



Clearing Desktop Report – CPS 818

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Western Australia.*

Indian Ocean Drive - Lancelin Road
Intersection 56.84 Deproclamation

October 2021

2370

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Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environment Officer	Draft v1	24/08/2021
Reviewer:	Environment Officer	Draft v1	19/10/2021
Author:	Environment Officer	Final	19/10/2021

1 PURPOSE

This Clearing Desktop Report (CDR) is a desktop assessment of native vegetation clearing that is proposed to be cleared using the Statewide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

2 SCOPE

2.1 Project Scope

Project Name: Indian Ocean Drive - Lancelin Road Intersection 56.84 Realignment

Project Purpose / Components: The project has been requested of Main Roads by the Shire of Gingin to improve access for a mineral sands project being constructed in the area.

The project description is to realign and upgrade the intersection of old Lancelin Rd and Indian Ocean Drive (IOD). This includes widening IOD to allow passing of turning vehicles.

This intersection excludes the SLK's associated with the three passing lanes on Indian Ocean Drive (M045) that fall under Ministerial Statement 618.

The proposed clearing under CPS 818 is: 0.3 ha within a 0.4 ha project area.

The proposed temporary clearing under CPS 818 is: none.

Project Location(s): The project area is located on Indian Ocean Drive (M045) SLK 56.84 and old Lancelin Rd (M034) SLK 00 to 0.70, Shire of Gingin as shown in Figure 1.

- MGA reference: 350266.547 6553665.523 meters

The location of the proposed works is at Figure 1.

2.2 Desktop Assessment Scope

The assessment area is confined to a local area of a 10 km radius, as shown in Figure 2.

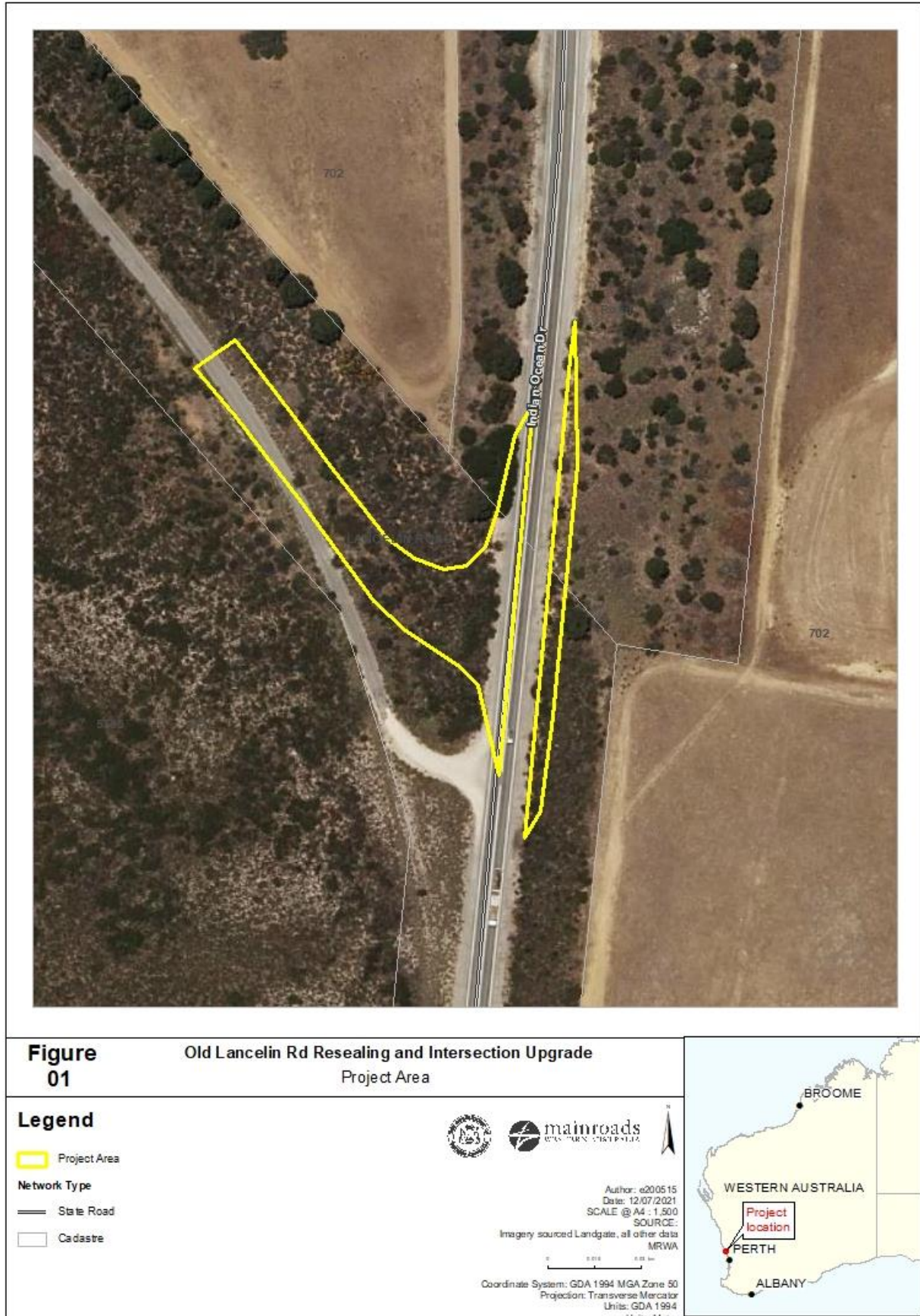


Figure 1. Project Area

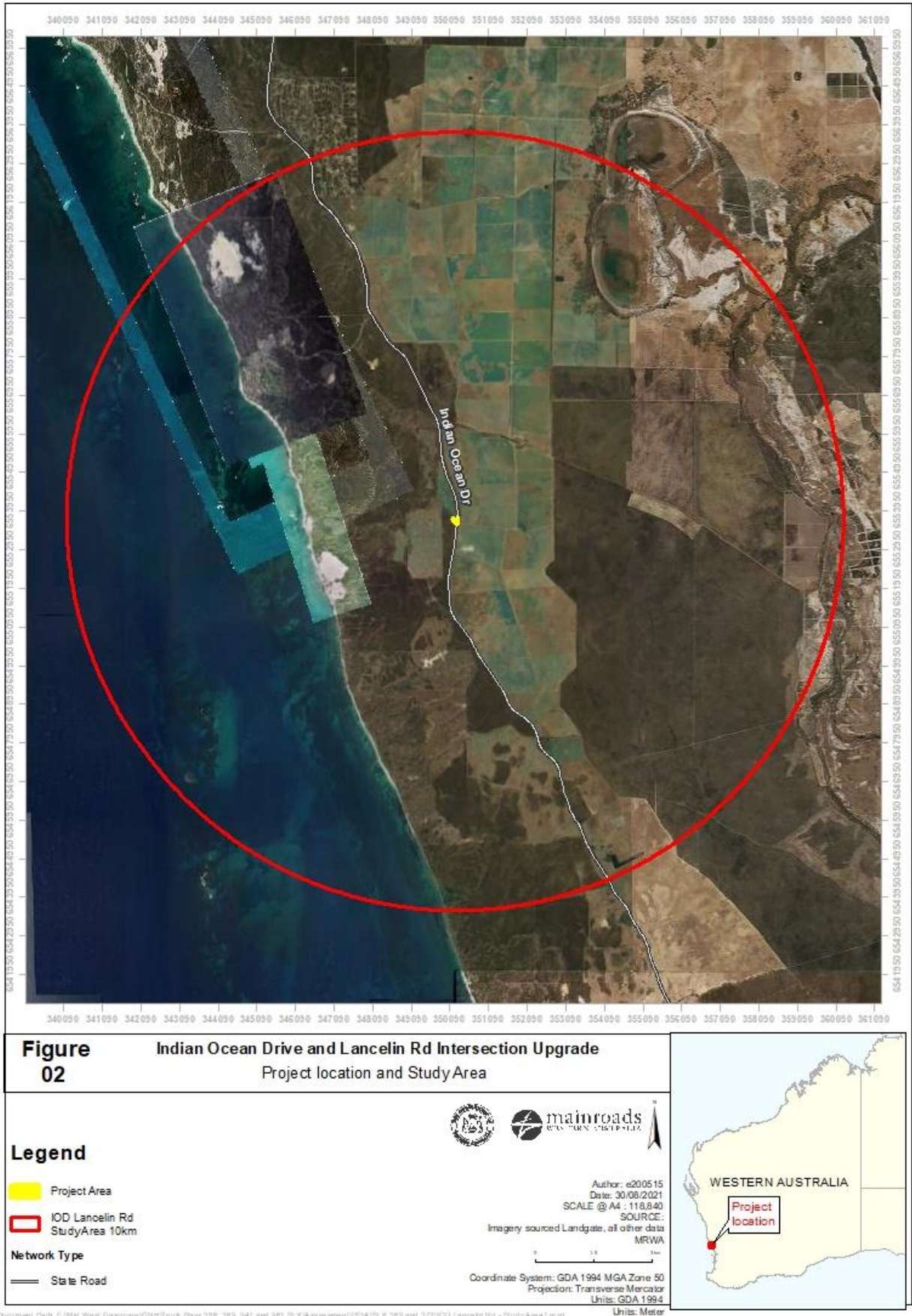


Figure 2. Project Location and Study Area

2.3 Alternatives to Clearing

No alternatives exist to achieve the project outcome. Realignment of the intersection is required to keep upgrade works within the road reserve and widening of IOD is required to meet safety requirements of project.

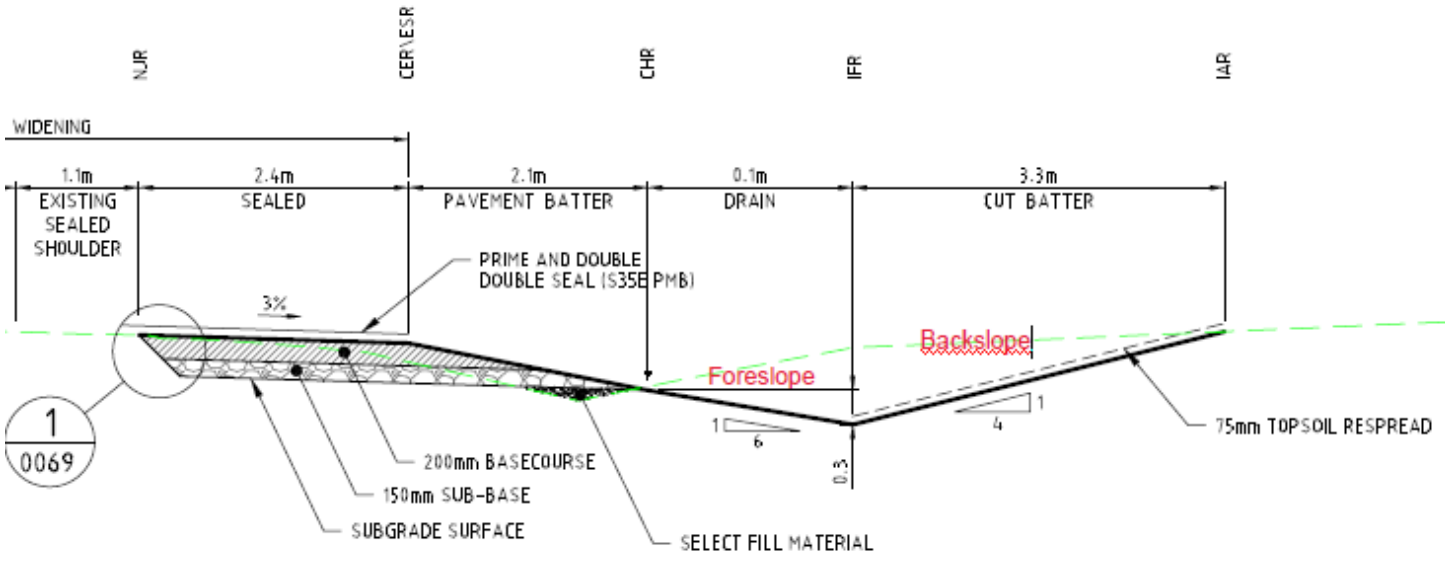
2.4 Measures to Avoid, Minimise, Mitigate and Manage Project Clearing Impacts

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

Impacts to vegetation will be minimised through the implementation of the following measures:

- the clearing area will be demarcated prior to the commencement of native vegetation clearing;
- where possible, vegetation will be pruned as opposed to removed;
- implementation of the Main Roads Principal Environmental Management Requirements:
 - clearing and access control measures (such as demarcation of clearing boundaries);
 - weed and dieback management;
 - landscaping of earth-worked areas;
 - erosion and sediment control;
 - waste and fire management;
 - topsoil management;
 - dust control; and
 - tree and vegetation retention where possible.

Table 1. Justification of Avoiding, Minimising, Mitigating and Managing Project Clearing Impacts

Design or Management Measure	Discussion and Justification
<p>Steepen batter slopes</p>	<p>Not implemented. The batter will be 1:6 on foreslope and 1:4 at backslope. This is required to allow for a clear zone on the foreslope.</p> 
<p>Installation of safety barriers</p>	<p>Not implemented. As stated above, the 1:6 foreslope is required to allow for adequate clear zone along the roadside. In addition, this section of IOD is in a straight alignment with very minimal risk of vehicles running off the road as compared to the curve. Installation of safety barrier at this point to allow for steeper batters may introduce a roadside hazard, thus this is not a suitable measure to avoid clearing.</p>
<p>Alignment to one side of existing road</p>	<p>Not applicable – Works required on both sides of IOD due to the intersection upgrade and the widening of IOD required to facilitate safe turning onto Lancelin Rd and overtaking of turning vehicles. Vegetation on both sides of IOD is in a degraded condition.</p>

Design or Management Measure	Discussion and Justification
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	A portion of the existing old Lancelin Rd is located outside of the road reserve. As Main Roads is handing this road back to the Shire of Gingin, it needs to ensure that the entire road is contained within the road reserve. To achieve this, the intersection is required to be moved further north into degraded vegetation.
Installation of kerbing	Not applicable. Kerbing is not required in an open road environment such as IOD.
Simplification of design to reduce number of lanes and/or complexity of intersections	The intersection has been simplified. It is single lane and IOD is being widened for a short distance to allow for safe overtaking of turning vehicles.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Not applicable. Access tracks, construction storage and stockpiling not required for this project.
Drainage modification	Drainage has been considered. The table drain will need to be reconstructed along IOD on the eastern side where the widening is and on the new intersection location to allow the water to drain following the natural ground level back into Old Lancelin Rd.
Other design treatment	Design has minimised clearing envelope and rehabilitation of disused road portion (intersection) will be undertaken.

2.5 Approved Policies and Planning Instruments

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

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

EPPs

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

Relevant other policies and guidance documents:

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

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

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

3 Methodology

3.1 Desktop Study

A desktop assessment of the project area and an assessment of native vegetation clearing were undertaken by reviewing a number of government agency managed databases and viewing GIS shapefiles.

GIS layer viewing and mapping is done using ArcMap and / or Main Roads Integrated Mapping System (IMS). 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, these are referenced in Section 8.

4 VEGETATION DETAILS

4.1.1 Project Site Vegetation Description

A survey of sections of Indian Ocean Drive for passing lanes and widening was undertaken by Astron in 2016, which covered 0.16 ha of the footprint required for the IOD widening and intersection realignment. This native vegetation was in a degraded condition and mapped by Astron (2016) as:

- *Allocasuarina lehmanniana* subsp. *lehmanniana* open low woodland to low woodland over *Acacia saligna* subsp. *lindleyi* open tall shrubland (Astron 2016) over weedy grasslands and herblands (W01)
- *Acacia rostellifera* and *Spyridium globulosum* open scrub over *Calothamnus quadrifidus* subsp. *quadrifidus* and *Melaleuca systema* open shrubland over **Ehrharta longiflora* and **Avena barbata* open grassland (SC01).

Approximately 0.03 ha within this project footprint was legally cleared in 2018 for other works.

A recent site inspection of the 0.13 ha area adjacent to the Astron survey area that is proposed to be cleared for this project confirmed that the vegetation was similar to the vegetation described above for W01 and in a similarly degraded condition; however, it has also been affected by fire (Main Roads 2021). Vegetation mapping is summarised in Table 2.

Table 2. Summary of Project Area's Vegetation composition

	Vegetation (ha)	Cleared (ha)
Vegetation Type W01 (Astron 2016)	0.10	
Vegetation Type SC01 (Astron 2016)	0.03	
Unsurveyed vegetation	0.13*	
Cleared		0.14
Total	0.26	0.14

* A site inspection indicated this vegetation was similar to Vegetation Type W01.

Table 3 and Table 4 provide details of the Pre-European Vegetation Associations within the project area and the remaining extents of these associations.

Table 3. Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 1029 Shrublands; scrub-heath <i>Dryandra-Calothamnus</i> association with <i>Banksia prionotes</i> on limestone in the northern Swan Region	Clearing of up to 0.3 ha for realignment of old Lancelin Rd intersection, and road widening of Indian Ocean Drive	Degraded (EPA 2016)	Vegetation description and condition determined from Main Roads site visit on 6 May 2021, aerial imagery and the Astron (2016) biological survey report.

Table 4. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 1029	Statewide	71,035.87	51,221.57	72.11	29
	IBRA Bio region Swan Coastal Plain	68,329.04	49,086.11	71.84	27.96
	IBRA Sub-region Perth	68,329.04	49,086.11	71.84	27.96
	Local Government Authority Shire of Gingin	19,335.98	9,837.15	50.87	18.80

4.1.2 Vegetation Complexes and Representation

Native vegetation complexes as described by Government of Western Australia (2019) within the project area comprise:

- Cottesloe Complex-North – Predominantly low open forest and low woodland of *Banksia attenuata* (Slender Banksia) - *Banksia menziesii* (Firewood Banksia) - *Eucalyptus todtiana* (Pricklybark); closed heath on the Limestone outcrops.

Table 5 provides the remaining extents of these complexes.

Table 5. Vegetation Complexes (Hedde/Mattiske) within the Project Area

Hedde/Mattiske Veg Complex	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Cottesloe Complex - North	43,474.31	25,165.42	57.89

5 Assessment Against the Ten Clearing Principles

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

Each principle has been assessed in accordance with DWER’s ‘A Guide to the Assessment of Applications to Clear Native Vegetation’.

The proposed clearing is not likely to be at variance with the 10 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
<p>Comments</p> <p>A survey of sections of Indian Ocean Drive for passing lanes and widening was undertaken by Astron in 2016, which covered the majority of the footprint required for the IOD widening and intersection realignment. The native vegetation that was surveyed was found to be in a degraded condition and mapped (Astron 2016) as:</p> <ul style="list-style-type: none"> • W01 - <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> open low woodland to low woodland over <i>Acacia saligna</i> subsp. <i>lindleyi</i> open tall shrubland over weedy grasslands and herblands • SC01 - <i>Acacia rostelifera</i> and <i>Spyridium globulosum</i> open scrub over <i>Calothamnus quadrifidus</i> subsp. <i>quadrifidus</i> and <i>Melaleuca systema</i> open shrubland over *<i>Ehrharta longiflora</i> and *<i>Avena barbata</i> open grassland. <p>Weed diversity was considered high by Astron (2016) in the mapped vegetation types and the area has been affected by fire (Main Roads 2021). The small section of vegetation (0.13 ha) of the realignment footprint which has not been surveyed was inspected and found to be similar to that described above for W01; however, it has been affected by fire and must be considered in at least good condition (Main Roads 2021 and Appendix 1).</p> <p>The above vegetation types do not match the vegetation types of any State-listed TEC or PEC (Astron 2016); however, MRWA GIS datasets of TECs and PECs show that the project area is mapped as the Priority 3 listed Banksia Dominated Woodland of the Swan Coastal Plain (synonymous with the EPBC Act listed Banksia Woodlands of the Swan Coastal Plain TEC). Several <i>Banksia attenuata</i> shrubs were identified during a site inspection in the area that had not been previously surveyed. The inspection (Main Roads 2021) determined that the area containing <i>Banksia attenuata</i> was less than 2 ha (estimated at 0.2 ha) in good condition (note: vegetation has been subject to impacts from fire and therefore must be rated at least in good condition for assessment) and therefore would not meet the minimum patch size to be considered the Banksia Woodland TEC (DotE 2016). In addition, the majority of this patch falls outside the project area and only one shrub will require clearing and as such is not considered a significant impact.</p> <p>Two mature Tuarts of DBH >50 cm were mapped by Astron on the southbound side of the road, outside the project area (32 m and 55 m from eastern boundary of project area). A site inspection (Main Roads 2021) identified an additional three mature trees of DBH <50 cm in the vicinity of the project area with the closest tree being immediately adjacent to the project boundary. The two other trees are 10 m and 15 m from the project area and are all within 60 m of each other and could be considered a “patch”. The Astron (2016) survey included a quadrat in this area and determined the vegetation to be in a degraded condition, with low native species diversity (two species) and a high percentage of weed cover (59%). The site inspection (Main Roads 2021) verified that this condition assessment was representative of the patch; however, the patch may be greater than 5 ha (extent of tuart vegetation was not determined during the site inspection due to time constraints) and as such it could represent the EPBC listed Tuart (<i>Eucalyptus</i></p>

gomphocephala) Woodlands and Forests of the Swan Coastal Plain TEC. No Tuarts will be cleared as part of this project and only 0.07 ha of understorey adjacent to the road will require clearing; as such, clearing is unlikely to have a significant impact on the Tuart TEC.

A search of the NatureMap database identified 107 native flora taxa that have been previously recorded within 10 km of the project area (DBCA 2021). The Astron (2016) survey identified eight Priority flora species that could have the potential to occur in the larger survey area:

- *Banksia dallanneyi* subsp. *pollostata* (P3)
- *Conostylis bracteata* (P3)
- *Leucopogon* sp. Yanchep (P3)
- *Stylidium maritimum* (P3)
- *Tetratheca pilifera* (P3)
- *Thryptomene* sp. Lancelin (P3)
- *Conostylis pauciflora* subsp. *euryrhypis* (P4)
- *Dodonaea hackettiana* (P4)

Only *Dodonaea hackettiana* (P4) was recorded by Astron (2016) just north of the project area on the west side of the road; however, this specimen was removed during the construction of passing lanes in 2018 and no Florabase records or other survey records show this species within the study area. The species occurs in greater abundance approximately 10 km to the east of the project area and within the Perth Metropolitan Area and as such, it is unlikely this species will be significantly affected by the proposed clearing. The remaining species have been recorded in several locations north and/or south, or inland of the project area and if present within the project area it is unlikely that these species will be significantly affected by the clearing of 0.3 ha of vegetation.

A search of the NatureMap database identified one additional Priority species recorded within 5 km of the project area, *Scholtzia laciniata* (P2). This species has a restricted range of approximately 30 km between Seabird and just north of Lancelin (WA Herbarium 2021) in shallow sand over limestone near the coast and deep yellow sand further inland (Rye 2019). There is suitable habitat for this species within the project area; however, the project area is surrounded by larger areas of more intact and better condition vegetation, than the small linear extent proposed to be cleared. Therefore, impacts are not likely to be significant.

NatureMap identified 106 fauna species that have been recorded within the study area. Of these, only one conservation significant species has a high likelihood of occurrence within the project area, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (Threatened) and been recorded within the study area (Astron 2016). Impacts to Carnaby's cockatoo are discussed in more detail under Principle (b).

Astron (2016) concluded that other significant fauna considered moderately likely to occur in the survey area are unlikely to be reliant upon the habitats present.

The vegetation to be cleared is adjacent to large areas of remnant vegetation to the west and removal of small linear areas of vegetation is not integral to maintaining ecological linkages.

The proposal is unlikely to be at variance to this principle.

Methodology

- DBCA shapefiles
- EPA (2016, 2020)
- Main Roads GIS Shapefiles
- Main Roads Site Inspection (07/09/2021)
- NatureMap (Accessed 12/07/2021)

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

Proposed clearing is not likely to be at variance to this Principle
<p>Comments</p> <p>The Astron (2016) survey identified two habitat types in the project area: open woodland and coastal heath, but both habitat types are in a degraded condition within the project area and are unlikely to be significant habitat for native fauna.</p> <p>Astron (2016) identified only one conservation significant species with a high likelihood of occurrence within the project area, Carnaby’s Cockatoo (<i>Calyptorhynchus latirostris</i>) (Threatened) which has been recorded within the study area. Two mature tuart trees were recorded by Astron (2016) close to, but outside the project area and appear to have a suitable DBH for Carnaby’s Cockatoo, but none contained hollows suitable for breeding (Astron 2016). Astron (2016) classified the area that was surveyed as “limited foraging habitat” for Carnaby’s Cockatoo which was confirmed during the site inspection with only a small patch of Banksia vegetation observed (approximately 0.2 ha). Only one Banksia specimen occurs within the project area and the clearing of this and any indirect impacts on the small adjacent banksia patch will not significantly impact on Carnaby’s Cockatoo foraging habitat in the local area. Better quality foraging habitat was mapped by Astron approximately 350 m south of the project area and larger areas of foraging habitat have been mapped approximately 3.5 km north and 1.5 km south of the project area by Astron (2016).</p> <p>Several other significant fauna species, while determined to have a moderate or high likelihood of occurrence in the survey area are considered unlikely to be reliant upon the habitats present (Astron 2016).</p> <p>There are also large amounts of intact vegetation remaining in the area, including large conservation areas, that will act as a corridor for fauna and no linkages are likely to be broken by the project activities.</p> <p>The proposal is unlikely to be at variance to this principle.</p>
<p>Methodology</p> <p>Main Roads Site Inspection (07/09/2021) DBCA Shapefiles DBCA website EPA (2016, 2020) PMST Report NatureMap (accessed July 2021)</p>

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

Proposal is not likely to be at variance to this Principle
<p>Comments</p> <p>No Rare flora was recorded during the 2016 survey by Astron and the post survey likelihood of occurrence determined that none are possible or likely to occur.</p> <p>Based on the degraded condition and location bordering the currently disturbed road corridor, the project area is unlikely to comprise habitat necessary for the continued existence of Rare flora. The proposal is unlikely to be at variance to this principle.</p>

<p>Methodology MRWA GIS datasets NatureMap (accessed 13/07/2021) Florabase (Accessed 13/07/2021) Main Roads Site Inspection (07/09/2021)</p>

(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.

<p>Proposed clearing is not at variance to this Principle</p>
<p>Comments A search of MRWA GIS datasets did not identify any state listed Threatened Ecological communities (TECs) within the study area. Given the above, the project clearing is not at variance to this principle.</p>
<p>Methodology DBCA shapefiles Main Roads Site Inspection (07/09/2021)</p>

(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.

<p>Proposed clearing is not at variance to this Principle</p>								
<p>Comments The mapped vegetation association and table outlining the percentage of vegetation remaining are included below. From those tables it is clear that the project area does not represent an area that has been extensively cleared as there is greater than the critical 30% threshold vegetation remaining statewide (72.11%) and in the IBRA region (72.84%). Only 0.3 ha will be cleared for this project which will not significantly affect the amount of vegetation remaining. In addition, it is noted from aerial imagery (Figure 2) the study area contains a significant proportion of remnant vegetation directly adjacent to the project area that is likely in a better condition and the small amount of linear clearing in the road reserve is not likely to diminish any linkages of native vegetation across the landscape. As such the proposed clearing is not at variance to this principle.</p> <p>Summary of Project Area’s Mapped Pre-European Vegetation Associations</p> <table border="1"> <thead> <tr> <th>Pre-European Vegetation Association(s)</th> <th>Clearing Description</th> <th>Vegetation Condition</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>Vegetation Association 1029 Shrublands; scrub-heath <i>Dryandra-Calothamnus</i> association with <i>Banksia prionotes</i> on limestone in the northern Swan Region</td> <td>Clearing of up to 0.3 ha for realignment of old Lancelin Rd intersection, and road widening of Indian Ocean Drive</td> <td>Degraded (EPA 2016)</td> <td>Vegetation description and condition determined from Main Roads site visit on 6 May 2021, aerial imagery and the Astron (2016) biological survey report.</td> </tr> </tbody> </table>	Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments	Vegetation Association 1029 Shrublands; scrub-heath <i>Dryandra-Calothamnus</i> association with <i>Banksia prionotes</i> on limestone in the northern Swan Region	Clearing of up to 0.3 ha for realignment of old Lancelin Rd intersection, and road widening of Indian Ocean Drive	Degraded (EPA 2016)	Vegetation description and condition determined from Main Roads site visit on 6 May 2021, aerial imagery and the Astron (2016) biological survey report.
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Pre-European Vegetation Representation					
Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 1029	Statewide	71,035.87	51,221.57	72.11	29
	IBRA Bio region Swan Coastal Plain	68,329.04	49,086.11	71.84	27.96
	IBRA Sub-region Perth	68,329.04	49,086.11	71.84	27.96
	Local Government Authority Shire of Gingin	19,335.98	9,837.15	50.87	18.80
<p>Methodology Aerial photography EPA (2016) Government of Western Australia (2019)</p>					

(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
<p>Comments</p> <p>A search of Geomorphic Wetlands of the Swan Coastal Plan dataset and the PMST report indicates no wetlands (RAMSAR, nationally important, geomorphic, etc.) are located within the vicinity of the project area. The nearest nationally important wetlands, Karakin Lakes are located approximately 7 km away and will not be affected by the project. The closest mapped watercourse is the Moore River located at its nearest point approximately 8 km from the project area and vegetation associated with this watercourse will not be affected by the project.</p> <p>The site investigation identified that there are no water bodies within the project area nor was there any evidence of riparian vegetation within the project area.</p> <p>Given that no riparian vegetation was identified during the site visit and the project’s distance to the nearest watercourse and wetlands it is considered unlikely that the native vegetation to be cleared is growing in or in association with a watercourse or wetland.</p> <p>Therefore, the proposed clearing is not at variance to this Principle.</p>
<p>Methodology DWER and DBCA shapefiles Main Roads Site Inspection (06/05/2021)</p>

(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	
Comments	
Aspect	Risk
Flood Risk	0% of map unit showing a moderate to high flood risk
Salinity	0% of map unit showing a moderate salinity risk
Waterlogging	0% of map unit showing a moderate to very high waterlogging risk
Water Erosion	25% of map unit has a very high to extreme water erosion risk
Wind Erosion	70% of map unit has high to extreme wind erosion risk
Acid Sulphate Soils (ASS)	Extremely Low Probability of Occurrence
<p>The table above indicates that the majority of degradation risks in the area are low except for wind erosion. The project area is composed of deep sands so it is unlikely that land degradation will be an issue. Since the soil is sand it will have a high infiltration rate and the risk of waterlogging or water erosion will be low.</p> <p>As there will be vegetation remaining in the surrounding area and only a linear section will be removed, wind erosion is unlikely to be significantly increased. The works that are to be completed for this project are minor in nature. There will be no dewatering or excavation below the water table so it is unlikely that acid sulphate soils will be an issue in the area.</p> <p>Given the above this proposed clearing is not likely to be at variance to this Principle.</p>	
Methodology	
Main Roads Site Inspection (06/05/2021)	
Natural Resource Information WA (Accessed 14/07/2021)	

(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	
Comments	
<p>Within the study area there is one conservation area, the Gnangara-Moore River State Forest located approximately 2.5 km from the project area. Project activities will be confined to the road reserve and will not impact on the any conservation areas or reserves or linkages to the conservation area.</p> <p>Given the minor nature of the works and the distance to the nearest conservation area, the project will not be at variance to this Principle.</p>	
Methodology	
DBCA shapefiles	
EPA (2016)	

(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.

<p>Proposed clearing is not at variance to this Principle</p>
<p>Comments</p> <p>The closest mapped watercourse is the Moore River located at its nearest point approximately 8 km from the project area. The project area is located within the Gingin Groundwater Area. One Public Drinking Water Source Area is located within the study area, Ledge Point Water Reserve; however, it is 5 km from the project area. No Proclaimed Surface Water Areas are located within the study area.</p> <p>It is unlikely that this project will cause a deterioration in the quality of the surface or underground water because of the minor nature of the road works and most of the existing vegetation will remain after the proposed clearing.</p> <p>Given the above the proposed clearing is not at variance to this Principle.</p>
<p>Methodology</p> <p>DWER and DBCA shapefiles EPA (2016) Main Roads Site Inspection (06/05/2021)</p>

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

<p>Proposed clearing is not likely to be at variance to this Principle</p>
<p>Comments</p> <p>The project area receives a moderate annual average rainfall of 615.9 mm; however, the DPIRD Natural Resource Information mapping indicates that there is a low risk of flooding in the project area (0% of map unit showed a moderate to high flood risk). The project area is predominately composed of sandy soils that will have a high infiltration rate and the risk of flooding will be low. As vegetation will remain in the surrounding area and only small linear sections will be removed, it is unlikely that this project will increase the risk of flooding in the area.</p> <p>Given the above this project clearing is not likely to be at variance to this Principle.</p>
<p>Methodology</p> <p>Main Roads Site Inspection (06/05/2021) Natural Resource Information WA (Accessed 14/07/2021) Bureau of Meterology (Accessed 14/07/2021)</p>

6 ADDITIONAL ACTIONS REQUIRED

The clearing associated with the proposal is unlikely or not at variance with the Clearing Principles. Additional management actions under CPS 818 are detailed in Table 6.

Table 6. Summary of Additional Management Actions Required by Permit CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
<p>1. The project involves clearing for temporary works (as defined by CPS 818).</p>	<p>No</p>	<p>No further action required.</p>
<p>2 a. Project is within Region that:</p> <ul style="list-style-type: none"> - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for uninfested areas to be impacted 	<p>No</p>	<p>Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists.</p>
<p>3. 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</p>	<p>No</p>	<p>No further action required.</p>
<p>4. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition</p>	<p>No</p>	<p>No further action required.</p>

7 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. Vegetation will be managed in accordance with the Principal Environmental Management Requirements (PEMR's).

8 REFERENCES

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9 APPENDICES

Appendix	Title
Appendix 1	Environmental Site Inspection
Appendix 2	DBCA Threatened Flora and Fauna Database Searches

Appendix 1: Environmental Site Inspection Report

Refer to D21#914077

Appendix 2: DBCA Threatened Flora and Fauna Database Searches

D21#835468 NatureMap Report

D21#835471 NatureMap Map

D21#683771 Protected Matters Search Tool Report