

Clearing Assessment Report – CPS 818

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Indian Ocean Drive 251 SLK Water Bores and Access Track Mid West Gascoyne Shire of Irwin EOS 2605

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1 PROPOSAL

1.1 Purpose and Justification

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

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

Main Roads Western Australia (Main Roads) intends to widen Indian Ocean Drive (IOD) in stages over the next several years (the Project). To facilitate the Project, Main Roads proposes to undertake construction and operation of an access track to two new water bores (Bore A and Bore B) perpendicular to IOD 251 Straight Line Kilometre (SLK). The two new water bores will provide water for the proposed road widening upgrades to IOD between SLK 219.85 and SLK 253.18 (refer Figure 1).

IOD is part of the State Road Network and is the major traffic artery extending along the coast from Yanchep through to its connection to the Brand Highway just south of Dongara. IOD has experienced an increase in traffic volumes since opening, which has raised several safety issues for road users. To improve road user safety to the upgrades to IOD between SLK 219.85 and 253.18 will greatly reduce the estimated 'Killed or Seriously injured' crash rate, as well as increase the efficiency of freight movements.

1.1.1 Main Roads Approach to Road Safety and the Environment

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

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

Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

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

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

1.2 Proposal Scope

Main Roads proposes the construction and operation of two new water bores, "Bore A" and "Bore B" via an access track perpendicular to IOD 251 SLK. The scope of the proposed works includes the following activities:

- Clearing for a 5m wide access track, located perpendicular to Indian Ocean Drive at SLK 251 and extending east for approximately 1.45 km.
 - The 5m wide access track will allow for a 3.5m vehicle track and 1.5m for windrows of mulch.
- Clearing to allow for water bore drilling at two locations:
 - Drilling and equipping of Bore A to a depth of approximately 30m to target the Perth Superficial Swan aquifer.
 - Drilling and equipping Bore B to a depth of approximately 85m to target the Cattamarra Coal Measures aquifer.
- Operations of the two Bores:
 - Bore A to target an abstraction rate of 1250L/min with a total project requirement of 70ML.
 - Bore B to target an abstraction rate of 300L/min with a total project requirement of 20ML.

1.3 Proposal Location

The proposed clearing is located perpendicular to IOD 251 SLK, extending approximately 1.45 km east, within the locality of Arrowsmith, Shire of Irwin.

- Latitude: -29.604238
- Longitude: 114.982852

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:

The proposed access track and water bores will result in clearing approximately 1.2ha of native vegetation and will be conducted under the CPS 818 approval.

Areas of Native Vegetation Clearing:

A broad scale view of the proposed clearing, where symbology indicates populations of species within the Native Vegetation Clearing Area is provided in Figure 1.

Type of Native Vegetation:

Five vegetation units will be impacted by the proposed clearing identified from a single-phase, detailed spring flora and vegetation assessment, and targeted survey undertaken by Focused Vision Consulting (2023). None of the vegetation units represent listed Threatened Ecological Communities (TECs), or Priority Ecological Communities (PECs). The types of vegetation to be cleared under this Proposal are described in further detail in Section 4.

Vegetation units and vegetation condition to be cleared under this proposal are illustrated in Figure 2 and Figure 3.



Figure 1: Conservation Significant Flora (Focused Vision Consulting, 2023).



Figure 2: Vegetation Units (Focused Vision Consulting, 2023).



Figure 3: Vegetation Condition (Focused Vision Consulting, 2023).

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- A cleared area comprising 0.03 ha is included in the proposal, however, locating the proposal entirely within previously cleared areas or areas devoid of vegetation was not considered feasible, as further cleared areas were not available.
- Clearing has been reduced to that which is necessary and appropriate to facilitate bore installation with associated aquifers. Other locations may have resulted in an increased Native Vegetation Clearing footprint in comparison to the chosen location.
- Where possible, proposed access design has been altered to avoid Priority flora species.

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. In addition, the following measures have also been considered:

- The proponent will provide specific details for the site to contractors before they commence any works to reduce the risk of over clearing or clearing the wrong areas.
- Where Priority species are located directly adjacent to the proposed clearing, a botanist may be requested on site to demarcate by flagging tape, Priority species and areas to avoid prior to clearing.
- GPS coordinates of the Native Vegetation Clearing Area boundary to be supplied to contractor/personnel undertaking the clearing activities.
- Prior to clearing of the Native Vegetation Clearing Area, the area will be demarcated by star pickets, coloured flagging tape, or bunting and all personnel will be made aware of the requirement to protect and retain vegetation beyond permitted areas. Where this is not possible, clearing may be undertaken using GPS machine guidance, with local correction to control point at Dongara 72SSM.
- Dieback, weed and hygiene controls will be implemented at the entrance to the proposed site to reduce the risk and spread of dieback, pathogens and weed species entering the vegetated areas.
- Vegetation clearing will be scheduled to occur immediately before planned works to minimise the potential for dust emissions, where possible.
- Efforts will be made to reduce the size of the machinery and equipment used during the works to reduce the footprint and clearing extent for access.

Design or Management Measure	Discussion and Justification
Use of existing cleared areas for access tracks, construction storage and stockpiling	An existing cleared area consisting of 0.03 ha within the Native Vegetation Clearing Area will be utilised for laydown and storage of machinery to avoid further clearing for this purpose.
Stockpiling Topsoil	Topsoil containing seedbanks will be collected and stockpiled from the proposed Native Vegetation Clearing Area to be preferentially spread in degraded areas within the IOD project where vegetation is regionally similarly represented.
Use of cleared vegetation for mulch	Clearing of native vegetation will be repurposed for use as mulch windrows. A 1.5m allowance for windrows of mulch is inclusive in the 5m wide access track.

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

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.*
- Aboriginal Heritage Act 1972 (WA).
- Aboriginal Cultural Heritage Act 2021 (WA).
- Bush Fires Act 1954 (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 Recovery Plans for threatened species.
- Strategic advice EPA.

2 SCOPE AND METHODOLOGY OF CLEARING DESKTOP/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 Area¹ 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.
- **Study Area** Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 20km radius.
- **Survey Area** Area covered by the Biological Survey, which is typically larger that the Native Vegetation Clearing Area.

2.2 Desktop Assessment

A desktop assessment of the Native Vegetation Clearing 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 8.

2.3 Surveys and Assessments

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

• *Single-phase, detailed spring flora and vegetation assessment and targeted survey* (Focused Vision Consulting, 2023).

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

3 SUMMARY OF SURVEYS

3.1 Overview of Surveys

Main Roads commissioned a single-phase, detailed spring flora and vegetation assessment and targeted surveys of the Native Vegetation Clearing Area to understand the environmental values present with the proposed area of works. The surveys were completed in 2022 and is summarised in Table 2 with key findings provided in Section 3.2.

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Table 2	Summary	of Biological	and Target	ted Surveys F	Relevant to th	e Proposal
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Consultant & Survey Name	Survey Details
Focused Vision Consulting (2023) Indian Ocean Drive Widening – Supplementary Biological Assessment Report.	 Survey Area: Survey area comprised of approximately 8.1ha and included the corridor to a proposed bore location, perpendicular to IOD – 251 SLK. Type: Single-phase, detailed spring flora and vegetation assessment and targeted survey along a corridor to a proposed bore location. Flora, vegetation and floristic communities were defined and mapped during the survey. Timing: Fieldwork conducted between 27 to 28 September 2022. Survey Results Shapefile TRIM Ref: D23#71469 Document TRIM Ref: D23#241695
Glevan Consulting (2022) IOD SLK139 to SLK144 and SLK251 Phytophthora Dieback occurrence assessment – Version 2.0	Survey Area: Survey area comprised 7.6ha of a 40m wide linear corridor extending east from IOD - SLK 251 for approximately 1.9 km. Type: Phytophthora Dieback assessment and survey. Timing: 2022 Survey Results Shapefile TRIM Ref: D23#71469 Document TRIM Ref: D22#683295

3.2 Summary of Flora and Vegetation Surveys

A 5m wide, 1.6km long corridor to a proposed bore location was surveyed perpendicular to IOD – SLK 251 (Focused Vision Consulting, 2023). Data from six quadrats were recorded from the proposed bore access corridor (Survey Area) in spring 2022. Review of species composition, aerial imagery and vegetation structure determined vegetation alignment and definition of vegetation.

The survey mapped five vegetation units, ranging in condition from 'Very Good' to 'Excellent', with the majority (95.61%) found to be in 'Excellent' condition (Figure 3). Additionally, an existing cleared area (0.03 ha) was identified representing a prior alignment of IOD and associated shoulders and tracks. None of the vegetation units were representative of State or Commonwealth listed Threatened or Priority Ecological Communities.

The vegetation units identified within the Native Vegetation Clearing Area were:

- Eucalyptus Woodland/ Guichenotia Shrubland (EeGl).
- Eucalyptus Woodland/ Hibbertia Shrubland (EeHh).
- *Eucalyptus* Woodland (EzW).
- Acacia/ Melaleuca Shrubland (AaAh).
- *Melaleuca* Woodland (MICp).
- Cleared areas.

One hundred and sixty four flora taxa were recorded in the Survey Area. Limited cleared areas and disturbances for access tracks resulted in low weed abundance within and surrounding the Survey Area. Floral diversity is considered to be moderate, and none of the vegetation units contain an unusually high level of diversity or are considered to be significant because of this factor (Focused Vision Consulting, 2023).

Four Priority flora species were recorded within the 8.1 ha Survey Area within vegetation units EeGl, EeHh and EzW, however, there is potential for more individuals to occur outside the Survey Area within associated vegetation units. The extent of Priority species identified within the Survey Area include:

- Beyeria cinerea subsp. cinerea (Priority 3) five individuals.
- *Stylidium maritimum* (Priority 3) one individual.
- *Eucalyptus zopherophloia* (Priority 4) 127 individuals within a population.
- Grevillea hirtella (Priority 3) five individuals.

Within the Native Vegetation Clearing Area, one single population of *Eucalyptus zopherophloia* (Priority 4) was recorded (Focused Vision Consulting, 2023). Focused Vision Consulting (2023) identified approximately 127 individuals within the Survey Area and populations were observed to extend beyond the Survey Area with an opportunistic estimate of 50 individuals observed where the vegetation unit extends outside the Survey Area. The species is known from 63 FloraBase records and contributes to the structure of defined vegetation units EzW, and EeGI occurring as either dominant or occasionally dominant upper storey species. The Native Vegetation Clearing Area comprises approximately 0.06ha of the single population of *Eucalyptus zopherophloia* (Priority 4), however, a total of approximately 1.54ha is mapped opportunistically outside the Native Vegetation Clearing Area. As this species was observed opportunistically outside the survey area, Focused Vision Clearing (2023) identified the records may not be a true representation of the population that

occurs outside the Survey Area, but, serves as an indication that the species may occur in more widespread populations.

Further individuals of *Beyeria cinerea* subsp. *cinerea* (Priority 3) were considered to be present within vegetation type EeHh within and outside the Survey Area. The P3 species was not identified as occurring within the Native Vegetation Clearing Area.

Grevillea hirtella (Priority 3), is known from 47 FloraBase records and distributions recorded in the Survey Area were within vegetation unit EeHh, extending the known distribution of this species by 47km south. *Hakea erinacea* was also identified as a species exhibiting range extension from known distribution of the species by 57km south. The vegetation unit is considered to be of regional significance due to the flora species exhibiting range extension, however, Focused Vision Consulting (2023) described further individuals of the species may occur within and outside the Survey Area within vegetation type EeHh. The two species were not identified as occurring within the Native Vegetation Clearing Area.

Focused Vision Consulting (2023) identified no Ramsar Wetlands or Conservation Category Wetlands identified as occurring within the Survey Area. No areas are gazetted as conservation estates or Environmentally Sensitive Areas (ESAs) within the Survey Area. No recordings of Threatened flora under the *Biodiversity Conservation Act 2016* or under the *Environment Protection and Biodiversity Conservation Act 1999* was identified within or surrounding the Survey Area, and none are likely to occur (Focused Vision Consulting, 2023).

3.3 Summary of Dieback Survey

A 7.6ha dieback assessment was conducted by Glevan Consulting (2022) along a 40m wide linear corridor extending east from Indian Ocean Drive – SLK 251 for approximately 1.9km.

No *Phytophthora* Dieback infestations were observed during the assessment. The entire SLK 251 Survey Area was uninterpretable due to a lack of reliable indicator species, however, desktop assessments indicated that *Phytophthora* spp. had not been recovered in, or near the Survey Area. Soil and tissue samples were not taken during the assessment, as no reliable indicator species were observed within the Survey Area. No evidence of disease, *Armillaria luteobubalina*, or other *Phytophthora spp*. were identified.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

Focused Vision Consulting (2023) mapped two Beard (1990) vegetation associations (377 and 432) representative of vegetation units (AaAh, EzW and MICp). The National Objectives and Targets for Biodiversity Conservation recognise that it is important that ecological communities are maintained above the threshold level of 30% of pre-European extent for each community and therefore ecological communities with levels below 30% should be fully retained. Vegetation associations all exceed the 30% retention threshold at a State, IBRA Region, IBRA Subregion and within the Shire of Irwin (Focused Vision Consulting, 2023).

The Native Vegetation Clearing Area is mapped within two Pre-European Vegetation Associations:

- Illyarrie_377: Mixed heath with scattered tall shrubs *Acacia spp., Proteaceae* and *Myrtaceae*.
- Cliff Head_432: Wattle, *casuarina* and *teatree acacia-allocasuarina-melaleuca* alliance.

Table 3 provide details of the Pre-European Vegetation Associations and the remaining extents of the associations within the Native Vegetation Clearing Area. Table 3 provides details of the vegetation types and their condition.

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.	Statewide	63,099.54	62,724.44	99.41	75.29
377	IBRA Bioregion Geraldton Sandplains	63,099.54	62,724.44	99.41	75.29
	IBRA Sub-region Lesueur Sandplain	63,099.54	62,724.44	99.41	75.29
	Local Government Authority Shire of Irwin	22,618.31	22,395.04	99.01	65.42
Veg Assoc No.	Statewide	5,732.45	5,101.01	88.98	52.35
432	IBRA Bioregion Geraldton Sandplains	5,636.04	5,101.00	90.51	53.25
	IBRA Sub-region Lesueur Sandplain	5,636.04	5,101.00	90.51	53.25
	Local Government Authority Shire of Irwin	2,887.45	2,282.15	79.04	8.30

Table 3. Pre-European Vegetation Representation

Vegetation Type	Extent within Survey Area (ha)	Vegetation Condition	Total Extent Mapped within Survey Area (%)	Native Vegetation to be cleared (ha)
Eucalyptus Woodland/ Guichenotia Shrubland (EeGI): <i>Eucalyptus erythrocorys</i> and <i>occasional Eucalyptus zopherophloia</i> Mallee Woodland over <i>Acacia xanthina</i> or <i>Melaleuca cardiophylla</i> Tall Sparse Shrubland over <i>Bossiaea eriocarpa</i> and <i>Guichenotia ledifolia</i> Open Shrubland over <i>Stenanthemum notiale</i> subsp. <i>notiale</i> Low Sparse Shrubland	3.35	Excellent	41.37	0.43
Eucalyptus Woodland/ Hibbertia Shrubland (EeHh): <i>Eucalyptus erythrocorys</i> Mallee Woodland over <i>Acacia spathulifolia</i> and <i>Melaleuca lanceolata</i> Tall Sparse Shrubland over <i>Hibbertia hypericoides</i> subsp. <i>hypericoides</i> and <i>Stenanthemum</i> <i>notiale</i> subsp. <i>notiale</i> Low Sparse Shrubland	3.72	Excellent	45.90	0.55
Eucalyptus Woodland (EzW): <i>Eucalyptus</i> <i>zopherophloia</i> Mallee Woodland over <i>Rhagodia baccata</i> Low Sparse Shrubland	0.68	Excellent	8.35	0.09
Acacia/ Melaleuca Shrubland (AaAh): Acacia aestivalis and Melaleuca cardiophylla Tall Open Shrubland over Alyogyne huegelii Tall Sparse Shrubland over Acanthocarpus preissii, Avena barbata and *Bromus madritensis Open Grassland.	0.06	Very Good – Excellent	0.77	0.04
Melaleuca Woodland (MICp): Melaleuca lanceolata Low Woodland over <i>Melaleuca</i> <i>cardiophylla</i> and <i>Melaleuca</i> subsp. <i>huegelii</i> Low to Mid Open Shrubland over <i>Cryptandra pungens, Thryptomene</i> <i>racemulosa</i> and <i>Templetonia retusa</i> Open Heathland.	0.26	Very Good – Excellent	3.26	0.07
Cleared Areas: Existing cleared vegetation for infrastructure such as roads.	0.03	Cleared	0.35	0.02

Table 4. Summary of Vegetation Types within the Native Vegetation Clearing Area.

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 either not at, or not likely to be at variance with the ten Clearing Principles.

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

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

Assessment

Focused Vision completed a single-phase, detailed spring flora and vegetation assessment and targeted survey of the Native Vegetation Clearing Area in September 2022. This included the establishment of six quadrats. The proposal involves the clearing of up to 1.2ha of native vegetation and is comprised of six vegetation types illustrated in Figure 2.

- Eucalyptus Woodland/ Guichenotia Shrubland (EeGI): *Eucalyptus erythrocorys* and occasional *Eucalyptus zopherophloia* Mallee Woodland over *Acacia xanthina* or *Melaleuca cardiophylla* Tall Sparse Shrubland over *Bossiaea eriocarpa* and *Guichenotia ledifolia* Open Shrubland over *Stenanthemum notiale* subsp. *notiale* Low Sparse Shrubland.
- Eucalyptus Woodland/ Hibbertia Shrubland (EeHh): *Eucalyptus erythrocorys* Mallee Woodland over *Acacia spathulifolia* and *Melaleuca lanceolata* Tall Sparse Shrubland over *Hibbertia hypericoides* subsp. *hypericoides* and *Stenanthemum notiale* subsp. *notiale* Low Sparse Shrubland.
- Eucalyptus Woodland (EzW): *Eucalyptus zopherophloia* Mallee Woodland over *Rhagodia baccata* Low Sparse Shrubland.
- Acacia/ Melaleuca Shrubland (AaAh): *Acacia aestivalis* and *Melaleuca cardiophylla* Tall Open Shrubland over *Alyogyne huegelii* Tall Sparse Shrubland over *Acanthocarpus preissii, Avena barbata* and **Bromus madritensis* Open Grassland.
- Melaleuca Woodland (MICp): *Melaleuca lanceolata* Low Woodland over *Melaleuca cardiophylla* and *Melaleuca* subsp. *huegelii* Low to Mid Open Shrubland over *Cryptandra pungens, Thryptomene racemulosa* and *Templetonia retusa* Open Heathland.
- Cleared: Existing cleared vegetation for infrastructure such as roads.

Five vegetation units within the Native Vegetation Clearing Area ranged from 'Very Good' to 'Excellent' condition with the majority (95.61%) found to be in 'Excellent' condition due to no prior disturbances (Focused Vision Consulting, 2023). Aerial imagery suggests areas surrounding the Native Vegetation Clearing Area are of similar condition, with no notable disturbances and similar composition of vegetation. 164 flora taxa were recorded in the Survey Area and none of the recorded vegetation units were considered to exhibit unusually high diversity and are consistent with areas outside of the Survey Area (Focused Vision Consulting, 2023).

Focused Vision Consulting identified four Priority flora species within the Survey Area, however only one Priority 4 species (*Eucalyptus zopherophloia*) was identified as occurring within the Native Vegetation Clearing Area (Figure 1):

- Beyeria cinerea subsp. cinerea (Priority 3) five individuals
- Stylidium maritimum (Priority 3) one individual
- Eucalyptus zopherophloia (Priority 4) 127 individuals
- Grevillea hirtella (Priority 3) five individuals.

One single population of *Eucalyptus zopherophloia* (Priority 4) was recorded within the Native Vegetation Clearing Area (Figure 1). The Native Vegetation Clearing Area comprises approximately 0.06ha of the single population of *Eucalyptus zopherophloia* (Priority 4), however, a total of approximately 1.54ha is mapped opportunistically outside the Native Vegetation Clearing Area. As this species was observed opportunistically outside the survey area, Focused Vision Consulting (2023) identified the species records may not be a true representation of the population that occurs outside the Survey Area, but, serves as an indication that the species may occur in more widespread populations. In addition, Focused Vision Consulting (2023) identified approximately 127 individuals within the Survey Area and populations were observed to extend beyond the Survey Area with an opportunistic estimate of 50 individuals observed. Aerial imagery and the description of the vegetation unit presented within Focused Vision (2023) suggests the area is relatively sparse with little to no understory suggesting the area will not provide a high level of biodiversity. Clearing of 0.06 ha of the *Eucalyptus zopherophloia* (Priority 4) population, is not considered to be a significant impact.

Surrounding habitat is broadly representative of that within the Native Vegetation Clearing Area and it is likely flora species are far more widespread than Focused Vision Consulting (2023) recorded, given limited survey effort by use of opportunistic observations outside the Survey Area. Further individuals of flora species are likely expected in adjacent and surrounding areas (Focused Vision Consulting, 2023), and therefore, the proposed clearing is not likely to be at variance to this Principle.

No Threatened flora species pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* and/or gazetted as Threatened pursuant to the *Biodiversity and Conservation Act 2016* were identified within the Native Vegetation Clearing Area. No vegetation representative of a Priority Ecological Community was located by the biological survey (Focused Vision 2023).

Database searches (a 20km radius of the Native Vegetation Clearing Area) identified no vegetation representative of any Commonwealth or State listed Threatened Ecological Communities (TECs) recorded. A State listed Priority Ecological Community (PEC), the Coastal Sands with *Acacia rostellifera*, mallees Priority 1 ecological community, identified by the DBCA database searches, was recorded approximately 16km north of the Native Vegetation Clearing Area. A DBCA managed Nature Reserve (Beekeepers Nature Reserve; WA24496) is identified directly adjacent to the eastern portion of the Native Vegetation Clearing Area.

Thirty-two weed species were identified during the survey, however no weed species were identified as Declared Pests or Weeds of National Significance (WoNS) within the Survey Area (Focused Vision Consulting, 2023). No dieback was identified within or expected to be located outside the Survey Area (Glevan Consulting, 2022). Highly alkaline limestone coastal sandy soils make *Phytophthera cinnamomi* presence unlikely, however, given the area is adjacent to DBCA

managed land (Beekeepers Nature Reserve; WA24496), Main Roads propose dieback, weed and hygiene management measures be included at the entrance to the proposed site to reduce the risk and spread of dieback, pathogens and weed species entering the vegetated areas. Potential impacts to the biodiversity of the area as a result of the proposed clearing will be relatively low.

Department of Biodiversity, Conservation and Attraction (DBCA) database search and Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) database search (20km radius of Native Vegetation Clearing Area) identified 11 significant fauna species. This included seven birds, three mammals and one reptile. Of these, two species are likely to occur, and four species or species habitat are known to occur which include:

Likely

- Calidris ferruginea [Curlew Sandpiper] (CR)
- Falco hypoleucos [Grey Falcon] (VU)

Known

- Leipoa ocellata [Mallefowl] (VU).
- *Limosa lapponica menzbieri* [Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit] (CR).
- Sternula nereis nereis [Australian Fairy Tern] (VU).
- Zanda latirostris listed as Calyptorhynchus latirostris [Carnaby's Cockatoo] (EN).

All species listed above are well represented in the surrounding area and have broad distributions (See Principal b). The proposed clearing will not significantly impact any species given the small scale of the clearing having regard to surrounding available habitat. More details of the fauna species that are assessed as likely or known to occur are described in Principle (b).

Fourteen Migratory Marine species are excluded from the DCCEEW PMST search as no preferred marine or wetland habitat is located within or directly adjacent to the Native Vegetation Clearing Area. All species listed above are well represented in the surrounding areas of similar vegetation and have broad distributions.

Database searches (a 20 km radius of the Native Vegetation Clearing Area) identified no recordings of Carnaby's Black Cockatoo associated habitat, breeding or roosting sites within a 20km Study Area. The nearest association to Carnaby's Cockatoo was identified as a 1km buffered roosting site, 34km north of the Native Vegetation Clearing Area.

Disturbance within the Native Vegetation Clearing Area comprising 1.2ha is unlikely to significantly impact any of the species listed due to the abundance of similar habitat surrounding the Study Area containing a similar level of biological diversity. Clearing of 1.2ha will not significantly impact biological diversity, and therefore, is not likely to be at variance to this Principle.

Given the results from the desktop and field surveys, the Native Vegetation Clearing Area contains a similar level of biological diversity compared to the surrounding undisturbed areas and significant impacts to biodiversity are considered minimal as flora and fauna species are

considered to be well distributed and well represented outside the Native Vegetation Clearing Area.

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

Methodology

- Focused Vision Consulting (2023).
- Glevan Consulting (2022)
- DCCEEW Protected Matters Search Tool Report.
- Government GIS Shapefiles:
 - DBCA Threatened and Priority Flora, Fauna and Communities Shapefiles (Accessed 2023).
 - DBCA Legislated Lands and Waters (Accessed 2023).
 - Bush Forever (Regional Scheme Special Areas) (Accessed 2023).
- Statewide Vegetation Statistics (Government of Western Australia 2018).
- Main Roads GIS Shapefiles.
- DBCA Carnaby's Black Cockatoo shapefiles.
- Aerial Imagery.

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

Proposed clearing is not at variance to this Principle.

Assessment

Department of Biodiversity, Conservation and Attraction (DBCA) database search and Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) database search (20km radius of Native Vegetation Clearing Area) identified 11 significant fauna species consisting of seven birds, three mammals and one reptile. Of these, two species are likely to occur, and four species or species habitat are known to occur which include:

Likely

- Calidris ferruginea [Curlew Sandpiper] (CR)
- Falco hypoleucos [Grey Falcon] (VU)

Known

- Leipoa ocellata [Mallefowl] (VU).
- Limosa lapponica menzbieri [Bar-tailed Godwit] (CR).
- Sternula nereis nereis [Australian Fairy Tern] (VU).

• Zanda latirostris listed as Calyptorhynchus latirostris [Carnaby's Cockatoo] (EN)

Curlew Sandpiper (EN) occurs around the coasts and are also widespread inland, though smaller in numbers. Records are identified in all states during the non-breeding season when many non-breeding one year old birds remain in Australia, rather than migrating north. In Western Australia, the species is widespread around coastal and subcoastal plains from Cape Arid to the south-west Kimberley Division, but, are more sparsely distributed between Carnarvon and the Dampier Archipelago. The species occurs in thousands to tens or thousands, at Port Hedland. The species mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets, and lagoons. Non-tidal swamps, lakes and lagoons near the coast are also favoured and are occasionally recorded inland around ephemeral and permanent lakes, dams, waterholes, and bore drains with bare edges of mud or sand (Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2023a). Given the lack of suitable habitat the Native Vegetation Clearing Area will not impact this species.

Grey Falcon (VU) occurs in arid and semi-arid Australia, where rainfall is less than 500 mm. The species becomes marginally more widespread when wet years are followed by drought. Timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses are frequented by the species and are known to hunt in treeless areas, tussock grasslands and open woodlands. The species appears to be absent south of latitude 26°S in Western Australia (DCCEEW, 2020). Given the above, the Native Vegetation Clearing Area will not impact this species.

Mallefowl (VU) There are four historical records of the species collected in 1985,1964 and 2009, with the most recent recording in 2011 located approximately 8.7 km northeast of the proposal. The species is found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee or acacias. Densities are greatest in areas of higher rainfall where habitats are thicker and there is an abundance of food plants (DCCEEW, 2007). The species are commonly observed in reserves around the Wheatbelt region and continue to persist in several nature reserves across the state. The species are commonly found in areas dominated by mallee eucalyptus on sandy soils and are known to occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), Eucalyptus woodlands and coastal heathlands (DBCA, 2017). Given the proposed Native Vegetation Clearing Area is directly adjacent to a major road, it is unlikely the species have persisted in the area due to disturbances and have likely located to favoured habitats where there is less disturbance. The proposed clearing will not impact this species.

Bar-tailed Godwit (CR) the species known habitat includes estuarine mudflats, beaches and mangroves. They are common in coastal areas around Australia and migrate from breeding grounds in the northern hemisphere to Australia. The species forage by wading through the shallows or over exposed mud in groups of up to thirty or more birds. The species is a non-breeding migrant in Australia (Australian Museum, 2023). Given the species habitat is not located within the proposed Native Vegetation Clearing Area, there will be no impact on this species.

Australian Fairy Tern (EN) occurs along the coasts of Western Australia and other coastlines of Australia, occurring as far north as the Dampier Archipelago near Karratha. The species nests on sheltered sandy beaches, the banks above the high tide line and below vegetation in addition to a variety of habitats offshore, estuarine, wetlands and mainland coastline. The species is known to roost on beaches at night and feeds from shallow waters (DCCEEW, 2023b). Given the above,

no species habitat is not located within the proposed Native Vegetation Clearing Area, there will be no impact on this species.

Carnaby's Black Cockatoo (EN) there are three recordings of the species within 20 km southeast of the proposed Native Vegetation Clearing Area collected in 2010, 2016 and 2017. The species is most commonly recorded from south of 29° S and west of 120° E from the Wheatbelt areas that receive between 300-750 mm of rainfall annually, to the wetter regions of the south-west WA, including the Swan Coastal Plain and the southern coast. The species is well known in metropolitan Perth, where the species is recorded to forage and roost every month of the year. Habitat includes uncleared or remnant native eucalypt woodlands, especially those that contain wandoo and salmon gum in shrubland or kwongan healthland dominated by banksia, grevillea species, hakea and dryandra. The species is also known to forage in pine plantations that receive high rainfall (DCCEEW, 2023c). Database searches (a 20 km radius of the Native Vegetation Clearing Area) identified no recordings of Carnaby's Black Cockatoo associated habitat, breeding or roosting sites within the 20km Study Area. The nearest association to Carnaby's Black Cockatoo was identified as a 1km buffered roosting site, 34km north of the Native Vegetation Clearing Area. Given the above, the proposed Native Vegetation Clearing Area will not impact this species habitat.

14 Migratory Marine species identified within the DCCEEW PMST search have been excluded from further discussion as no marine or wetland habitat is located within or directly adjacent to the Native Vegetation Clearing Area. All species listed above are well represented in the surrounding areas of similar vegetation and have broad distributions.

Disturbance within the Native Vegetation Clearing Area comprising 1.2ha is unlikely to significantly impact any of the species listed due to the abundance of similar habitat surrounding the Study Area containing a similar level of undisturbed areas and habitat types. Clearing of 1.2ha will result in an initial low impact fauna within the area, and no significant impacts will result from the clearing.

The proposed clearing will not be at variance to this Principle.

Methodology

- Focused Vision Consulting (2023).
- DCCEEW Protected Matters Search Tool Report.
- Government GIS Shapefiles:
 - DBCA Threatened and Priority Fauna database search (Accessed 2023).
 - DBCA Legislated Lands and Waters (Accessed 2023).
- DBCA Carnaby's Black Cockatoo shapefiles.

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

Proposal is not at variance to this Principle.

Assessment

No recordings of Threatened flora under the *Biodiversity Conservation Act 2016* or under the *Environment Protection and Biodiversity Conservation Act 1999* was identified within or surrounding the Survey Area, and none are likely to occur (Focused Vision Consulting, 2023).

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

Methodology

- Focused Vision Consulting (2023).
- Florabase (Accessed 2023).
- Government GIS shapefiles:
 - DBCA Threatened flora database search (Accessed October 2022).

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

Proposed clearing is not at variance to this Principle.

Assessment

The Native Vegetation Clearing Area is not located within any mapped Threatened Ecological Communities (Focused Vision Consulting, 2023). A vegetation survey conducted by Focused Vision Consulting (2023) did not record any vegetation considered representative of a TEC, or PEC within the Native Vegetation Clearing Area. The clearing of up to 1.2ha will not impact on any TECs or vegetation necessary for the continued existence of a TEC.

The proposed clearing will not be at variance to this Principle.

Methodology

- Focused Vision Consulting (2023).
- Government GIS shapefiles:
 - DBCA Threatened Ecological Community database search (Accessed October 2022).

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is not at variance to this Principle.

Assessment

The Native Vegetation Clearing Area falls within the Geraldton Sandplains Bioregion of the Interim Biogeographic Regionalisation for Australia (GIS Dataset). Two pre-European vegetation associations were identified within the Native Vegetation Clearing Area:

- Illyarrie_377: Mixed heath with scattered tall shrubs *Acacia* spp., Proteaceae and Myrtaceae.
- Cliff Head_432: Wattle, *casuarina* and teatree *acacia-allocasuarina-melaleuca* alliance

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	Statewide	63,099.54	62,724.44	99.41	75.29
No. 377	IBRA Bioregion Geraldton Sandplains	63,099.54	62,724.44	99.41	75.29
	IBRA Sub-region Lesueur Sandplain	63,099.54	62,724.44	99.41	75.29
	Local Government Authority Shire of Irwin	22,618.31	22,395.04	99.01	65.42
Veg Assoc No.	Statewide	5,732.45	5,101.01	88.98	52.35
432	IBRA Bio region Geraldton Sandplains	5,636.04	5,101.00	90.51	53.25
	IBRA Sub-region Lesueur Sandplain	5,636.04	5,101.00	90.51	53.25
	Local Government Authority Shire of Irwin	2,887.45	2,282.15	79.04	8.30

The National Objectives and Targets for Biodiversity Conservation recognise that it is important that ecological communities are maintained above the threshold level of 30% of pre-European extent for each community and therefore ecological communities with levels below 30% should be fully retained. Both vegetation communities identified within the Native Vegetation Clearing Area are well above the 30% threshold of retention at a State, Bioregion, Sub-region and Local Government Authority level. These vegetation associations have not been extensively cleared as over 79% of the pre-European extent of these vegetation associations remain uncleared.

The clearing of up to 1.2ha of native vegetation will not impact on the remnant native vegetation within the area. The proposed clearing will not be at variance to this Principle.

Methodology

- Government GIS shapefiles:
 - Pre-European vegetation (2022).
 - Vegetation complexes (2022).
- Statewide Vegetation Statistics (Government of Western Australia 2018).

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

Proposed clearing is not at variance to this Principle.

Assessment

A review of available surface water feature mapping did not identify any hydrological features that intersect the Native Vegetation Clearing Area (GIS Database, 2022). The nearest hydrological feature is Arrowsmith River, a major river located approximately 10 km east.

No Ramsar wetlands were identified within a 1 km radius of the Native Vegetation Clearing Area. The DBCA geomorphic wetlands mapping did not identify any wetlands within the Native Vegetation Clearing Area.

Vegetation within the Native Vegetation Clearing Area is not considered to be associated with a watercourse or wetland or representative of riparian vegetation. The proposed clearing of 1.2ha of vegetation will not impact any associated watercourse or wetland.

The proposed clearing will not be at variance to this Principle.

Methodology

- Government GIS shapefiles:
 - Geomorphic Wetlands (2023).
 - Ramsar Wetlands (2023).
 - Important Wetlands (2023).
 - Watercourses (2023).
 - RIWI Act Rivers (2023).

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

Proposed clearing is not at variance to this Principle.

Assessment

Soil landscape and land system mapping of WA described broad soil and landscape characteristics from regional to local scales, ranging from 1:20,000 to 1:250,000 (Department of Agriculture and Food WA, 2012). The Native Vegetation Clearing Area intercepts two land system, approximately 10% Tamala South 10 Subsystem and 90% Tamala South 5 Subsystem:

- 221Ta_5 Tamala South 10 Subsystem: Low hills with relict dunes and some limestone outcrop; Calcareous shallow and deep sands
- 221Ta10 Tamala South 5 Subsystem: Broad swales with fine pinkish brownish calcareous sands.

The table below indicates the Native Vegetation Clearing Area is located in a zone classified as less than 3% moderate to high risk of flooding events and waterlogging, less than 3% moderate to high salinity, and less than 3% high to extreme water erosion risk. As such, the risk of the proposal causing appreciable land degradation is low. Acid Sulphate Soils (ASS) has an extremely low probability of occurring in the clearing area and is unlikely to have an impact. The wind erosion risk is greater than 70% as high to extreme winds may persist. The clearing area comprises a narrow vehicle access track and two drill pads, providing minimal exposed area for erosion by wind.

Main Roads' standard environmental management measures will be implemented and address erosion and other land degradation processes. Based on the above, the proposed clearing is not at variance to this Principle.

Aspect	Risk
Flood Risk	<3% of the map unit has a moderate to high
	flood risk
Salinity	<3% of map unit has a moderate to high salinity risk or is permittently saline.
	risk or is persistently saline.
Waterlogging	<3% of map unit has a moderate to very high
	waterlogging risk
Water Erosion	<3% of map unit has a high to extreme water
	erosion risk
Wind Erosion	>70% of map unit has a high to extreme wind
	erosion risk and $<3\%$ of map unit has a high to
	extreme wind erosion risk

Methodology

- Government GIS Shapefiles:
 - Soil landscape land quality Water Erosion Risk (2023)
 - Soil landscape land quality Wind Erosion Risk (2023)
 - Soil landscape land quality Salinity Risk (2023)
 - Soil landscape land quality Surface Acidity (2023)
 - Soil landscape land quality Waterlogging Risk (2023)
 - Soil landscape land quality Flood Risk (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 at variance to this Principle.

Assessment

No Environmentally Sensitive Areas (ESAs) are mapped within the Survey Area. The proposed Native Vegetation Clearing Area does not intersect any known conservation areas or DBCA managed lands, however a Nature Reserve is identified directly adjacent to the eastern portion of the Native Vegetation Clearing Area (Beekeepers Nature Reserve; WA24496).

Thirty-two weed species were identified during the survey, however no weed species were identified as Declared Pests or Weeds of National Significance (WoNS) within the Survey Area (Focused Vision Consulting, 2023).

No dieback was identified within or expected to be located outside the Survey Area (Glevan Consulting, 2022). Highly alkaline limestone coastal sandy soils make *Phytophthera cinnamomi* presence unlikely, however, given the area is adjacent to DBCA managed land (Beekeepers Nature Reserve; WA24496), Main Roads propose dieback, weed and hygiene management measures be included at the entrance to the proposed site to reduce the risk and spread of dieback, pathogens and weed species entering the vegetated areas.

It is unlikely impacts to any buffers, ecological linkages, or conservation areas will result under this proposal, and subsequently not impact the environmental values of nearby conservation areas.

Based on the above, the proposed clearing will not be at variance to this Principle.

Methodology

- Glevan Consulting (2022).
- Focused Vision Consulting (2023).
- Government GIS Shapefiles:
 - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 2023)
 - Geomorphic Wetlands (conservation category wetlands only) (Accessed 2023)
 - Ramsar Wetlands (Accessed 2023)
 - Important Wetlands (Accessed 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 at variance to this Principle.

Assessment

The long-term annual average rainfall is 547mm (Jurien Bay, Site No. 009131) per year (BoM, 2023). A desktop search of the Study Area does not identify any major watercourses or water bodies intersecting the Native Vegetation Clearing Area. The nearest river is Arrowsmith River, a major river located approximately 10km east. Impacts are not anticipated due to the distance from the proposal.

The proposal is within the Arrowsmith Groundwater Area (RIWI Act) and Dongara Arrowsmith Subarea and the following proclaimed Surface Water Area:

• Eneabba Coastal Tributaries.

The proposed clearing is adjacent to an existing road (Indian Ocean Drive) and it is not within surface features; therefore, it is not expected to cause deterioration in the quality of surface water.

The proposal does not intersect with a Country Areas Water Supply Act (CAWS) water catchment area. The nearest Public Drinking Water Source is Eneabba Water Reserve (Priority 1, 2, 3) located approximately 36km southeast. The proposed native vegetation clearing is not likely to alter groundwater quality for this area.

Given the absence of significant waterbodies across the Survey Area, it is unlikely to significantly impact the quality of surface or groundwater. The relatively small area proposed to be cleared (1.2ha) is unlikely to result in sedimentation, increased nutrients, or changes to salinity. The proposed activities are unlikely to impact existing levels of surface water runoff, or adversely alter surface and groundwater quality.

Based on the above, the proposed clearing will not be at variance to this Principle. **Methodology**

- Government GIS Shapefiles:
 - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 2023)
 - CAWSA Part 2A Clearing Control Catchments (Accessed 2023)
 - RIWI Act, Groundwater Areas (Accessed 2023
 - Soil landscape land quality Salinity Risk (Accessed 2023)
 - Groundwater Salinity Statewide (Accessed 2023)
 - Soil Mapping (Accessed 2023)
 - Acid Sulphate Soil risk mapping (Accessed 2023)
 - Soil landscape land quality Subsurface Acidification Risk (Accessed 2023)

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

Proposed clearing is not at variance to this Principle.

Assessment

The proposed area receives an average rainfall of 547mm (Jurien Bay, Site No. 009131) per year (BoM, 2023). The area has not been identified as a significant risk of flooding, waterlogging or erosion from soil landscape land quality analyses. The proposal area ranges approximately 19m (AHD) in elevation.

The proposal is within the Arrowsmith Groundwater Area (RIWI Act) and Dongara Arrowsmith Subarea and the following proclaimed Surface Water Area:

• Eneabba Coastal Tributaries.

The nearest:

- river is over 10km east of the proposal area (Arrowsmith River);
- Public Drinking Water Source Area is Eneabba Water Reserve (Priority 1, 2, 3) located approximately 36km southeast;
- wetland is located outside the 20km radius Study Area and is therefore, not considered to be impacted.; and
- the proposal does not intersect with a *Country Areas Water Supply Act 1947* (CAWS) water catchment area.

These systems are of considerable distance from the proposal and no impacts will be caused by the clearing of 1.2ha. The proposed works are unlikely to cause, or exacerbate, the incidence of flooding in the local area.

Based on the above, the proposed clearing will not be at variance to this Principle.

Methodology

- BoM Website (Accessed 2023)
- Government GIS Shapefiles:
 - Soil Mapping (Accessed 2023)
 - Contours (Accessed 2023)
 - Soil landscape land quality Waterlogging Risk (Accessed 2023)
 - Soil landscape land quality Flood Risk (Accessed 2023)

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 1).

7 COMPLIANCE WITH CPS 818

Table 5 summarises what further pre-clearing impact assessment is required in accordance with CPS818.

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

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.	No	No further action required.
 2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality <u>or</u> (j) the incidence of flooding. 3. Clearing is at variance with Clearing 	No	No further action required
Principle (g) land degradation, (i) surface or underground water quality and (j) the incidence of flooding.	NO	
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, 		Standard Vehicle and Plant management actions from Principle Environmental Management Requirements (PEMRs) and Vehicle and Plant Hygiene Checklists will be applied.
 works are necessary in 'Other than dry conditions'; and, works have potential for uninfested areas to be impacted. 	Νο	
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	No	No further action required.

Impact of Clearing	Yes/No or NA	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	No further action required. Dieback, weed and hygiene controls will be included at the entrance to the proposed site to reduce the risk and spread of dieback, pathogens and weed species entering the vegetated areas. No weed species were identified as Declared Pests or Weeds of National Significance (WoNS) within the Survey Area (Focused Vision Consulting, 2023). Therefore, there is low risk of weed spread.
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 was suitably qualified and had more than three years' experience.

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9 APPENDICES

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: 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

- 1. 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.
- 2. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident.
- 3. The Contractor must ensure that:
 - 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.).
- 4. The Contractor must ensure that in the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance. The Contractor must maintain records of any animal taken to a wildlife carer.

POST WORKS

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

Table 3: 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 4: Mulch and 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 and weed infected topsoil and mulch vegetation must be handled separately to minimise the risk of spreading dieback and weed species across the site and stockpiles.
- 4. The Contractor must ensure that stockpiling operations must occur in a manner to ensure that the properties of the topsoil are not degraded and the topsoil made unsuitable for use in revegetation are not degraded and the topsoil made unsuitable for use in revegetation.

POST WORKS

Nil

Table 5: Pegging and Flagging PEMR

PRE WORKS

- 1. Pegging must be done in accordance with the requirements detailed below.
- 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 6: 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.



Appendix 2: Project Study Area.

Figure 4: Study Area.