

Clearing Assessment Report – CPS 818

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South Coast Highway Shoulder Widening SLK 468.85 to 469.51 South Coast Highway H008 Goldfields-Esperance Region 2249

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1 PROPOSAL

1.1 Purpose and Justification

Proposed works are required to improve overall road user safety at the intersections of South Coast Highway (SCH) at Bukenerup Road (Rd) and Collier Rd. Proposed upgrades to this intersection are aimed to improve sight line distances and reduce incidence of killed or seriously injured accidents (KSI).

The Proposed improvements will include shoulder widening to 2 m at intersections, construction of additional 3.5 m wide traffic lane at the Bukenerup Rd and Collier Rd intersections and sealing a section of SCH from Straight line Kilometre (SLK) 468.85 to SLK 469.51. Intersections will be improved significantly and have been designed to accommodate trucks of up to 19 m length.

South Coast Highway connects the South-West and Goldfields Esperance Region (GER), extending from Walpole to Esperance and forms part of Australia's Highway 1 network, a strategic freight, tourist and inter-town route. The efficiency and reliability of SCH is vital to the WAs mining, fishing and agricultural sectors who rely on this as a critical transport route to Esperance Port, considered a global trade-hub.

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

South Coast Hwy sectional widening and sealing at SLK 468.85 to SLK 469.51. The scope includes the construction of new pavement to accommodate an additional, 3.5m traffic lane and a 2 m shoulder widening at both intersections of SCH/Bukenerup Rd and SCH/Collier Rd.

1.3 Proposal Location

The Proposal is located on SCH H008, Esperance, SLK 468.85 to SLK 469.51, within the Shire of Esperance, shown in Figure 1. Vegetation Clearing within Development Envelope below.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:

0.75 hectares (ha)

Areas of Native Vegetation Clearing:

The areas of native vegetation to be cleared are shown in Figure 2.

Type of Native Vegetation:

Two vegetation formations occur within the Proposed Clearing Area described as Banksia *speciosa* Shrubland and *Acacia cyclops* Shrubland, as shown in Figure Figure 2 below. Vegetation condition ranges from Degraded to Excellent. The Banksia *speciosa* Shrubland is concordant with the Threatened *Kwongkan* Shrublands of the southeast coastal floristic province (Kwongkan TEC) (T, P3)



Path: Y:\South Coast Highway\SCHwy Map.aprx

Figure 1. Vegetation Clearing within Development Envelope



Path: Y:\South Coast Highway\SCHwy Map.aprx

Figure 2. Mapped Vegetation for clearing within the Development Envelope

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, this will result in a poorer safety outcome and result in ongoing fatalities or serious injuries and further degradation of the State road asset.
- Further reducing the speed limit to minimise clearing requirements, still balancing safety (driver fatigue) and freight efficiency.

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

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

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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	The upgrade and widening of South Coast Highway has been aligned to the north-east, as much as possible to minimise impact on vegetation assessed to be concordant with Threatened and Priority Ecological Communities (comprising 0.18 ha), located north-east and to the south of the Development Envelope. Although total avoidance of this vegetation type is not possible due to the configuration of the existing intersection, a total reduction of clearing from 0.18 ha to 0.09 ha for this vegetation type will be achieved.
Alternative alignment located within degraded areas	The Development Envelope has been orientated on existed cleared and/or degraded land, approximately 86% of the Development Envelope occurs within existing cleared land (68%) or vegetation in Degraded condition (18%). Increased impact to vegetation in Very Good to Excellent condition directly adjacent to Development Envelope has been avoided.
Simplification of design to reduce number of lanes and/or complexity of intersections	Designs have been simplified to reduce the length of passing lanes and filter lanes at the intersections of Bukenerup and Collier Roads while meeting required safety standards. Impacts to vegetation types south of the current Development Envelope, determined to be concordant with Threatened and Priority Ecological Communities, have been reduced due to simplified design.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Further Proposal clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas.

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 510 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 (RIWI Act)
- 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 for Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia
- 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.
- Development Envelope The maximum extent within which the Clearing Area will be located. This envelope larger than the Clearing Area and the Proposal Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area.
- **Proposal Area** The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design and is less than the development envelope. It usually includes a buffer to allow for constructability and the movement of machinery during construction.
- **Study Area** Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 10 km radius.
- **Survey Area** Area covered by the Biological Survey, which is typically larger that the Development Envelope. This represents the area surveyed by Southern Ecology (2018) and covers three areas of SCH between straight line kilometres (SLK) 371.5 380 (Munglinup), 392.9 403 (Stokes) and 466.7 474.44 (Esperance).

2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary. Results from searches can be found in Appendix 2.

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 9.

2.3 Surveys and Assessments

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

- Detailed and targeted flora and vegetation survey (Southern Ecology, 2018)
- A targeted Black Cockatoo habitat assessment (Southern Ecology, 2018)
- Dieback assessment (Southern Ecology, 2021)

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

3 SUMMARY OF SURVEYS

3.1 Overview of Surveys

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

Consultant & Survey Name	Survey Details
Southern Ecology (2018) South Coast Hwy Biological Survey (SLK 371.5 – 380, 392.9 – 403 and 466.7 – 474.44)	Survey Area: South Coast Highway, between straight line kilometres (SLK) 371.5 – 380 (Munglinup), 392.9 – 403 (Stokes) and 466.7 – 474.44 (Esperance). The Survey Area included the full width of the road reserve at each project site and encompassed a total of 222 hectares (ha). Type: Targeted Flora Search for potential Threatened and Priority flora, Vegetation assessment, General Fauna habitat assessment, and Black Cockatoo (Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red- tailed Black Cockatoo) habitat assessment Timing: Conducted on 7 – 21 September, 17 – 18 October and 1 - 4 and 19 of November 2017 Survey Results Shapefile TRIM Ref: D18#1062228 Document TRIM Ref: D18#1025917
Southern Ecology (2021) Phytophthora Dieback Management Plan: South Coast Highway, Bukenerup to Collier Road	 Survey Area: Area surveyed comprised approximately 5 ha adjacent to SCH between SLK 468.85-469.51 near the town of Esperance Type: Dieback assessment to map the occurrence of Phytophthora species in the survey area and to provide hygiene management recommendations. Timing: 6th November 2021 Survey Results Shapefile TRIM Ref: D22#931773 Document TRIM Ref: D22#1318537

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

3.2 Summary of Flora and Vegetation Surveys

Southern Ecology completed a Biological Survey over 222.51 ha, encompassing the full extent of the SCH road reserve between SLKs; 371.5 – 380, 392.9 – 403 and 466.7 – 474.44 in three campaigns between 7 – 21 September, 17 – 18 October and 1 - 4 and 19 of November 2017.

Thirteen vegetation formations were identified within the Survey Area with two occurring within the DE; *Acacia cyclops* Shrubland (0.66ha) and *Banksia speciosa* Shrubland (0.09ha). The majority of vegetation (0.45 ha) is in a Degraded condition with the remaining (0.30 ha) in Very Good to Excellent condition.

Banksia speciosa Shrubland was determined to be concordant with the Threatened Kwongkan Shrublands of the southeast coastal floristic province (Kwongkan TEC) (T, P3), mapped to occur over 18.16 ha of the Survey Area and 0.09 ha within the DE.

A total of 544 plant taxa from 69 families were recorded within 41 survey quadrats established in the Survey Area. No Conservation Significant threatened species protected under the *Biodiversity Conservation Act 2016* (BC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded.

Five DBCA listed Priority (P) populations were identified within the Survey Area, however no DBCA listed species occur within the DE. One species (*Myriophyllum muelleri* (P1)), was located approximately 300 m north of the DE.

A likelihood of occurrence assessment following the field survey was completed by Southern Ecology. A total of 21 species were considered likely or possible to occur within the Survey Area.

Limitations of the survey (lack of recent fire or disturbance) were identified for one taxa (*Adelphacme minima* (P3)) with historic records within 30km of the DE.

Three Declared Pests and/or Weeds of National Significance (WONS) were identified within the Survey Area; Bridal Creeper (*Asparagus asparagoides*), Boxthorn (*Lycium ferocissimum*), and Cape tulip (*Moraea flaccida*).

A fauna habitat assessment primarily focused on vegetation type and structure was undertaken within the Study Area. The focus of the survey was to identify potential suitable habitat rather than the presence of species. During the habitat assessment opportunistic sightings or signs of fauna species (sightings, bird calls, tracks, scats, bones and feeding signs) were recorded.

A likelihood of occurrence assessment was completed for conservation significant fauna species following the field survey. Six species were considered to be present or likely to occur within the Survey Area; three species (as listed below) within the DE; Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (Threatened, 'present'), Southern Brown Bandicoot (*Isoodon obesulus* subsp. *fusciventer*) (P4, 'likely'), and Peregrine Falcon (*Falco peregrines*) (Specially protected, 'likely')

Three conservation significant fauna species (excluding migratory birds) were considered to possibly occur within the Survey Area including the DE, as listed below; Sharp-tailed Sandpiper (*Calidris acuminata*) (IA), Blue-billed Duck (*Oxyura australis*) (P4) and Southern Death Adder (*Acanthophis antarcticus*) (P3). Carnaby's Cockatoo was the only species considered to be present, based on the identification of 18.16 ha of high-quality foraging habitat (mature Proteaceae dominated shrublands) throughout the Survey Area and within 0.09ha of the DE. Large areas of potential roosting sites were identified in both native and introduced tree species over 21.48 ha within the Survey Area. No roosting sites, DBH trees or hollows where identified within the DE. The Survey Area is outside the predicted breeding range of Cockatoo species.

The Lake Warden Nature Reserve (Res. 32257) and Wetland System occurs within the Survey Area, approximately 500 m south of the DE. This wetland is a RAMSAR site and an Environmentally Significant Area. No shorebirds were determined to be present within the Survey Area.

3.3 Summary of Dieback Survey

A Dieback Survey was conducted on 6 November 2021 by Southern Ecology (Southern Ecology, 2018). The Survey Area covered the extent of SCH road reserve between SLK 468.85 to 469.51 over an area of approximately 5 ha.

The Dieback Survey mapped the DE into five disease status categories for the purposes of managing the spread of *Phytophthora cinnamomi*. The majority of the survey area was mapped as Unprotectable (4.78 ha) from the introduction of *Phytophthora cinnamomi* (includes mapping categories Uninterpretable, Excluded, Infested and Temporality Uninterpretable

Two small areas of Banksia speciosa Shrubland (0.24 ha) were mapped as Uninfested (Protectable), where no evidence of Phytophthora was present. This vegetation is concordant with the Commonwealth listed TEC "Proteaceae Dominate Kwongkan Shrublands" and in contiguous to a larger patch extending outside the survey area. Proteaceae Dominate Kwongkan Shrublands has a high proportion of susceptible taxa, therefore is highly vulnerable to impacts from Phytophthora species.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The Proposed Development Envelope (DE) is located within the Goldfields to Esperance region. Broadly, the landscape comprises of a mosaic of cleared agricultural land and patches of remnant native vegetation. The DE can be considered to be located on the dividing edge between vast expanses of remnant vegetation that extend from the DE to the Esperance coastline; and cleared agricultural land that dominates the areas north of the DE.

The vegetation within the DE consists of two vegetation associations: *Banksia speciosa* shrubland (0.09 ha) and *Acacia cyclops* shrubland (0.66 ha). The vegetation types exist either side (north and south) of the existing cleared road alignment (approximately 16 - 20 m wide).

The vegetation condition within the DE ranges from Degraded to Excellent condition, with the majority (approximately 58%) mapped in a Degraded condition (Southern Ecology, 2018). Three Declared Pests and/or Weeds of National Significance (WONS) were recorded during the Biological Survey (Southern Ecology, 2018) and within existing cleared and degraded areas within the DE. Species identified include; *Moraea flaccida, Leptospermum laevigatum*, and *Asparagus asparagoides*. Weeds will be required to be managed during the construction process and will be addressed through the Principal's Environmental Management Requirements.

Table 3 and Table 4 below provide details of the vegetation types and their condition within the DE and the remaining extents of these associations.

For a full description of the existing vegetation, refer to the Biological Report (Southern Ecology, 2018) found at TRIM Ref D18#1025917

Vegetation Type	Maximum Extent within Development Envelope (ha)	Total Extent Mapped within Survey Area (ha)
Acacia cyclops Shrubland (Ac)	0.66	27.18
Banksia <i>speciosa</i> Shrubland (Bs)	0.09	3.44
TOTAL (ha)	0.75	30.62

Table 3. Summary of Vegetation Types within Development Envelope

The information provided in Table 4 is taken from the 2019 Statewide Vegetation Statistics (current as of December 2018). The Statewide Vegetation Statistics are updated annually by DBCA and can be accessed via the following link - Statewide Vegetation Statistics. Refer to Main Roads 'A Guide to Preparing a PEIA and PCIA' for further information.

Pre-European Vegetation Association	Scale	Pre– European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land
Veg Assoc No.	Statewide	134 625	106 278	78.9	65.1
7048 (Banksia	IBRA Bioregion: Esperance Plains	134 615	106 268	78.9	65.0
<i>speciosa</i> Shrubland)	IBRA Sub-region: Recherche	134 615	106 268	78.9	65.0
	Local Government Authority: Shire of Esperance	134 625	106 278	78.9	65.1
Veg Assoc No.	Statewide	310 085	297 963	96.1	44.3
42 (Acacia cyclops	IBRA Bio region: Esperance Plains	135 420	128 053	94.6	53.7
Shrublands)	IBRA Sub-region: Recherche	108 885	104 049	95.6	64.5
	Local Government Authority: Shire of Esperance	105 345	99 942	94.9	64.7

Table 4. Pre-European Vegetation Representation

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '<u>A Guide to the</u> <u>Assessment of Applications to Clear Native Vegetation</u>' (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, d and f of the ten Clearing Principles.

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

Proposed clearing is at variance to this Principle.

Comment

The Proposal requires the clearing of up to 0.75 ha of native vegetation within a Development Envelope (DE) of 2.60 ha. The DE is located on the northern edge of vast areas of remnant vegetation that span from South Coast Hwy to the Esperance coastline. The DE is located wholly within the existing road reserve cadastre that contains South Coast Highway. External to the road reserve cadastre, the western half of the DE is surrounded by a Crown Reserve managed by the Shire of Esperance for the purpose of Recreation. The eastern half of the DE is surrounded by privately owned land that has been extensively cleared and modified for agricultural use.

The Proposal is not located within areas identified as Biodiversity Hotspots for priority action, by the Threatened Specifies Scientific Committee for the Australian Government (DER, 2014).

The vegetation to be cleared is not located in or adjacent to any conservation reserves or lands managed by the Department of Biodiversity, Conservation and Attractions (DBCA). The nearest land parcel reserved for conservation purposes is Lake Warden Nature Reserve, located approximately 600 m southeast of the DE, and Pink Lake Nature Reserve, located approximately 1.2 km southwest of the DE. Pink Lake is also a Priority Ecological Community – Priority 1 "Stromatolite-like microbialite community of a Coastal Hypersaline Lake (Pink Lake)". The DE is located within the 2 km mapped buffer zone of the PEC (DBCA-038), however the DE itself does not contain watercourses or wetland features and is located 300 m from the nationally significant wetland mapped boundary for Pink Lake (refer to Clearing Principle [f]).

Two vegetation formations were described within the DE (Southern Ecology 2018): two upland Shrublands: *Banksia speciosa* Shrubland and *Acacia cyclops* Shrubland. Vegetation condition varied from Degraded to Excellent. *Banksia speciosa* Shrublands (0.09 ha) was identified as concordant with *Kwongkan* Shrublands ecological community, due to Proteaceae cover > 30%. The *Proteaceae* dominated *Kwongkan* Shrublands and is listed as an Endangered Threatened Ecological Community (TEC) in the EPBC Act and as a Priority 3 Ecological Community (PEC) in the BC Act. A total of 18.16ha of *Kwongkan* Shrublands TEC was identified within the survey area (Southern Ecology, 2018) of which 0.09ha (or less than 0.005%) is required to be cleared. In addition, the desktop review of TEC and PEC datasets indicate large areas of *Kwongkan* Shrublands TEC are likely to exist within 10 km of the DE, further confirming the clearing in the DE will not be considered significant given the context of remaining remnant vegetation.

Dieback was confirmed (Southern Ecology, 2022) as infested within 0.20 ha of vegetation, including 0.06 ha within the TEC Kwongkan Shrublands. The remaining vegetation within the DE was un-infested (0.03 ha) and uninterpretable (0.52 ha).

All vegetation types are well represented within the Shire of Esperance local government area when compared with their pre-european extents: 78.9% Vegetation Association 7048 (*Banksia speciosa*

Shrublands) remaining, 94.9% Vegetation Association 42 (*Acacia cyclops* Shrublands) remaining. Similar representation of these vegetation types occurs across the state, with 78.9% and 96.1% remaining, respectively.

There were no Threatened (T) or Priority (P) flora species identified within the Development Envelope.

Six conservation significant fauna species were identified by Southern Ecology (2018) as present or likely to occur within the larger Survey Area following the field survey. One species, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (Threatened) was considered present, and three species, Southern Brown Bandicoot (*Isoodon obesulus* subsp. *fusciventer*) (Priority 4), Western Brush Wallaby (*Macropus Irma*) (Priority 4), Peregrine Falcon (*Falco peregrines*) (OS) were considered likely to utilise vegetation within the DE. One additional conservation significant species Sharptailed Sandpiper (*Calidris acuminata*) was also considered to possibly occur within suitable foraging habitat identified within the Survey Area and possibly within the DE. Of the 0.75ha of vegetation to be cleared, 0.09ha contains habitat value for Black Cockatoos. Please see Principle B for fauna habitat assessment.

The proposed clearing is at variance with principle (a), as the project area contains 0.09ha of Commonwealth listed Threatened Ecological Community: *Kwongkan* Shrublands and contains a small area of habitat for conservation significant fauna species, specifically 0.09 ha of high-quality Black Cockatoo foraging habitat.

- Biological Survey (Southern Ecology, 2018)
- Dieback Surey (Southern Ecology, 2022)
- DCCEEW Protected Matters Search Tool (2023)
- Government GIS Shapefiles:
 - DBCA Threatened and Priority Ecological Community database search (Accessed 30/03/23),
 - DBCA Threatened and Priority flora database search (Accessed 30/03/23),
 - DBCA Threatened and Priority Fauna (Accessed 30/03/23),
 - DBCA Directory of Important Wetlands in Australia Western Australia (Accessed 30/03/23)
- Statewide Vegetation Statistics (Government of Western Australia 2019)

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

Proposed clearing is at variance to this Principle.

Comment

Two vegetation types were identified within the DE for the project (Southern Ecology, 2018)

- Banksia speciosa Shrublands (0.09 ha)
- Acacia cyclops Shrublands (0.66 ha)

These vegetation types are well represented within both the Shire of Esperance (78.9%, 94.9% respectively, of pre-european extent remaining) and within the state (78.9%, 96.1%, respecitively, of pre-european extent remaining).

Southern Ecology (2018) determined four conservation significant fauna species were either present or likely to utilise habitat within these two vegetation associations within the DE:

- Carnaby's Cockatoo (Calyptorhynchus latirostris)
- Western Brush Wallaby (Macropus irma)
- Southern Brown Bandicoot (Isoodon obesulus subsp. fusciventer)
- Peregrine Falcon (Falco peregrines).

Table 5 below presents the conservation significant fauna and their confirmed presence (P) or likely (L) habitat utilisation within vegetation associations within the Development Envelope (Southern Ecology, 2018):

Vegetation Association	Carnaby's Cockatoo (Calyptorhynchus latirostris) habitat	Western Brush Wallaby (<i>Macropus</i> <i>irma</i>) habitat	Southern Brown Bandicoot (<i>Isoodon</i> <i>obesulus</i> subsp. <i>fusciventer</i>) habitat	Peregine Falcon (<i>Falco peregrines</i>) habitat
Banksia speciosa Shrubland	Ρ	L	L	L
<i>Acacia cyclops</i> Shrubland	N/A	N/A	L	L
Total Potential Habitat (ha)	0.09	0.09	0.75	0.75

One additional fauna species: Sharp-tailed Sandpiper (*Calidris acuminata*) was considered to possibly occur within the Survey Area and DE, although this could not be confirmed during the biological survey (Southern Ecology 2018).

Carnaby's Cockatoo (Calyptorhynchus latirostris)

The DE occurs within the known distribution and predicted non-breeding range of Carnaby's Cockatoo. No breeding habitat or roosting habitat was identified within the DE. The closest recorded roosting site (DBCA-050) occurs over 3.5 km south of the DE near Esperance and the closest breeding site (DBCA-063) over 170 km away west of Ravensthorpe. Visual observations of a flock of up to 15 birds and evidence of feeding was observed within the Survey Area in a paddock tree; observations recorded during the Southern Ecology, 2018 survey were not within 90 km of the DE of this proposal.

Carnaby's Cockatoo mainly occurs in uncleared or remnant native eucalypt woodlands and in shrubland or *Kwongkan* heathland dominated by *Hakea*, *Banksia* and *Grevillea* species. On the south coast they feed on Jarrah and Marri seeds and a wide variety of Proteaceous species. Areas of *Kwongkan* Shrublands, of which 0.09ha is present within the DE and in a excellent to very good condition, are considered high quality feeding and foraging habitat for Carnaby's Cockatoos (Southern Ecology, 2018).

The proposed native vegetation clearing will result in:

- up to 0.09 ha of high quality foraging habitat
- No trees with DBH>500 mm, that are potential breeding habitat
- No trees will be removed that are known roosting sites
- No trees will be removed that contain hollows

The removal of up to 0.09 ha of foraging habitat over a short linear strip adjacent to a busy road, and given the vast expanses of largely uncleared remnant vegetation that exist between the DE and the coastline (with over 78% of *Banksia speciosa* Shrubland vegetation association remaining within the local government area alone), the vegetation to be cleared is not likely to be necessary for the maintenance of the species and will not have a significant impact on any populations of Carnaby Cockatoos, or more broadly, the persistence of these species.

Western Brush Wallaby (Macropus irma)

The occurrence of this species is poorly documented and occurs more widely than records indicate (Southern Ecology, 2018). Preferred habitat identified within the Survey Area includes open forest/woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. No scats of this species were observed during the Southern Ecology (2018) survey and no previous records occur within the DE or wider Survey Area (Southern Ecology, 2018). Based on the lack of records within the DE and wider survey area, absence of any evidence of the species (e.g. scats), proximity to an existing main road, and the minor (0.75ha) linear nature of the vegetation clearing, the vegetation to be cleared is not necessary for the maintenance of this species.

Southern Brown Bandicoot (Isoodon obesulus subsp. fusciventer)

Quenda inhabit wet or dry sclerophyll forest through to open woodland and scrubby vegetation on sandy soils (Southern Ecology, 2018). This species is also found in dense scrubby, often swampy, vegetation with dense cover up to one metre high and often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover. The closest confirmed record of this species occurs over 4km north-east of the DE, adjacent to a large area of remnant bushland (>500 ha) containing a perennial swamp (DBCA TPFA database). The clearing of a small linear patch of vegetation (0.75ha) abuts an existing main road and is located in an area that has approximately 63ha of remnant vegetation (in very good to excellent condition) adjacent to the north and south of the DE boundaries that provide suitable habitat in equal condition to that of the DE vegetation. As such the clearing within the DE is not necessary for the maintenance of this species.

Peregrine Falcon (Falco peregrines)

The Peregrine occurs in a variety of habitats from woodlands to open grasslands and coastal cliffs (Southern Ecology, 2018). The species requires abundant prey and secure nest sites (cliff faces, tree hollows or in the large abandoned nests of other birds) and prefers coastal and inland cliffs or open woodlands near water. This species has a home range of 20-30 km per day, and no suitable nesting sites were identified in the DE or wider Survey Area. (Southern Ecology, 2018). Peregrine Falcon are highly mobile species with wide distributions and would not be reliant on vegetation in the DE for habitat. Vegetation proposed to be cleared (0.75 ha) within the DE is therefore not considered to be significant foraging habitat for this highly mobile species.

Sharp-tailed Sandpiper typically forage along the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water; also among inundated vegetation of saltmarsh, grass or sedges, sewage ponds, and often in hypersaline environments. After rain, they may forage in paddocks of short grass, well away from water. They may forage on coastal mudflats at low tide, and move to freshwater wetlands near the coast to feed at high tide (Southern Ecology, 2018). Sharp-tailed Sandpiper roost at the edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh. Occasionally, they roost on sandy beaches, stony shores or on rocks in water (Southern Ecology, 2018). The closest known record of the species is on Lake Warden (350 m south) and Pink Lake (approx. 550 m east), adjacent to the DE however no impacts to this species is expected due to the absence of preferred habitat (wetland vegetation, saltmarsh, grass and sedges).

Conclusion:

The DE, located between SLK 468.8 to 469.6 on South Coast Highway, can be considered to be situated on the northern perimeter of large expanses of intact remnant native vegetation that extend to the south coast of WA. Vegetation associations within the DE are well represented within local area, with 106,278 ha of *Banksia speciosa* Shrublands and 99,942 ha of *Acacia cyclops* Shrublands currently remaining within the Shire of Esperance alone. The proposed clearing within the DE of 0.09 ha of *Banksia speciosa* Shrublands and 0.66 ha of *Acacia cyclops* Shrublands represents less than 0.00001% of each vegetation association to be impacted by the proposal, within the Shire of Esperance.

Within a 10 km radius of the DE, there are numerous reserves under the management of the Department of Biodiversity, Conservation and Attractions (DBCA) for conservation purposes: Pink Lake Nature Reserve (173 ha); Lake Warden Nature Reserve (702 ha); Woody Lake Nature Reserve (938 ha); Shark Lake Nature Reserve (11 ha); Mullet Lake Nature Reserve (1,885 ha); and two unnamed Nature Reserves (159 ha and 42 ha).

The vegetation area to be cleared is insignificant compared with the extent of remnant vegetation in the surrounding area, local government boundary and state. Noting the linear nature of clearing impacts to fauna habitat are deemed to not be significant nor will it result in a significant impact to habitat necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia. However, due to the vegetation clearing impacting 0.09ha of high quality black cockatoo foraging habitat, the proposed clearing is likely to be at variance to this principle.

- Biological Survey (Southern Ecology, 2018),
- DCCEEW Protected Matters Search Tool (2023)
- Dieback Survey (Southern Ecology, 2022),
- Government GIS Shapefiles:
- DBCA Threatened and Priority Ecological Community database search (Accessed 30/03/23),
- DBCA Threatened and Priority Fauna (Accessed 30/03/23),
- DBCA Directory of Important Wetlands in Australia Western Australia (Accessed 30/03/23)
- DBCA Carnabys Cockatoo Confirmed Roost Sites (DBCA-050) (Accessed 30/03/23)
- Statewide Vegetation Statistics (Government of Western Australia 2019)

(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

Southern Ecology (2018) undertook a Biological Survey of three sections of South Coast Hwy for three separate Projects, including the proposed DE for this Project. The Biological Survey included a desktop assessment of existing flora records from DBCA and/or the Western Australian Herbarium, a review of existing biological survey reports and a targeted flora search for significant flora. The targeted flora search focused on locating potential Threatened and Priority flora identified from the desktop assessment.

No Threatened (T) or Priority (P) flora records exist hisotrically within the DE (DBCA_TPFL and WAHerbarium Database) and none were located within the DE (Southern Ecology 2018).

Survey limitations (lack of recent fire or disturbance) were identified for three taxa only (*Anigozanthos bicolor* subsp. *minor* (T), *Conostylis lepidospermoides* (T) and *Adelphacme minima* (P3)) (Southern Ecolgy, 2018)

Anigozanthos bicolor subsp. minor (T) is noted to possibly appear in sandy areas post-fire, however no suitable habitat for this speicis was indeifited duriung the survey.

Conostylis lepidospermoides (T) is considered possible to occur within open, disturbed (post-fire / partial grazed) areas within the Survey Area post-fire. The species is noted to be most abundant west of the Survey Area. The survey was undertaken during flowering period when plants are best identified.

Adelphacme minima (P3)) was considered to likely occur in the Survey Area despite surveys being completed during flowering period and no taxa being identified. The species has previously been found near Survey Area in burnt *Banksia speciosa*. No similar habitats of recenetly burnt habitat occur in the Survey Area, this species could appear post-fire.

The proposed clearing within the DE is not likely to be at variance to this Principle.

- Biological Survey (Southern Ecology, 2018),
- Government GIS Shapefiles:
- DBCA Threatened and Priority Ecological Community database search (Accessed 30/03/23),
- DBCA Threatened and Priority flora database search (Accessed 30/03/23),
- DBCA Directory of Important Wetlands in Australia Western Australia (Accessed 30/03/23)

(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 proposed clearing within the DE consists of 0.09 ha *Banksia speciosa* Shrublands, determined to be concordant with the ecological community: *Kwongkan* Shrublands of the southeast coastal floristic province, listed as a Threatened Ecological Community under the EPBC Act and as a Priority 3 Ecological Community under the EPBC Act and as a Priority 3 Ecological Community under the EP Act (Southern Ecology 2018).

Vegetation is in very good to excellent condition (Southern Ecology, 2018), with 0.06 ha identified as infested with *Phytophthora* Dieback, and a small 0.03 ha portion un-infested (protectable) (Southern Ecology 2022). Despite being infested by Dieback, patches of vegetation ≥0.05 ha in size are eligible to be considered as Moderate quality *Kwongkan* Shrublands against approved conservation criteria advice (DoE, 2014) .Proteaceae Dominated *Kwongkan* Shrublands are highly susceptible to *Phytophthora* Dieback which represents a key threat to the protection of this community.

On a regional scale approximately 1,185,188 ha of this TEC remains entirely within the southeast coastal floristic province (DoE, 2014). Of this, approximately 52% (619 577 ha) occurs within DBCA managed conservation reserves (e.g. Stirling Range National Park, Fitzgerald River National Park, Cape Le Grand National Park and Cape Arid National Park) while occurrences outside of managed reserves are severely fragmented due to land clearing for agriculture since 1920s.

The *Kwongkan* Shrubland TEC was mapped in fragmented patches over 18.16 ha of the Survey Area (Southern Ecology 2018). Proposed vegetation clearing will result in the loss of less than 0.5% of the mapped extent known to occur in the Survey Area. The mapped extent (Southern Ecology, 2018) was limited to approximately 30 m either side of the road alignment however this is not representative of the full extent of the *Kwongkan* Shrubland TEC within the local area.

Although the linear shaped clearing of 0.09 ha of *Kwongkan* shrubland TEC to a maximum width of 7.5 m on the edge of an existing road is not considered to be significant in terms of the size of impact due to clearing, or the location for the continuation of ecological values of the TEC, it does form "part of" a Threatened Ecological Community and therefore, by definition, is at variance to this Principle.

Proposed clearing will be undertaken with hygiene management procedures to ensure the potential introduction of Dieback to un-infested areas within and adjacent to the DE is avoided and assist in preserving the condition of vegetation.

- Biological Survey (Southern Ecology, 2018),
- Diebadck Survey (Southern Ecology, 2022),
- Government GIS shapefiles:
 - DBCA Threatened and Priority Ecological Community database search (Accessed 30/03/23)
 - DBCA Threatened and Priority flora database search (Accessed 30/03/23),
 - DBCA Threatened and Priority flora database search (Accessed 30/03/23).
- Department of the Environment (2014)

(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

There are two vegetation associations within the DE proposed to be cleared:

- Fanny Cove 7048 Mixed Heath (congruent with Banksia *speciosa* shrubland).
 This vegetation type was determined to be of Very Good / Excellent condition in the Biological Survey (Southern Ecology 2018).
- Fanny Cove 42 Shrublands on coastal dunes (congruent with *Acacia cyclops* shrublands). This vegetation type ranged from Degraded to Excellent condition.

Vegetation associations have between 78.9% (No. 7048) and 96.1% (No. 42) remnant remaining statewide when compared with their pre-European ranges. Within the Shire of Esperance, the two listed vegetation associations have between 78.9% (No. 7048) to 94.9% (No. 42) remnant vegetation remaining when compared with their pre-European ranges (Refer to Table 2 and 3) (DBCA 2019).

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Fanny Cove 7048 – Mixed heath (congruent with <i>Banksia</i> <i>speciosa</i> Shrubland within the Survey Area)	Clearing of up to 0.09 ha for road widening and drainage on South Coast Hwy	Very Good / Excellent	Vegetation description and condition determined from the Biological Survey (Southern Ecology 2018)
Fanny Cove 42 – Shrublands on coastal dunes (congruent with <i>Acacia</i> <i>cyclops</i> Shrublands from the Survey Area)	Clearing of up to 0.66 ha for road widening and drainage on South Coast Hwy	Degraded to Very Good/Excellent	Vegetation description and condition determined from the Biological Survey (Southern Ecology 2018)

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

The remaining extent of the vegetation association is summarised in the below table.

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre– Europea n (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No.	Statewide	134 625	106 278	78.9	65.1
7048 (Banksia	IBRA Bioregion: Esperance Plains	134 615	106 268	78.9	65.0
<i>speciosa</i> Shrubland)	IBRA Sub-region: Recherche	134 615	106 268	78.9	65.0

	Local Government Authority: Shire of Esperance	134 625	106 278	78.9	65.1
Veg Assoc No.	Statewide	310 085	297 963	96.1	44.3
42 (Acacia cyclops	IBRA Bio region: Esperance Plains	135 420	128 053	94.6	53.7
Shrublands)	IBRA Sub-region: Recherche	108 885	104 049	95.6	64.5
	Local Government Authority: Shire of Esperance	105 345	99 942	94.9	64.7

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30 per cent or more of the pre-European extent of each ecological community is necessary if Australia's biological diversity is to be protected (Environment Australia, 2001). As indicated in Table 3, the two vegetation associations that occur within the DE retain a significantly high percentage of their pre-European extent at all scales. Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

- Biological Survey (Southern Ecology 2022)
- Environment Australia 2001, National Objectives and Targets for Biodiversity Conservation 2001–2005, EA, Canberra
- Government GIS shapefiles:
 - Native Vegetation Extent (DPIRD-005) Accessed 18/10/22
 - Aerial imagery IMGY WANow Landgate Imagery (LGATE-320) Accessed 18/10/22
 - Pre-European Vegetation (DPIRD-006) Accessed 03/04/23
- Statewide Vegetation Statistics (Government of Western Australia 2018)

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

Proposed clearing is at variance to this Principle.

Assessment

There are no watercourses or surface drainagee features that directly intersect the DE.

The DE is located between two wetland systems: Pink Lake (approximately 300 m southwest) and Lake Warden (approximately 605 m southeast). The DE does not contain vegetation associations that are congruent with wetland or riparian vegetation types. There are two *Melaleuca cuticularis* woodland patches associated with wetland/riparian habitat mapped (Southern Ecology, 2018) within the wider Survey Area, however both occurrences are outside of the proposed clearing area, and subsequently will not be impacted by the proposed clearing. The DE will clear approximately 0.75 ha of vegetation that is not associated with a wetland or watercourse based on vegetation mapped by Southern Ecology (2018).

Privately owned agricultural land is located immediately to the east of the DE with several unmapped wetland features present. These unmapped wetlands are surrounded by agricultural grasses and paddocks. The vegetation to be cleared does not intersect these unmapped wetlands and is not representative of vegetation associated with any wetland (Southern Ecology, 2018).

Pink Lake, a Priority Ecological Community (PEC) protected under the BC Act: *Stromatolite-like microbialite community of a Coastal Hypersaline Lake (Pink Lake)* is located over 300 m from the DE. Land between the DE and wetland is a State-owned Reserve which also contains two Shire owned roads (Keenan Road and Collier Road). The current level of disturbance that exists between the DE and Pink Lake is likely to be greater than that caused by proposed clearing.

No riparian vegetation occurs within the DE and no vegetation associated with a wetland is proposed to be cleared. As such, clearing is not likely to be at variance with this principle.

- Biological Survey (sothern Ecology 2018)
- Government GIS shapefiles:
 - Directory of Important Wetlands in Australia WA (DBCA-045) Accessed 03/04/2023
 - Ramsar Sites (DBCA-010) Accessed 03/04/2023
 - Hydrography Linear (Hierarchy) (DWER-031) Accessed 03/04/2023
 - DBCA Legislated Lands and Waters (DBCA-011) Accessed 03/04/2023
 - DBCA Threatened and Priory Ecological Communities Accessed 03/04/2023

(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 DE occurs within the Gore System landscape map unit, characterised as a discontinuous level to gently undulating coastal plain with subdued sand dunes, lakes and swamps; Unconsolidated Pleistocene sediments.

The Clearing Area is classified as, low risk of land degradation from waterlogging, water erosion, salinity, land instability and flooding. No surface drainage lines intercept the DE that have the potential to contribute to increased erosion within or adjacent to the Clearing Area. There is a high to extreme susceptibility to wind erosion. Given the minor and linear nature of the clearing, exposed soils will be sealed and/or stabilised as part of the planned road upgrade, appreciable land degradation from an increase in wind erosion is not likely.

The DE is located within an area mapped as having an extremely low probability of acid sulfate soils risks. Given there are no anticipated risks of ASS, risks encountered during construction are not likely however measures will be incorporated into environmental management procedures for management of ASS.

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

- Biological Survey (Southern Ecology, 2018)
- Government GIS Shapefiles:
 - Acid Sulphate Soil Risk Map (Accessed 03/04/2023)
 - Soil landscape land quality Water Erosion Risk (Accessed 03/04/2023)
 - Soil landscape land quality Wind Erosion Risk (Accessed 03/04/2023)
 - Soil landscape land quality Salinity Risk (Accessed 03/04/2023)
 - Soil landscape land quality Surface Acidity (Accessed 03/04/2023)
 - Soil landscape land quality Waterlogging Risk (Accessed 03/04/2023)
 - Soil landscape land quality Flood Risk (DPIRD-007) (Accessed 03/04/2023)

(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

The nearest conservation areas to the DE are associated with the Pink Lake wetland system (approximately 315 m southwest) and the Lake Warden Nature Reserve wetland system (approximately 605 m southeast). The distance from the DE to mapped features varies depending on dataset used, as conservative approach the minimal distance has been applied to assess potential impact.

Proposed clearing is linear in shape with a maximum width of 7.5 m and located along an established road. The clearing will result in the increase of the existing cleared road corridor from approximately 20 to 28 m. A large area of remnant vegetation (over 100 ha) exists between Pink Lake and Lake Warden Reserve and provides direct connectivity between the two wetlands. The vegetation to be cleared is located 550m to the north of this large patch of remnant vegetation and subsequently the ecological linkage will not be directly or indirectly impacted.

One additional unnamed Nature Reserve is located within 3 km of the DE, no other Reserve of Conservation value occur within 3 km of the DE. The proposed clearing is not likely to impact any environmental values of current or proposed Conservation Reserves.

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

- Biological Survey (Southern Ecology, 2018)
- Government GIS Shapefiles:
 - DBCA Lands of Interest DBCA-012 (Accessed 04/04/23)
 - DBCA Legislated Lands and Waters DBCA-011 (Accessed 04/04/23)
 - Directory of Important Wetlands in Australia DBCA-045 (Accessed 04/04/23)
 - Environmentally Sensitive Area DWER-046 (Accessed 04/04/23)
 - RAMSAR Sites DBCA-010 (Accessed 04/04/23)

(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

As described in the assessment of Principle (h) above, two wetlands occur south of the DE, no direct or indirect impacts to either wetland are likely to occur from proposed clearing.

Surface water features (unmapped wetlands that do not appear on hydrological datasets i.e. DWER-031) are located within 60 m north of the DE. The biological survey (South Ecology 2018) indicated wetland vegetation associations were present within the Survey Area, however the DE footprint will not impact upon these wetland vegetation types. No clearing of vegetation or ground disturbance is proposed to occur within the 60 m of the identified unmapped wetlands, this will allow a protection buffer between the DF wetland to be maintained for the duration of works.

The DE is mapped as:

- within the Esperance Groundwater Area, Proclaimed Groundwater area (RIWI Act);
- within a Low salinity risk (L1) area,
- within an Extremely Low probability of ASS occurrence,
- not within 3.5 km of a Public Drinking Water Source Area,
- located on relatively flat landform.

The DE does not directly intersect any watercourses or wetland/riparian vegetation (South Ecology 2018). Given the small scale of linear clearing (0.75 ha), proposed clearing is unlikely to impact adjacent surface water features and wetland values. The DE is located on a relatively level flat area with a slight slope < 5% gradient from south- north, with surface v-drains currently existing along the road alignment (north and south) that contain surface water flows and encourage natural infiltration. The proposal will retain v-drains on the north and south of the road alignment to contain surface water and sediment following rainfall events while promoting natural infiltration. The proposed works will be undertaken with operational controls (i.e avoid working during wet weather, stabilise batter slopes, maintain existing drainage features) to ensure no increased erosion, sediment or contaminants are released from the DE during works to prevent impact to the surrounding environment. No groundwater or surface water abstraction is proposed to occur without prior approval under the RIWI Act.

The minor scale and linear nature of clearing and the proposed management controls is unlikely to result in excessive levels of surface runoff that adversely alter surface and underground water quality

The proposed clearing of native vegetation is not at variance to this principle. Methodology

- Biological Survey (Southern Ecology 2018)
- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 04/04/2023)
 - RIWI Act, Groundwater Areas (Accessed 04/04/2023)
 - Soil landscape land guality Salinity Risk (Accessed 04/04/2023)
 - Soil Mapping (Accessed 04/04/2023)
 - Acid Sulphate Soil risk mapping (Accessed 04/04/2023)
 - 2 metre contours DPIRD-072 (Accessed 04/04/2023)
 - Hydrography Linear DWER-031 (Accessed 04/04/2023)
 - Public Drinking Water Source Areas DWER-033 (Accessed 04/04/2023)
 - DBCA Lands of Interest DBCA-012 (Accessed 04/04/23) _
 - DBCA Legislated Lands and Waters DBCA-011 (Accessed 04/04/23)

- Directory of Important Wetlands in Australia DBCA-045 (Accessed 04/04/23)

(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 proposal includes the clearing of approximately 0.75 ha of linear clearing along an established road. The maximum width of clearing for the road widening is approximately 7.5 m and is unlikely to result in an increase in the incidence or intensity of flooding within or adjacent to the DE.

The DE is located approxiamtely 6 km north from the town centre of Esperance, which receives a mean average annual rainfall of 618.7 mm (BOM 2022).

The DE is mapped as having a relatively low water logging risk, salinity risk, flooding risk and water erosion risk

- <3% of map unit has a moderate to very high waterlogging risk (DAFWA-016; DPIRD-015);
- <3% of map unit has a moderate to high salinity risk (DAFWA-011); and
- <3% of map unit has a moderate to high flood risk (DPIRD-007).
- Proposal is not located within an "FPM Floodplain Area" (DWER-020).
- <3% of map unit has a high to extreme water erosion risk (DPIRD-013; DAFWA-014)

The DE is not located within any surface water catchement area or does not intersects any watercourses or defined Hydrological driange lines. The extent of the exsting road alingment within the DE contains surface v-drains, which will be maintained to ensure localised surface water flows following rainfall events. The DE and sorrounding landform is relatively flat with < 5% northern gradient observed across the natural landform. The DE and sorrunding area is described (Southern Ecology, 2018) to contain sandy duplex to deep sands and not condusive to flooding. Based on publically available data available groundwater level is not wihin 3 m of the the natural ground level.

The clearing is not considered to be of a scale that would cause or exacerbate the incidence or intensity of flooding.

Given the minimal clearing to widen an existing road, the DE is within areas mapped as low flooding risk, the proposal is considered not likely to be at variance to this Principle.

- Biological Survey (Southern Ecology, 2018)
- BoM Website, Groundwater Explorer (Accessed 05/04/23)
- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 04/04/2023)
 - RIWI Act, Groundwater Areas (Accessed 04/04/2023)
 - Soil landscape land quality Salinity Risk (Accessed 04/04/2023)
 - Soil Mapping (Accessed 04/04/2023)
 - Acid Sulphate Soil risk mapping (Accessed 04/04/2023)
 - 2 metre contours DPIRD-072 (Accessed 04/04/2023)
 - Hydrography Linear DWER-031 (Accessed 04/04/2023)
 - DBCA Legislated Lands and Waters DBCA-011 (Accessed 04/04/23)
 - Directory of Important Wetlands in Australia DBCA-045 (Accessed 04/04/23)

6 VEGETATION MANAGEMENT

A Vegetation Management Plan (VMP) has been developed given that proposed clearing is at variance with Clearing Principle d.

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

7 STAKEHOLDER CONSULTATION

Main Roads has undertaken stakeholder consultation in accordance with CPS 818 Condition 8.

8 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	 Clearing Report to be published on website and submissions sought for 21 days. Submissions invited from relevant parties, including the LGA, the owner or occupier of the land and other stakeholders in accordance with Condition 8 of CPS 818. VMP has been completed, refer to Appendix 1. An offset proposal for approval by DWER has been prepared. 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 <u>or</u> (j) the incidence of flooding.	Νο	No further action required.
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <u>and</u> (j) the incidence of flooding.	Νο	No further action required.

Impact of Clearing	Yes/No or NA	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	Dieback will be managed during construction through a CEMP with specific management requirements.
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.	Νο	PEMR will include requirement that all vehicles and machinery arrive on site clean and free from foreign material, weed infested material is removed from site. There is a low risk of weed introduction or spread in to adjacent areas of native vegetation.

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

9 **REFERENCES**

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10 APPENDICES

Appendix 1: Vegetation Management Plan

SOUTH COAST HIGHWAY SHOULDER WIDENING SLK 468.85 TO 469.51

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 South Coast Highway Shoulder Widening SLK 468.85 to 469.51

This Project is required for increased safety, related with:

- Improved overall road user safety,
- Improved sight distances,
- Reducing incidence of killed or seriously injured (KSI) accidents.

The project will involve the shoulder widening and sealing of a section of South Coast Highway (H008) from SLK 468.85 to SLK 469.51. The scope includes constructing new pavement to accommodate an additional 3.5 m traffic lane and 2 m shoulder widening near the intersections with Bukenerup Road and Collier Road. Both intersections will be modified to accommodate trucks of up to 19 m length.

The Proposal also includes:

- proposed material will be supplied by the contractor
- proposed water source will be supplied by the contractor
- no proposed side tracks will be required during construction
- stockpile locations (for mulch, aggregate, materials) have yet to be identified
- potholing to locate services (such as gas pipes) may be required, with relocation unlikely but possible.

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 3.1 references the standard Principal Environmental Management Requirements (PEMRs) (Tables 1 to 9) 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 3.1.

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.

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 <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	 Completed Hygiene Checklist (available at: https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/) or a equivalent Hygiene form to check that all machinery and vehicles are Clean on Entry (i.e. free of soil and vegetation must be provided to Superintendent on arrival of all machinery and vehicles on- site. No machinery or vehicles are authorised to undertake works prior to being authorised as Clean on Entry. Contractors engaged to undertaken Clearing activities are to be inducted and understand Project specific PEMRs. All Limits of Clearing must have been surveyed by the Contractor and electronic survey datafiles received by the Superintendent within a minimum of 7 days prior to commencing clearing. No clearing or movement of machinery or vehicles is to occur in Dieback infested areas during or immediately following rainfall events where there is a risk of introducing dieback infested areas is to be undertake following the completion of all other areas to minimise the spread if Dieback into uninfested areas. All cleared material located in Dieback Infested Areas including ; vegetation, top-soil (0 - 100mm) and subsoil (>100mm) is to remain stockpiled and handled within dieback infested areas and disposed of offsite or re-used only in locations approved by the Superintendent.

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
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 <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	 Clean on Entry Points must be clearly pegged and demarcated to ensure access is controlled to Dieback Infested and Uninfested Areas. Protection buffers must to be pegged and demarcated surrounding known Dieback infested and uninfested areas. All pegged area limit are to be verified by Main Roads Environment Officer (EO) and approved by Superintendent. Pegged Limits of Clearing are to be surveyed and electronic format GDA 2020 Shapefiles provided to Main Roads EO for endorsement and Superintendents Approval at-least 7 days prior to commencing clearing.
Dieback Management	 Refer to Table 2: Dieback Management PEMR Specification 204 Environmental Management Construction Environmental Management Plan Contract Tender Documents available at <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	 Known Dieback infested areas are to be demarcated appropriately as per Specification 204 and 301 contract requirements. Dieback infested areas are to be controlled access. Dieback Infested Areas are to be demarcated with ORANGE flagging tape with knot facing infested area. A must be buffer is to be applied to prevent disturbance and spread of infested soil. Vehicle and Machinery must not to enter a Dieback uninfested or Dieback Protectable area following entry into Dieback Infested Areas. A full Hygiene Checklist and complete washdown must have been completed an a designated washdown area. All constructed drainage lines/barriers are to avoid directing surface water from Dieback infested to uninfested areas.
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 <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	• All material stockpile, laydown and turn around areas are to be included in a Site Location Plan and approved for suitability by Superintendent prior to commencing activities.

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Fauna Management	 Refer to Table 4: Fauna Management PEMR Specification 204 Environmental Management Construction Environmental Management Plan Contract Tender Documents available at <u>https://www.mainroads.wa.gov.au/technical-</u> <u>commercial/tender-preparation/</u> 	Not Applicable
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 <u>https://www.mainroads.wa.gov.au/technical-</u> commercial/tender-preparation/	Not Applicable
Mulch and Topsoil Management	 Refer to Table 6: Mulch and Topsoil Management Specification 204 Environmental Management Construction Environmental Management Plan Specification 301 Vegetation Clearing Specification 304 Revegetation and Landscaping Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical- commercial/tender-preparation/ 	 All locations used for the stockpile of mulch, topsoil and vegetation are to be reinstated to condition prior to commencing works. The land surface is not to be susceptible to erosion from wind, surface water or stormwater runoff. All reinstated areas are to be inspected for suitability by the Superintendent. Excess (weed and Dieback Free) mulch not able to be utilised by the Project is to be made available to use in adjacent Main Roads Projects or provided to the public, to be approved by the Superintendent. Excess weed/Dieback infested topsoil and or mulch not able to be re-used within locations of equal condition must be disposed to a suitable facility offsite approved by the Superintendent.
Water Drainage Management	 Refer to Table 8: Water Drainage Management PEMR Specification 204 Environmental Management Construction Environmental Management Plan 	• No surface or ground water abstraction is to be undertaken without prior approval under the RIWI Act. If required, the Contractor must obtain all relevant approvals prior to commencing any water abstraction activities.

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 <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	• 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 <u>https://www.mainroads.wa.gov.au/technical-</u> <u>commercial/tender-preparation/</u> 	Not Applicable
Auditing	 Specification 204 Environmental Management Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at <u>https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</u> 	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.
- 3. The Contractor must confirm with the Superintendent that identified locations for clearing are within the Limits of Vegetation Clearing or are within a previously cleared location.

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

1. On completion of Vegetation Clearing the Contractor is to provide written confirmation on the location, extent and duration (start and end date) of clearing with electronic survey datafiles required under Specification 204 and 301 of the works contract.

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

- Completed <u>Hygiene Checklist</u> (available at: <u>https://www.mainroads.wa.gov.au/technical-</u> <u>commercial/contracting-to-main-roads/</u>) or a equivalent Hygiene form to check that all machinery and vehicles are Clean on Entry (i.e. free of soil and vegetation must be provided to Superintendent on arrival of all machinery and vehicles on-site. No machinery or vehicles are authorised to undertake works prior to being authorised as Clean on Entry.
- 2. Contractors engaged to undertake Clearing activities are to be inducted and understand Project specific PEMRs.
- 3. All Limits of Clearing must have been surveyed by the Contractor and electronic survey datafiles received by the Superintendent within a minimum of 7 days prior to commencing clearing.
- 4. No clearing or movement of machinery or vehicles is to occur in Dieback infested areas during or immediately following rainfall events where there is a risk of introducing dieback infested material into uninfested areas.
- 5. Clearing within Dieback Infested areas is to be undertaken following the completion of all other areas to minimise the spread if Dieback into uninfested areas.
- All cleared material located in Dieback Infested Areas including ; vegetation, top-soil (0 100mm) and subsoil (>100mm) is to remain stockpiled and handled within dieback infested areas and disposed of offsite or re-used only in locations approved by the Superintendent.

Table 2: Dieback Management PEMR

STANDARD MANAGEMENT REQUIREMENTS

PRE WORKS

- 1. Contractor's Pre-starts must detail the requirements from the DMP/HMP, where relevant, dieback management areas and the requirements of each area, maps of infested and uninfected locations, and hygiene requirements
- 2. Where relevant a copy of the DMP/HMP must be onsite. This plan will include maps of management areas and obligatory control actions
- 3. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works.
- Use the <u>Hygiene Checklist</u> (available at: <u>https://www.mainroads.wa.gov.au/technical-</u> <u>commercial/contracting-to-main-roads/</u>) 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. Location/s of dieback infested or dieback free areas and hygiene control locations marked on site in accordance with contract HMP or DMP.
- 2. Hygiene control works to be undertaken as per the HMP or DMP, where required.
- 3. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing.
- 4. Ensure no known weed or disease infested soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing.
- 5. Ensure cleared materials are stockpiled or disposed at waste at the locations approved by the Superintendent.

POST WORKS

- 1. Record that the project was undertaken in dry soil conditions (unless an approved DMP authorises otherwise).
- 2. Use the <u>Hygiene Checklist</u> to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation).

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

- 1. Known Dieback infested areas are to be demarcated appropriately as per Specification 204 and 301 contract requirements.
- 2. Dieback infested areas are to be controlled access.
- 3. Dieback Infested Areas are to be demarcated with ORANGE flagging tape with knot facing infested area. A buffer must be applied to prevent disturbance and spread of infested soil.
- 4. Vehicle and Machinery must not to enter a Dieback uninfested or Dieback Protectable area following entry into Dieback Infested Areas. A full <u>Hygiene Checklist</u> and complete washdown_must have been completed an a designated washdown area.
- 5. All constructed drainage lines/barriers are to avoid directing surface water from Dieback infested to uninfested areas.

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. Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area;
 - d. Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated;
 - e. Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion;
 - f. Minimise exposed soil working surfaces or protect from wind, surface and stormwater erosion;
 - g. Ensure material such as gravel, crushed rock and excavated material is stockpiled away from natural and constructed drainage paths and securely covered to prevent erosion; and
 - h. Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.

DURING WORKS

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

POST WORKS

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

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

1. All material stockpile, laydown and turn around areas are to be included in a Site Location Plan and approved for suitability by Superintendent prior to commencing activities.

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 Site Induction and Pre-Start / Toolbox meetings.
- 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 potential 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 to the Superintendent and submitted into EQSafe.
- 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 and environmental incidnet submitted into EQSafe.

Table 5: Machinery and Vehicle Management PEMR

PRE WORKS

- 1. The Contractor must ensure that all areas associated with the storage, parking, turn-around, 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, vegetation material and foreign debris) and comply with the requirements of Specification 204.B.32.
- 3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken offsite or at a designated area 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 Hygiene Checklists for all vehicles, machinery and plant for Clean on Entry and provided with Vegetation Clearing reporting requirements to the Superintendent.

POST WORKS

1. Clean on Entry checklist to be provided to Superintendent for all vehicles, machinery and plant.

Table 6: Mulch & Topsoil Management PEMR

PRE WORKS

- 1. The Contractor must ensure that the movement of soil and vegetation is only undertaken in dry conditions unless otherwise approved and / or directed by the Superintendent.
- 2. The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.

DURING WORKS

- 1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds.
- 2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction.
- 3. The Contractor must ensure that Dieback infested and weed infected topsoil, mulch and vegetation must be handled separately to minimise the risk of spreading Dieback and weed species across the Site, stockpiles and surrounding area.
- 4. The Contractor must ensure that stockpiling operations occur in a manner to ensure that properties of topsoil is not degraded and made unsuitable for use in revegetation.

POST WORKS

1. See Project Specific Management Requirements

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

- All locations used for the stockpile of mulch, topsoil and vegetation are to be reinstated to condition prior to commencing works. The land surface is not to be susceptible to erosion from wind, surface water or stormwater runoff. All reinstated areas are to be inspected for suitability by the Superintendent.
- 2. Excess (weed and Dieback Free) mulch not able to be utilised by the Project is to be made available to use in adjacent Main Roads Projects or provided to the public, to be approved by the Superintendent.
- 3. Excess weed/Dieback infested topsoil and or mulch not able to be re-used within locations of equal condition must be disposed to a suitable facility offsite approved by the Superintendent.

Table 7: Pegging and Flagging PEMR

PRE WORKS

- 1. Pegging must be done in accordance with the requirements detailed in Specification 301 and Dieback Management PEMR.
- 2. The Contractor must clearly communicate, either at the Pre-Start meeting or equivalent, to the crew undertaking the clearing works, through approved Project specific maps or other means, what the Pegging and flagging 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.
- 4. The Contractor must demark dieback-infested areas using ORANGE flagging with knot facing infested area.

POST WORKS

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

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

- 1. Clean on Entry Points must be clearly pegged and demarcated to ensure access is controlled to Dieback Infested and Uninfested Areas.
- 2. Protection buffers must be pegged and demarcated surrounding known Dieback infested and uninfested areas.
- 3. All pegged area limit are to be verified by Main Roads Environment Officer (EO) and approved by Superintendent.
- 4. Pegged Limits of Clearing are to be surveyed and electronic format GDA 2020 Shapefiles provided to Main Roads EO for endorsement and Superintendents Approval at-least 7 days prior to commencing clearing.

Table 8: 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. Diversion drains must not result in; surface water becoming contaminated or sediment/silt being released offsite.
- 4. Runoff from disturbed areas must be controlled and managed to avoid contamination and adverse impacts on surrounding vegetation, watercourses and properties.
- 5. Booms and silt fences must be used to control any potential stormwater runoff from within the Project Area to restrict offsite impacts 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.

PROJECT SPECIFIC MANAGEMENT REQUIREMENTS

 No surface or ground water abstraction is to be undertaken without prior approval under the RIWI Act. If required, the Contractor must obtain all relevant approvals prior to commencing any water abstraction activities.

Table 9: 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

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