Clearing Desktop Report – CPS 818

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Total Solar Eclipse Network Upgrade: Projects 4 and 5

August 2022

EOS references: 2666, 2753

D22#847200

Contents

Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environmental Officer (GHD) Environmental Officer (Main Roads)	Draft v1	15/08/2022
Reviewer:	Senior Environmental Officer (Main Roads)	Draft v1	19/08/2022
Author:	Environmental Officer (GHD)	Final	30/08/2022
Reviewer:	Senior Environmental Officer (Main Roads)	Final	06/09/2022

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: Total Solar Eclipse Network Upgrade: Projects 4 and 5.

Project Purpose / Components: As part of the total solar eclipse that will occur in Exmouth in April 2023, Main Roads Western Australia (Main Roads) has identified the need to upgrade a parking bay and rest area adjacent to the North West Coastal Highway (NWCH) to improve facilities and road user safety between the town sites of Shark Bay and Exmouth, Western Australia.

The two Projects are detailed below.

Project 4 – Overlander Roadhouse Parking Bay Upgrade
Main Roads proposes to upgrade, and bitumen seal the existing parking area on NWCH between Straight Line Kilometre (SLK) 280.95 and SLK 281.15 opposite the Overlander Roadhouse to Heavy Vehicle Rest Area (HVRA) standards, with light vehicle parking unsealed. This will provide a facility for truck drivers to take mandatory rest breaks and check their vehicles.

Project 5 – 26th Parallel Rest Area Upgrade
Main Roads proposes to increase the side of the existing rest area on NWCH between SLK 328.60 and SLK 328.72 by lengthening (10m in either direction) and widening (10m east of the existing rest area) to enable multiple motorists to pull off the road network safely.

The proposed clearing under CPS 818 is: Up to 0.42 ha:

- Project 4: 0.3 ha Impact Area contained within a 1.52 ha Development Envelope (DE)
- Project 5: 0.12 ha Impact Area contained within a 0.49 ha DE

The proposed temporary clearing under CPS 818 is: 0 ha

Project Location(s): The Project DEs are located on North West Coastal Highway SLK 280.95 to 281.15 in the Shire of Shark Bay and SLK 328.60 to 328.72 in the Shire of Carnarvon as shown in Figure 1 and 3.

- Project 4: 114.4637755, -26.4127256 (Figure 1)
- Project 5: 114.3074764, -26.0064936 (Figure 3).

2.2 Desktop Assessment Scope

The assessment area is confined to a local area of a 10 km radius, as shown in Figures 2 and 4.

Figure 1. Project 4 Development Envelope and Impact Area

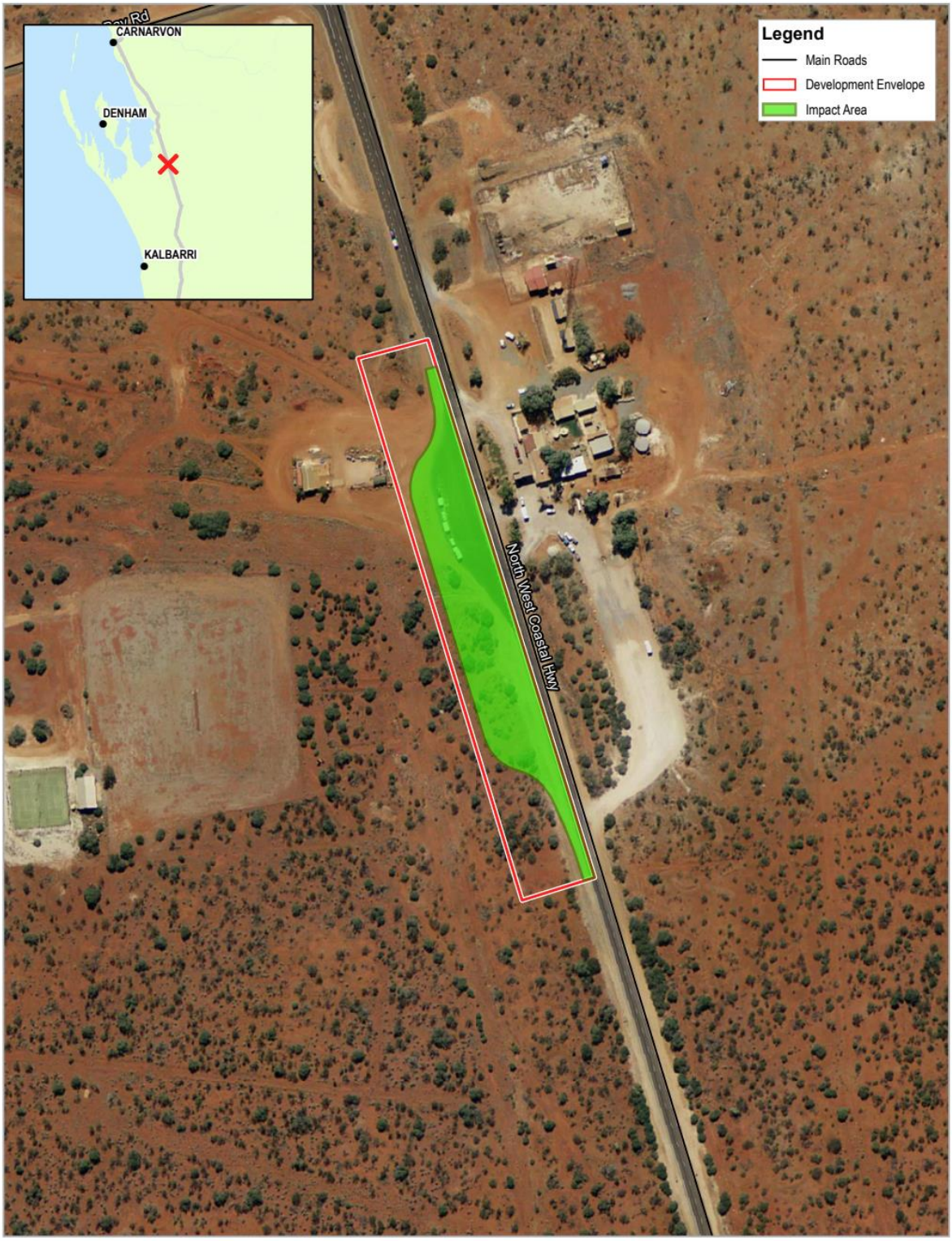


Figure 2. Project 4 Desktop Assessment Area

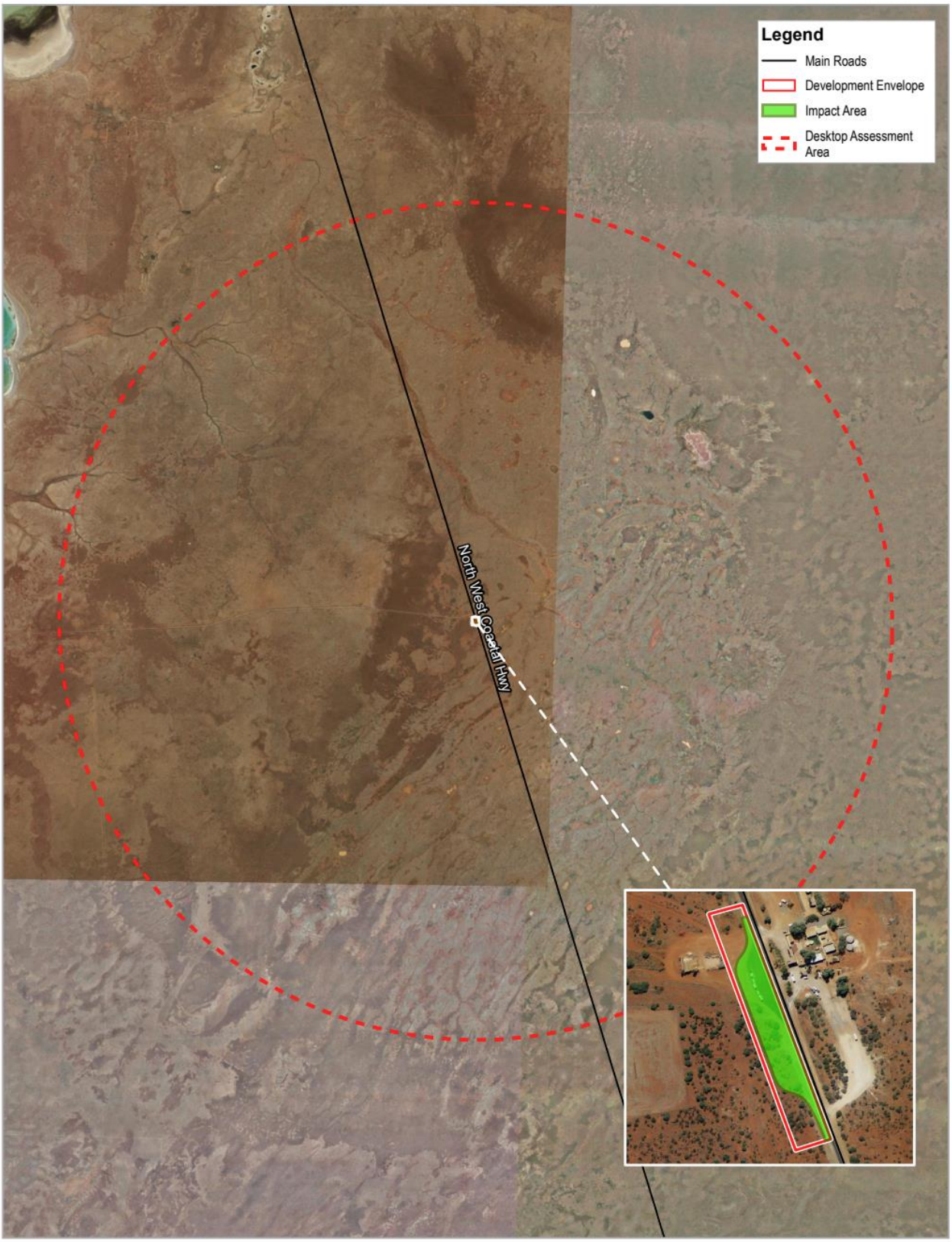
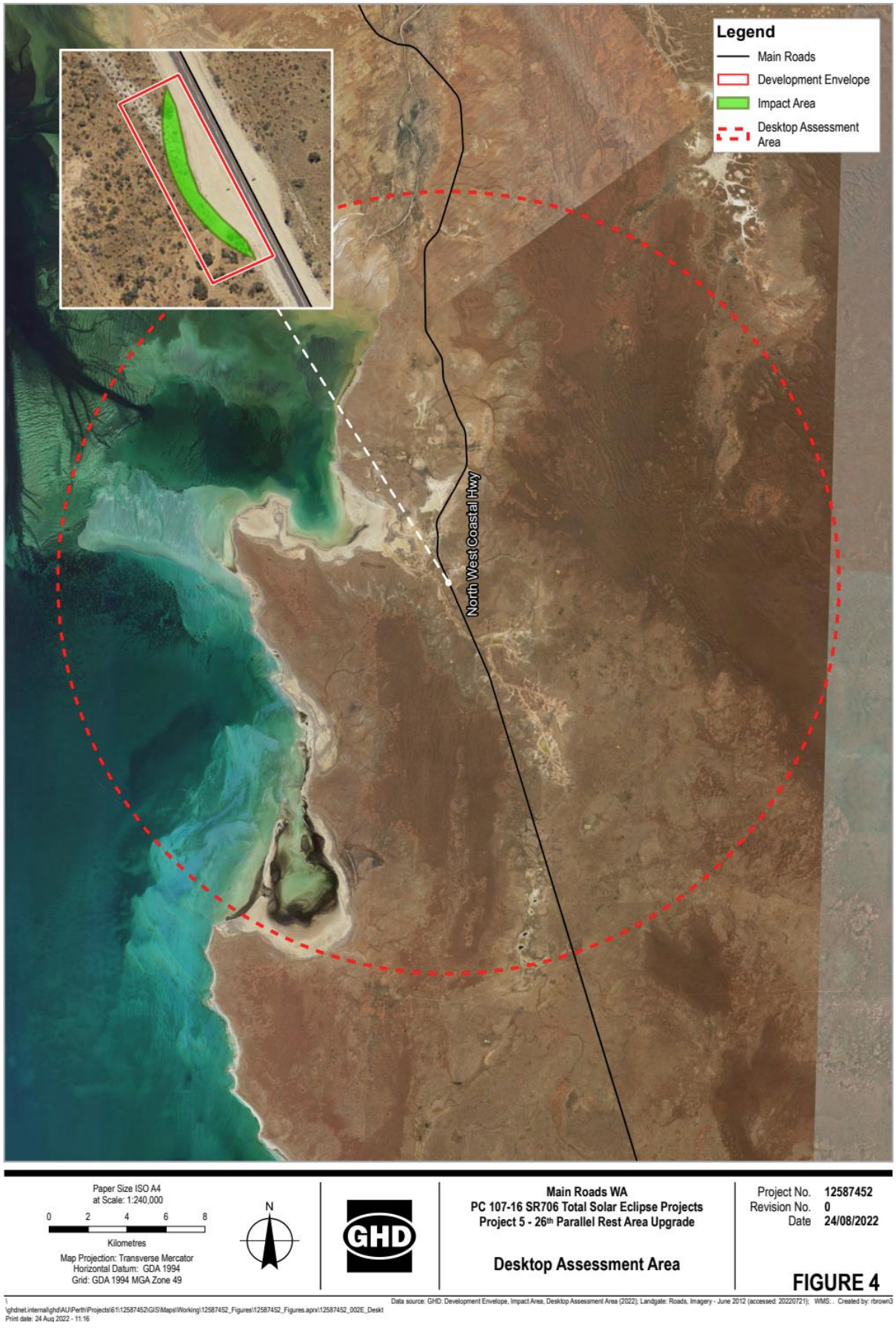


Figure 3. Project 5 Development Envelope and Impact Area

Figure 4. Project 5 Desktop Assessment Area



2.3 Alternatives to Clearing

Upgrade to the rest area/parking bay/intersection have been contained within existing cleared and disturbed areas as much as possible to minimise clearing of native vegetation.

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.

Other measures include:

- Project Impact Areas are located on existing parking areas.
- Turnaround locations, site office and stockpile locations will be established in historically cleared areas
- Clearing of vegetation and ground disturbance has been maintained within the existing disturbance footprint as much as possible
- The design has been simplified as much as practicable to minimise impacts to the environment
- 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 management
    - landscaping of earth-worked areas
    - erosion and sediment control
    - waste and fire management
    - topsoil management
    - dust control
    - 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
Steepen batter slopes	Due to the traffic volumes, vehicle type and posted speeds these batters cannot be changed significantly. A 6:1 foreslope and 4:1 backslope to be inputted where required.
Installation of safety barriers	Given that the civil elements that are being designed are parking bays (low speed environments) and intersection upgrade, installation of safety barriers would not be justified.
Alignment to one side of existing road	Not applicable to Project as existing parking bays and intersection upgrade are aligned to only one side of the road.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	Parking areas are being located on existing parking areas that are partially cleared and disturbed to minimise clearing of native vegetation.
Installation of kerbing	Not applicable. Kerbing is not relevant to this proposal.
Simplification of design to reduce number of lanes and/or complexity of intersections	Where possible, the footprint for the parking areas was optimised to minimise the footprint, costs and vegetation to be cleared.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Turnaround locations, site office and stockpile locations will be established in historically cleared areas
Drainage modification	Existing drainage will be maintained with only minor modification including reinstatement of table drains and extension of culverts where required.

2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* (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:

Relevant 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 areas and an assessment of native vegetation clearing were undertaken by reviewing a number of government agency managed databases, viewing GIS shapefiles and consulting with relevant stakeholders where necessary. Results from searches can be found in the relevant Appendix.

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 7.

4 VEGETATION DETAILS

4.1.1 Project Site Vegetation Description

No current site assessment information for the Projects is available, however GHD completed a Level 1 Flora and Fauna assessment for NWCH between SLK 280.7 to SLK 281.6 (GHD 2013) and a Level 1 Flora and Fauna assessment for NWCH SLK 300 to SLK 376 (GHD 2015). These assessments are used to provide context for this CDR.

Vegetation types (VT) within Projects 4 and 5 DEs were mapped by GHD (2013, 2015) as follows:
Project 4:

- VT2 – High Shrubland over Shrubland on sandy loam 0.74 ha (48.7% of DE)
- VT3 – Cleared/Degraded 0.78 ha (51.3% DE).

Project 5:

- VT4 – Low *Acacia* Shrublands over Chenopods 0.45 ha (91.8% of DE)
- VT6 – Cleared 0.04 ha (8.2% DE).

Broad scale (1:1,000,000) pre-European vegetation mapping of the Mid-West Gascoyne (Bear 1975) confirms that Projects 4 and 5 are located within vegetation associations no. 224 and 221 respectively.

Tables 2 and 3 provide details of the Pre-European Vegetation Associations which intersect the Project DEs and the remaining extents of these associations. The remaining Pre-European extent of these vegetation associations at the State, IBRA bioregion, IBRA sub-region and LGA scales is reported to be 100% for Project 4 and greater than 94% for Project 5.

The condition of the vegetation within Project 4 DE was assessed as Good (GHD 2013) and Excellent for Project 5 DE (GHD 2015) at the time of the respective surveys.

A review of current aerial imagery (Landgate 2022) indicated the Project 4 Impact Area to be consistent with the GHD (2013) vegetation condition mapping, placing the Impact Area in Good condition native vegetation (100%). A review of current aerial imagery (Landgate 2022) indicated the Project 5 Impact Area has most likely experienced vegetation degradation since the GHD (2015) survey was undertaken and is now most likely in a degraded condition.

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

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Project 4: Veg Assoc No. 224	Clearing of up to 0.3 ha for parking bay upgrade on NWCH.	Good (EPA 2016)	Vegetation description and condition determined from aerial imagery and previous survey (GHD 2013).
Project 5: Veg Assoc No. 221	Clearing of up to 0.12 ha for parking bay upgrade on NWCH.	Degraded (EPA 2016)	Vegetation description and condition determined from aerial imagery.

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Project 4: Veg Assoc No. 224	Statewide: WA	82,644.14	82,644.14	100.00	1.19
	IBRA Bioregion: Carnarvon	82,367.77	82,367.77	100.00	0.87
	IBRA Sub-region: Wooramel	82,367.77	82,367.77	100.00	0.87
	LGA: Shire of Shark Bay	81,833.15	81,833.15	100.00	0.34
Project 5: Veg Assoc No. 221	Statewide: WA	63,720.06	59,923.05	94.04	17.99
	IBRA Bioregion: Carnarvon	15,459.62	15,447.65	99.92	51.24
	IBRA Sub-region: Wooramel	15,459.62	15,447.65	99.92	51.24
	LGA: Shire of Carnarvon	12,742.44	12,646.82	99.25	61.41

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 at variance to this Principle
Comments

The combined extent of native vegetation within the proposed Project Impact Areas amounts to 0.42 ha. The condition of the vegetation within Project 4 DE was assessed as Good (GHD 2013) and Excellent for Project 5 DE (GHD 2015). A review of current aerial imagery (Landgate 2022) indicated the Project 4 Impact Area to be consistent with the GHD (2013) vegetation condition mapping, placing the Impact Area in Good condition native vegetation (100%). A review of current aerial imagery (Landgate 2022) indicated the Project 5 Impact Area has most likely experienced vegetation degradation since the GHD (2015) survey was undertaken and is now most likely in a Degraded condition.

Significant flora and vegetation

Project 4 –The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) did not identify any Commonwealth listed Threatened Ecological Communities (TECs) within the desktop assessment area or DE. Department of Biodiversity, Conservation and Attractions (DBCA) datasets identified one State-listed Priority Ecological Community (PEC) (Priority (P)1) within the desktop assessment area, namely the Hypersaline microbial community number 2 (Hamelin Pool stromatolites). This PEC is described as "Hypersaline tidal stromatolite aragonite community formed by trapping and binding by a variety of cyanobacteria and eukaryotes". There is one occurrence of this PEC within the desktop assessment area, 5.2 km west of the DE. No records of this PEC occurred in the DE (GoWA 2022) and the vegetation mapped within the DE was not representative of this PEC (GHD 2013).

WA Herbarium and DBCA datasets identified 11 conservation significant flora species as previously recorded within the desktop assessment area. These species are listed as follows:

- *Acacia drepanophylla* – P3 (six records)
- *Calytrix Formosa* – P3 (one record)
- *Dasymalla glutinosa* – P3 (three records)
- *Dicrastylis linearifolia* - P3 (one record)
- *Goodenia sericostachya* – P3 (two records)
- *Grevillea costata* – P3 (one record)
- *Grevillea rogersoniana* – P3 (one record)
- *Melaleuca boeophylla* – P3 (one record)
- *Rhodanthe* sp. Overlander (P.S. Short 2096) - P1 (one record)
- *Tetragonia coronate* – P3 (two records)
- *Verticordia dichroma* var. *dichroma* – P3 (five records).

EPBC PMST identified the presence/potential presence of *Caladenia hoffmanii* (listed as Endangered under the EPBC Act and BC Act) and *Eucalyptus beardiana* (listed as Vulnerable under the EPBC Act and BC Act) in the desktop assessment area. None of the above significant flora were recorded from the Project 4 DE at the time of the GHD (2013) survey.

Project 5 – The EPBC Act PMST did not identify any Commonwealth listed TECs within the desktop assessment area or DE. DBCA datasets identified two State-listed PECs within the desktop assessment area, namely the Hypersaline microbial community number 2 (Hamelin Pool stromatolites) (P1) and the Salune Land System (P3). The P1 community is described as "Hypersaline tidal stromatolite aragonite community formed by trapping and binding by a variety of cyanobacteria and eukaryotes". The P3 community is described as "Alluvial plains and saline flats interspersed with undulating sandy banks and low dunes; tall acacia shrublands and low shrublands of bluebush, saltbush and samphire". The buffer for the P1 community intersects the DE of Project 5, while the P3 community is 6.7 km south east of the DE. The vegetation mapped within the DE was not representative of the two State-listed PECs (GHD 2015).

WA Herbarium and DBCA datasets identified six conservation significant flora species as previously recorded within the desktop assessment area. These species are listed as follows:

- *Acacia drepanophylla* – P3 (one record)
- *Acacia sclerosperma* subsp. *Glaucescens* – P3 (18 records)
- *Calandrinia operta* – P1 (three records)
- *Lepidium biplicatum* – P3 (one record)
- *Scaevola chrysopogon* – P2 (one record)

- *Sondottia glabrata* – P2 (one record).

EPBC PMST identified the presence/potential presence of *Caladenia hoffmanii* (listed as Endangered under the EPBC Act and BC Act) and *Eucalyptus beardiana* (listed as Vulnerable under the EPBC Act and BC Act) in the desktop assessment area.

The GHD (2015) survey identified [redacted] (P3) as occurring within the Project 5 DE. Five records occur within the DE, three of these records occur within the Impact Area, the three points represented six individual plants. The GHD (2015) survey identified 248 records of [redacted] within the survey area of SLK 300 to SLK 376, the 248 records represented 1904 individual plants. The clearing of six individuals would represent less than 0.01% of the known surveyed population (GHD, 2015). Additionally, FloraBase (2022) lists 25 records of this species with many records noting the species as "very common".

Significant fauna

Project 4 – GHD (2013) identified fauna habitat within the DE as High Shrubland over Shrubland on sandy loam. The EPBC Act PMST and DBCA database identified the presence/potential presence of the following significant fauna species occurring within the desktop assessment area:

- 10 species listed as Threatened under the EPBC Act and/or the BC Act
- One species listed as Priority by DBCA
- One species listed as an Other specially protected species by DBCA
- 14 species listed as migratory (Terrestrial and Wetland) under the EPBC Act and/or as Migratory birds protected under an international agreement under the BC Act
- 13 EPBC marine listed species (bird).

Project 5 – GHD (2015) identified fauna habitat within the DE as Low *Acacia* shrublands over Chenopods. The EPBC Act PMST and DBCA database identified the presence/potential presence of the following significant fauna species occurring within the desktop assessment area:

- 35 species listed as Threatened under the EPBC Act and/or the BC Act
- No species listed as Priority by DBCA
- 56 species listed as migratory (Terrestrial and Wetland) under the EPBC Act and/or as Migratory birds protected under an international agreement under the BC Act
- 13 EPBC marine listed species (bird).

A desktop search of ArcGIS shapefiles indicates the DEs for Projects 4 and 5 are not located within, or adjacent to, any reserves or conservation areas, within or adjacent to any DBCA managed lands or reserves, or any Environmentally Sensitive Area (ESAs). Bush Forever is only relevant to the Perth metropolitan area, and therefore not relevant to the Projects.

Proposed clearing is minor (0.42 ha in total), spread across two Project Impact Areas and is linear in nature. The small extent of clearing for the Projects will not remove entire corridors of vegetation and will not remove any ecological linkages between the local and surrounding vegetation. Whilst the Projects will result in a combined loss of up to 0.42 ha native vegetation, the vegetation does not comprise a high biological diversity in the local or regional context.

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

Methodology

DBCA shapefiles
EPA (2016, 2020)
Government of WA (2022)
Main Roads GIS Shapefiles

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

Proposed clearing is not at variance to this Principle

Comments

The fauna habitat within Projects 4 and 5 DEs is well represented at a local and regional scale and would not be necessary for the maintenance of conservation significant fauna. Some threatened fauna species may infrequently visit the Project DEs, however would not be reliant on the 0.42 ha habitat for survival.

Project 4 – GHD (2013) identified fauna habitat within the DE as High Shrubland over Shrubland on sandy loam. The EPBC Act PMST and DBCA database identified the presence/potential presence of the following significant fauna species occurring within the desktop assessment area:

- 10 species listed as Threatened under the EPBC Act and/or the BC Act
- One species listed as Priority by DBCA
- One species listed as an Other specially protected species by DBCA
- 14 species listed as Migratory (Terrestrial and Wetland) under the EPBC Act and/or as Migratory birds protected under an international agreement under the BC Act
- 13 EPBC Marine listed species (bird).

Project 5 – GHD (2015) identified fauna habitat within the DE as Low *Acacia* shrublands over Chenopods. The EPBC Act PMST and DBCA database identified the presence/potential presence of the following significant fauna species occurring within the desktop assessment area:

- 35 species listed as Threatened under the EPBC Act and/or the BC Act
- No species listed as Priority by DBCA
- 56 species listed as Migratory (Terrestrial and Wetland) under the EPBC Act and/or as Migratory birds protected under an international agreement under the BC Act
- 13 EPBC Marine listed species (bird).

Significant fauna species are unlikely to be solely reliant on the 0.42 ha of habitat within the Project Impact Areas. The Project DEs are predominantly cleared and disturbed as a result of the existing rest area and parking bay with vegetation in Good or better condition outside the Project DEs which would provide preferable habitat to significant fauna species.

Vegetation within the Project DEs does not represent key habitat for significant fauna species. The scale of the proposed clearing is minor on a regional and local level when compared to available habitat in the surrounding area. Based on the above information, the vegetation proposed to be cleared is not necessary for the maintenance of local fauna species and is not considered to represent significant fauna habitat.

The proposed clearing is not at variance to this Principle.

Methodology

DBCA Shapefiles
DBCA website
EPA (2016, 2020)

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

Proposal is not at variance to this Principle
Comments The Project DEs do not intersect any EPBC Act, BC Act or DBCA listed flora species with no known records of Threatened or rare flora within the Project DEs (DBCA shapefiles) and none recorded during the GHD (2013, 2015) surveys. The proposed clearing is not at variance to this Principle.
Methodology DBCA shapefiles Florabase (Accessed July 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
Comments No Threatened Ecological Communities (TEC) occur within or in the vicinity of the Project DEs and the native vegetation within the Project DEs is not representative of State or Commonwealth TECs (GHD 2013, 2015).
Methodology DBCA shapefiles

(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
Comments The combined extent of native vegetation within the proposed Project Impact Areas amounts to 0.42 ha. Broad scale (1:1,000,000) pre-European vegetation mapping of the Mid-West Gascoyne area was completed by Beard (1975) at an association level. The mapping confirms the DE for Projects 4 and 5 are located within vegetation associations no. 224 and 221 respectively. The remaining Pre-European extent of these vegetation associations at the State, IBRA bioregion, IBRA sub-region and LGA scales is reported to be 100% for Project 4 and greater than 94% for Project 5. The national objectives and targets for biodiversity conservation Australia have been set to prevent clearance of ecological communities with less than 30% of their pre-European extent, below which species loss appears to accelerate exponentially (Commonwealth of Australia 2001). Current extents of vegetation associations no. 224 and 221 are above the 30% threshold. Vegetation proposed to be cleared is minor in nature and not significant as a remnant of native vegetation in an area that have been extensively cleared. Therefore, proposed clearing is not at variance to this Principle.
Methodology Aerial photography EPA (2016)

Government of Western Australia (2017)

(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

Comments

A search of ArcGIS shapefiles indicates no wetlands (including RAMSAR, Nationally Important Wetlands) or watercourses are mapped within the Project DEs.

The Project DEs contains no significant surface water features or riparian vegetation and subsequently the proposed clearing is not at variance to this Principle.

Methodology

DWER and DBCA shapefiles

(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

Project 4 – The DE is located within the Shark Bay Zone of the Carnarvon Province. This zone is characterised by Tille (2006) as Sandplains (with coastal flats and dunes, calcrete plains and alluvial plains) on marine shoreline and aeolian deposits and Cretaceous marine limestone of the Carnarvon Basin. Red deep sands with some Calcareous deep sands, Calcareous shallow loams and Red deep sandy duplexes. Acacia shrublands (often grassy) with some scrub-heaths, halophytic shrublands and spinifex grasslands. The Impact Area is attributable to the Toolonga System, Soil Type 237To, described as "Gently undulating calcrete outcrop plains with local and internal drainage supporting acacia tall shrublands."

Project 5 – The DE is located within the Shark Bay Zone of the Carnarvon Province. This zone is characterised by Tille (2006) as Sandplains (with coastal flats and dunes, calcrete plains and alluvial plains) on marine shoreline and aeolian deposits and Cretaceous marine limestone of the Carnarvon Basin. Red deep sands with some Calcareous deep sands, Calcareous shallow loams and Red deep sandy duplexes. Acacia shrublands (often grassy) with some scrub-heaths, halophytic shrublands and spinifex grasslands. The impact area is attributable to the Foscal System, Soil Type 237Fs, described as "Calcrete mesas, buttes and dissected plateaux, stony slopes and broad lower plains supporting tall and low acacia shrublands with saltbush and bluebush."

The clearing with the Project DEs is minor in nature and scale and is spread across two locations and is unlikely to alter drainage regimes or hydrology. Surface water management measures will be implemented as part of the Project designs to maintain drainage and existing flow lines consistent with the existing hydrology. Given the linear nature of proposed clearing and that the Project areas will be sealed upon completion, the proposed clearing is not likely to lead to an appreciable increase in land degradation, through erosion and sedimentation, to surrounding areas. Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of erosion, sedimentation, flooding and the potential for land degradation.

Given the above, clearing for the Project DEs is not likely to be at variance to this principle.

Methodology

Natural Resource Management SLIP Soil Systems (Accessed July 2022)

(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

The desktop assessment area for Project 4 does not intersect with any conservation reserves or DBCA managed lands. The nearest DBCA managed land to Project 5 DE is the Sedimentary Deposits Reserve (R30885), which is located approximately 3.5 km west of the western extent of the DE and will not be impacted.

The Projects will not impact on the environmental values of any adjacent or nearby conservation areas. Therefore, proposed clearing is not at variance to this Principle

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.

Proposed clearing is not at variance to this Principle

Comments

The Project DEs are not located in any RAMSAR or Nationally Important Wetlands. The Project DEs are located within the Carnarvon Groundwater Area which is proclaimed under the RIWI Act. The Project DEs are located within the Pilbara Surface Water Area proclaimed under the RIWI Act. The Project DEs do not intersect any Public Drinking Water Source Areas (PDWSAs) (GoWA 2022).

The Project DEs are located in areas that are historically disturbed and degraded with clearing spread across two locations. Impacts associated with Project works are unlikely to cause deterioration to surface water quality. As no dewatering is proposed for either of the Projects, impacts to groundwater quality are unlikely.

Given the above it is unlikely that this Project will cause deterioration in the quality of surface or underground water. Therefore, this Project is considered not to be at variance to this Principle.

Methodology

DWER and DBCA shapefiles
EPA (2016)

(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

Comments

The climate of the region is semi-arid, with hot dry summers and mild winters. The average annual rainfall is 210 mm with the highest amount falling in June. Drainage lines in the area are dry for most of the year, only flowing briefly following significant rainfall (BoM 2022).

Review of ArcGIS shapefiles indicates that the proposed works will not disturb or interrupt any natural drainage or surface run-off patterns with no permanent water courses or waterbodies within the project areas. The removal of up to 0.42 ha of native vegetation across the two sites is unlikely to result in excessive surface runoff that would increase the intensity or incidence of flooding about the current risk level.

Surface water management measures will be implemented as part of Project construction to maintain existing flow lines and to avoid impact to adjacent native vegetation. Road runoff and storm water will be managed via the Principal Environmental Management Requirements (PEMRs). Based on the above, proposed clearing is not at variance to this clearing principle.
Methodology Bureau of Meteorology (Accessed 2022)

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*
1. The project involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
2 a. Project is within Region that: - 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	**No**	Proceed with standard Vehicle and Plant management actions from PEMR's and Vehicle and Plant Hygiene Checklists.
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	**No**	No further action required.
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	**No**	No further action required.

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).

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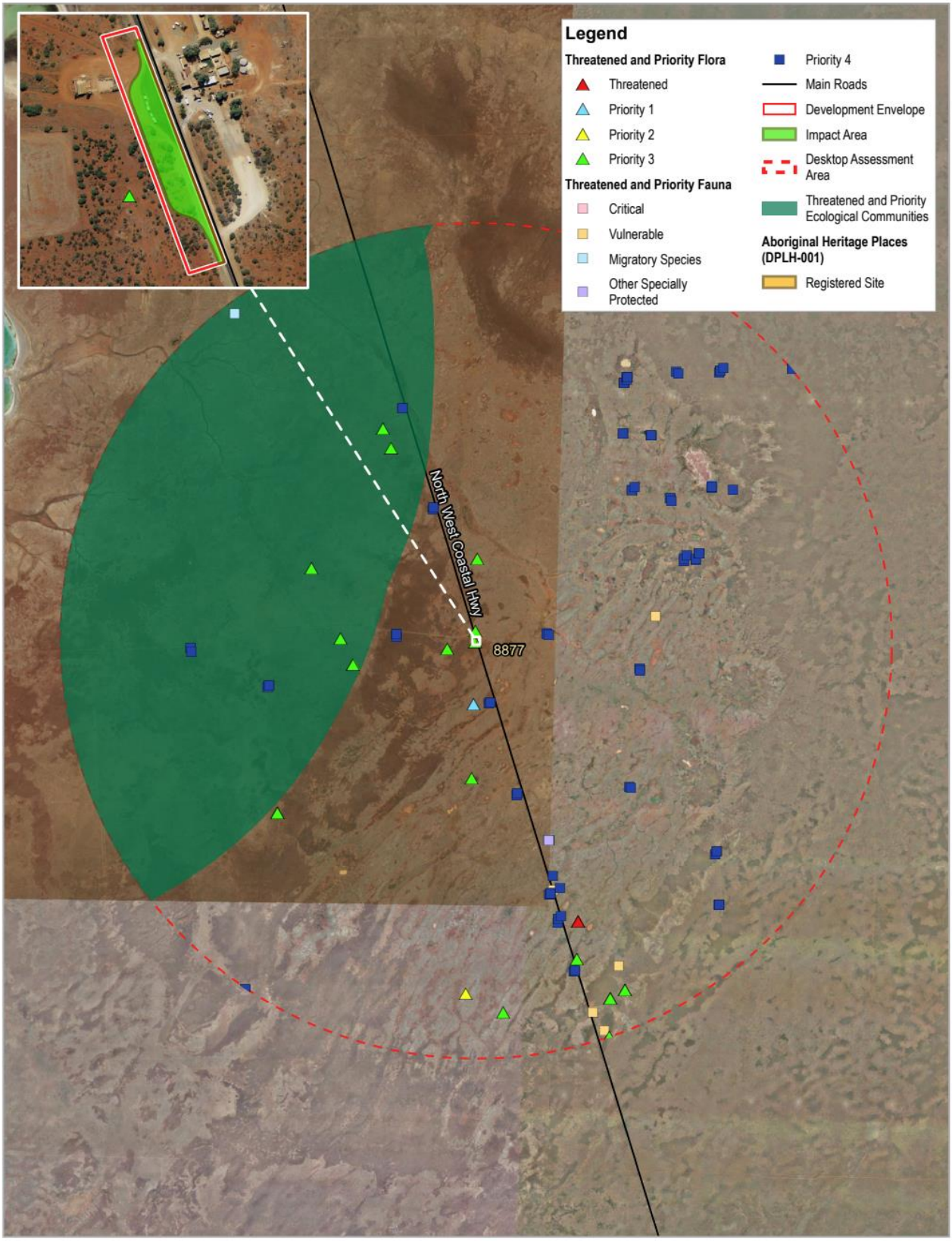
9 APPENDICES

Appendix	Title
Appendix 1	DBCA Threatened Flora and Fauna Database Search Results and other environmental constraints mapping

Appendix 1: DBCA Threatened Flora and Fauna Database Search Results and other environmental constraints mapping

Figure 5. Project 4 Constraints



Paper Size ISO A4
at Scale: 1:240,000

0 2 4 6 8
Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 49

N

GHD

Main Roads WA
PC 107-16 SR706 Total Solar Eclipse Projects
Project 4 - Overlander Roadhouse Parking Bay Upgrade

Constraints

Project No. 12587452
Revision No. 0
Date 24/08/2022

FIGURE 5

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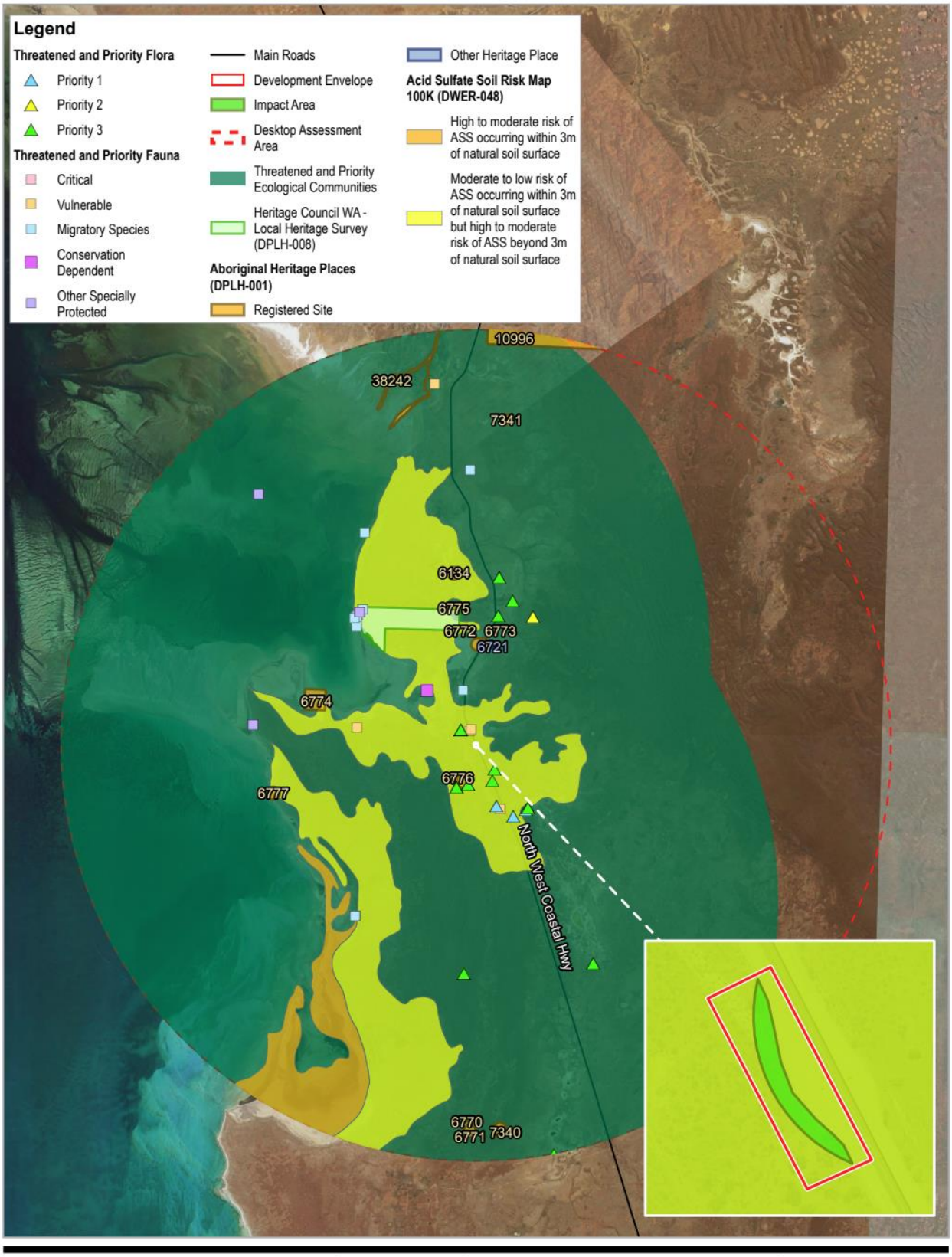
Print date: 24 Aug 2022 - 11:13

Data source: GHD: Development Envelope, Impact Area, Desktop Assessment AreaThreatened and Priority Flora/Fauna/Ecological Communities (2022); Landgate: Roads, DPLH (001) - Aboriginal Heritage Places, Imagery - June 2012 (accessed: 20220721); WMS: . Created by: rbrown3

Figure 6. Project 5 Constraints



Paper Size ISO A4
at Scale: 1:240,000
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Kilometres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 49

N

GHD

Main Roads WA
PC 107-16 SR706 Total Solar Eclipse Projects
Project 5 - 26th Parallel Rest Area Upgrade

Constraints

Project No. 12587452
Revision No. 0
Date 24/08/2022

FIGURE 6

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Print date: 24 Aug 2022 - 11:17

Data source: GHD: Development Envelope, Impact Area, Desktop Assessment Area, Threatened and Priority Flora/Fauna/Ecological Communities (2022); Landgate: Roads, DPLH (001/008) - Local Heritage, Aboriginal Heritage Places, DWER (048) - ASS Risk Map, Imagery - June 2012 (accessed: 20220721); WMS: . Created by: rbrown3