accessed 12/06/2023)

(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.

Assessment

No Nature Reserves or Bush Forever Sites are located directly adjacent to the Proposal Area. The Proposal Area is within a Clearing Regulation ESA which also covers previously cleared areas including Preston Beach Road, Forrest Highway and their respective maintenance zones. The ESA is associated with Yalgorup National Park and Myalup State Forest which although located within 100 m of the Proposal Area are not contiguous with the Proposal Area. Yalgorup National Park is located on the opposite side of Preston Beach Road and south of the Proposal Area and Myalup State Forest on the opposite side of Forrest Highway and the east of the Proposal Area. The Proposal will not enter either of these areas (Figure 6).

The Proposal will not result in direct or indirect impacts and is unlikely to result in indirect impacts on Nature Reserves, Conservation Areas or Bush Forever sites as:

- only 0.2 ha of native vegetation is proposed for removal;
- vegetation proposed for removal is not contiguous with any DBCA managed land and construction works are on opposite sides of Preston Beach Road and Forrest Highway respectively, therefore indirect impacts through edge effects are considered unlikely;
- standard hygiene measures will manage the potential introduction and spread of weeds and dieback;
- the Proposal will tie into existing roadside drainage; and
- no ecological linkages, either locally or regionally will be impacted by the proposed works.

With the above assessment and management, it is not likely that works will have any impacts to any conservation area. Therefore, the proposed clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- DBCA Legislated Lands and Waters & Lands of Interest (Accessed 12/06/2023)

(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

The works require the removal of up to 0.2 ha of roadside vegetation within the 1.41 ha Proposal Area. The clearing will occur in a previously disturbed environment and include reinstatement of existing roadside drainage. The Proposal Area is not within a Proclaimed Surface Water Area. None of the vegetation proposed for removal is growing in association with a watercourse. Surface water quality is unlikely to be negatively impacted by the removal of up to 0.2 ha of vegetation growing in the road verge.

Furthermore, the removal of up to 0.2 ha of native vegetation is unlikely to impact groundwater levels or quality. Works are within a Proclaimed Groundwater Area, however, are not within a Public Drinking Water Source Area. As no abstraction of water is required for the Proposal and vegetation clearing is so minor, impact to groundwater levels is not anticipated. Furthermore, the works will not intercept groundwater.

The proposed clearing of native vegetation is not likely to be at variance with this clearing principle.

Methodology

- Flora and Vegetation Survey (Ecoedge, 2023)
- Basic and Targeted Fauna Survey (Biota 2023)
- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 12/06/2023)
 - CAWSA Part 2A Clearing Control Catchments (Accessed 12/06/2023)
 - RIWI Act, Groundwater Areas (Accessed 12/06/2023)

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

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

Assessment

The works require the removal of up to 0.2 ha of roadside vegetation within the 1.41 ha Proposal Area. The clearing will occur in a previously disturbed environment to facilitate the widening of Preston Beach Road and Forrest Highway for the construction of the acceleration lane. The additional area of sealed road is unlikely to make a notable difference to the quantity of runoff entering the road drainage system. Roadside drainage will be reinstated adjacent to the newly constructed acceleration lane, tying into the existing roadside drainage.

The soil within the Proposal Area is mapped as the Spearwood 211Sp_S4b phase, characterised by flat to gently undulating sandplain with shallow to moderately deep siliceous yellow-brown and grey-brown sands. The sandy soils known to the Proposal Area are not at risk of flooding due to their well-draining nature. The removal of the vegetation is therefore unlikely to exacerbate the incidence or intensity of flooding.

The clearing of native vegetation is not likely to be at variance with this Clearing Principle.

Methodology

- Flora and Vegetation Survey (Ecoedge, 2023)



Figure 4a. TEC Mapping – Proposal Area



Figure 4b. TEC Mapping – Proposal Area



Figure 5. Priority Flora Mapping

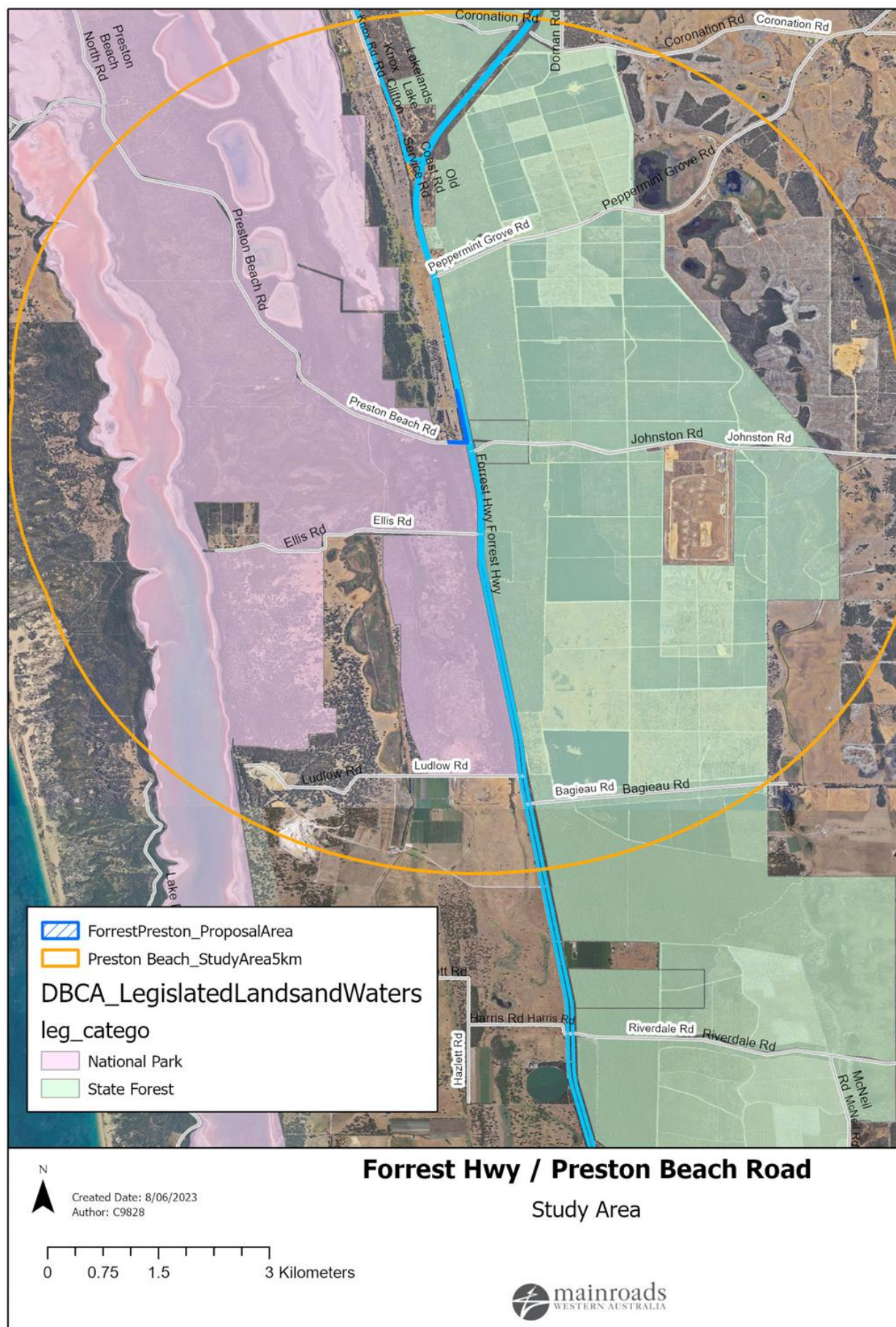


Figure 6. DBCA Managed Land



Figure 7. Wetlands

6 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan (VMP) has been developed to manage and minimise vegetation clearing for the Proposal (refer to Appendix 2).

7 REHABILITATION, REVEGETATION & OFFSETS

7.1 Revegetation and Rehabilitation

No temporary clearing will be undertaken as part of the Proposal activities.

7.2 Offset Proposal

In the original submission of the CAR to DWER on 18 July 2023, Main Roads requested an exemption from the requirement to implement an offset in accordance with the conditions of CPS 818/16 (D23#692018). On 9 August 2023, DWER responded to the request and determined that an environmental offset was required to counterbalance significant residual impacts (SRI) on the Tuart Woodland TEC/PEC, as well as habitat for WRP and threatened black cockatoos (D23#826644). On 18 October 2023, Main Roads proposed an offset of a monetary contribution of \$69,149.60 to counterbalance the SRI's identified in DWER's assessment (D23#1286459). On 1 November DWER requested more evidence that revegetation offset works had been properly considered (D23#1286440). On 9 November 2023 Main Roads responded by providing additional information and expressed the view that the impacts of the clearing were not significant and an offset was not warranted (D23#1286409). DWER reviewed the information provided and on 17 November 2023 provided a letter stating that the re-assessment of the project had determined that the impacts of the proposed clearing are not significant and an offset is not required (D23#1286391).

8 STAKEHOLDER CONSULTATION

Condition 8 of CPS 818 requires Main Roads WA to invite submissions from a number of parties when the proposed clearing is considered likely to be seriously at variance, at variance or may be at variance with one or more clearing principles. The CAR was published on the Main Roads Website for a period of 21 days, between the 17 July 2023 and 7 August 2023. As part of this process Main Roads invited submissions from DWER and the Shire of Waroona.

Submissions received are outlined below.

Name of Stakeholder	Date of Consultation	Key Issue/Comment	Main Roads Response/Comment	TRIM Ref of Consultation
Public submission	22/07/2023	Considered the removal of 0.2 ha of vegetation more than acceptable given the importance of the project to local safety. Overall in favour of the project.	No response or change to CAR required.	D23#737263
Preston Beach Progress Association	27/07/2023	Acknowledged the environmental impacts of the project but commented on the project being essential due to numerous safety factors. Overall in favour of the project.	No response or change to CAR required.	D23#737243
DWER	09/08/2023 to 18/10/2023	DWER determined that the proposed clearing is at variance with Principle (a), (b) and (d) and is not likely to be at variance with the remaining clearing principles. DWER approved the VMP for clearing as proposed. DWER determined that an offset was required to counterbalance the impacts to Tuart Woodlands TEC/PEC, Western Ringtail Possum habitat, and foraging habitat for threatened black cockatoos.	Main Roads amended the CAR to reflect DWERs assessment and requests. On 18 October 2023, Main Roads proposed an offset of a monetary contribution of \$69,149.60 to counterbalance the SRI's identified in DWER's assessment (D23#1286459).	D23#826644
DWER	1/11/2023 to 09/11/2023	On 1 November 2023 DWER requested more evidence that revegetation offset works had been properly considered (D23#1286440).	On 9 November 2023 Main Roads responded by providing additional information and expressed the view that the impacts of the clearing were not significant and an offset was not warranted (D23#1286409).	D23#1286440
DWER	17/11/2023	DWER reviewed the information provided and on 17 November 2023 provided a letter stating that the re-assessment of the project had determined that the impacts of the proposed clearing are not significant and an offset is not required (D23#1286391).	Main Roads have accepted this decision. No further offset requirements for the project.	D23#1286391

9 COMPLIANCE WITH CPS 818

Table 5 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.	Yes	1. Clearing Report to be published on website and submissions sought for 21 days. 2. Submissions invited in accordance with Condition 8 of CPS 818. 3. VMP has been completed, refer to Appendix 2. 4. Given the impacts, MRWA will provide an offset proposal to DWER for consideration. 5. Summary of submissions and a statement addressing each of those submissions to be published on website.
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. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality and (j) the incidence of flooding.	No	No further action required.
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: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • works have potential for uninfested areas to be impacted.	Yes	The Proposal Area is currently maintained as one linear stretch of road reserve and is therefore likely to have a consistent dieback status throughout the Proposal Area. Movement of soil may be required in non-dry conditions however all fill material required to complete the works will be cut to fill, meaning no import of sand to site is required. The Proposal Area is located on spearwood soils which are considered to be at lower risk of dieback compared to other soils due to physical and chemical properties that make them less hospitable to the <i>Phytophthora cinnamomi</i> pathogen. In addition, limestone will be utilised for the subbase and basecourse, which is not known to be hospitable to dieback. All vehicles and machinery will be required to be clean on entry/ clean on exit and no vehicles or equipment will be permitted on the road reserve directly abutting DBCA Managed Land. Given the above,

Impact of Clearing	Yes/No or NA	Further Action Required
		dieback is not considered to be an issue for the Proposal. Standard Vehicle and Plant management actions from Principal Environmental Management Requirements (PEMRs) and <u>Hygiene Checklists</u> will be applied.
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	Standard management actions will be included to manage weeds and to ensure they do not spread and result in environmental harm to adjacent areas of native vegetation that are in Good-or-better condition. 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 including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience.

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11 APPENDICES

Appendix 1: CPS 818/16 condition 8 (e) (iii) Biological Surveys and Field Assessment Executive Summary and Report Conclusions

Flora and Vegetation Surveys

Executive summary

Ecoedge Environmental Services (Ecoedge) was engaged by Main Roads Western Australia (Main Roads) in July 2021 to undertake a flora and vegetation survey, and targeted flora survey at the Forrest Highway/Preston Beach Road (29.44 ha) intersection.

Main Roads plans to upgrade this intersection to reduce traffic congestion and improve safety. This survey may inform environmental impact assessment and approvals processes that might be required as part of this proposal.

The flora and vegetation survey was undertaken on 27 September, 8 October, 3, 5, 16 November 2021 in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016). The total area surveyed was approximately 29.44 hectares (ha), of which 10.92 ha was native vegetation.

One hundred and twenty-nine vascular flora taxa were found within the survey area, of which twenty-nine were introduced species. One hundred and fourteen individuals of the Priority 3 taxa, *Lasiopetalum membranaceum* (P3) was recorded within the survey area. All other Threatened and Priority taxa potentially occurring within the survey area were assigned an "Unlikely" post-survey likelihood of occurring. This was mainly because suitable habitat was not present within the survey area.

Two vegetation units were identified within the survey area, with one 9 ha patch of native vegetation representing the Commonwealth-listed TEC and State-listed PEC 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' (from a total patch size of 28.326 ha).

Vegetation condition within the survey area was predominately (68%) in Very Good condition. Vegetation within the survey areas forms part of formally mapped regional ecological linkages. Two vegetation complexes are mapped to occur across the survey area, the Yoongarillup Complex and the Vasse Complex. The survey area vegetation is characteristic of these complexes in terms of dominant species and structure. The Yoongarillup Complex exceeds the state-wide 30% pre-European extent retention target (35.81%), whereas the Vasse Complex does not meet the retention target, with 16.31% remaining vegetation. Beard Association 6 is mapped over the survey area. The vegetation units described for the survey areas are also a reasonable match for the 'broadly described' description of the Association. Association 6 has less than 30% of the pre-European extent remaining (23.72%) at a state and IBRA region levels but exceeds the target for the Shire of Harvey and the Shire of Waroona.

The Preston Beach Road survey area is intersected at two locations by a Ramsar wetland boundary. The first intersection comprises 0.289 ha, which comprises road and cleared maintenance zone. The second intersection is 0.057 ha in size and comprises 0.009 ha of vegetation Unit C in Very Good condition with the balance (0.048 ha) comprising firebreak.

The buffer of a conservation category dampland wetland (Unique Feature Identifier (UFI): 3014) associated with the Yalgorup wetlands system intersects the Preston Beach Road survey area just west of the Forrest Highway for approximately 84 m along Preston Beach Road. There is no vegetation mapped within this intersection area. It comprises only of road and the cleared road shoulders and maintenance zone. The entire Preston Beach Road survey area is encompassed by an ESA associated with the conservation category wetland.

Conclusions

6.1 Significance of flora

6.1.1 *Lasiopetalum membranaceum* (P3)

Lasiopetalum membranaceum (P3) is a multi-stemmed shrub, 0.2-1 m high that occurs on sand over limestone on the Swan Coastal Plain between Two Rocks and Busselton, with an outlying population on the Scott Coastal Plain. Some populations near Perth are considered under threat from encroaching urbanization (Shepherd & Wilkins 2018). There are around 36 known populations recorded for this species Statewide, some comprising hundreds of plants. DBCA data for the 10 km surrounding the survey area indicates there are six known populations, with three of them having population counts of up to a hundred plants. There is no data for the other populations. One hundred and fourteen plants were found within the Preston Beach Road survey area. Based on these numbers, the survey area population could be considered to be an important one in a local context.

6.2 Significance of vegetation

Vegetation units (C, D) within the survey area qualify as occurrences of the Commonwealth-listed TEC 'Tuart Woodlands and Forests of the Swan Coastal Plain' where condition and patch-size criteria are met. Vegetation unit C was assigned by the MVA to FCT 25 (Southern *Eucalyptus gomphocephala* – *Agonis flexuosa* woodlands). While unit D was tentatively assigned to FCT 17 (which typically does not include Tuart), it is regarded as an occurrence of the Tuart Woodlands and Forests of the Swan Coastal Plain' because of the presence of Tuart.

6.3 Vegetation complexes and associations

The Preston Beach Road survey area comprises the Vasse and the Yoongarillup Complex. Preston Beach Road intersection is well aligned with the general description of these complexes.

According to these statistics, the Vasse complex, which occurs within the survey area, has less than 30% (16.31%) pre-European Extent on the SCP but is well represented in the Shire of Harvey (31.35%) and in the Shire of Waroona (61.17%). The Yoongarillup complex also occurs within the survey area and has over 30% (35.81%) remaining on the SCP with marginally less than 30% (29.80%) in the Shire of Harvey.

One association is mapped over the survey area, Association 6. The vegetation units described for the survey areas are also a reasonable match for the 'broadly described' description of the Association. Association 6 has less than 30% (23.72%) of the pre-European extent remaining at a state and IBRA region levels but exceeds the target for the Shire of Harvey and the Shire of Waroona.

6.4 Regional ecological linkages

Much of the vegetation within the Preston Beach Road survey area has been assigned the two highest Molloy et al. (2009) PV ratings of 1a and 1b because of its high degree of connectivity with an ecological axis line associated with the Yalgorup National Park and the Myalup State Forest

There is no statutory basis for the protection of regional ecological linkages. However, in general, the importance of ecological linkages has been recognised as an environmental policy consideration in EPA and Planning policy (EPA 2008 and references therein).

6.5 Wetlands and watercourses

Vegetation unit D comprises wetland vegetation which has been tentatively assigned to FCT 17 (*Melaleuca raphiophylla*-*Gahnia trifida* seasonal wetlands) of Gibson et al. (1994). FCT 17 is not a Threatened or Priority community itself, but the vegetation is adjacent to the Peel-Yalgorup System Ramsar listed wetland.

A very small amount of vegetation unit C (0.06 ha) within the survey area along a firebreak west of the Forrest Highway at the Preston Beach Highway is within the boundary of Peel-Yalgorup System Ramsar listed wetland. There is a wetland to the west of the survey area however, there is no wetland vegetation within the survey area.

The survey area is also intersected by a Conservation category wetland. The total area of the intersection is approximately 0.158 ha, including road and cleared areas and a small amount of vegetation (mainly overhanging tree canopy) categorised as unit C, which is not wetland vegetation.

6.6 Environmentally sensitive areas

The entire Preston Beach Road survey area is encompassed by an ESA associated with conservation category wetlands associated with the Yalgorup Wetlands system.

Exemptions for the need to obtain a clearing permit under the Environmental Protection (Clearing of Native Vegetation) Regulation 2004 do not apply within the boundary of ESAs.

Fauna Surveys

Executive summary

1.1 Background

Main Roads Western Australia (Main Roads) is planning the construction of a northbound acceleration lane and subsequent intersection upgrades at the Preston Beach Road intersection along Forrest Highway. To inform the environmental impact assessment of the proposed works, Main Roads commissioned Biota Environmental Sciences (Biota) to conduct a basic and targeted fauna survey to be undertaken within a 1.7 km stretch of roadside vegetation, approximately 9.6 ha in area (of which approximately 7.5 ha is vegetated); the 'survey area'.

1.2 Methods

Database searches and a review of publicly available literature were undertaken to determine previous records from the locality and to compile a list of potentially occurring significant species for the survey area.

The fauna survey was conducted over a 1.5-day period from the 6 – 8 February 2023. Systematic strip-transect searches were conducted in wooded areas within the survey area to determine the extent and quality of black cockatoo foraging, night roosting and breeding habitat (currently used, or with the potential to be used in the future). Any observations of individuals, calls or feeding signs were also recorded. Habitat assessments were also undertaken within the survey area.

A targeted survey for the Western Ringtail Possum involved habitat assessments, systematic nocturnal strip-transect spotlight searches, and scat and drey searches (conducted concurrently with the black cockatoo survey). Spotlight searches were conducted on the evening of 7 February 2023, throughout the entirety of the survey area.

Opportunistic observations of other fauna species were also recorded, when encountered.

1.3 Results

Fauna habitat assessments identified three habitat types within the survey area:

- *Eucalyptus marginata* (Jarrah) with *Eucalyptus gomphocephala* (Tuart), *Acacia* sp., and
- *Agonis flexuosa* (Peppermint) open forest (5.2 ha) south of Preston Beach Road,
- *Agonis flexuosa* (Peppermint) and *Eucalyptus gomphocephala* (Tuart) low closed forest over
- *Acacia saligna* tall, closed scrub (1.6 ha) immediately north of Preston Beach Road; and
- *Agonis flexuosa* (Peppermint) low open woodland over *Acacia saligna* tall closed scrub (0.7 ha) at the northern extent of the survey area

The remainder of the survey area comprised cleared area associated with roads.

Three Western Ringtail Possums were recorded from the Jarrah forest in the southern section of the survey area. This habitat type represents core habitat for the species and is continuous with adjacent areas of Yalgorup National Park.

The black cockatoo habitat assessment identified a total of 83 potential nesting trees, none with suitable hollows for nesting. The survey area included foraging resources in the form of Jarrah, Tuart and Peppermint. The survey area was not dominated by foraging plants for any of the species, however, Jarrah represents a preferred foraging plant for Forest Red-tailed Black Cockatoo and Tuart a secondary foraging plant, while both Tuart and Peppermint represent opportunistic foraging plants for Carnaby's Black Cockatoo. Carnaby's Black Cockatoo have previously been recorded within the survey area with numerous additional records from the surrounding desktop study area and were assessed as likely to occur as a foraging visitor. In contrast, there were very few records of Baudin's Black Cockatoo or Forest Red-tailed Black Cockatoo returned and none from within the survey area, although these species may occur on occasion as foraging visitors.

In addition, the Peregrine Falcon may occur as a foraging visitor, and three species may occur as resident (Quenda, Western Falsistrelle, Perth Lined Slider).

Discussion

6.1 Fauna Habitats

The northern and southern sections differed in their level of connectivity to contiguous habitat, with the northern section being fragmented by the highway to the east and a number of privately owned lots (comprising largely cleared land) to the west, whereas the southern section extends continuously westwards into Yalgorup National Park. As a result, habitat quality also differed, with the habitat in the northern section being relatively poor quality with a higher number of introduced fauna and flora species, due to its fragmented and relatively disturbed nature. The southern section borders and intersects Yalgorup National Park, which represents vegetation and habitat in a relatively good condition. However, the closer to Forrest Highway the vegetation was, the higher levels of disturbance were evident (due to rubbish, weeds, 4WD tracks and nonnative fauna).

When considering the overall faunal value of habitats within the survey area, the following criteria can be used to assess areas of higher habitat value. These are habitats that:

- support fauna of conservation significance;
- support unique faunal assemblages; and/or
- are uncommon in the region.

The survey area was assessed unlikely to support particularly high biodiversity or a unique faunal assemblage for the following reasons:

- the northern areas of the survey area were disturbed from historical clearance and fire which together have led to the death of many of the larger trees and also a predominance of *Acacia saligna* with little else in the lower strata; and
- while the southern portion of the survey area represents foraging habitat for black cockatoos and core habitat for the Western Ringtail Possum, it is continuous with the Yalgorup National Park and so this habitat type is relatively common in the local area.

6.2 Significant Species

6.2.1 Black Cockatoos

No evidence of any of the three black cockatoo species was recorded during the survey. The targeted assessment identified a total of 83 potential nesting trees, seven of which were hollow-bearing trees, all of which were assessed as being currently unsuitable for breeding.

Potential foraging habitat was assessed using both the scoring tool given in the Federal referral guidance (DAWE 2022), and that recommended within the Main Roads fact sheet (Bamford Consulting Ecologists 2020, Main Roads WA 2021). The two methods produced very different assessments of quality; the DAWE (2022) tool indicated high quality habitat for all three species while the BCE (2020) assessment indicated low quality for Forest Red-tailed Black Cockatoo and Baudin's Black Cockatoo, and moderate quality for Carnaby's Black Cockatoo. The latter assessment is supported by the paucity of local records of Baudin's Black Cockatoo and Forest Red-tailed Black Cockatoo and the absence of preferred foraging plants for Baudin's Black Cockatoo. Marri is a preferred food source for all three species, and the lack of Marri present in the survey area lowers the potential value of the survey area as does the absence of proteaceous species preferred by both Carnaby's Black Cockatoo and Baudin's Black Cockatoo.

6.2.2 Western Ringtail Possum

The southern section of the survey area was identified as representing core fauna habitat, for the Western Ringtail Possum. Individuals were recorded here during the field survey which was not unexpected, given the known population within the adjacent Yalgorup National Park (Biota 2020).

Appendix 2: Vegetation Management Plan

FORREST HWY/PRESTON BEACH ROAD ACCELERATION LANE

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 Forrest Highway/Preston Beach Road Acceleration Lane.

The Proposal will involve construction of a 670 m long northbound acceleration lane at the intersection of Forrest Highway (H057) and Preston Beach Road (2090031) including a 3.5 m wide lane with a 2.5 m wide sealed shoulder. Raised islands and improved street lighting will also be provided. Construction is to be full limestone pavement with an asphalt wearing course and drainage will be managed through roadside open drains.

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

Action

Appendix 2.1 references the standard Principal Environmental Management Requirements (PEMRs) (Tables 1 to 8) that will be utilised for all proposals that involve clearing to avoid, mitigate and manage the environmental impacts of the Proposal.

Proposal specific environmental management actions are contained in Appendix 2.1.

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

Timeframes

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

Responsibilities

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

Appendix 2.1: Vegetation Management

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Clearing	Refer to Table 1: Clearing PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition • Environment Measurement and Evaluation Checklist (for release of HOLD POINTS) Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Pegging and Flagging	Refer to Table 7: Pegging and Flagging PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Dieback Management	Refer to Table 2: Dieback Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Erosion and Sedimentation Control	Refer to Table 3: Erosion and Sedimentation Control PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Fauna Management	Refer to Table 4: Fauna Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	A suitably qualified fauna specialist will be present on site during all clearing activities to reduce the risk of potential direct impacts to conservation significant fauna.
Machinery and Vehicle Management	Refer to Table 5: Machinery and Vehicle Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Water Drainage Management	Refer to Table 8: Water Drainage Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan	Not Applicable

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Weed Management	Refer to Table 9: Weed Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Monitoring	• Specification 204 Environmental Management • Construction Environmental Management Plan • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Auditing	• Specification 204 Environmental Management • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable

Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

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

Table 2: Dieback Management PEMR

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works. 2. Use the <u>Hygiene Checklist</u> (available at: https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/) or equivalent Hygiene form to check that all machinery and vehicles are clean on entry (i.e. free of soil and vegetation).
DURING WORKS 1. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing. 2. Ensure no known weed affected soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing. 3. Ensure cleared materials are stockpiled or disposed at waste facilities at the locations approved by the Superintendent.
POST WORKS 1. Use the <u>Hygiene Checklist</u> to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation).

Table 3: 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. Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion; d. Minimise exposed soil working surfaces or protect them from stormwater erosion; e. Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.
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. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.

Table 4: 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.
POST WORKS 1. The Contractor must provide any records of fauna impact to the Superintendent.

Table 5: 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.
DURING WORKS 1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
POST WORKS NIL

Table 6: Pegging and Flagging PEMR

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 must peg/demarcate vegetation proposed to be retained 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 proposal works are completed.

Table 7: Water Drainage Management PEMR

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