Clearing Assessment Report – CPS 818

We're working for Western Australia.

Lumsden Point Intersection and Acceleration Lane Upgrade.

Great Northern Highway

Pilbara

EOS: 2926

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1 PROPOSAL

1.1 Purpose and Justification

Main Roads Western Australia (Main Roads) proposes to clear up to 12.03 hectares (ha) of native vegetation to upgrade the Great Northern Highway (GNH) and Pinga Street / Lumsden Point intersection, including the development of two additional Acceleration Lanes between 1605 – 1609 SLK in the Shire of Port Hedland.

Pilbara Ports Authority (PPA) are finalising plans to upgrade its Port facility at Lumsden Point in Port Hedland. The project will result in a major upgrade to importing heavy and large equipment in the North West of Western Australia. The primary purpose for the upgrade is to reduce congestion at the existing intersection as well as to facilitate the Lumsden Point Port Upgrade which includes importation and transportation of wind turbine blades. The blades themselves are up to 120m long and are to be transported throughout the Pilbara, primarily East and West along Great Northern Highway to various locations for installation.

The current access road to Lumsden Point is not suitable for transporting heavy loads. Additionally, the intersection of Great Northern Highway (GNH) and Pinga St is not designed to handle the increased traffic flow and the necessary turning radius for 130m long vehicles. To address this issue, a concept design has been created proposing a grade-separated interchange solution at the current intersection of GNH and Pinga Street. An acceleration lane has also been designed to accommodate the increased traffic volume of trucks using the intersection and to assist with turning onto Pinga Street and Lumsden Point.

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 to clear 12.03 ha for intersection and acceleration lane upgrades on GNH and Pinga Street in Port Hedland, in the Shire of Port Hedland.

Construction of the Great Northern Highway (H006) Grade Separated Interchange over Pinga Street and Lumsden Point Access Road, including Bridge No. 1939 and No.1940 and two acceleration lanes, will cater for the transportation and importation of heavy and large equipment to and from the Lumsden Point Port area, and reduce congestion at the intersection. The Proposal will be delivered in two stages and improve road user safety:

1. Great Northern Highway (GNH) (H006) and Lumsden Point / Pinga Street intersection upgrade works (16.05 – 1607.50_Straight Line Kilometre (SLK)).
2. Acceleration lanes works on GNH (1607 – 1609 SLK).

The works comprise of the following components:

- Protection of services within the construction site;
- Construction of entry and exit ramps into Lumsden Point Access Road and Pinga Street;
- Construction of approximately 600m of the Lumsden Point Access Road into the Port facility;
- Widening of the Pinga Street intersection and roundabout;
- Construction of Bridges No. 1939 and No. 1940;
- Construction of Drainage Culverts, Stormwater Drains and Drainage Structures.

1.3 Proposal Location

The Proposal Area is located on Great Northern Highway and Pinga Street / Lumsden Point, in the Town of Port Hedland between 1605 and 1609 SLK in the Shire of Port Hedland as shown in Figure 1. A 40 km Study Area was used for the environmental assessment and is shown in Figure 2.

The central coordinates of the proposal are:

- Eastings: 118.5993551
- Northings: -20.3637601

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:

The Proposal Area is approximately 28.65 ha, with a total Clearing Area of 12.03 ha.

Areas of Native Vegetation Clearing:

The Proposal Area and the areas of native vegetation to be cleared are shown in Figure 1.

Type of Native Vegetation:

The Proposal Area consists of two vegetation types:

- Sandy Plains: (AsppTRTtTe*Cc - *Acacia* spp. scattered tall shrubs over *Acacia stellaticeps, Trianthema turgidifolium* scattered low shrubs over *Triodia epactia* open hummock grassland over **Cenchrus ciliaris* open tussock grassland.);

- Mudflats: (TECspp - *Tecticornia* spp. low open shrubland).

The vegetation condition of the Proposal Area ranges from Good to Degraded condition. The Proposal Area and Vegetation Types are displayed in Figure 3.

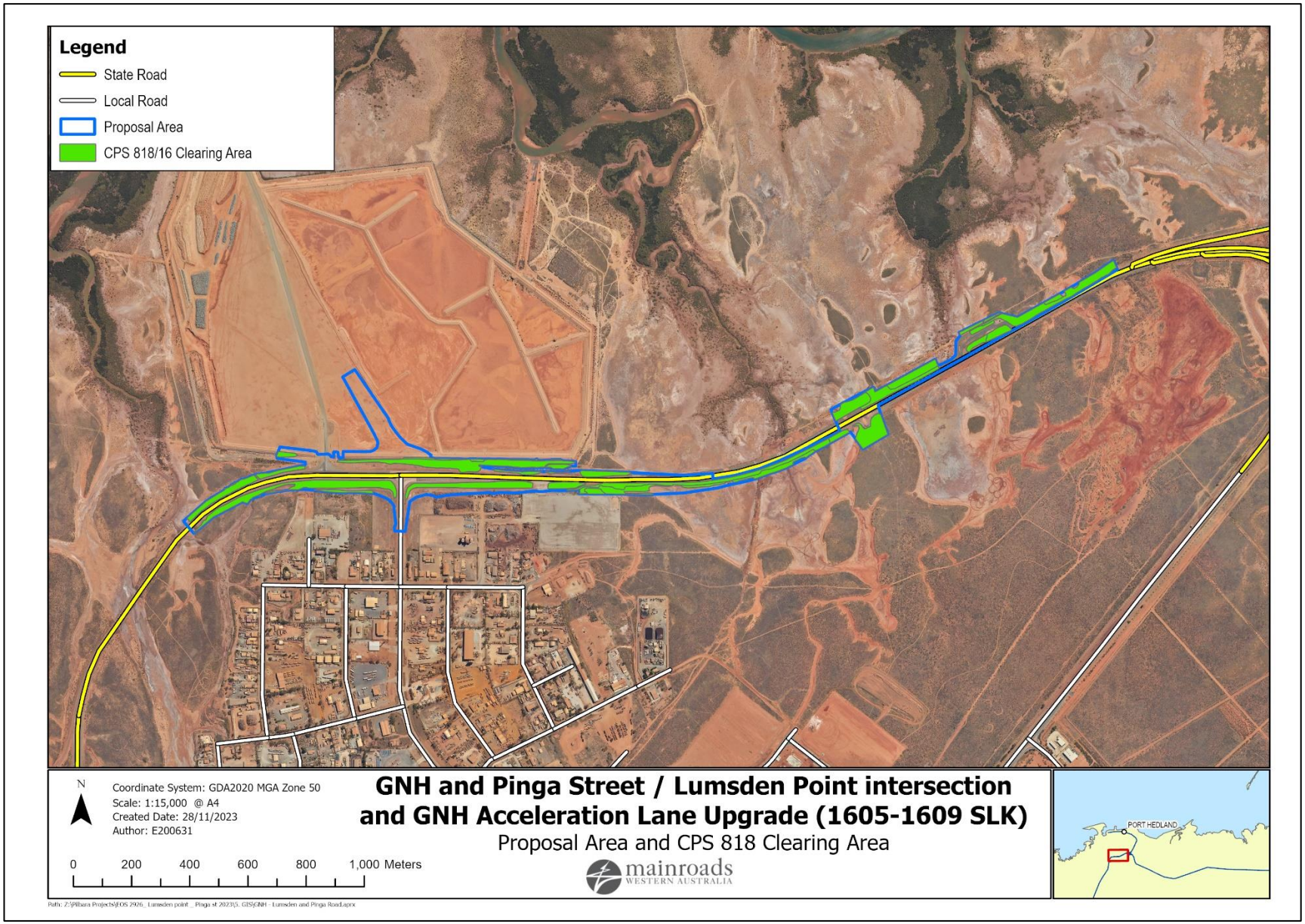

Figure 1: Proposal Area and CPS 818 clearing area

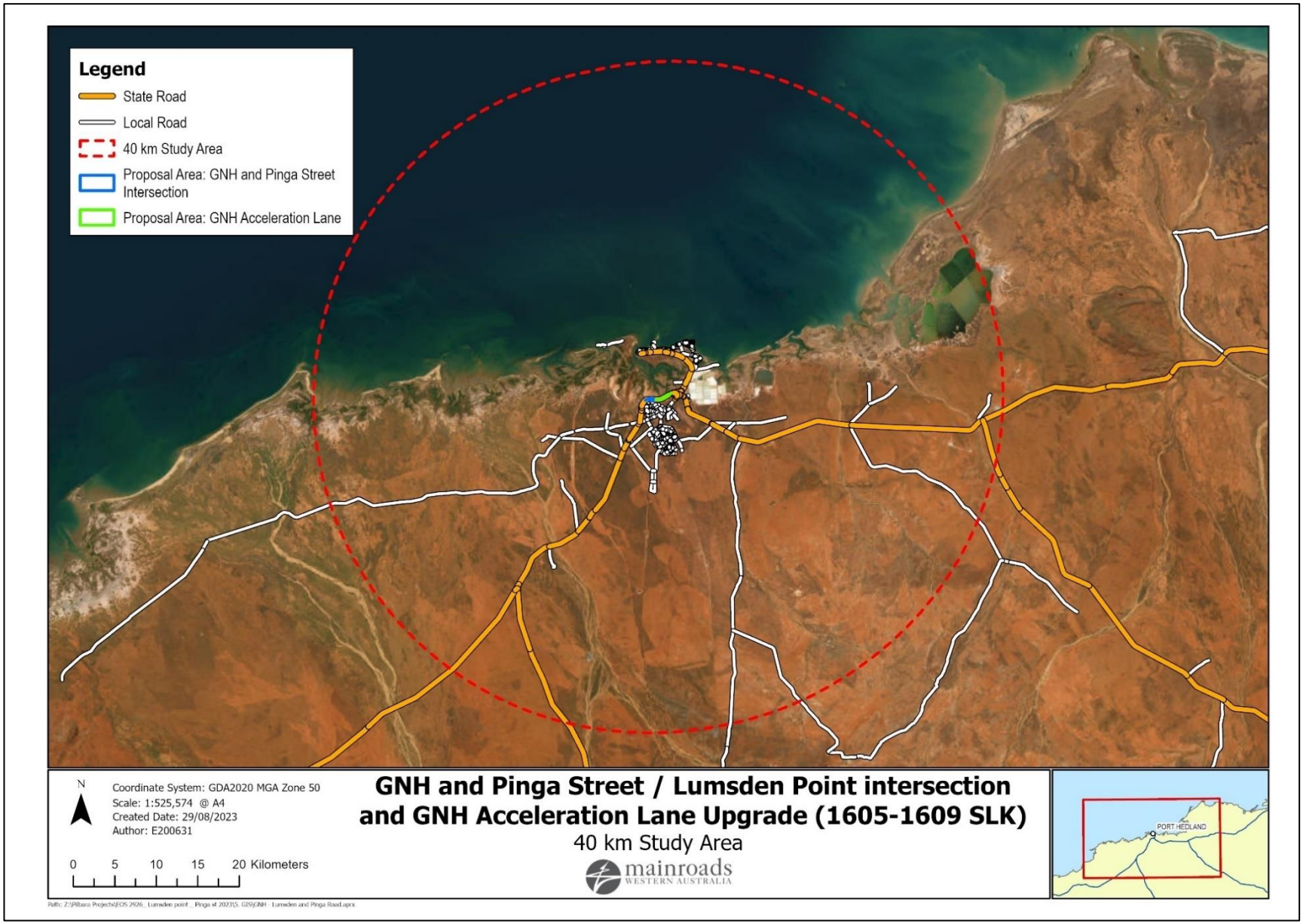

Figure 2: 40 km Study Area

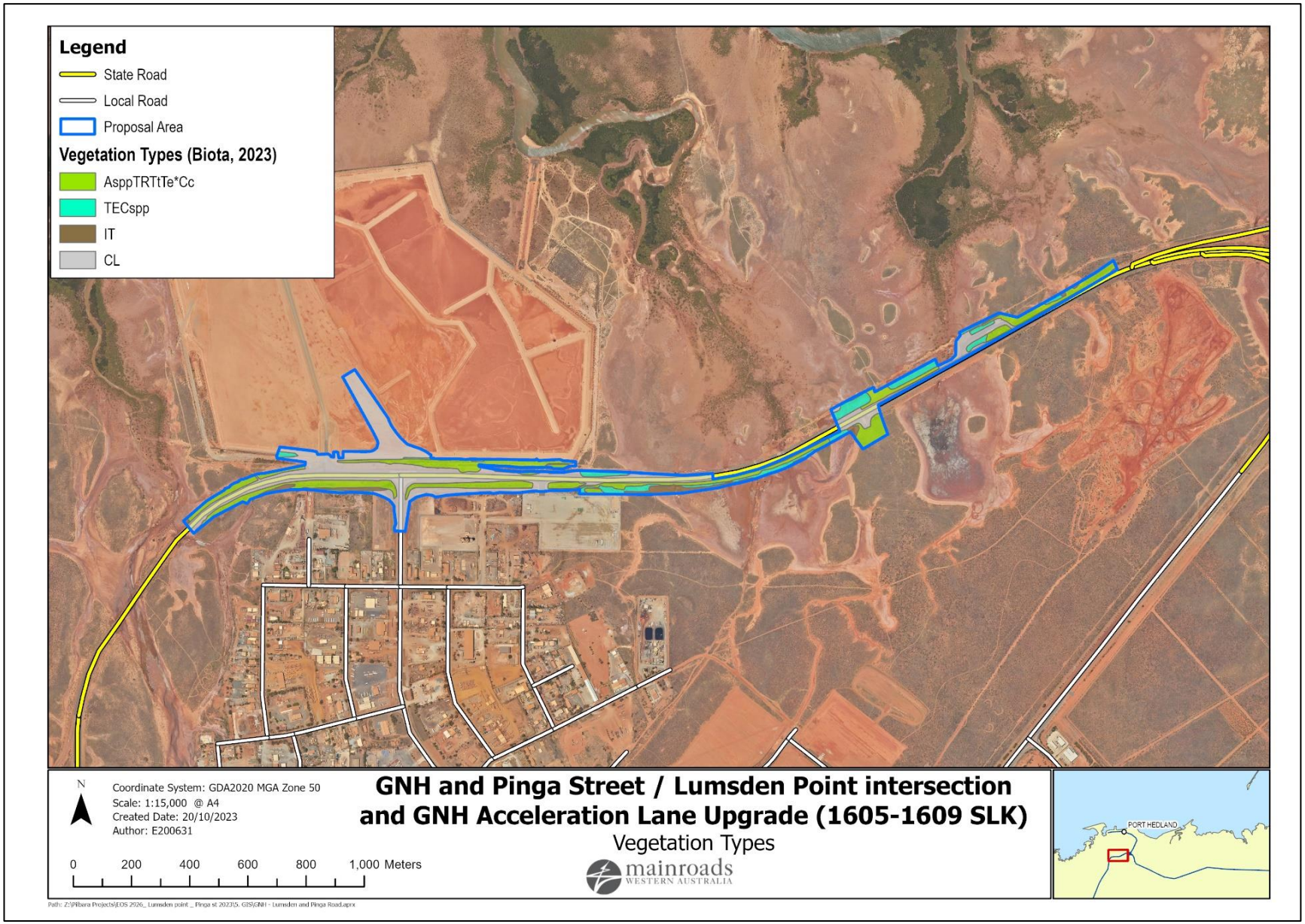

Figure 3: Vegetation Type in Proposal Area.

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

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

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

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

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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	Due to the location of the existing road, the Port and environmental sensitivities including mangroves, aligning the works to one side only is not possible as a measure to avoid further impacts or reduce clearing.
Alternative alignment located within pasture or degraded areas	Proposed clearing is within degraded areas.
Simplification of design to reduce number of lanes and/or complexity of intersections	The acceleration lane and intersection upgrade scope of works cannot be further simplified whilst retaining the necessary safety benefits. The works have been selected to support the Port facility upgrades and relieve traffic congestion whilst improving safety for road users.
Steepen batter slopes	Due to the traffic volumes, vehicle types and posted speeds, these batters cannot be changed significantly. Furthermore, the existing terrain correlates to the potential batter slope without changing the shape of the batter, resulting in a reduction of clearing.
Installation of barriers	Barriers have been considered and implemented in the design where possible.
Installation of kerbing	Kerbing has been considered and implemented in the design where possible.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Construction storage and stockpiling will occur on cleared areas and the construction will be staged to ensure no side tracks are required.
Drainage modification	Culverts will be installed to ensure surface hydrology will not be negatively impacted.

1.7 Approved Policies and Planning Instruments

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

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

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

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

Environmental Protection Policies:

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

Other relevant policies and guidance documents:

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

2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

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:

- **Biological Survey** – Fauna and Flora field surveys of the Survey Area to obtain onsite environmental information of the area.

- **Native Vegetation Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal under CPS818. The Native Vegetation Clearing Area will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction.

- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design. This includes a buffer to allow for constructability and the movement of machinery during construction. The survey area and a portion of the contextual area constitute the Proposal Area for this Proposal.

- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 40 km radius.

- **Survey Area** – Area covered by the Biological Surveys.

- **Contextual Area** – A 500 m buffered vegetation extrapolated mapped area adjacent to the Survey Area conducted during the biological survey.
    - An additional opportunistic survey was undertaken 20 m outside of the Proposal Area boundary.

- **Extrapolated Area:** A small area of extrapolated GIS vegetation condition and fauna habitat mapping to ensure complete coverage of the Proposal Area.

2.2 Desktop Assessment

A desktop assessment of the Proposal Area was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary.

GIS layer viewing and mapping is done using ArcPro. Referencing of the GIS layers accessed is provided under the relevant methodology section of each Clearing Principle. Government managed databases were searched to locate additional information and are referenced in Section 9.

2.3 Surveys and Assessments

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

- Biota Environmental Services, Lumsden Point Biological Survey (Biota, 2023).
- Main Roads, extrapolation of Biota Environmental Sciences provided spatial data of vegetation condition and fauna habitat.

The survey and assessment details are outlined in Table 2.
A summary of the results of the above survey and extrapolation are provided in Section 3.

Final design was completed after the Biota survey was undertaken which resulted in a slight increase to the proposal area and clearing footprint. The Biota survey did not cover small sections of the increased proposal area; therefore, a desktop assessment was undertaken by Main Roads to extrapolate the Biota survey information to ensure full coverage of the increased proposal area. This Extrapolated Area comprising vegetation condition mapping representing 7.12 ha and fauna habitat mapping representing 6.87 ha of the total Proposal Area.

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

Consultant & Survey Name	Survey and Assessment Details
Biota (2023) Lumsden Point Biological Survey	**Survey Area:** The Survey area comprised of an intersection (Lumsden Point / Pinga Street and GNH) and an acceleration lane on GNH. The approximate survey area was 23.10 ha on GNH (SLK 1605 to 1609) in the town of Port Hedland in the Shire of Port Hedland. **Type:** Reconnaissance vegetation, flora and fauna survey. The survey identified and mapped the dominant vegetation units, assessed vegetation condition and completed opportunistic searches for conservation significant ecological communities and flora and fauna taxa. **Timing:** The field work was undertaken in two parts because the second acceleration lane was added to the project scope after the fieldwork on the 15th/16th March was undertaken. One report was completed incorporating the two separate survey efforts. • Survey A - conducted on the 15th and 16th of March 2023, the survey covered the intersection and the first acceleration lane. • Survey B was completed on the 13th of June 2023, the survey covered the second acceleration lane. **Survey Results Shapefile TRIM Ref:** D23#536225 **Document TRIM Ref:** D23#790918
Main Roads (2023) Extrapolated Area Data Mapping	**Extrapolated Area:** The Extrapolated Area comprised of the intersection (Lumsden Point / Pinga Street and GNH). This equated to approximately 7.12 ha on GNH (SLK 1605 to 1607.67) in the town of Port Hedland in the Shire of Port Hedland. **Type:** Extrapolation of existing Biota spatial data information to comprise an Extrapolated Area of the Vegetation Condition and Fauna Habitat. **Timing:** The mapping was undertaken in October 2023.

3 SURVEY/ASSESSMENT RESULTS

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

3.1 Summary of Flora and Vegetation Surveys

Biota (2023) sampled a total of 12 quadrats. These included nine quadrats within the Survey Area and three within the Contextual Area.

A total of 54 native vascular flora species from 42 genera and 23 families were recorded during the field survey. Sixteen individuals of the Priority 1 species *Tephrosia rosea* var. Port Hedland (A.S. George 1114) were recorded during the survey. Twelve individuals were recorded within the Survey Area, while the remaining four individuals were recorded in the Contextual Area, within 20 m of the Survey Area boundary (Biota, 2023).

Biota (2023) recorded six introduced flora species in the Survey Area. None of the species comprise Declared Pests or WoNS, and all are common and widespread weeds in the locality.

No TECs or PECs were recorded in the Survey Area, and none are expected to occur based on their known distribution and species composition (Biota, 2023).

A large proportion (53.5%) of the Survey Area was cleared, and a further 4% comprised naturally bare intertidal areas. Two vegetation types were recorded and mapped over the remaining 9.85 ha (42.5%) of the survey area (Table 3), comprising spinifex hummock grassland (AsppTRTtTe*Cc) and samphire vegetation (TECspp). This is representative of the local vegetation types throughout the Survey Area and Contextual Area (Biota, 2023).

Biota (2023) mapped most of the remnant vegetation in the survey area in Good condition, however some areas were mapped as Poor or Degraded and a small area was mapped as N/A (absence of vegetation) (

Table 4 and Figure 5).

Main Roads Environment Officers utilised the Biota (2023) mapped Vegetation Types to extrapolate the Vegetation Condition rating in areas outside the primary survey area. This information is presented in

Table 4 and mapped in Figure 5.

Table 3: Vegetation Types and Descriptions within the Surveyed and Extrapolated Areas

Vegetation Unit	Description	Extent in Proposal Area Surveyed (ha)
AsppTRTtTe*Cc	*Acacia* spp. scattered tall shrubs over *Acacia stellaticeps, Trianthema turgidifolium* scattered low shrubs over *Triodia epactia* open hummock grassland over **Cenchrus ciliaris* open tussock grassland.	9.11
TECspp	*Tecticornia* spp. low open shrubland.	2.93
IT	Bare intertidal mudflats and creeks	1.19
CL	Cleared areas	15.42
Proposal Area Total		**28.65 ha**

Table 4: Vegetation Condition within the Surveyed and Extrapolated Areas

Vegetation Condition	Extent in Proposal Area	
	Surveyed (ha)	Extrapolated (ha)
Good	6.45	1.13
Poor	2.23	1.54
Degraded	0.65	0.22
Cleared	11.51	3.81
N/A (no vegetation)	0.70	0.42
Total	**21.53**	**7.12**
Proposal Area Total	**28.65**	

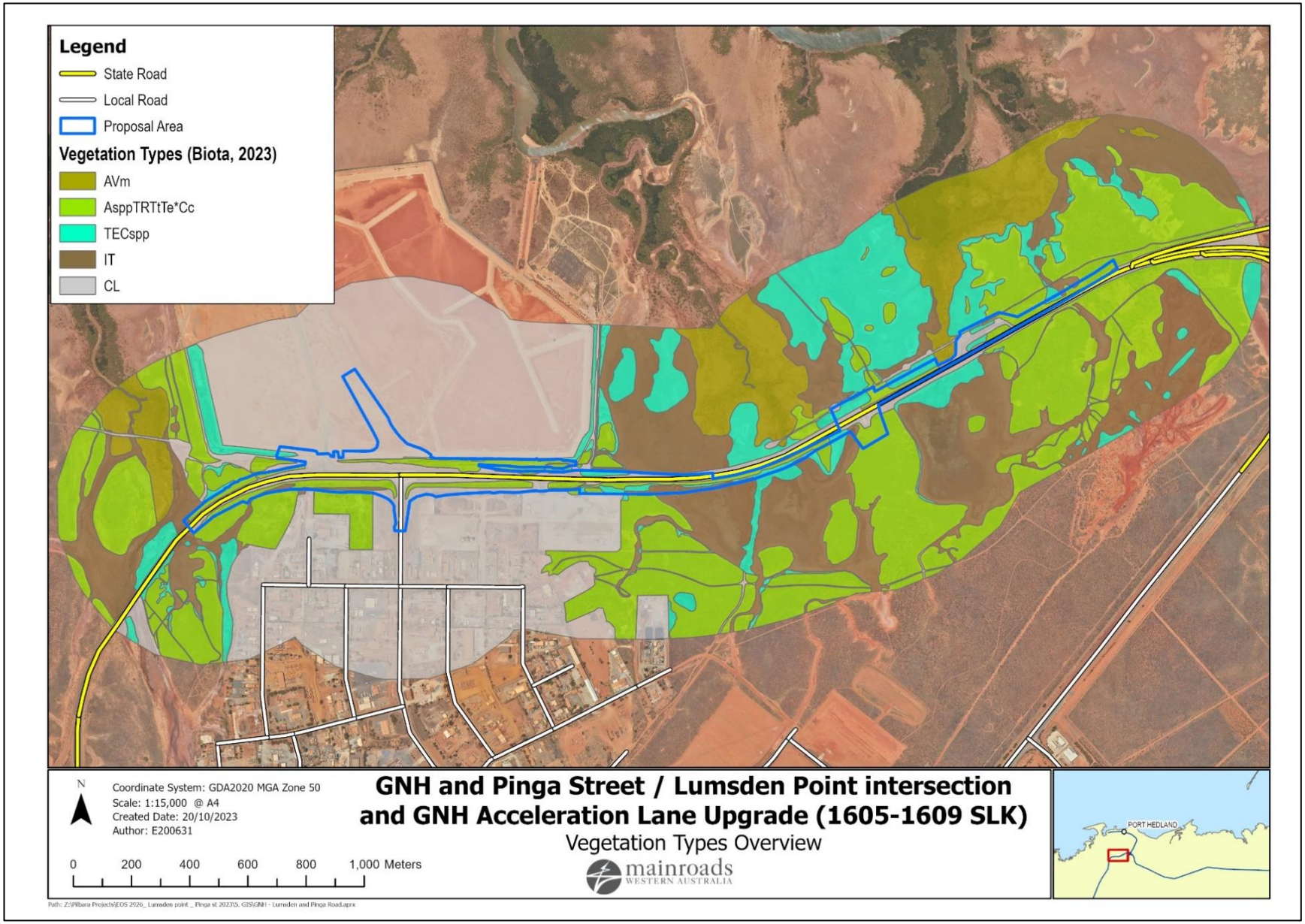

Figure 4: Vegetation Type in Survey Area (Biota, 2023)

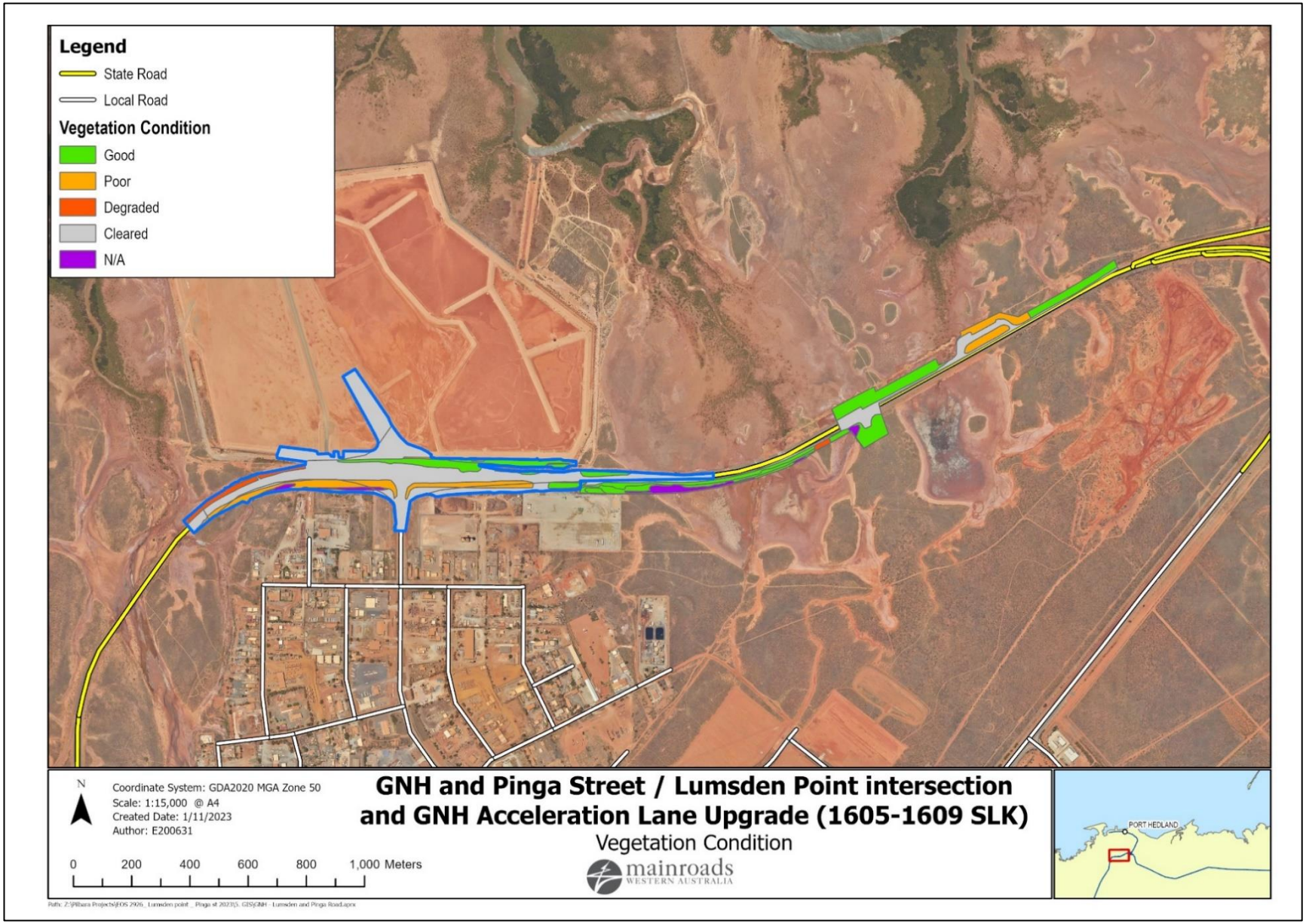

Figure 5: Vegetation Condition in Survey Area (Biota, 2023) and extrapolated data by Main Roads

3.2 Summary of Fauna Surveys

The fauna assessment was undertaken concurrently with the flora and vegetation component of the survey. Three habitat assessment locations were sampled within the Survey Area.

Five vertebrate fauna species were recorded during the survey, including one introduced species. Several varanid burrows were observed throughout the survey area but could not be identified to species level. The three bird species were recorded in the contextual area only. No listed significant vertebrate fauna species were recorded within the Survey Area. However, based on the habitats identified during the field survey, the following species was considered 'likely to occur' in the survey area:

Felis catus - cat tracks were recorded during the survey.

Three distinct fauna habitats were mapped within the survey area: supratidal spinifex flats, naturally occurring mudflats and artificial mudflats, as well as cleared areas. These are described further below in Table 5 and mapped in Figure 6.

Main Roads Environment Officers utilised the Biota (2023) mapped Fauna Habitat data to extrapolate the mapped Fauna Habitat areas outside the primary survey area. This information is presented in Table 5 and mapped in Figure 6.

Table 5: Habitat Types within Survey Area (Biota, 2023) and extrapolated data by Main Roads.

Vegetation Unit	Description	Extent in Proposal Area	
		Surveyed (ha)	Extrapolated (ha)
Supratidal spinifex flats	Low, sandy rises vegetated with moderately dense to very dense spinifex (*Triodia epactia*) and Buffel Grass (**Cenchrus* spp.) mosaic on sandy clay loam. Scattered *Acacia* spp. and *Trianthema turgidifolium* in some areas.	7.03	2.53
Naturally occurring mudflats	Mudflats with a sandy clay substrate, inundated on moderately high to very high tides. Some areas supported low samphire (*Tecticornia* spp.) shrublands and occasional mangroves (*Avicennia marina* subsp. *marina*). Some water ponding was observed during the survey, as well as numerous crabholes in many areas.	3.05	0.61
Artificial mudflats	Assessed via aerial imagery only. Non-vegetated ponding areas, likely on a clay-based substrate.	1.17	2.37
Cleared areas	Roads (GNH) and areas associated with the Wedgefield industrial estate.	10.53	1.36
Total		**21.78**	**6.87**
Total Proposal Area		**28.65 ha**	

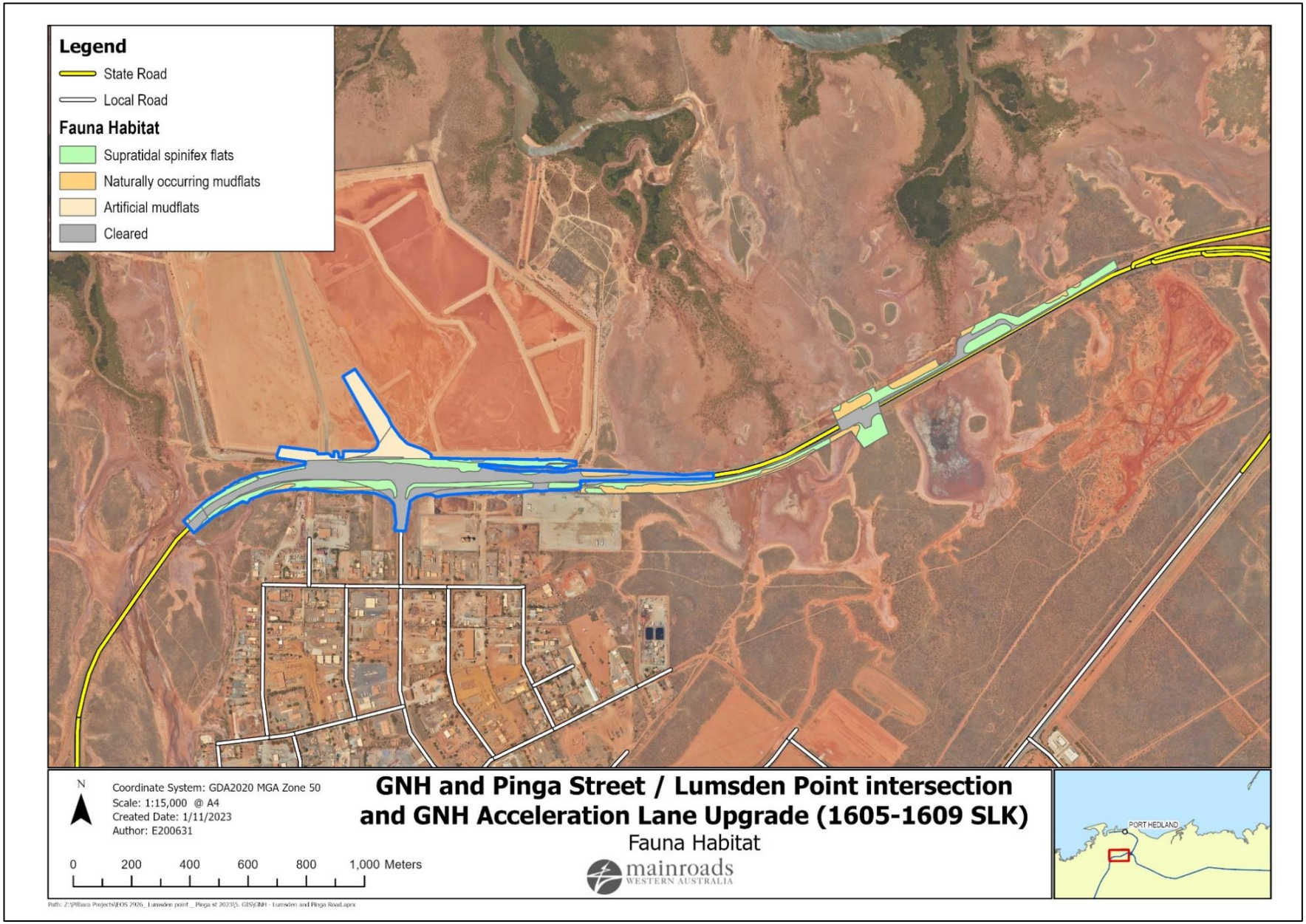

Figure 6: Fauna Habitat within Survey Area (Biota, 2023) and extrapolated mapping areas by Main Roads

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The Proposal Area is located in the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) region. The Pilbara IBRA region is characterised by vast coastal plains and inland mountain ranges with cliffs and deep gorges. Vegetation is predominantly mulga low woodlands or snappy gum over bunch and hummock grasses (DCCEEW, 2008). The Pilbara region is further classified into subregions, and the Proposal Area occurs within the Roebourne subregion and has five components on the mainland (Kendrick & Stanley, 2003)

- Quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses (Department of Climate Change, Energy, Environment and Water (DCCEEW), 2008)s, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*.
- Uplands are dominated by Triodia spp. hummock grasslands.
- Ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands.
- Marine alluvial flats and river deltas support a variety of Samphire, Sporobolus and mangal.
- Resistant linear ranges of basalts occur across the coastal plains, with minor exposures of granite.

The Proposal Area is comprised of two Vegetation Types as identified by Biota (2023) (Table 6).

Table 6. Summary of Vegetation Types within Proposal Area

Vegetation Type	Proposal Area
Sandy Plains (AsppTRTtTe*Cc)	9.11 ha (31.76 %)
Mudflats (TECspp)	2.93 ha (10.20 %)

Two Vegetation Associations occur within the Proposal Area as listed below, with further detail on their regional distribution presented in (Table 7):

- Abydos Plain 127 – Bare areas; mud flats,
- Abydos Plain 647 – Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex.

Table 7. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 127 - Abydos Plain	**Statewide**	737, 724	697, 871	94.60	10.03
	IBRA Bioregion *Pilbara*	177, 749.75	159, 595.04	89.79	2.32
	IBRA Sub-region *Roebourne*	177, 178.87	159, 024	89.75	2.33
	Local Government Authority *Town of Port Hedland*	67, 213.79	55, 276.38	82.24	0.08
Veg Assoc No. 647 - Abydos Plain	**Statewide**	195, 860.89	191, 711.41	97.88	0
	IBRA Bioregion *Pilbara*	195, 859.95	191, 710.92	97.88	0
	IBRA Sub-region *Roebourne*	188, 901.32	184, 774.70	97.82	0
	Local Government Authority *Town of Port Hedland*	180, 908.49	176, 759.02	97.71	0

5 ASSESSMENT AGAINST 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.

The combined area of the Biota (2023) survey and the Main Roads extrapolated data comprised the Proposal Area (28.65 ha). The total clearing area will involve the clearing of 12.03 ha of native vegetation.

Two broad scale pre-European vegetation associations (VA 127 and VA 647) are mapped within the Proposal Area (Table 7). The Vegetation Associations are both widespread and very well represented locally and regionally, with more than 80% of their pre-European extents remaining intact at all levels (Department of Biodiversity Conservation and Attractions (DBCA), 2019).

Two Vegetation Types were mapped in the Proposal area. The remainder of the Proposal Area was predominantly comprised of cleared areas (CL), and one non-vegetated area (IT) (Table 8).

The Vegetation Condition within the Proposal Area was rated between Good to Degraded condition (

Table 9).

Table 8: Vegetation Types present in the Proposal Area (Biota, 2023)

Vegetation Type	Description	Proposal Area (ha)
Sandy Plains (AsppTRTtTe*Cc)	*Acacia elachantha, A. colei,* (*Sesbania cannabina*) scattered tall shrubs to tall open shrubland over *A. stellaticeps, Trianthema turgidifolium* scattered low shrubs to low open shrubland over *Triodia epactia,* (*T. secunda*) very open hummock grassland to hummock grassland over **Cenchrus ciliaris* scattered tussock grasses to tussock grassland.	9.11 ha (31.76 %)
Mudflats (TECspp)	*Tecticornia halocnemoides* subsp. *tenuis,* (*T. auriculata*). low open shrubland.	2.93 ha (10.20 %)
IT	Bare intertidal mudflats and creeks	1.19 ha (4.15 %)
Cleared CL	Cleared areas	15.42 ha (53.78 %)

Table 9: Vegetation Condition present in the Proposal Area

Vegetation Condition	Proposal Area (ha)
Good	15.32
Poor	0.87
Degraded	7.57
Cleared	1.12
N/A (no vegetation)	3.77

A search of the DBCA Significant Flora and WA Herbarium layers database identified 11 State significant species within the 40 km Study Area.

A total of 54 native vascular flora species from 42 genera and 23 families were recorded during the survey. Four dominant families are present within the Proposal Area – Fabaceae (12 taxa), Poaceae (nine taxa), Chenopodiaceae (seven taxa) and Asteraceae (four taxa).

No Threatened flora were recorded in the Proposal Area, and none are expected to occur based on previous and current survey data. One Priority One (P1) flora species was recorded within the Proposal Area (*Tephrosia rosea* var. Port Hedland (A.S. George 1114)) (Biota, 2023).

Table 10: Comparative impact on priority flora species

Species	Total Recorded in Survey Area	Total Recorded in Study Area	Percentage impact on Study Area
Tephrosia rosea var. Port Hedland (A.S. George 1114) (P1)	16	943	1.27 %

***Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1)**

This species is a sprawling or erect shrub growing up to 1.7m tall occurring in sandy soils, often within *Triodia* spp. hummock grassland and *Acacia stellaticeps* low shrubland.

This species' known range occurs from 156km west of Port Hedland, to 240km east of Port Hedland and 28km to the south. During the survey, 12 individuals were recorded within the Proposal Area.

According to WA Herbarium records, *Tephrosia rosea* var. Port Hedland (A.S. George 1114) has been documented to occur in high numbers outside the Proposal Area (up to 700 individuals) (Western Australian Herbarium, 1998-). In addition, Woodman Environmental (2011) recorded 227 individuals, and Ecologia (2019) recorded 1,912 individuals within the broader Port Hedland area and estimated the local known population to be 3,105 individuals. Given its widespread occurrence and abundance elsewhere within the Port Hedland surrounds, the clearing of twelve known individuals from the Proposal area (representing 1.27% of the species recorded in the Study Area), is not likely to reduce the local representation of *Tephrosia rosea* var. Port Hedland (A.S. George 1114) and not result in a significant residual impact on the species.

Biota (2023) deducted that two Priority species were ranked as 'may occur' following the survey based on their detectability, habitat preferences and proximity to the survey area. These species are described in a post-survey Likelihood of Occurrence assessment (Table 11):. Neither species was recorded in the Survey Area and both species are well spread across the region. Clearing in the Proposal Area is unlikely to impact these species or result in a significant residual impact.

Table 11: Flora Likelihood of Occurrence (Biota, 2023)

Species	Likelihood	Information
Eragrostis crateriformis (Priority 3)	**May Occur**	This delicate annual grass could potentially occur in damp microhabitats in the survey area but would have been unlikely to be visible at the time of the survey. This species is widespread through the Pilbara and has been more frequently recorded in recent years. The species is likely to have been under-recorded in the past due to its small size and similarity to other *Eragrostis* species
Bulbostylis burbidgeae (Priority 4)	**May Occur**	This small annual sedge could potentially occur in damp microhabitats, particularly on clay soils, but would only be visible for a short period following good rainfall. It is relatively widespread through the north-eastern Pilbara, but rarely recorded due to its size.

Given the level of on-ground survey effort, the vegetation types mapped for the Proposal Area, and the Good to Degraded condition of the vegetation, all of the remaining significant flora identified in the desktop study were determined to be 'unlikely to occur' or 'would not occur' (Biota, 2023).

Six introduced flora species are located within the Proposal Area. None of the species comprise Declared Pests or Weeds of National Significance, and all are widespread weeds in the locality.

A Desktop search by Biota (2023) indicates that the Proposal Area is outside any mapped TEC/PEC. The closest is the known Priority Ecological Community is the "Eighty Mile Land System" located approximately 29 km north-east of the Proposal Area.

Two vegetation types (Table 8) were mapped within the Proposal Area. These Vegetation Types were deemed generally common on a local and regional level and did not represent any Threatened Ecological Communities or Priority Ecological Communities (Biota, 2023).

Biota (2023) mapped the Fauna Habitat within a 21.78 ha Survey Area.

Three Fauna Habitats were mapped within the 28.65 ha Proposal Area (Table 12). Biota (2023) noted that all the uncleared areas of the survey area represent fauna habitat of value, as does one small cleared area (the artificial mudflat, which ponds water and may be of some value to significant shorebirds). All fauna habitats in the Proposal Area are well represented in the broader locality.

Table 12: Fauna Habitat Type present in the Proposal Area

Fauna Habitat	Description	Proposal Area (ha)
Supratidal spinifex flats	Low, sandy rises vegetated with moderately dense to very dense spinifex (*Triodia epactia*) and Buffel Grass (**Cenchrus* spp.) mosaic on sandy clay loam. Scattered *Acacia* spp. and *Trianthema turgidifolium* in some areas. This habitat is likely to be of value to Brush-tailed Mulgara (*Dasycercus blythi*) and Bilbies (*Macrotis lagotis).*	9.56 ha (33.38 %)
Naturally occurring mudflats	Mudflats with a sandy clay substrate, inundated on moderately high to very high tides. Some areas supported low samphire (*Tecticornia* spp.) shrublands and occasional mangroves (*Avicennia marina* subsp. *marina*). Some water ponding was observed during the survey, as well as numerous crabholes in many areas. This habitat is likely to be important for the skink *Ctenotus angusticeps* and of value to significant shorebirds	3.65 ha (12.75 %)
Artificial mudflats	Assessed via aerial imagery only. Non-vegetated ponding areas, likely on a clay-based substrate. This habitat may be of some value to significant shorebirds	3.54 ha (12.34 %)
Cleared areas	Cleared areas include roads and road reserves	11.90 ha (41.53 %)

Main Roads GIS Rare Fauna layer identified 66 State significant species within the 40 km Study Area.

None of the identified species or any other conservation significant fauna species were recorded during the Biota (2023) biological survey. Following a likelihood of occurrence conducted by Biota (2023) based on habitat present within the Proposal Area and species habitat preference, five species were considered 'likely to occur' in the survey area.

To determine whether the planned works will impact the species identified by Biota (2023) that were 'likely to occur', Main Roads undertook a desktop Likelihood of Occurrence assessment, shown in Table 13.

Table 13: Fauna Likelihood of Occurrence

Species	Information
White-winged Black Tern (*Chlidonias leucopterus*) (MI) Peregrine Falcon (*Falco peregrinus*) (OS) Barn Swallow (*Hirundo rustica*) (MI)	The migratory and transient nature of these species enables them to quickly fly over or leave the Proposal Area. Any clearing activities will not affect their movement and avoidance of the area. It is essential to acknowledge that their habitat extends beyond the Proposal Area and clearing it will not limit their ability to move. It is **unlikely** that these species will be significantly impacted by the proposal and impacts will be short-term and limited to the construction period.
Ctenotus angusticeps (P3) (Reptile)	This species thrives in mainland coastal salt marsh vegetation near mangroves and areas with many crabholes commonly found on mudflats. The Proposal Area consists of both artificial and naturally occurring mudflats (5 ha; 21%) within the Proposal Area. The nearest known species was sighted about 150 meters north of the Proposal Area in 2012, and a group of 23 species was discovered 7 kilometres northeast of the area in the same year. Given the fragmentation of land and clearing surrounding the Proposal Area, it is **unlikely** that the species population

	will be impacted due to the development of the Great Northern Highway Intersection and Acceleration Lanes.
Brush-tailed Mulgara (*Dasycercus blythi*)	The species is located in Spinifex (Triodia) grasslands on sandplains and gibber plains. This habitat is located within the Proposal Area (7.6 ha; 33.1%). Historical records show the closest known recording of the species was 2 km west of the Proposal Area in 2007, and in 2012, a population of 210 species were identified 7 km west of the Proposal Area. Given the fragmented landscape between the larger population and the Proposal Area, it is **unlikely** that the development works will significantly impact the species population.

Given the fragmented habitat of the landscape, and the proximity of the closest species identified according to DBCA data, it is unlikely these species will be impacted by the proposed works within the Proposal Area.

The vegetation within the Proposal Area does not form part of an ecological link, nor is the vegetation type unique or classified as a TEC or PEC. The habitat within the Proposal Area is not unique and is consistent with that found within the Pilbara Region. It has also been subject to ongoing disturbance, further reducing its value as fauna habitat. No conservation fauna species were identified as occurring within the Proposal Area.

Based on the above, the clearing for the Proposal is **not likely to be at** variance to this Principle.

Methodology

- Biota Environmental Sciences, Lumsden Point Biological Survey (Biota, 2023)
- Buttweld and Powell Rd Realignments and Roundabout Upgrades Biological Survey (Ecologia, 2019)
- Protected Matters Search Tool Report (21/04/2023) (DCCEEW, 2023)
- EPA Technical Guidance (Environmental Protection Authority (EPA), 2016)
- Florabase (Western Australian Herbarium, 1998-)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed 15/08/2023)
  - DBCA Threatened and Priority flora database search (Accessed 15/08/2023)
  - DBCA Threatened and Priority Ecological Communities database search (Accessed 15/08/2023)
- DBCA Statewide Vegetation Statistics (DBCA, 2019)
- WA Herbarium Threatened and Priority flora database search (Accessed 15/08/2023)

(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.

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

Three Fauna Habitats were mapped within the 28.65 ha Proposal Area (Table 12). These constitute Supratidal Spinifex Flats, Naturally Occurring Mudflats and Artificial Mudflats. The total habitat area available within the Proposal Area is 16.57 ha (87.66 %).

DBCA GIS Rare Fauna layer identified 66 State significant species within the 40 km Study Area.

None of the identified species or any other conservation-significant fauna species were recorded during the Biota (2023) biological survey. Following a post-survey likelihood of occurrence conducted by Biota (2023) based on the habitat present within the Proposal Area and species habitat preference, five species were considered 'likely to occur' in the survey area.

To determine whether the planned works will impact these species, Main Roads undertook a Likelihood of Occurrence assessment (Table 13). It was concluded that three of the five species identified are Migratory bird species that are transient in nature, enabling them to fly over or leave the Proposal Area quickly. Migratory birds may be temporarily impacted during the construction phase, however and abundance of available habitat is available beyond the proposal area, therefore, migratory species will not be significantly impacted by the proposed works.

The Proposal Area consists of fauna habitat associated with *Ctenotus angusticeps* and *Dasycercus blythi*. However, given the land fragmentation between the nearest recorded species and the Proposal Area, the absence of ecological linkage, and the ongoing disturbance within the Proposal Area, it is unlikely these species would be present within the Proposed Area.

The proposed clearing does not comprise the whole or a part of or is not considered necessary for the maintenance of significant habitat for fauna indigenous to Western Australia.

Given the above, clearing for Proposal area is **not likely to be at** variance to this Principle.

Methodology

- Biota Environmental Sciences, Lumsden Point Biological Survey (Biota, 2023)
- EPA Technical Guidance (EPA, 2016)
- Protected Matters Search Tool Report (21/04/2023) (DCCEEW, 2023)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed 02/06/2023)
  - DBCA Threatened and Priority Ecological Communities database search (Accessed 02/06/2023)

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

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

The desktop database searches did not identify known records of Threatened flora taxa from within a 40 km radius of the Project Area. No Threatened Flora were recorded within the Proposal Area in the Biological Surveys undertaken (Biota, 2023) and are not likely to occur in the Proposal Area.

Given the above, clearing for the Proposal area is **not likely to be at** variance to this Principle.

Methodology

- Biota Environmental Sciences, Lumsden Point Biological Survey (Biota, 2023)
- Protected Matters Search Tool Report (21/04/2023) (DCCEEW, 2023)
- Florabase (Western Australian Herbarium, 1998-)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority flora database search (Accessed 02/06/2023)
  - WA Herbarium Threatened and Priority flora database search (Accessed 02/06/2023)

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

Proposed clearing is not at variance to this Principle.

Main Roads desktop assessment confirmed no TECs occur within, or in the vicinity of, the Proposal Area.

Vegetation communities recorded during the Biological Surveys carried out by Biota (2023) are not representative of TECs.

Given the above, clearing for the Proposal Area is **not at** variance to this Principle.

Methodology

- Biota Environmental Services, Lumsden Point Biological Survey (Biota, 2023)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Communities database search (Accessed 15/08/2023)

(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.

The project involves the clearing of 12.03 ha of vegetation consisting of Vegetation Association 127 and 647 (Table 14). Both Vegetation Associations have greater than 80% of their pre-European representation remaining at all scales and therefore exceed the 30% retention national objectives and targets for biodiversity conservation in Australia (Table 15).

Table 14: Summary of Proposal Area Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition
Vegetation Association 127 is described as Bare areas and mud flats.	Clearing of up to 3.07 ha in the Proposal Area	Good to Degraded
Vegetation Association 647 is described as Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex.	Clearing of up to 8.96 ha in the Proposal Area	Good to Degraded

Table 15. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 127 - Abydos Plain	**Statewide**	737, 724	697, 871	94.60	10.03
	IBRA Bioregion *Pilbara*	177, 749.75	159, 595.04	89.79	2.32
	IBRA Sub-region *Roebourne*	177, 178.87	159, 024	89.75	2.33
	Local Government Authority *Town of Port Hedland*	67, 213.79	55, 276.38	82.24	0.08
Veg Assoc No. 647	**Statewide**	195, 860.89	191, 711.41	97.88	0
	IBRA Bioregion *Pilbara*	195, 859.95	191, 710.92	97.88	0
	IBRA Sub-region *Roebourne*	188, 901.32	184, 774.70	97.82	0
	Local Government Authority *Town of Port Hedland*	180, 908.49	176, 759.02	97.71	0

The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area and is contained within a broad landscape of relatively undisturbed vegetation within the IBRA region (VA 127: 697, 871 ha and VA 647: 191, 711.41 ha). Given that the vegetation associations are widespread throughout the area and are well-represented locally and regionally, impacts due to the proposed clearing are not likely to be significant.

Given the above, clearing for the Proposal area is **not at** variance to this Principle.

Methodology

- Aerial photography
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 15/08/2023)

  - Vegetation complexes (Accessed 15/08/2023)
- Statewide Vegetation Statistics (DBCA, 2023)

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

Proposed clearing is at variance to this Principle.

Biota (2023) identified two vegetation types within the Proposal Area: Sandy Plains (AsppTRTtTe*Cc) and Mudflats (TECspp). One vegetation type, Mudflats (TECspp), was found to represent riparian vegetation based on the vegetation description provided in Table 3.

According to the DWER Principle (Department of Environment Regulation, 2014), vegetation that depends on seasonally or intermittently waterlogged soils should be considered part of a wetland, watercourse, or buffer such as damplands and floodplains. The Mudflats (TECspp) vegetation unit meet this criterion, and therefore, are considered to be associated with a watercourse/wetland environment.

The Mudflats (TECspp) vegetation type covers an area of 2.93 ha (24.32 %) of the total vegetated clearing area (12.03 ha) within the Proposal Area. Biota (2023) described the vegetation condition as ranging from Good (63.00 %) to Poor (31.30 %), based on the presence of ground disturbance, weeds (particularly *Cenchrus ciliaris), and the impact of rubbish dumping.

Photos 1 and 2 display the typical vegetation associated with the Mudflats (TECspp).

Photo 1: Vegetation of Mudflats (TECspp)

Photo 2: Vegetation of Mudflats (TECspp)

Given that the vegetation types are widespread throughout the area and are well-represented locally and regionally, impacts due to the proposed clearing are not likely to be significant.

Because the Mudflats (TECspp) vegetation type is considered to be growing in association with a watercourse, the proposed clearing **is at** variance to this Principle.

Methodology

- Biota Environmental Services, Lumsden Point Biological Survey (Biota, 2023)
- Government GIS shapefiles:
  - Geomorphic Wetlands (Accessed 02/06/2023)
  - Important Wetlands (Accessed 02/06/2023)
  - Surface Water Areas and Irrigation Districts (Accessed 02/06/2023)
- Groundwater Areas (Accessed 02/06/2023)

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

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

According to the Department of Primary Industries and Regional Development (DPIRD, 2023) the Proposal Area is located within Zone 281 (De Grey-Roebourne Lowlands Zone) and Zone 286 (Karratha Coast Zone). These Zones are described in Table 16.

Table 16: Soil Landscape Zone Descriptions (DPIRD, 2023)

Zone	Description
Zone 281 (De Grey-Roebourne Lowlands)	Alluvial plains and sandplains on alluvial and marine deposits over the northern Pilbara Craton with Red deep sandy duplexes, Red loamy earths, Red/brown non-cracking clays, Cracking clays, Red sandy earths and Red deep loamy duplexes.
Zone 286 (Karratha Coast)	Coastal mudflats (with sandy coastal plains and some hills) on marine deposits over the Pilbara Craton with Tidal soils, Calcareous loamy earths, Salt lake soils and Red/brown non-cracking clays.

Land zones have been further classified into soil-landscape systems (DPIRD, 2023). The Proposal Area is located within the Uaroo System (281Ua) and the Littoral System (286Li). These Systems are described in Table 17.

Table 17: Soil Landscape System Descriptions (DPIRD, 2023)

System	Description
Uaroo System (281Ua)	Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs.
Littoral System (286Li)	Bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.

DPIRD (2023) mapping indicates that the Proposal Area presents the following land degradation risk:

Risk Percentage	Information
1%	Very poor to poor drainage potential
1%	Very high to extreme water erosion hazard
1%	High to extreme wind erosion hazard
1%	Moderate salinity hazard
0%	Has pHCa <4.5 surface acidity
1%	Moderate to very high waterlogging Risk
1%	Moderate to high flood hazard

GHD (2023), undertook Geotechnical Investigations for Acid Sulphate Soils and concluded the following:

"*Upgrading works have been identified as generating disturbance of soils below 3 m depth including but not limited to potential piling (where spoil arisings will be bought to the surface) for the bridges (west and east). Spoil arisings returned to the surface may be classified as ASS and volumes greater than 100 m3 will require treatment and management in accordance with the* DER ASS Guideline: *Treatment and management of soil and water in acid sulfate soil landscapes*."

Based on the above, the Proposal Area is located in an area with a low risk of land degradation. Clearing will be conducted in dry conditions and in accordance with the Main Roads Standard Construction Environment Management Plan (CEMP). Given the relatively small amount of vegetation proposed to be

cleared is in a pre-existing project setting adjoining existing cleared and disturbed areas, the project works are unlikely to cause appreciable land degradation.

Therefore, the proposed clearing **is not likely** to be at variance to this Principle.

Methodology

- Geotechnical Site Investigation – Factual Report (GHD, 2023)
- Natural Resource Information (WA) (DPIRD, 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.

A search of ArcGIS shapefiles indicates no Nature Reserves or Conservation Areas are located within the vicinity of the Proposal Area. The nearest registered Wetland of National Importance is located 12.5 km north-east (Leslie (Port Hedland) Saltfields System) of the proposed clearing area. As such, the clearing of 12.03 ha is unlikely to impact values of the Nationally Important Wetland area or any other Conservation Area.

The clearing is considered **not at** variance to this Principle.

Methodology

- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 15/08/2023)
  - Ramsar Wetlands (Accessed 15/08/2023)
  - Directory of Nationally Important Wetlands (Accessed 15/08/2023)

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

The Proposal area is located in the proclaimed Pilbara Surface Water Area and within the Pilbara Groundwater Proclamation Area under the *Rights in Water and Irrigation Act 1914* (RIWI Act). These areas cover the majority of the Pilbara. The amount of clearing required is a small proportion of the catchment size and the project is therefore unlikely to significantly impact surface water quality. The works include reinstatement and redesign of drainage, improving the current road hydrological system. These drainage improvements will ensure no detrimental impacts on surface water hydrology or changes to groundwater level or quality.

Main Roads Standard Environment Management Plan contains appropriate provisions to manage possible contamination risk from spill incidents due to fuel leakage during on-ground works. Operational controls will include; No storage of hazardous materials, fuel or oil within 50 m of any watercourse of wetland; All hazardous materials, fuel or oil storage areas will be bunded; Spill kits will be in place at all storage areas; and Induction programs to make all personnel aware of the appropriate response to spills. The clearing of vegetation under this proposed scope of works is not expected to cause deterioration in the quality of surface or underground water.

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

Methodology

- Biota Environmental Services, Lumsden Point Biological Survey (Biota, 2023)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 12/06/2023)
  - CAWSA Part 2A Clearing Control Catchments (Accessed 12/06/2023)

- RIWI Act, Groundwater Areas (Accessed 12/06/2023)

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

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

The Proposal area is located in Port Hedland which is described as having a hot arid climate and is subject to the influence of tropical cyclones. The closest weather station to the Proposal Area is Port Hedland Airport (Site No 004032) located 3.50 km south-east (Bureau of Meteorology (BoM), 2023). The average annual rainfall received at Port Hedland Airport is 318.50 mm, the majority of which falls between the months of January to March. Tropical cyclones and tropical storms can bring heavy and sustained rainfall, particularly in the months leading up to and during the wet season. It is common for a large proportion of the Region's rainfall to be recorded in one single event, leading to extensive flooding of rivers, creeks and roadways.

During a rainfall event, the cleared area may result in the collection and temporary retention of storm water, however, in the climatic context these impacts are short lived and similar localised water accumulation will occur across the region.

The proposed clearing of 12.03 ha of native vegetation, within a region where >80% of pre-European levels of native vegetation remain is unlikely to cause or exacerbate the incidence or intensity of flooding. As noted above, climatic conditions are the main factor influencing flooding and the removal of a relatively small amount of vegetation in this setting will have no measurable influence on flood regimes in the local area or vicinity.

Given the above, the proposed clearing is **not likely to be at** variance to this Principle.

Methodology

- Bureau of Meteorology – Climate Statistics (Bureau of Meteorology (BoM))

6 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing will be kept to a minimum. Clearing of Vegetation will be managed in accordance with the Main Roads standard management measures.

7 REHABILITATION, REVEGETATION & OFFSETS

7.1 Revegetation and Rehabilitation

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

7.2 Offset Proposal

In accordance with CPS 818 condition 11(a), Main Roads is seeking an exemption from submitting an offset proposal.

8 STAKEHOLDER CONSULTATION

Condition 8 of CPS 818/17 requires Main Roads WA to invite submissions from a number of parties when the proposed clearing is considered likely to be seriously at variance, at variance or may be at variance with one of more of the ten clearing principles. The CAR was published on the Main Roads website for a period of 21 days, between 13 December 2023 – 11 January 2024 inclusive. As part of this process, Main Roads invited submissions from the following stakeholders:

- Department of Water and Environmental Regulation (DWER)
- Town of Port Hedland
- Care for Hedland
- Kariyarrah Aboriginal Corporation
- Pilbara Port Authority
- Wildflower Society of Western Australia

Submissions were received from the following stakeholders:

- Shire of Port Hedland
- DWER

Table 18 details the key issues raised and Main Roads' response to these issues.

Table 18: Summary of Main Roads' Responses to Stakeholder Submissions

Name of Stakeholder	Date of Consultation	Key Issue / Comment	Main Roads Response / Comment	TRIM Ref of Consultation
Shire of Port Hedland	04/01/2024	The Shire's submission noted the Project is located within a Visual Protection Area as per the Town's Local Planning Strategy. The Shire has no objection to the proposed clearing but recommends efforts are made to mitigate impacts clearing will have on visual amenity through incorporating measures to improve existing	Main Roads responded to the submission noting that the Project has been designed to avoid and minimise the extent of native vegetation clearing required to the extent practicable. Measures adopted include construction storage and stockpiling will occur in cleared areas and the	D24#327763

Name of Stakeholder	Date of Consultation	Key Issue / Comment	Main Roads Response / Comment	TRIM Ref of Consultation
		landscape buffers such as revegetation of the road reserve and utilisation of native seeded mulch along batters where possible to promote new vegetation growth.	construction will be staged to ensure no temporary side tracks are required. It is noted that over 50% of the Project's proposal area consists of pre-existing cleared areas. To encourage natural regeneration of native vegetation, cleared vegetative material and topsoil will be respread over disturbed areas, which will also assist to stabilise disturbed surfaces.	
DWER	18/01/2024	DWER determined that the proposed clearing is at variance with principle (f), not at variance with principles (d), (e) and (h) and not likely to be at variance with the remaining clearing principles. In relation to clearing principle (a), DWER noted the proposed clearing area contains suitable habitat for the brush-tailed mulgara (P4) and northwestern coastal ctenotus (P3), as well as individuals of priority flora species *Tephrosia rosea* var. Port Hedland (A.S. George 1114) (P1). The proposed clearing of the priority flora is unlikely to be significant at the regional or species level due to size of the populations recorded within the local area and presence of suitable habitat extending beyond the project area. Given the extent of clearing and availability of suitable habitat in the surrounding area, the impacts of the proposed clearing to the above flora and fauna species is not considered to be significant. DWER agreed with Main Roads' determination that the proposal is unlikely to result in a significant residual impact given the scale, nature and location of the 2.93 ha of riparian vegetation to be cleared which is adjacent to an existing road.	In Section 5 "Assessment Against the Ten Clearing Principles", Clearing Principles (b), (c) and (j) have been updated from 'not at variance' to 'not likely to be at variance', in line with DWER's comments.	D24#327771

9 COMPLIANCE WITH CPS 818

Table 19 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

Table 19. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.	**Yes**	**1.** Clearing Report to be published on website and submissions sought for 21 days. **2.** Submissions invited from relevant parties, including the LGA, the owner or occupier of the land and other stakeholders in accordance with Condition 8 of CPS 818. **3.** VMP has been completed, refer to Appendix 3.1. **4.** An offset proposal for approval by DWER has been prepared. **5.** Summary of submissions and a statement addressing each of those submissions to be published on website.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **or** (j) the incidence of flooding.	**NA**	No further action required.
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding.	**NA**	No further action required.
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
5a. Proposal is within a Region that: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • works have potential for **uninfested** areas to be impacted.	**No**	Standard Vehicle and Plant management actions from Annexure 204B (TABLE 204B.9.1), Hygiene Checklists *(D17#859669)* and Vehicle, Plant and Machinery Hygiene Register Template *(D23#179551)* will be applied
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	**No**	No further action required.
6. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback.	**NA**	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.	**Yes**	Site will be added to Regional Vegetation Management Plan and into Environment Online System (EOS) Compliance Tab to ensure weeds growing within the cleared area are removed or killed at least once in every 12-month period for five years from the

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

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11 APPENDICES

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

Flora and Vegetation Surveys

Main Roads WA is proposing to upgrade the existing intersection of Great Northern Highway (GNH) and Pinga Street bordering the Wedgefield industrial estate, as part of the Lumsden Point expansion project at Port Hedland. The proposed project entails construction of a grade separated interchange and associated acceleration lanes along GNH.

In preparation for the proposed developments, which may require some clearing of native vegetation, Main Roads WA commissioned Biota Environmental Sciences (Biota) to conduct a detailed and targeted vegetation and flora survey, and a basic fauna survey of a 23.1 ha survey area. The overall objective of the study was to identify key biological values within the survey area to inform the environmental impact assessment and approvals processes.

A large proportion (54%) of the survey area was cleared, and a further 3% comprised naturally bare intertidal areas. Three vegetation types were recorded and mapped over the remaining 9.8 ha (42%) of the survey area, comprising spinifex hummock grassland, samphire vegetation and mangrove forest. The mangrove vegetation represented a Benthic Community and Habitat and was mapped over 0.2 ha of the survey area. Most of the remnant vegetation in the survey area was in Good condition, but some areas were ranked as Poor or Degraded.

A total of 54 native vascular flora species from 42 genera and 23 families were recorded during the field survey. Eight individuals of the Priority 1 species *Tephrosia rosea* var. Port Hedland (A.S. George 1114) were recorded within the survey area, and a further eight individuals were recorded within 20 m of the survey area boundary. Two additional Priority species may occur in the survey area, but were not recorded. *Eragrostis crateriformis* (P3) is a delicate annual grass, and *Bulbostylis burbidgeae* (P4) is a small annual sedge: both would only be recorded during optimal collecting conditions.

Fauna Surveys

No listed significant vertebrate fauna species were recorded during the field survey (i.e. species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) or Western Australian *Biodiversity Conservation Act 2016* (the BC Act), or those listed as Priority species by the WA Department of Biodiversity, Conservation and Attractions (DBCA)). Five species were, however, considered likely to occur in the survey area:

- Brush-tailed Mulgara (*Dasycercus blythi*) – DBCA Priority 4;
- White-winged Black Tern (*Chlidonias leucopterus*) – BC Act and EPBC Act Migratory;
- Peregrine Falcon (*Falco peregrinus*) – BC Act Other Specially Protected Species;
- Barn Swallow (*Hirundo rustica*) – BC Act and EPBC Act Migratory; and
- *Ctenotus angusticeps* – DBCA Priority 3.

A further 31 species, comprising predominantly Migratory-listed shorebirds, may occur.

All of the uncleared sections of the survey area represent potential fauna habitat, as well as one small cleared area (an artificial mudflat that ponds water, which may be used by significant shorebirds).

However, all the habitats within the survey area are subject to some degradation in the form of rubbish dumping, vehicle use, and ground disturbance. All the fauna habitats in the survey area are well represented in the broader locality.

Appendix 2: Vegetation Management Plan

Lumsden point / Pinga Street Intersection and Acceleration Lane Grade Separation

Purpose and Scope

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the Lumsden Point / Pinga Street Intersection and Acceleration Lane Grade Separation.

Main Roads proposes to clear 12.03 ha for intersection and acceleration lane upgrades on GNH and Pinga Street in Port Hedland, in the Shire of Port Hedland.

To cater for the transportation and importation of heavy and large equipment to the Lumsden Point Port area, and to reduce congestion at the intersection, the Proposal will be developed in two stages:

1. Great Northern Highway (GNH) (H006) and Lumsden Point / Pinga Street intersection upgrade requirements (16.05 – 1607.50_Straight Line Kilometre (SLK)).
2. To ensure a safe turning area onto Lumsden Point and Pinga Street, two additional Acceleration Lanes will be necessary on GNH (1607 – 1609 SLK).

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

Action

Appendix 3.1 references the standard Principal Environmental Management Requirements (PEMRs) (Tables 1 to 6) that will be utilised for all proposals that involve clearing to avoid, mitigate and manage the environmental impacts of the Proposal.

Proposal specific environmental management actions are contained in Appendix 3.1.

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

Timeframes

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

Responsibilities

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

Appendix 2.1: Vegetation Management

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Clearing	Refer to Table 1: Clearing PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition • Environment Measurement and Evaluation Checklist (for release of HOLD POINTS) Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	• The Contractor must provide written confirmation to the Superintendent and Main Roads Environmental Officers of intention to commence clearing at least 2 weeks prior to the commencement of such activity. • The Contractor must peg out the allocated clearing area limits. • The Contractor must use the Main Roads Standardised pegging and flagging colours when allocating the limits of clearing. • The Contractor must submit the pegged clearing data to Main Roads Environmental Officers in shapefile format for checking and approval before clearing can commence. • The Contractor must submit a completion of clearing shapefile to the Main Roads Environmental Officers of the final clearing limits/footprint.
Dieback Management	The Proposal Area is located in the Pilbara Region of Western Australia, and north of the 26th Parallel and therefore is no applicable.	
Fauna Management	Refer to Table 2: Fauna Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
Machinery and Vehicle Management	Refer to Table 3: Machinery and Vehicle Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	• Copies of completed Vehicle/Machine Hygiene Checklists will be provided by the contractor within two weeks of completion of site works.
Pegging and Flagging	Refer to Table 4: Pegging and Flagging PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	
Water Drainage Management	Refer to Table 5: Water Drainage Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan	
Weed Management	Refer to Table 6: Weed Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	
Monitoring	• Specification 204 Environmental Management	

VMP Requirement	Standard Management Actions	Specific Environmental Management Actions
	• Construction Environmental Management Plan • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	
Auditing	• Specification 204 Environmental Management • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	

Principal Environmental Management Requirements (PEMRs)

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 Contract must report any vegetation disturbance beyond the Pegged Vegetation Clearing Area to the Superintendent as an Environment Incident using EQSafe. 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

STANDARD MANAGEMENT REQUIREMENTS
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. Contractor must ensure that all staff suitably qualified and competent to The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
POST WORKS 1. The Contractor must submit records of checking all vehicles, machinery and plant are clean on entry to the Superintendent.

Table 4: Pegging and Flagging PEMR

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. 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 peg/demarcate vegetation proposed to be retained is demarcated 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 removes and dispose of appropriately any demarcation, pegging or flagging once project works are completed.

Table 5: Water Drainage Management PEMR

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary.
DURING WORKS 1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted. 2. Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work. 3. Maintain these drainage systems in proper working order at all times. 4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties. 5. Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts.
POST WORKS 1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue). 2. Prior to backfilling the completed pipe work, certify that the entire system is flushed clean and tested. 3. Disturbed areas will be stabilised soon after construction activities are completed. 4. Culvert and drainage structures will be free of all grass, weeds, silt and debris.

Table 6: Weed Management PEMR

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. The Contractor must remove or kill any weeds growing in project area that are likely to spread and result in environmental harm to adjacent areas of native vegetation that are in good or better condition. 2. The Contractor must develop, implement and maintain procedures to identify, and control declared and invasive weed species within the Contract areas, to the satisfaction of the Superintendent. 3. The Contractor must prepare a weed control program, for nominated weed species for control and disposal, to the satisfaction of the Superintendent. 4. The Contractor must undertake weed management in Stockpiles as directed by the Superintendent.
DURING WORKS 1. The Contractor must implement the weed control procedures and management plan and record and manage records of its implementation. 2. The Contractor must treat nominated weed infestations as many times as necessary to control and eradicate the weed species in accordance with the approved weed control program. 3. The contractor must ensure that no known weed, pest or diseased affected soil, mulch, fill or other material is brought into the Site.
POST WORKS 1. The relevant Vegetation Maintenance Record Form available at: https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/ must be completed and sent to the Superintendent.