# Clearing Assessment Report & Vegetation Management Plan (VMP) – CPS 818

We're working for Western Australia.

Five Mile Creek and Pentecost River
Gibb River Road (M012)
Kimberley Region
EOS1904



D25#417203
May 2025

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# Document Control

| Report Compilation & Review | Name and Position | Document Revision | Date |
|---|---|---|---|
| Author: | Graduate Environment | Draft v1 | 08/05/2025 |
| Reviewer: | Senior Environment Officer | Draft v1 | 13/05/2025 |
| Author: | Graduate Environment | Rev 0 | 14/05/2025 |
| Reviewer: | Senior Environment Officer | Rev 0 | 15/05/2025 |

# 1 PROPOSAL

## 1.1 Purpose and Justification

The Gibb River Road stretches between Derby and Kununurra, providing a key access route to the cattle stations and communities in the area. The road is a mixture of unsealed and bitumised road surface which acts as a key tourist route and location. Main Roads is looking to reduce the period of which the Gibb River Road is closed throughout the wet season each year, which includes upgrades to existing low floodway crossings at Five Mile Creek, and the Pentecost River Crossing.

The nearest station to benefit from these upgrades is Home Valley Station located at SLK 580, however, these upgrades will aid in the accessibility of other communities and stations located further west along the Gibb River Road.

### *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 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 upgrade two floodways on Gibb River Road, including Five Mile Creek and the Pentecost River. The road will be sealed on either side of these floodways to increase road safety and reduce maintenance requirements in these areas.

## 1.3 Proposal Location

The Development Envelope is located on the Gibb River Road, with Five Mile Creek located at SLK 584.9 and the Pentecost River Crossing at 589.5, in the Shire of Wyndham-East Kimberley as shown in Figures 1 to Figure 3. The central coordinate of the proposal is 127.8817107, -15.7969273.

## 1.4 Clearing Details

**Proposed Clearing to be undertaken using CPS 818:**

Up to 7.00 ha of native vegetation clearing within a Development Envelope of approximately 26 ha.

**Areas of Native Vegetation Clearing:**

The areas of native vegetation to be cleared are shown in Figure 2 and Figure 3.

**Type of Native Vegetation:**

Across the two Biological Surveys that intersect the Development Envelope, 28 vegetation units were described under four broad landforms. These have been amalgamated into 15 units (including Cleared areas) by identifying similar features in each vegetation unit as practicable to estimate potential impacts from the proposed works. Of these 15 units, eight intersect the Development Envelope. These eight vegetation types are detailed further in Table 3.

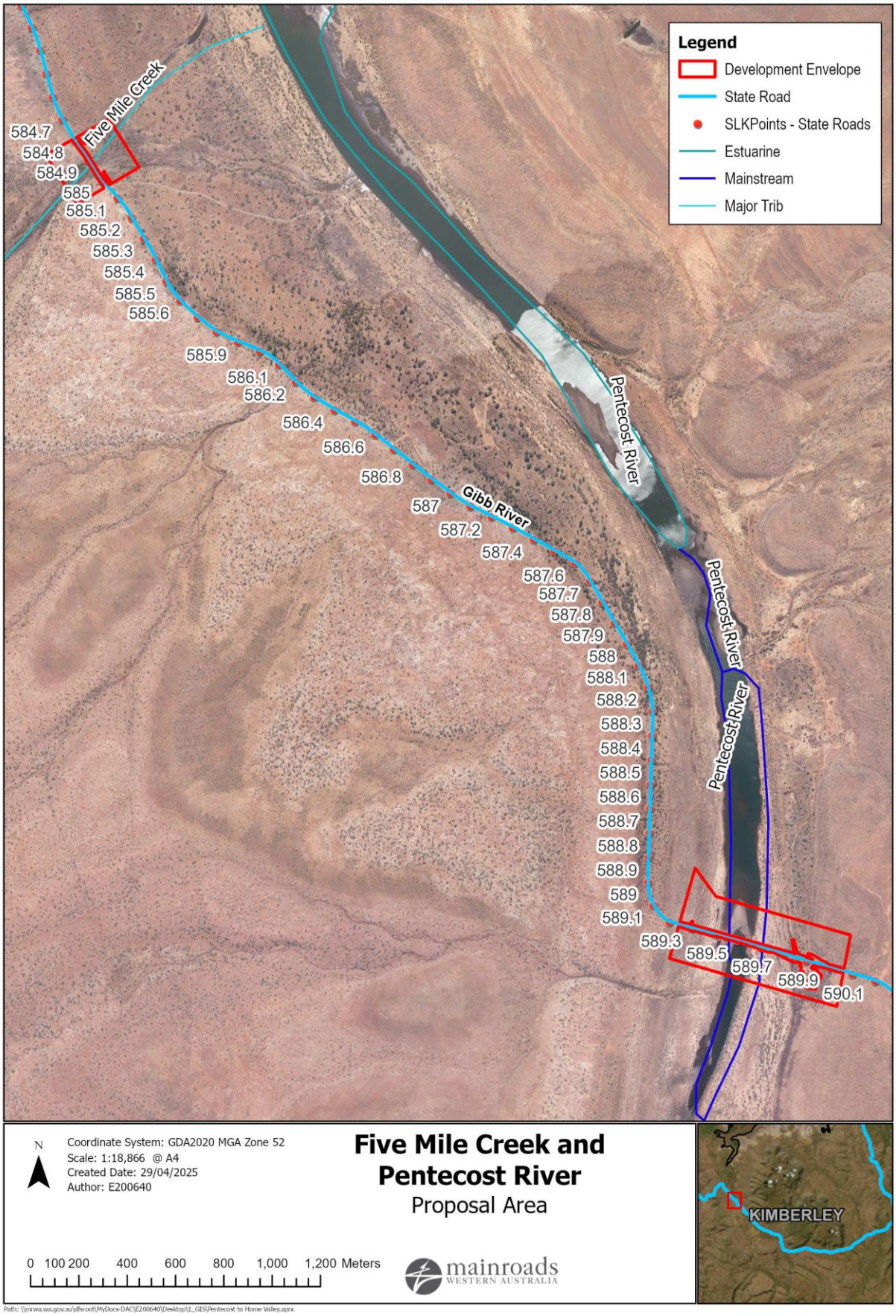


**Figure 1. Gibb River Road Five Mile Creek and Pentecost River: Development Envelope.**

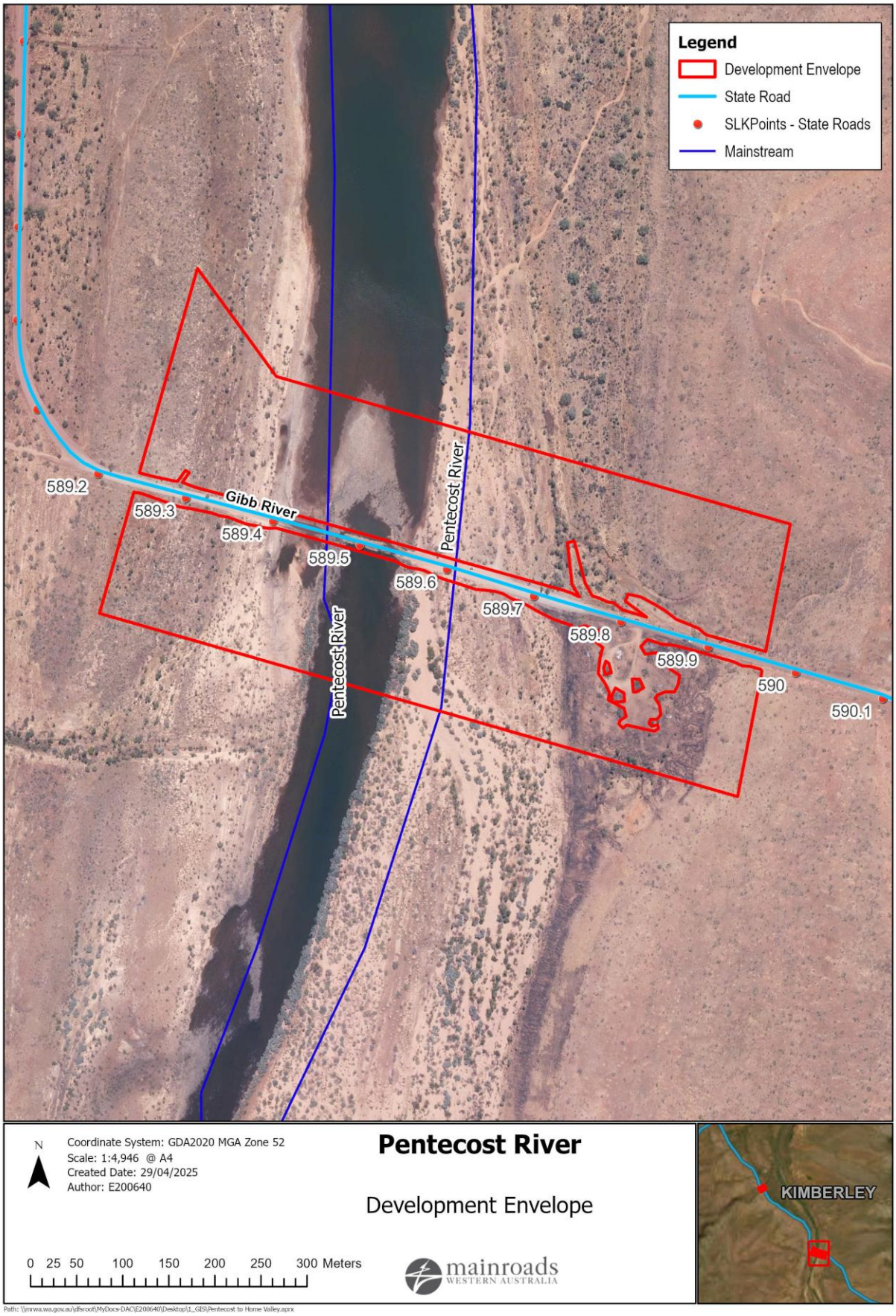


**Figure 2. Gibb River Road Five Mile Creek and Pentecost River: Pentecost River Crossing.**

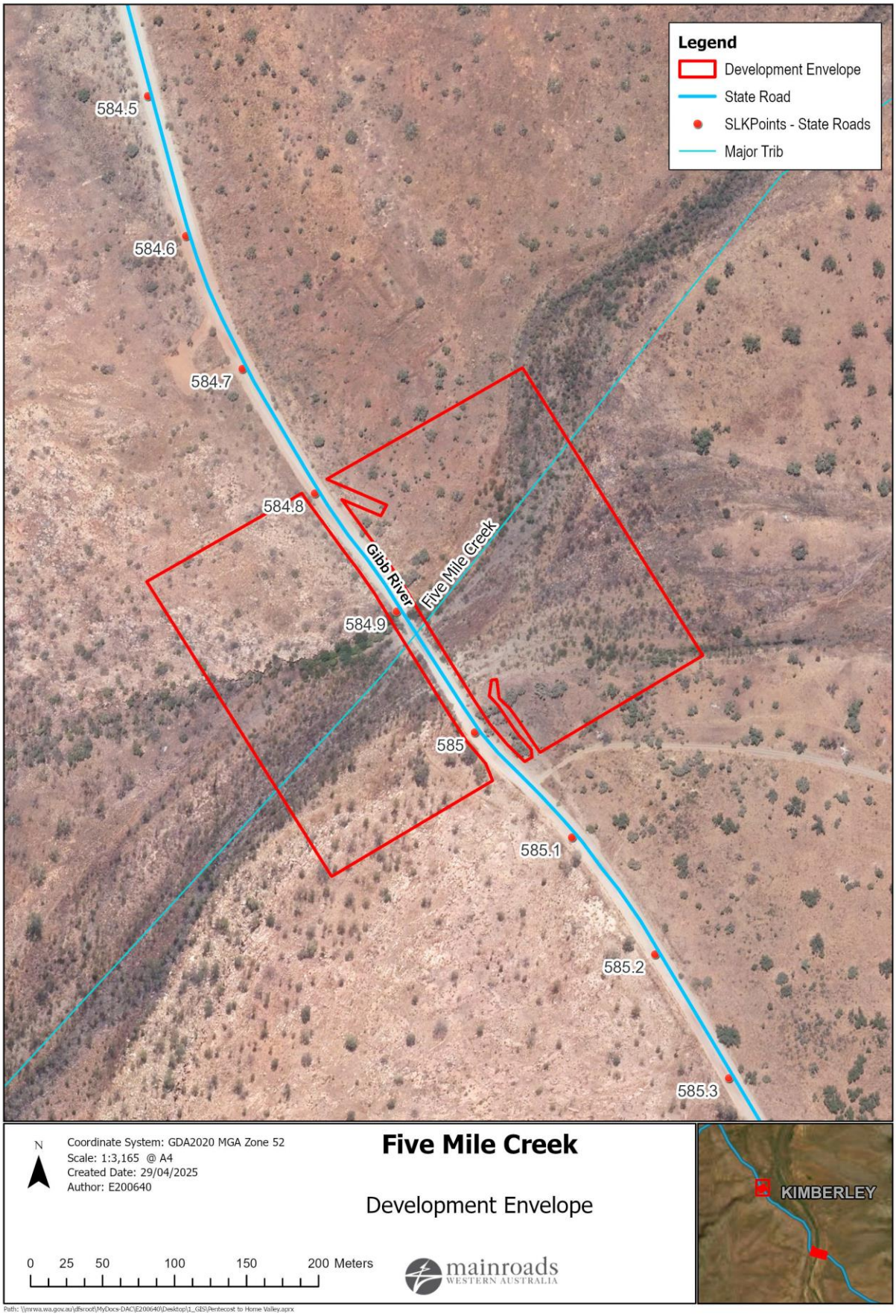


**Figure 3. Gibb River Road Five Mile Creek and Pentecost River: Five Mile Creek.**

## 1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Preferentially locating the new alignment in cleared pasture areas over the existing road reserve. However, all adjacent areas are well-vegetated.
- 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.
- 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 proposed.

## 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 |
|---|---|
| **Simplification of design to reduce the requirement for horizontal realignments** | The existing alignment of the floodway crossings is being utilised. By avoiding any horizontal realignments, the proposed works have significantly reduced the amount of vegetation clearing required for road upgrades whilst also improving the safety of the road network. |
| **Floodway alignment** | The existing disturbance footprint of floodways will be utilised without altering the centreline of the horizontal alignment in these areas. This minimises additional clearing that would be required should the road have been realigned horizontally into adjacent vegetation. |

## 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 and D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act)
- *Aboriginal Heritage Act 1972* (WA).

**Environmental Protection Policies:**

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

**Other relevant policies and guidance documents:**

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (DER, 2014)
- Procedure: Native vegetation clearing permits (DWER, 2021)
- 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:

- **Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction. The Clearing Area for this Proposal is 7.00 ha.

- **Development Envelope** – The maximum extent within which the Clearing Area will be located. This envelope is larger than the Clearing Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CAR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area. The Development Envelope for this Proposal is approximately 26 ha.

- **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 (Ecologia, 2022; Ecoscape, 2024).

## 2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary. Results from searches can be found in Appendix 1.

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government-managed databases were searched to locate additional information, which are found under References in Section 9.

## 2.3 Surveys and Assessments

The surveys/assessments undertaken to inform this CAR are outlined in Table 2 and a summary of the findings in these reports are presented in Sections 3.1 to 3.2.

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

| Consultant and Survey Name | Survey Details |
|---|---|
| **Ecologia (2022)**<br>Jump up to Pentecost River Upgrade Biological Survey | **Survey Area:** The Survey Area comprised approximately 365 ha along Gibb River Road from SLK 562 – 594 including the road reserve and prospective material pits with a 400 m Contextual Area.<br>**Type:** The survey area was subject to a single-phase detailed flora and vegetation survey and a basic vertebrate fauna and fauna habitat assessment<br>**Timing:** The Survey was conducted from 14 - 18 June 2021.<br>**Survey Results Shapefile TRIM Ref:** D22#685302<br>**Document TRIM Ref:** D22#113951 |
| **Ecoscape (2024)**<br>Gibb River Road to Home Valley Station Biological Survey | **Survey Area:** The Survey Area comprised approximately 405.91 ha along Gibb River Road from SLK 562 – 594 including the road reserve and prospective material pits with a 400 m Contextual Area.<br>**Type:** The survey area was subject to Detailed flora/Basic fauna survey (collectively referred to as 'Detailed survey area') and two parcels subject to Targeted flora searches that occupied 301.09 ha<br>**Timing:** The flora component was conducted from 7-16 June 2024 and the fauna component was conducted from 19 to 20 April 2024.<br>**Survey Results Shapefile TRIM Ref:** D24#1464273<br>**Document TRIM Ref:** D24#1464250 |

# 3 SURVEY 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 and/or field assessments are provided in Appendix 1.

## 3.1 Summary and Analysis of Flora and Vegetation Surveys

**Ecologia (2022)**

A total of 190 vascular plant taxa (species, infraspecific taxa, and phrase names) representing 55 families and 108 genera were recorded during the survey. No EPBC Act (1999) or BC Act (2016) listed Threatened species were recorded. One DBCA listed Priority species was recorded within the survey area: *Goodenia brachypoda* (P1).

Eight introduced plant species were recorded within the survey area. None are listed as Declared Pests or are classified as a Weeds of National Significance (WONS).

Hierarchical agglomerative clustering was conducted using floristic data from 24 quadrats within the survey area. Based on this classification, ten vegetation types were characterised and mapped, with vegetation consisting mainly of *Terminalia canescens, Terminalia hadleyana, Cochlospermum fraseri* low open woodland on clay/clay-loam hills and undulating plains and *Corymbia opaca, Buchanania oblongifolia, Cochlospermum fraseri, Terminalia hadleyana* low woodland on silty, clay, loam low hills and undulating plains. Vegetation within the survey area was mostly in 'Very Good' to 'Excellent' condition. None of the vegetation types are considered significant based on available data.

**Ecoscape (2024)**

Prior to undertaking the field survey, an initial desktop assessment was completed. The key findings of the desktop assessment were:

- four pre-European vegetation associations intersect the survey area, each with greater than 97% of their statewide extent remaining.
- two Priority Ecological Communities identified by the database search from within 40 km (the 'study area'); neither of these have been recorded within the survey area. The nearest PEC occurrence is 1.46 km from the survey area (Vegetation Association 838).
- 25 conservation-listed flora were identified as having been recorded within the study area by the database searches consisting of one Threatened Flora, 11 Priority 1, five Priority 2 and eight Priority 3. One P1 (*Goodenia brachypoda*) and one P3 (*Brachychiton incanus*) have been previously recorded from within the survey area. One P1 (*Goodenia heterotricha*) was identified as being Likely to occur based on the information available during the desktop assessment. A further three conservation-listed flora taxa that 'may occur' within the survey area (*Euploca cupressina*; P1, *Grevillea latifolia*; P2 and *Tephrosia* sp. Mistake Creek (A.C. Beauglehole 54424); P3) were also prioritised for field survey.

The key findings of the field survey were:

- 42 floristic quadrats established within the survey area.
- 305 vascular flora recorded from the survey area, including:
  - six conservation-listed flora; *Euploca cupressina* (P1), *Goodenia brachypoda* (P1), *Goodenia heterotricha* (P1), *Tephrosia cardiophylla* (P1), *Dolichandrone filiformis* (P2) and *Brachychiton incanus* (P3).
  - 16 introduced flora including one Declared Pest (**Calotropis procera*).

- thirteen vegetation types from four landform types (low hills/slopes, plains, drainage lines and wetlands/depressions) including:
  - no vegetation types considered representative of any TEC or PEC
  - two vegetation types considered representative of Groundwater Dependent Vegetation (GDV) including **TbAhMr** and **AtTb**, corresponding with Bindoola Creek and the Pentecost River respectively. A further two vegetation types may be considered as potential GDV (**EoEs** and **MvSsFt**).
- the vegetation condition ranged from Good to Excellent with the majority in Excellent (56.70%) or Very Good condition (33.89%). The main factors affecting vegetation condition were presence and abundance of weeds, grazing by cattle and historical clearing.

## 3.2 Summary and Analysis of Fauna Surveys

**Ecologia (2022)**

Fauna habitat assessments were undertaken at 32 sites to describe representative habitat types present within the survey area. Additional opportunistic searches for reptiles were conducted at 10 locations where piles of rocks and boulders were present.

Four fauna habitat types were identified within the survey area: Low Rocky Hill, Creekline, River and Floodplain. All habitat types are considered generally common at a local and regional level and were not restricted to the survey area. Habitat condition ranged from 'Good' to 'Excellent' with evidence of introduced herbivores and clearing contributing to lower condition ratings for several assessment sites. Evidence of recent fire (<1 year) was recorded at six habitat assessment sites (HA01-HA03 and HA09-HA11).

Sixty-eight vertebrate fauna species were recorded during the survey including three mammals (one introduced), 52 birds and 13 reptiles. Fauna recorded during the survey were generally common and are not restricted to survey areas. One Threatened species, the Gouldian finch (*Chloebia gouldiae* [EN EPBC Act, P4 BC Act]) was recorded at site HA18 and suitable habitat for this species is present in the River, Creekline and Floodplain habitat types. An additional four Migratory birds protected under international agreements (Caspian tern, common greenshank, common sandpiper and gull-billed tern) have previously been recorded within the survey area; however, these species were not observed during the current survey.

The post-survey likelihood of occurrence assessment identified six significant birds (glossy ibis, osprey, peregrine falcon, purple-crowned fairy-wren, partridge pigeon and grey plover) considered 'Likely' to occur within the survey area based on the presence of suitable habitat and proximity (<10km) of DBCA Threatened and Priority Fauna Database records.

Two reptiles (the Australian freshwater crocodile and salt-water crocodile) and one mammal (northern leaf-nosed bat) were assessed as to 'Possible' occur within the survey area due to distance of records from the survey area and limited availability of suitable habitat. The dwarf sawfish was also assessed as 'Possible' to occur within the survey area, despite the age of DBCA Threatened and Priority Database records (most recent 1989), as the species was historically recorded 3 km from the survey area within a Pentecost River tributary and has a lifespan of approximately 50 years. An additional eleven Migratory birds are considered 'Possible' to occur within the survey area; however, usage of habitat within survey area by these species is likely to be restricted to intermittent visitation on a seasonal basis.

**Ecoscape (2024)**

Prior to undertaking the field survey, an initial desktop assessment was completed. The key findings of the desktop assessment were:

- 31 conservation-listed fauna species were identified by the DBCA database search within the study area including five mammals, 25 birds and one reptile. One conservation-listed fauna species has been previously recorded within the survey area and a further three were assessed as Likely to occur.

The key findings of the vertebrate fauna field survey were:

- five distinct habitat types were recorded from within the survey area: Low hills, Major drainage, Minor drainage, Plains and Floodplain. None are of local or regional significance and are abundant in the landscape.
- 75 vertebrate fauna species were recorded; including four conservation-listed/of conservation interest: Gouldian Finch (EN EPBC and P4 DBCA status), Freshwater Crocodile (OS DBCA status), Peregrine Falcon (OS DBCA status) and Rainbow Bee-eater (MA EPBC status).

# 4 DESKTOP ASSESSMENT OF VEGETATION

## 4.1 Desktop Vegetation Description

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

For a full description of the existing vegetation, refer to the Biological Reports detailed in Table 2.

**Table 3. Summary of Vegetation Types within the Survey Areas and Development Envelope.**

| Vegetation Type | Total Extent Mapped (ha) within Survey Area | Extent within Development Envelope (ha) |
|---|---|---|
| **Low Hills/Hillslopes** | | |
| ***EoCfTb***<br>*Eucalyptus obconica* and *Erythrophleum chlorostachys* low woodland over *Cochlospermum fraseri, Terminalia canescens* and *Grevillea pyramidalis* subsp. *leucadendron* tall sparse shrubland over *Triodia ?bitextura, Sorghum stipoideum* and *Eriachne obtusa* mid hummock/tussock grassland | 587.82 | 0.00 |
| ***EpAtSs (Ecologia 2022: F)***<br>*Eucalyptus phoenicea, E. miniata* and *Corymbia dichromophloia* low woodland over *Acacia tumida* var. *tumida* tall sparse shrubland over *Sorghum stipoideum, Triodia ?bitextura* and *T*. sp. 3 mid tussock/hummock grassland | 420.44 | 1.15 |
| ***E***<br>*Terminalia canescens, ±Eucalyptus ?obconica, ±Eucalyptus miniata* low open woodland*; Triodia bitextura* low open hummock grassland. | 5.11 | 1.45 |
| **Undulating plains** | | |
| ***CgMmTb***<br>*Corymbia grandifolia* subsp. *lamprocardia* low open woodland over *Melaleuca minutifolia, Grevillea pyramidalis* subsp. *leucadendron* and *Terminalia canescens* mid sparse shrubland over *Triodia ?bitextura, Eriachne fastigiata,* and *Acacia lycopodiifolia* low hummock/tussock grassland/shrubland | 513.07 | 0.00 |

| | | |
|---|---|---|
| ***CgSsAh (Ecologia 2022: C)***<br>*Corymbia greeniana, Buchanania oblongifolia* and *Acacia platycarpa* mid open woodland over *Sorghum stipoideum, Acacia* sp. Kununurra (Lullfitz 6195) and *Senna oligoclada* mid grassland/shrubland over *Aristida holathera* var. *holathera, Eriachne obtusa* and *Waltheria indica* mid tussock grassland/shrubland | 83.76 | 0.48 |
| ***EoAtEo (Ecologia 2022: D)***<br>*Eucalyptus obconica* and *Corymbia dichromophloia* low open woodland over *Acacia tumida* var. *tumida* and *Acacia* sp. Kununurra (Lullfitz 6195) mid open shrubland over *Eriachne obtusa, Sorghum stipoideum* and *Triodia ?bitextura* mid tussock/hummock grassland | 127.18 | 0.00 |
| ***LcTcEo (Ecologia 2022: G)***<br>*Lysiphyllum cunninghamii* low open woodland over *Terminalia canescens, Melaleuca minutifolia* and *Cochlospermum fraser*i mid sparse shrubland over *Eriachne obtusa, Chrysopogon fallax* and *Sorghum plumosum* var. *plumosum* mid closed tussock grassland | 146.43 | 0.99 |
| ***LcTcTb (Ecologia 2022: H)***<br>*Lysiphyllum cunninghamii* low open woodland over *Terminalia canescens* mid sparse shrubland over *Triodia ?bitextura*, *Eriachne obtusa* and *Sorghum stipoideum* mid closed hummock/tussock grassland | 196.52 | 2.92 |
| **Drainage lines** | | |
| ***AtTb (Ecologia 2022: I, J)***<br>*Acacia tumida* var. *tumida, Terminalia canescens* and *Lophostemon grandiflorus* subsp. *riparius* tall shrubland over *Triodia ?bitextura* and *Eriachne glauca* var. *glauca* hummock/tussock grassland | 47.04 | 11.81 |
| ***CgAtSs***<br>*Corymbia greeniana* mid open woodland over *Acacia tumida* var. *tumida* tall shrubland over *Sorghum stipoideum, Mesosphaerum suaveolens* and *Whiteochloa biciliata* tall closed tussock grassland | 20.84 | 0.00 |
| ***MvSsFt***<br>*Melaleuca viridiflora* low woodland over *Sorghum stipoideum* tall grassland over *Fimbristylis tetragona* and *Pseudopogonatherum contortum* mid sedgeland/grassland | 19.35 | 0.00 |
| ***TbAhMr (Ecologia 2022: B, Waterbody)***<br>*Terminalia bursarina, Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *obtusa* low woodland | 25.59 | 3.05 |

| | | |
|---|---|---|
| over *Acacia holosericea* tall sparse shrubland over *Mnesithea rottboellioides* mid sparse tussock grassland | | |
| ***TbEg (Ecologia 2022: A)***<br>*Terminalia bursarina, Acacia tumida* var. *tumida* and *Erythrophleum chlorostachys* tall sparse shrubland over *Eriachne glauca* var. *glauca*, *Triodia ?bitextura* mid tussock/hummock grassland | 104.69 | 0.00 |
| **Wetland/depression** | | |
| ***EoEs***<br>*Eucalyptus obconica, Corymbia grandifolia* subsp. *lamprocardia* low open woodland over *Eriachne sulcata, Chrysopogon fallax* and *E. obtusa* low tussock grassland | 73.89 | 0.00 |
| **Other Mapping Units** | | |
| **Cleared**<br>Not native vegetation (cleared) or waterbodies devoid of vegetation. | 104.19 | 3.72 |
| **Total** | **2510.48** | **25.58** |

**Table 4. Pre-European Vegetation Representation within the Development Envelope.**

| 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. *61*** Grasslands, tall bunch grass savanna woodland, coolabah over ribbon grass (*Crysopogon spp*.). | **Statewide** 61 | 185,472.52 | 185,315.67 | 99.92 | 0.55 |
| | **IBRA Bioregion** *Victoria Bonaparte* | 2,970.48 | 2,970.48 | 100.00 | 0.14 |
| | **IBRA Sub-region** *Keep VIB01* | 2,970.48 | 2,970.48 | 100.00 | 0.14 |
| | **Local Government Authority** *SWEK* | 3,004.91 | 3,004.91 | 100.00 | 0.13 |
| **Veg Assoc No. 75** Grasslands, curly spinifex, low tree savanna woodland; gnaingar (*Eucalyptus phoenicea*) & *Eucalyptus ferrruginea* over *Triodia pungens*. | **Statewide** *75* | 1,961,050.02 | 1,961,013.43 | 100.00 | 0.00 |
| | **IBRA Bioregion** *Central Kimberley* | 1,956,790.30 | 1,956,753.72 | 100.00 | 0.00 |
| | **IBRA Sub-region** *Pentecost CEK01* | 1,956,790.30 | 1,956,753.72 | 100.00 | 0.00 |
| | **Local Government Authority** *SWEK* | 1,486,002.88 | 1,486,002.88 | 100.00 | 0.00 |
| **Veg Assoc No. 814** Hummock grasslands, low steppe woodland; silver-leaved box (*Eucalytpus prunosa*) & *melaleuca* over *Triodia*. | **Statewide** *814* | 171,121.81 | 171,114.48 | 100.00 | 16.27 |
| | **IBRA Bioregion** *Victoria Bonaparte* | 110,409.18 | 110,401.85 | 99.99 | 25.22 |
| | **IBRA Sub-region** *Keep VIB01* | 110,409.18 | 110,401.85 | 99.99 | 25.22 |
| | **Local Government Authority** *SWEK* | 171,121.81 | 171,114.48 | 100.00 | 16.27 |
| **Veg Assoc No. 901** Grasslands, high grass savanna woodland; stringybark & woolybutt over upland tall grass & curly spinifex. | **Statewide** *901* | 4,781,133.26 | 4,683,522.84 | 97.96 | 18.68 |
| | **IBRA Bioregion** *Central Kimberley* | 2,250.27 | 2,250.27 | 100.00 | 3.09 |
| | **IBRA Sub-region** *Pentecost CEK01* | 2,250.27 | 2,250.27 | 100.00 | 3.09 |
| | **Local Government Authority** *SWEK* | 4,018,429.72 | 3,923,147.89 | 97.63 | 21.15 |

# 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '*A Guide to the Assessment of Applications to Clear Native Vegetation*' (Department of Environment Regulation, 2014) and other relevant clearing permit application decision reports prepared by DWER.

The proposed clearing is at variance to Clearing Principle (f) and is not, or not likely, to be at variance with the remaining 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 Development Envelope does not occur in any of the eight Biodiversity Hotspots located in Western Australia. The nearest Biodiversity Hotspot is the Northern Kimberley IBRA region, located over 36 km northwest of the Development Envelope. Current guidance on the assessment of biological diversity, described in DER (2014), includes the following five metrics as indicators of high diversity:

1. Flora and Fauna Species Diversity;
2. Priority and other Significant Flora;
3. Fauna Habitat & Priority Fauna;
4. Significant Ecological Communities; and
5. Vegetation Condition.

Two Biological Surveys intersect the Development Envelope. Mapping for these areas has been clipped to the latest survey conducted (e.g., where Ecoscape (2024) mapping intersects Ecologia (2022) the Ecoscape mapping takes precedence due to its more recent nature) and vegetation units/fauna habitats amalgamated where descriptions are synonymous.

**1. Flora and Fauna Species Diversity**

**Flora**

Two biological surveys for flora species intersect the Development Envelope. These surveys identified 305 (Ecoscape 2024) and 192 (Ecologia 2022) vascular flora taxa, respectively.

No range extensions of flora species were identified. Some specimens were unable to be identified to species level, but were assessed with certainty that they did not resemble any currently described Threatened flora species. No Threatened flora species were recorded within the Survey Area.

Six species of Priority flora were recorded within the Survey Areas. These species include:

1. *Euploca cupressina* (P1);
2. *Goodenia brachypoda* (P1);
3. *Goodenia heterotricha* (P1);
4. *Tephrosia cardiophylla* (P1);
5. *Dolichandrone filiformis* (P2); and
6. *Brachychiton incanus* (P3).

All other conservation significant flora species identified in the 40 km radius desktop Study Area that were not recorded during the field survey were assessed as either Unlikely or Very Unlikely to occur by the post-survey likelihood of occurrence assessment.

Vegetation types in the Development Envelope are likely to be common and widespread at a regional scale based on the remaining extent of pre-European vegetation as outlined in Table 4. Floristic diversity within the Development Envelope is unlikely to be high in comparison to

surrounding uncleared areas, both locally and regionally, and comprising vegetation types that are well represented beyond the Development Envelope.

**Fauna**

Ecoscape (2024) and Ecologia (2022) observed or positively identified 75 and 68 vertebrate fauna species, respectively. Of these, four (Ecoscape 2024) and five (Ecologia 2022) are conservation significant. Fauna diversity is unlikely to be high in the Development Envelope compared to surrounding areas, given the widespread availability of the same fauna habitat types in the local and regional area beyond the Development Envelope. This is supported by over 97% of remaining pre-European vegetation associations at all scales (as seen in Table 4).

From these surveys, 24 species were either Recorded, are Likely to Occur, or May occur. The highest likelihood of occurrence amongst the two surveys has been applied to the below 24 species.

**Recorded (4):**

1. Gouldian Finch (*Chloebia gouldiae*) (EN EPBC Act, P4 BC Act)
2. Freshwater Crocodile (*Crocodylus johnstonei*) (OS BC Act)
3. Peregrine Falcon (*Falco peregrinus*) (OS BC Act)

Migratory (1):

4. Rainbow Bee-eater (Rainbow Bee-eater) (MA EPBC Act)

**Likely to Occur (5):**

5. Purple-crowned Fairy (*Wren Malurus coronatus coronatus*) (EN EPBC Act & BC Act)

Migratory Species (4):

6. Glossy Ibis (*Plegadis falcinellus*) (MI EPBC Act)
7. Grey Plover (*Pluvialis squatarola*) (MI EPBC Act & BC Act)
8. Osprey (*Pandion haliaetus*) (MI EPBC Act & BC Act)
9. Partridge Pigeon (western subspecies) (*Geophaps smithii blaauwi*) (VU EPBC Act & BC Act)

**May Occur (15):**

10. Small Toadlet (*Uperoleia minima*) (P3 DBCA listed)
11. Northern Leaf-nosed Bat (*Hipposideros stenotis*) (P2 DBCA listed)
12. Salt-water Crocodile (*Crocodylus porosus*) (MI EPBC Act, OS BC Act)
13. Dwarf Sawfish (*Pristis clavata*) (VU EPBC Act, P1 DBCA listed)

Migratory Species (11):

14. Curlew Sandpiper (*Calidris ferruginea*) (CR, MI & MA EPBC Act; CR BC Act)
15. Eastern Curlew (*Numenius madagascariensis)* (CR & MI EPBC Act; CR BC Act)
16. Fork-tailed Swift (*Apus pacificus*) (MI EPBC Act & BC Act)
17. Greater Sand Plover (*Charadrius leschenaultii*) (VU & MI EPBC Act; VU BC Act)
18. Little Curlew (*Numenius minutus*) (MI EPBC Act & BC Act)
19. Long-toed Stint (*Calidris subminuta*) (MI EPBC Act & BC Act)
20. Marsh Sandpiper (*Tringa stagnatilis*) (MI EPBC Act & BC Act)
21. Red-necked Stint (*Calidris ruficollis*) (MI EPBC Act & BC Act)
22. Sharp-tailed Sandpiper (*Calidris acuminata*) (MI EPBC Act & BC Act)
23. Whimbrel (*Numenius phaeopus*) (MI EPBC Act & BC Act)
24. Wood Sandpiper (*Tringa glareola*) (MI EPBC Act & BC Act)

**2. Priority and other Significant Flora**

A desktop search of DBCA TPFL and WA Herbarium records identified 51 species of conservation significant flora within 40 km of the Development Envelope. Of these species, six species of priority flora were recorded from the two Survey Areas, consisting of four P1 taxa, one P2, and one P3.

***Euploca cupressina* (P1**)

*Euploca cupressina*, previously known as *Heliotropium cupressinum*, is a perennial herb that grows in stony sandy soils and sandstone up to 0.6 m high and flowers in March to May (Western Australian Herbarium, 1998-). The nearest observation of the species outside of the Survey is over 30 km northwest of the Development Envelope. *Euploca cupressina* has been recorded in three IBRA bioregions (Central Kimberley, Ord Victoria Plain and Victoria Bonaparte).

This species was recorded from three locations within the Survey Area, none of which occur within the Development Envelope. The nearest record to the Development Envelope was over 10 km northwest. The populations of this species were not identified at the time of the survey as the field identification resource was misleading, based on a specimen housed within the reference collection at the Western Australian Herbarium, which was inaccurate. Therefore, the actual size/extent of the population is unclear, however, all records arise from a single vegetation type within a one kilometre section of the Survey Area. It was recorded at low density (<1% cover) within each of the three quadrats. *Euploca cupressina* is known from 51 records in the Kimberley region of Western Australia as well as the Northern Territory, with an east-west range of approximately 380 km (Atlas of Living Australia, 2024). Suitable habitat extends into the Contextual Area and beyond into the Northern Territory. Due to the absence of records within the Development Envelope and wide distribution of the species and availability of habitat in the local and regional area, the proposed clearing is considered unlikely to significantly impact this species (Ecoscape 2024).

***Goodenia brachypoda* (P1):**

*Goodenia brachypoda* is a prostrate herb that grows in red sandy loam with stems to 25 cm and produces yellow flowers in September (Western Australian Herbarium 1998-). The species is known to occur within the Northern Kimberley and Victoria Bonaparte IBRA regions. Outside of the Survey Area, the nearest observation is over 27 km north of the Development Envelope. *G. brachypoda* is known from 131 records in the Kimberley Region of Western Australia as well as the Northern Territory (ALA 2024) from an east-west range of approximately 625 km.

This species was recorded from 64 records totalling 758 plants within the Survey Area, likely representing up to three populations. An additional 416 plants were recorded from outside the Survey Area. No individuals occur within the Development Envelope and the nearest is approximately 50 metres southeast beside an existing dirt track. Significant populations of the species are likely to extend beyond Survey Area as illustrated by the additional 416 plants identified in the Contextual Area of Ecoscape's (2024) biological survey. As the species does not occur within the Development Envelope, no significant impact on this species is anticipated from the proposed clearing.

***Goodenia heterotricha* (P1):**

*Goodenia heterotricha* is a slender, ascending herb with yellow flowers that has been recorded from plains, seasonally wet flats and gentle slopes in close proximity to drainage features (Western Australian Herbarium, 2024). The species is known to occur within the Central Kimberley

IBRA region, and is known from six records from the Central Kimberley region, with a range of approximately 100 km north-south.

The species was recorded from 79 records totalling 458 plants within the Survey Area, likely representing up to five populations. An additional 160 plants were recorded within the Contextual Area. Whilst this taxon can be considered poorly known based on the low number of previous records, it was recorded from seven vegetation types within the Survey Area that are also extensive within the Contextual Area.

No observations of the species were recorded within the Development Envelope. Therefore, no significant impact on *G. heterotricha* is anticipated from the proposed clearing.

***Tephrosia cardiophylla* (P1):**
*Tephrosia cardiophylla* is a low spreading shrub that grows 0.25–0.6 m tall and 0.2–0.9 m wide (Barrett, 2015). The species grows in brown loam or red-brown clayey sand among sandstone rocks and produces small orange flowers in February and May. The species is known to occur within the Central Kimberley, Northern Kimberley, and Victoria Bonaparte IBRA regions (Western Australian Herbarium, 1998-). Outside of the Survey data, the nearest observations are approximately 16 km north of the Development Envelope.

The species was recorded by Ecoscape (2024) from three records totalling 12 plants within the Survey Area, indicating a sparse and isolated distribution. It occurred in a single vegetation type that extended substantially into the Contextual Area. No individuals were located within the Development Envelope, and the nearest record is over 31.5 km northeast. *Tephrosia cardiophylla* is known from eight records in the Kimberley region with a range of 230 km east-west and can be considered a poorly known species. However, given the low number of plants recorded, high potential for additional plants within the Contextual Area, and lack of individuals within the Development Envelope, the potential impact of the proposed clearing on the species is unlikely to be significant (Ecoscape, 2024).

***Dolichandrone filiformis* (P2):**
*Dolichandrone filiformis* is a shrub or tree that occurs in sandstone, sandy soils and grows up to four metres high, producing white flowers in December. The species is known to occur within the Northern Kimberley and Victoria Bonaparte IBRA regions (Western Australian Herbarium, 1998-). Outside of the Survey Area, the nearest observations are approximately 31 km east of the Development Envelope.

This species was recorded from two isolated plants within the Survey Area, of which the nearest is over 8 km west of the Development Envelope. *Dolichandrone filiformis* is known from 734 records from the Kimberley region as well as the Northern Territory with a distribution of approximately 1,000 km east-west (Ecoscape 2024). Based on the known distribution, low number of plants within the Survey Area, and the lack of observations within the Development Envelope, the potential impact of the proposed clearing on this species is unlikely to be significant (Ecoscape 2024).

***Brachychiton incanus* (P3):**
*Brachychiton incanus* is a tree that occurs in sandy soils over sandstone or quartzite, rocky slopes, or scarps and ridges. The species grows 4-15 m high, producing red/pink-red flowers from July to September. It occurs on sandy soils over sandstone or quartzite, rocky slopes, scarps and

ridges. The species is known to occur within the Central Kimberley, Northern Kimberley and Victoria Bonaparte IBRA regions (Western Australian Herbarium, 1998-). Outside of the Survey Area, the nearest observations are approximately 2 km north of the Development Envelope.

This species was recorded from 20 records totalling 33 plants in the Survey Area, frequently observed as isolated plants. An additional five plants from two records were recorded from the Contextual Area. Of these, three individuals are present within the Development Envelope. It was recorded from six vegetation types within the Survey Area that are also well represented in the Contextual Area. *Brachychiton incanus* is known from 41 records within the Kimberley region with a range of 400 km east-west (Ecologia, 2022). Considering the relatively low number of plants recorded, high potential for substantial population within the Contextual Area and large known range of the species, it is unlikely that potential impact to this species would be considered significant (Ecoscape, 2024).

### 3. Fauna Habitat and Priority Fauna

Amalgamated mapping of the two Biological Surveys and their intersects with the Development Envelope is summarised below in

Table 5. These include nine mapped units (including Cleared area), however, the Development Envelope intersects only five. All of these habitats are typically in Good or better condition.

**Table 5. Fauna Habitat within the Development Envelope across two Biological Surveys (Ecoscape 2024, Ecologia 2022).**

| FAUNA HABITAT & CODE | TOTAL EXTENT MAPPED (ha) WITHIN SURVEY AREA | EXTENT WITHIN DEVELOPMENT ENVELOPE (ha) |
|---|---|---|
| **Creekline (CL)**<br>This habitat supports minor and major creeklines with scattered eucalypts over tussock grasses. During the survey, all creeklines within the survey area were dry; however, this habitat type may provide seasonal habitat for migratory birds, waterfowl, ducks and fish when inundated. Gouldian finches may visit this habitat type whilst foraging and utilise creeklines within the survey area as water sources when inundated. | 5.86 | 3.14 |
| **Floodplain (FP)**<br>This habitat types is found adjacent to major drainage lines with permanent water. It consists of Corymbias, Eucalyptus and Acacias over native tussock and or hummock grasses subject to seasonal inundation with a rocky/sandy substrate. Disturbances are minor and associated with previous clearing. | 136.81 | 1.61 |
| **Low Hills (LH)**<br>Low undulating rocky hills with scattered trees/shrubs (Corymbias, Eucalyptus and/or Acacias) to open woodland over tussock/hummock grassland. Boulders/rock piles are scarcely present throughout this habitat type. This habitat type has a varying fire history and is at different stages of regrowth. | 226.56 | 0.00 |

| | | |
|---|---|---|
| **Low Rocky Hill (LRH)**<br>Low Rocky Hills with scattered Acacia over Triodia and undulating hills. Boulders, rock-piles and rock-slabs are present within this habitat type, providing contain crevices and provide shelter, denning and roosting habitat for mammals and reptiles. Within the survey area, this habitat type exhibited evidence of widespread burning and was comprised of small, patchily distributed outcrops which lacked suitable niches for rock ringtail possums or scaly-tailed possums (e.g. fractured rock, large fissures and crevices or rugged rocky terrain). | 194.61 | 5.29 |
| **Major Drainage (MJD)**<br>This habitat is associated with Bindoola Creek and the Pentecost River and is characterised by permanent water. The vegetation consists of riparian woodland/shrubland (Eucalyptus, Melaleuca spp.) over grassland on sandy substrate with occasional rocks. | 4.14 | 0.27 |
| **Minor Drainage (MND)**<br>Scattered trees of Corymbia and/or Acacia spp. over tussock or hummock grasses on light brown loam, rocks and/or sand. This habitat type is subject to seasonal inundation. | 29.15 | 0.00 |
| **Plain (PL)**<br>Scattered trees/shrubs (Eucalyptus, Corymbias and/or Acacias) over tussock or hummock grassland on gently undulating country. The substrate is sandy/loam with occasional rocks. This habitat type has a varying fire history and is at different stages of regrowth and display varying levels of cattle disturbance. | 101.47 | 0.00 |
| **River (R)**<br>This habitat type encompasses a portion of the Pentecost River which intersects the survey area. River habitat within the survey area encompasses riverine woodland and shrubland along the banks and sandy substrates. When inundated, the Pentecost River provides seasonal habitat for migratory birds, waterfowl, ducks, fish (including the dwarf sawfish) and both species of crocodile. Four Migratory bird species and one Threatened species have previously been recorded within this habitat. Gouldian finches were observed along the banks of the Pentecost River at habitat assessment site HA18 during the current survey. | 16.89 | 14.99 |
| **Cleared**<br>Cleared areas, with no significant vegetation growth. However, in many areas artificial ponds and pools have formed during the wet season and continue to provide some feeding habitat and a water source for a range of species, for the wetter parts of the year. | 56.18 | 0.00 |
| **TOTAL** | **771.67** | **25.30** |

These fauna habitats are likely widespread at a local and regional scale, with over 97% pre-European vegetation remaining at all scales, and less than 0.91% (up to 7.00 ha) of fauna habitat mapped is proposed to be cleared (Ecoscape, 2024; Ecologia, 2022). Ecoscape (2024) determined that vegetation identified extends well beyond the Survey Area.

Therefore, fauna habitats in the Development Envelope are unlikely to comprise a high level of biodiversity in comparison to surrounding uncleared areas both locally and regionally. Furthermore, habitat proposed to be cleared adjacent to the existing floodway infrastructure is unlikely to be significant for these species due to the frequent disturbance of vehicles and associated edge effects. Clearing of existing areas is preferred by limiting disturbance to one area rather than spreading disturbance across the Gibb River Road into untouched habitats.

Further assessment of the significance of fauna habitat is provided in Clearing Principle (b).

**4. Significant Ecological Communities**

No Threatened or Priority Ecological Communities (TECs/PECs) were recorded within the Development Envelope or the Survey Areas. The nearest is a Priority 1 PEC over 3.6 km south of the Development Envelope.

None of the recorded vegetation units occur as small, isolated communities and all extend beyond the boundary of the Survey Area in multiple locations and are not considered to be limited in their local extent or distribution.

No significant ecological communities will be impacted by the proposed clearing.

**5. Vegetation Condition**

**Table 6. Vegetation Condition within the Development Envelope and Survey Area.**

| VEGETATION CONDITION | SURVEY AREA (ha) | DEVELOPMENT ENVELOPE (ha) |
|---|---|---|
| Excellent | 528.56 | 18.37 |
| Very Good | 143.75 | 0.44 |
| Good | 17.43 | 2.56 |
| Cleared | 62.46 | 3.93 |
| **Total** | **752.20** | **25.30** |

The Development Envelope predominantly consists of vegetation mapped as Excellent (18.37 ha, 72.59%), followed by Good (2.56 ha, 10.13%), and Very Good (0.44 ha, 1.75%). However, the maximum potential impact on vegetation mapped in Excellent condition is 1.32% (7.00 ha), and the maximum percentage impact on any vegetation types is on that mapped in Good condition (at 2.56 ha, or 14.69%) followed by Excellent, and then Very Good (at 0.44 ha, or 0.32%). The availability of high-quality vegetation is unlikely to be significantly impacted by the proposed clearing. Furthermore, this high-quality vegetation is likely to extend beyond the Survey Area, both locally and regionally. As such, no significant impact to the availability of vegetation in Good or better condition is anticipated from the proposed clearing.

**Summary**

The Development Envelope is not representative of any TEC or PEC, is unlikely to significantly impact conservation significant flora, does not contain critical fauna habitat, is unlikely to significantly impact conservation significant fauna, and will impact an insignificant amount of

vegetation in Excellent condition. The Development Envelope is unlikely to comprise a high level of biodiversity based on the absence of key indicators.

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

**Methodology**

- Atlas of Living Australia (2024)
- Barrett (2015)
- BoM (2025)
- DCCEEW (2025a)
- Ecologia (2022)
- Ecoscape (2024)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed March 2025)
  - DBCA Threatened and Priority flora database search (Accessed March 2025)
  - Ecological Linkages (Accessed March 2025)
- Natural Resource Management SLIP Soil Systems (Accessed March 2025)
- Government of Western Australia (2019)
- Western Australian Herbarium (1998-)
- Western Australian Herbarium (2024)

**(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.**

Nine fauna habitats (including Cleared areas) were mapped across the two biological surveys and are summarised in
Table 5. Five of these habitats intersect the Development Envelope ('River', 'Creekline', 'Major Drainage', 'Floodplain' and 'Low Rocky Hill').

All fauna habitats present within the Development Envelope are likely widespread at a local and regional scale, with over 97% pre-European vegetation remaining at all scales, and less than 0.91% (up to 7.00 ha) of fauna habitat mapped is proposed to be cleared (Ecoscape, 2024; Ecologia, 2022). Ecoscape (2024) determined that vegetation identified extends well beyond the Survey Area. Therefore, fauna habitats present in the Development Envelope are unlikely to be necessary for the maintenance of a significant habitat for fauna in comparison to surrounding habitats which are widespread both locally and regionally. Furthermore, in comparison to uncleared areas away from the road, habitat proposed to be cleared adjacent to the Gibb River Road is unlikely to be significant for any fauna species due to the frequent disturbance by vehicles and associated edge effects.

A desktop search of DBCA Threatened and Priority Fauna (TPFA) records and Protected Matters Search Tool (PMST) data within the Study Area (40 km buffer) identified 69 conservation-significant fauna species. From these species, 25 were either Recorded, are Likely to Occur, or May occur. The highest likelihood of occurrence amongst the two surveys has been applied to the 25 species listed in Principle (a).

**Gouldian Finch**

The closest known record is within the Survey Area at the Pentecost River Crossing, with other records sighted within 600 m of the Development Envelope at numerous locations. Their preferred habitat is rocky hills with hollow-bearing smooth-barked gums (*Eucalyptus brevifolia or E. tintinnans*) within two to four kilometres of small waterholes or springs that persist throughout the dry season. Dry season feeding habitat is dominated by annual spear grasses or native sorghum (Sarga species), and in the wet season birds shift to feeding from scattered patches of cockatoo grass (*Alloteropsis semialata*), golden beard grass (*Chysopogon fallax*) or spinifex-dominated communities (*Triodia bitextura; T. acutispicula; T. bynoei; T. schinzii*) (O'Malley, 2006).

Factors most likely to have caused past declines, and to be preventing recovery in Gouldian Finch populations are vegetation change through altered fire regimes and grazing by introduced herbivores (O'Malley, 2006; Legge et al., 2015). Routing by feral pigs can also cause significant damage to patches of foraging grass, and introduced herbivores can reduce or degrade waterholes used by Gouldian Finches in the dry season by trampling and eating surrounding vegetation (O'Malley, 2006). The proposed clearing is unlikely to contribute to any of these landscape-scale threats.

During Ecologia's 2022 Biological Survey, a group of juvenile Gouldian Finches was recorded in the 'Low Hills' habitat type and again adjacent to the Development Envelope near the Pentecost River in Ecoscape's 2024 Biological Survey. The majority of the Survey Area provides suitable foraging habitat, and the Gouldian Finch can be regarded as a resident of the Survey Area. No Breeding habitat was identified in the Survey Area (Ecoscape, 2024). The Gouldian Finch is not reliant on the foraging habitat within the Survey Area and it can be assumed to be found in the extensive and less disturbed suitable habitat surrounding the Survey Area, and consequently, the Development Envelope (Ecologia, 2022; Ecoscape, 2024). Due to the significant distribution of

suitable habitat at a local and regional extent, no significant impact on the species is anticipated from the proposed clearing.

The proposal is unlikely to affect habitat availability for the species given the proposed works will impact up to 7.00 ha (or 0.94%) of 741.27 ha of mapped foraging habitat (Ecologia 2022; Ecoscape 2024), and noting that the surrounding landscape is largely uncleared. As such, no significant impact on the species is anticipated from the proposed activities.

**Peregrine Falcon**

The Peregrine Falcon occurs throughout Australia and in most habitat types, with the exception of treeless and waterless desert, and dense forests (Birdlife International, 2022). This species utilises ledges, cliff faces, and large hollows/broken spouts of trees for nesting. It also occasionally uses the abandoned nests of other birds of prey (Johnstone and Storr, 1998). The Peregrine Falcon mates for life and pairs maintain a home range of about 20 km to 30 km square throughout the year (Australian Museum, 2019a). Critical breeding habitat does not occur in the Survey Area; however, due to its widespread movements, the species may overfly all habitat types. Peregrine falcons feed almost exclusively on birds, especially ducks, parrots and pigeons.

Within the Survey Area, a single Peregrine Falcon was observed flying over and potentially foraging within the 'Low hills' habitat type. With one record within 5.5 km of the Survey Area and three additional records within the Study Area, this species is considered likely to intermittently overfly the Survey Area and may utilise all habitat types while foraging (Ecologia, 2022). This species is unlikely to be confined to the Survey Area (and by extension, the Development Envelope) and usage of habitats within the Survey Area is likely to be restricted to temporary visitation due to the absence of cliffs and rocky outcrops associated with breeding habitat. Due to the abundance of habitat in the local area, large home-range of the species, and lack of roosting habitat, the Development Envelope is unlikely to represent significant habitat for the species.

**Purple-crowned Fairy Wren**

The purple-crowned fairy-wren (western) inhabits dense, riparian vegetation in the wet-dry tropics of Western Australia and the Northern Territory (Smith & Johnstone, 1977; Boekel, 1979; Rowley & Russell, 1993; 1997). Its preferred habitat comprises a well-developed mid-storey under a dense canopy of emergent Eucalyptus and Melaleuca species (Garnett et al., 2011). In the Kimberley region, it usually occurs where the mid-storey is dominated by *Pandanus aquaticus* (Boekel, 1979) or *Barringtonia acutangula*, a freshwater mangrove (Skroblin & Legge, 2012), accompanied by a variety of shrubs. This species nests in dense pandanus grass from February until June and feeds on insects, spiders and cutworms (Johnstone and Storr, 2004).

The closest record of the Purple-crowned Fairy-wren is located approximately 745 m south of the Development Envelope associated with the habitat surrounding Pentecost River, from 2001. Breeding habitat described as dense vegetation around permanent water is restricted to the Major drainage habitat type and limited within the Survey Area (4.14 ha, 0.41%) and only up to 0.27 ha (6.52%) is present within the Development Envelope. Foraging habitat is available across all other habitat types recorded from within the Survey Area. Post-survey, this species is considered as 'May' occur within the survey due to limited breeding habitat availability and disturbances from the intersecting Gibb River Road. Suitable habitat is abundant outside of the Survey Area and associated with dense vegetation on the banks of Bindoola Creek and the Pentecost River. As the Survey Area contains only a small portion of the Pentecost River and suitable habitat extends well beyond the boundary of the Survey Area, the Purple-crowned Fairy-

wren is considered unlikely to be restricted to the Survey Area, and consequently, the Development Envelope.

Due to the significant distribution of suitable habitat at a local and regional extent, the Development Envelope is unlikely to constitute significant habitat for this species.

**Freshwater Crocodile**

Freshwater crocodiles inhabit various freshwater environments, including creeks, pools, billabongs, lagoons and swamps (Cogger, 2021). As habitats flood in the wet season, freshwater crocodiles are able to move throughout the floodplains, and when water levels drop in the dry season, they congregate within larger and deeper water bodies that remain (Australian Museum, 2024). While freshwater crocodiles spread out into the floodplains in the wet season, they do tend to return year on year to the same dry season water bodies (Australian Museum, 2024). Eggs are laid towards the end of the dry season into the wet, around October to November in sandbanks (Cogger, 2021) and take two to three months to hatch.

The nearest observation of the species is over 13 km from the Development Envelope. Within the Survey Area suitable habitat is restricted to the Major Drainage habitat (Ecoscape, 2024). Due to the limited extent of suitable habitat within the Survey Area, the Freshwater Crocodile can be regarded as an occasional visitor to the Survey Area, and a potential rare visitor to the Development Envelope. Ecologia (2022) affirmed this, stating the species has the potential to intermittently utilise River habitat surrounding the Pentecost River crossing while travelling though the Survey Area (Ecologia, 2022). Extensive suitable habitat is present outside of the Survey Area and consequently, the Development Envelope. Thus, habitat in the Development Envelope is not likely to constitute critical habitat for the species (Ecoscape, 2024).

**Small Toadlet**

The small toadlet is a tiny species of frog, reaching just 2.5 cm in body length (Australian Museum, 2019b). It was previously believed to be restricted to the Mitchell Plateau but is now thought to be distributed throughout the northern Kimberley (Western Australian Museum, 2014). Its preferred habitat is described as dense grasslands subject to flooding, but little is known of its breeding biology. To bridge this gap assumptions of the species are that it is similar to other *Uperolia* species, and likely breeds from the summer into autumn during the wet season (Western Australian Museum, 2014; Australian Museum, 2019b).

The nearest mapped DBCA record of this species is 12 km east of the Development Envelope. Habitat adjacent to the road network is unlikely to be critical for the species, potentially using small pools of water in drainage habitat.

Due to the abundance of suitable habitat for this species in the local area, and noting the proposed clearing is scheduled to occur outside of the species' breeding season, the Development Envelope is unlikely to constitute significant habitat for this species and no significant impact on the species is anticipated from the proposed clearing

**Northern Leaf-nosed Bat**

The Northern Leaf-nosed Bat occurs across the top end of Australia, with two disjunct populations: one in the Kimberley region of Western Australia, and the other in the Northern Territory and western Queensland. Searches for the Northern Leaf-nosed Bat in the Northern Territory revealed that this species is closely associated with steep hills and escarpments and does not typically forage far from diurnal roosts, unlike other cave-dwelling species.

The Northern Leaf-nosed Bat feeds predominantly on small insects detected with high-frequency echolocation calls and caught during a fluttering flight. Northern leaf-nosed bats roost alone or in well-separated pairs (Churchill, 1998). In the Kimberley, the breeding season of this bat extends from October through to at least the end of January, with some individuals being in the early stages of pregnancy in July (Churchill, 1998).

With one record (2012) 12 km from the Development Envelope, this species has the potential to intermittently overfly all habitat types within the Survey Area (and Development Envelope) and may intermittently utilise habitat whilst foraging. However, Low Rocky Hills habitat within the Survey Area and Development Envelope lack breakaways, caves and crevices which may provide roosting opportunities for the species. Both Ecoscape (2024) and Ecologia (2022) determined their respective Survey Areas are unlikely to provide critical roosting or foraging habitats for the species. This conclusion is therefore also transferable to the much smaller Development Envelope.

**Salt-water Crocodile**

Salt-water Crocodiles range from Rockhampton in Queensland, across the coastal areas of the Northern Territory, to King Sound in Western Australia. They mostly occur in tidal rivers, coastal floodplains and channels, billabongs and swamps up to 150 km inland, but have been reported in the open sea as far south as Broome (Ecologia, 2022).

Saltwater crocodiles are opportunistic feeders using active hunting or a sit-and-wait strategy. Juvenile crocodiles eat insects, crustaceans, fish and reptiles, while adults prey on mammals, birds and fish (Wilson and Swan 2010). In the Northern Territory, nesting occurs during the wet season, with a peak in January and February.

With one record (2010) 26 km downstream of the Survey Area, this species has the potential to intermittently utilise the River habitat surrounding the Pentecost River crossing while travelling through the Survey Area. Vegetation clearing within the Development Envelope will not inhibit the species' migration along the Pentecost River or Five Mile Creek, and the proposed infrastructure upgrades will be a replacement of like-for-like.

As the Salt-water Crocodile may use habitat in the Development Envelope intermittently and as a vagrant visitor, and noting the abundance of suitable habitat both upstream and downstream of the Pentecost Crossing, the Development Envelope is not likely to constitute critical habitat for the species.

**Sawfish Species (Narrow Sawfish, Dwarf Sawfish, Freshwater Sawfish, and Green Sawfish)**

The Dwarf Sawfish has been recorded twice within the Study Area (most recently 1989) with one of these records located 3 km downstream of the Survey Area along a tributary of the Pentecost River (Ecologia, 2022). The preferred habitat of the Dwarf sawfish is described as shallow coastal waters and estuarine habitats and are restricted to brackish and salt-water habitats.

The proposed floodway upgrade works are a like-for-like replacement with minimal vegetation clearing required. Clearing activities to facilitate the works will be a short term activity and are considered unlikely to result in any permanent habitat loss for Sawfish species that may be present in the Pentecost River or 5 Mile Creek. To provide some context, the Pentecost River is approximately 275 kilometres long and has a catchment of 8,940 square kilometres (894,000 ha) (Department of Water, 2008). Based on aerial imagery and GIS mapping, the portion of the Development Envelope that includes open water that may provide sawfish habitat is conservatively estimated to be less than 3.5 hectares. The Development Envelope is unlikely to constitute critical habitat for the Dwarf Sawfish, or any other Sawfish species.

**Migratory Species:**

As outlined in Principle (a) several Migratory species were identified with varying likelihoods of occurring within the Development Envelope. These species are migratory bird species with varying preferences for marine and wetland habitats.

Freshwater aquatic habitat is present within the Survey Area around the Pentecost River and its associated surroundings. Associated habitat in the Development Envelope is unlikely to be critical habitat in comparison to the significant amount of habitat in similar or better quality (and likely less frequently disturbed by human activity) at a local and regional extent. By way of context, the Pentecost River stretches approximately 275 km from the Durack Range, north to the estuary of Cambridge Gulf near Wyndham, and has a catchment area of approximately 894,000 ha. The small amount of clearing proposed for upgrades to existing watercourse crossings is unlikely to be significant for any migratory fauna species in this context.

**Summary**

The fauna habitats present in the Development Envelope are likely to be widespread at a local and regional scale, with over 97% pre-European vegetation remaining at all scales, and less than 0.91% (up to 7.00 ha) of fauna habitat mapped is proposed to be cleared (Ecoscape, 2024; Ecologia, 2022).

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

**Methodology**


- Atlas of Living Australia (2024)
- Australian Museum (2019)
- Australian Museum (2019)
- Australian Museum (2024)
- Birdlife International (2022)
- Boekel (1979)
- Churchill (1998)
- Cogger (2021)
- Ecologia (2022)
- Ecoscape (2024)
- Garnett et al. (2011)
- Government GIS Shapefiles:
    - DBCA Threatened and Priority fauna database search (Accessed March 2025)
    - Ecological Linkages (Accessed March 2025)
- Janse et al. (2015)
- Johnstone and Storr (2004)
- Legge et al. (2015)
- Marchant and Higgins (1993)
- McKenzie et al. (1995)
- McKenzie et al. (2018)
- O'Malley (2006)
- Rowley & Russell (1993)
- Rowley & Russell (1997)
- Skroblin & Legge (2012)
- Smith & Johnstone (1977)
- Western Australian Museum (2014)
- Wilson and Swan (2010)

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

**Proposed clearing is not at variance to this Principle.**

Desktop database searches identified no known records of Threatened flora within a 40 km radius of the Development Envelope.

Neither of the biological surveys which intersect the Development Envelope recorded any Threatened flora taxa and none are considered likely to occur (Ecoscape, 2024; Ecologia, 2022).

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

**Methodology**

- Ecologia (2022)
- Ecoscape (2024)
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed March 2025)

## (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.**

None of the vegetation types mapped within the Development Envelope by Ecologia (2022) or Ecoscape (2024) comprised of a listed Threatened Ecological Community (TEC).

Based on the above, the native vegetation proposed for clearing does not comprise the whole or a part of, and is not necessary for the maintenance of a TEC.

The proposed clearing is not at variance to this Principle.

**Methodology**

- Ecologia (2022)
- Ecoscape (2024)
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (Accessed March 2025)

**(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 National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30% or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia, 2001).

Vegetation within the Development Envelope is broadly mapped as pre-European Vegetation Associations 61, 75, 814, and 901 (as seen in Table 4), all of which have over 97% of their pre-European extent remaining (Government of Western Australia, 2019). The proposal is not located in an area that has been extensively cleared and the vegetation proposed for clearing is not significant as a remnant.

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

**Methodology**

- Commonwealth of Australia (2001)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed March 2025)
  - Vegetation complexes (Accessed March 2025)
- Government of Western Australia (2019)

**(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.**

The Development Envelope includes two named watercourses; the Pentecost River and Five Mile Creek (a tributary of the Pentecost River). Neither watercourse is listed as wetland of international or national importance (GIS Databases).

Ecoscape (2024) mapped 11.81 ha of vegetation type 'AtTb' within the Development Envelope growing in association with Pentecost River. This vegetation type was noted to be riparian vegetation and groundwater dependent vegetation. 3.05 ha of vegetation type 'TbAhMr' is mapped in the Development Envelope and is growing in association with Five Mile Creek. This vegetation type was also considered to be riparian vegetation and groundwater dependent vegetation.

In close alignment with vegetation mapping, Ecoscape (2024) mapped 14.99 ha of 'River' fauna habitat, 3.14 ha of 'Creekline' fauna habitat and 0.27 ha of 'Major Drainage' fauna habitat within the Development Envelope, totalling 18.4 ha. Clearing for floodway upgrades in these areas are anticipated to reach up to a value of 7.00 ha based on the works design and a nominal construction footprint buffer.

Infrastructure at 5 Mile Creek and Pentecrost River includes low floodways, of which no alignment change is proposed, which significantly reduces the vegetation clearing required as existing cleared footprints can be utilised. The loss of a small amount of vegetation growing immediately adjacent to these existing floodways is unlikely to result in a loss of associated watercourse values or functions, noting the Pentecost River catchment is largely uncleared and is approximately 894,000 ha in size. Standard construction environmental management measures, such as those outlined in the Vegetation Management Plan (Appendix 2), will be implemented to minimise impacts to watercourse values.

Based on the above, the proposed clearing at variance to this Principle.

**Methodology**

- Ecologia (2022)
- Ecoscape (2024)
- Government GIS shapefiles:
  - Ramsar Sites (Accessed December 2024)
  - Directory of Important Wetlands in Australia – Western Australia (Accessed December 2024)
  - WWYS Geoscience Australia Regional Surface Hydrology Lines (Accessed December 2024)

## (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.**

The Development Envelope intersects two Soil Landscape Systems (Payne and Schoknecht 2011); including the Cockburn System and the Pinkerton Land System. An assessment of the land degradation risks associated with these systems is provided below:

Cockburn System:
This land system is characterised by low hills and undulating plains on shale supporting curly spinifex grasslands or paperbark sparse low woodlands over curly spinifex. This Land system is not usually prone to degradation or erosion, but control of grazing pressure and frequency of burning is desirable to minimise potential degradation. The proposed clearing will not alter existing grazing or fire regimes. No appreciable land degradation is anticipated from the proposed clearing.

Pinkerton System:
This land system is characterised by rugged stony country on sedimentary rocks with gentle slopes adjacent to streamlines may be subject to flash floods. Due to the rugged nature of this soil system, no appreciable land degradation is anticipated from the proposed clearing.
The DWER/ASRIS Acid Sulfate Soil risk mapping indicates that the Development Envelope is primarily classified as Extremely Low Probability of Occurrence. However, there is a approximately 1.97 ha of High Probability of Occurrence within the Development Envelope. Native vegetation clearing is unlikely to oxidise acid sulfate soils, which would be expected at depth below the weathered soil profile.

Given the Soil Landscape Systems in the Development Envelope have a low susceptibility to erosion, and primarily consists of an extremely low risk of interacting with acid sulfate soils, the proposed clearing is unlikely to cause appreciable land degradation.

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

**Methodology**

- Payne and Schoknecht (2011)
- Government GIS Shapefiles:
  - Acid Sulfate Soil Risk Map (Accessed March 2025)

## (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.**

The Development Envelope is not located within, adjacent to, or nearby any conservation areas.

The nearest conservation area is located over 26 km northeast of the Development Envelope.

The nearest Environmentally Sensitive Area is over 40 km northeast of the Development Envelope, around the Parry Lagoons Nature Reserve.

The proposed clearing will not impact any buffers, ecological linkages or environmental values of any conservation areas.

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

**Methodology**

- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters (Accessed March 2025)
  - DBCA Lands of Interest (Accessed March 2025)
  - Ramsar Sites (Accessed March 2025)
  - Directory of Important Wetlands in Australia – Western Australia (Accessed March 2025)

## (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 Development Envelope is not located within or adjacent to a Public Drinking Water Source Area (PDWSA), Surface Water Area, or Country Area Water Supply (CAWS)Clearing Control Catchment. The Development Envelope is located within the proclaimed Canning-Kimberley Groundwater Area under the RIWI Act (GIS databases).

The Development Envelope includes the Pentecost River and the Five Mile Creek (a tributary of the Pentecost River). As outlined in section 1.6, the proposal has been designed to minimise the clearing required at these existing crossings where practicable. The Pentecost River is approximately 275 kilometres long and has a catchment of 8,940 square kilometres (894,000 ha) (Department of Water, 2008). Given the Pentecost River catchment is largely uncleared and clearing is planned to occur during the dry season, the proposed vegetation clearing is unlikely to cause deterioration in the quality of surface or groundwater.

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

**Methodology**

- Department of Water (2008)
- Ecoscape (2024)
- Ecologia (2022)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed March 2025)
  - CAWSA Part 2A Clearing Control Catchments (Accessed March 2025)
  - RIWI Act, Groundwater Areas (Accessed March 2025)
  - Public Drinking Water Source Areas (Accessed March 2025)
  - WWYS Geoscience Australia Regional Surface Hydrology Lines (Accessed March 2025)

## (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.**

The subregional climate is described as dry winter and hot semi-arid summer with a median annual rainfall in the range of 836.4 to 869.3 mm (Wyndham Aero, and Kununurra Aero respectively, Station Numbers 1006 and 2056) (BoM, 2025). Extreme weather events are a significant component of the Kimberley climate. 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.

The proposed clearing will take place in the dry season, reducing the potential escalation of flooding, waterlogging or erosion. No changes to the existing levels of natural flooding are anticipated from the proposed clearing of 7 ha, noting the Pentecost River catchment is approximately 894,000 ha (Department of Water, 2008) As noted above, climatic conditions are the main factor influencing flooding and the proposed clearing will have no measurable influence on flood regimes in the area.

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

**Methodology**

- BoM (2025)
- Department of Water (2008)
- Government GIS Shapefiles:
  - Soil Mapping (Accessed March 2025)
  - Contours (Accessed April 2025)

# 6 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. A Vegetation Management Plan (VMP) has been developed to manage and minimise vegetation clearing for the Proposal (refer to Appendix 2).

# 7 REHABILITATION, REVEGETATION AND OFFSETS

## 7.1 Revegetation and Rehabilitation

No temporary clearing will be undertaken as part of the Proposal activities and therefore no revegetation or rehabilitation will be conducted under CPS 818.

## 7.2 Offset Proposal

No offset proposal is required as the proposed clearing will not result in significant residual impacts to native vegetation within the region.

# 8 COMPLIANCE WITH CPS 818

Table 7 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

**Table 7. 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.<br>**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.<br>**3.** VMP has been completed, refer to Appendix 1.<br>**4.** In accordance with Condition 11 of CPS 818, an offset proposal will be provided to DWER for approval, unless advised in writing that an offset proposal is not required.<br>**5.** A summary of stakeholder submissions received and a statement addressing each of those submissions will be published on Main Roads' 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. | **No** | 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. | **No** | 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:<br>has rainfall greater than 400mm; and,<br>is South of the 26th parallel; and,<br>works are necessary in 'Other than dry conditions'; and,<br>works have potential for **uninfested** areas to be impacted. | **No** | No further action required. |

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **5b.** Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions? | **No** | No further action required. |
| **6.** Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback. | **No** | No further action required. |
| **7.** Weeds are likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition. | **No** | No further action required. |
| **8.** Did an environmental specialist conduct the survey or field assessment? | **Yes** | The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience. |
| **9.** Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal? | **Yes** | The Environmental Specialist preparing the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience. |

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# 10 APPENDICES

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

### Ecologia (2022) Jump up to Pentecost River Upgrade Biological Survey

#### Executive Summary

Main Roads Western Australia (Main Roads) is proposing to upgrade, seal and widen Gibb River Road between SLK 580 to SLK 590. The area covers 365 ha and includes upgrades to the Pentecost River crossing. Main Roads engaged Ecologia Environment to undertake a biological survey of the project area and surrounding area to delineate conservation values and potential sensitivity to impact. The survey will inform Main Roads' future construction and maintenance program to minimise potential impacts to environmental values. Ecologia Environment conducted a single-phase detailed flora and vegetation survey and a basic vertebrate fauna and fauna habitat assessment between 14th and 18th of June 2021.

***Flora and Vegetation Assessment***

A total of 190 vascular plant taxa (species, infraspecific taxa, and phrase names) representing 55 families and 108 genera were recorded during the survey. No EPBC Act (1999) or BC Act (2016) listed Threatened species were recorded. One DBCA listed Priority species was recorded within the survey area: *Goodenia brachypoda* (P1).
Eight introduced plant species were recorded within the survey area. None are listed as Declared Pests or are classified as a Weeds of National Significance (WONS).
Hierarchical agglomerative clustering was conducted using floristic data from 24 quadrats within the survey area. Based on this classification, ten vegetation types were characterised and mapped, with vegetation consisting mainly of *Terminalia canescens, Terminalia hadleyana, Cochlospermum fraseri* low open woodland on clay/clay-loam hills and undulating plains and *Corymbia opaca, Buchanania oblongifolia, Cochlospermum fraseri, Terminalia hadleyana* low woodland on silty, clay, loam low hills and undulating plains. Vegetation within the survey area was mostly in 'Very Good' to 'Excellent' condition. None of the vegetation types are considered significant based on available data.

***Fauna and Fauna Habitat Assessment***

Fauna habitat assessments were undertaken at 32 sites to describe representative habitat types present within the survey area. Additional opportunistic searches for reptiles were conducted at 10 locations where piles of rocks and boulders were present. Four fauna habitat types were identified within the survey area: Low Rocky Hill, Creekline, River and Floodplain. All habitat types are considered generally common at a local and regional level and were not restricted to the survey area. Habitat condition ranged from 'Good' to 'Excellent' with evidence of introduced herbivores and clearing contributing to lower condition ratings for several assessment sites. Evidence of recent fire (<1 year) was recorded at six habitat assessment sites (HA01-HA03 and HA09-HA11).
Sixty-eight vertebrate fauna species were recorded during the survey including three mammals (one introduced), 52 birds and 13 reptiles. Fauna recorded during the survey were generally common and are not restricted to survey areas. One Threatened species, the Gouldian finch (*Chloebia gouldiae* [EN EPBC Act, P4 BC Act]) was recorded at site HA18 and suitable habitat for this species is present in the River, Creekline and Floodplain habitat types. An additional four Migratory birds protected under international agreements (Caspian tern, common greenshank, common sandpiper and gull-billed tern) have previously been recorded within the survey area; however, these species were not observed during the current survey.

The post-survey likelihood of occurrence assessment identified six significant birds (glossy ibis, osprey, peregrine falcon, purple-crowned fairy-wren, partridge pigeon and grey plover) considered 'Likely' to occur within the survey area based on the presence of suitable habitat and proximity (<10km) of DBCA Threatened and Priority Fauna Database records.

Two reptiles (the Australian freshwater crocodile and salt-water crocodile) and one mammal (northern leaf-nosed bat) were assessed as to 'Possible' occur within the survey area due to distance of records from the survey area and limited availability of suitable habitat. The dwarf sawfish was also assessed as 'Possible' to occur within the survey area, despite the age of DBCA Threatened and Priority Database records (most recent 1989), as the species was historically recorded 3 km from the survey area within a Pentecost River tributary and has a lifespan of approximately 50 years. An additional eleven Migratory birds are considered 'Possible' to occur within the survey area; however, usage of habitat within survey area by these species is likely to be restricted to intermittent visitation on a seasonal basis.

### Conclusions

No Conclusions section was included in the report.

## Ecoscape (2024) Gibb River Road to Home Valley Station Biological Survey

### Executive Summary

Main Roads Western Australia (Main Roads) proposes to upgrade the Home Valley section of the Gibb River Road between SLK 562 and 594, approximately 91 km west of Kununurra at the closest point, in the Kimberley region of Western Australia.

Main Roads appointed Ecoscape to undertake a Detailed and Targeted flora and vegetation plus a Basic and Targeted terrestrial vertebrate fauna survey of 10 parcels of survey area (totalling 405.91 ha) that have not been previously surveyed plus a Targeted flora survey of two parcels of survey area (totalling 301.09 ha) to supplement the results of a previous survey. The outcome of the assessments will be used to inform the environmental assessment and approvals process and may assist in the preparation of Environmental Impact Assessment documentation.

Prior to undertaking the field surveys, an initial desktop assessment was completed. The key findings of the desktop assessment were:

- four pre-European vegetation associations intersect the survey area, each with greater than 97% of their statewide extent remaining.
- two Priority Ecological Communities identified by the database search from within 40 km (the 'study area'); neither of these have been recorded within the survey area. The nearest PEC occurrence is 1.46 km from the survey area (Vegetation Association 838).
- 25 conservation-listed flora were identified as having been recorded within the study area by the database searches consisting of one Threatened Flora, 11 Priority 1, five Priority 2 and eight Priority 3. One P1 (*Goodenia brachypoda*) and one P3 (*Brachychiton incanus*) have been previously recorded from within the survey area. One P1 (*Goodenia heterotricha*) was

identified as being Likely to occur based on the information available during the desktop assessment. A further three conservation-listed flora taxa that 'may occur' within the survey area (*Euploca cupressina*; P1, *Grevillea latifolia*; P2 and *Tephrosia* sp. Mistake Creek (A.C. Beauglehole 54424); P3) were also prioritised for field survey.

- 31 conservation-listed fauna species were identified by the DBCA database search within the study area including five mammals, 25 birds and one reptile. One conservation-listed fauna species has been previously recorded within the survey area and a further three were assessed as Likely to occur.

The field surveys were conducted during 7-16 June 2024 following a period of above-average rainfall. The key outcomes and findings from the flora and vegetation field surveys and subsequent analysis were:

- 42 floristic quadrats established within the survey area.
- 305 vascular flora recorded from the survey area, including:
  - six conservation-listed flora; *Euploca cupressina* (P1), *Goodenia brachypoda* (P1), *Goodenia heterotricha* (P1), *Tephrosia cardiophylla* (P1), *Dolichandrone filiformis* (P2) and *Brachychiton incanus* (P3).
  - 16 introduced flora including one Declared Pest (**Calotropis procera*).
- thirteen vegetation types from four landform types (low hills/slopes, plains, drainage lines and wetlands/depressions) including:
  - no vegetation types considered representative of any TEC or PEC
  - two vegetation types considered representative of Groundwater Dependent Vegetation (GDV) including **TbAhMr** and **AtTb**, corresponding with Bindoola Creek and the Pentecost River respectively. A further two vegetation types may be considered as potential GDV (**EoEs** and **MvSsFt**).
- the vegetation condition ranged from Good to Excellent with the majority in Excellent (56.70%) or Very Good condition (33.89%). The main factors affecting vegetation condition were presence and abundance of weeds, grazing by cattle and historical clearing.

The findings of the vertebrate fauna field surveys were:

- five distinct habitat types were recorded from within the survey area: Low hills, Major drainage, Minor drainage, Plains and Floodplain. None are of local or regional significance and are abundant in the landscape.
- 75 vertebrate fauna species; including four conservation-listed/of conservation interest: Gouldian Finch (EN EPBC and P4 DBCA status), Freshwater Crocodile (OS DBCA status), Peregrine Falcon (OS DBCA status) and Rainbow Bee-eater (MA EPBC status).

## Conclusions

No Conclusions section was included in the report.

## Appendix 2: Vegetation Management Plan

### FIVE MILE CREEK AND PENTECOST RIVER UPGRADES

**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 Five Mile Creek and Pentecost River Upgrades.

Main Roads proposes to upgrade two floodways on Gibb River Road, including Five Mile Creek and the Pentecost River. The road will be sealed on either side of these floodways to increase road safety and reduce maintenance requirements in these areas. Materials for these upgrades will be supplied from strategic material pits approved under Main Roads' statewide clearing permit, CPS 818.

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.

Actions, and their relevant timeframes, from this VMP will be documented within the relevant Tender Documentation (Specifications), such as:

- Specification 204 Environmental Management
- Specification 301 Vegetation Clearing and Demolition
- Specification 303 Materials and Water
- Specification 304 Revegetation
- Specification 304 Rehabilitation of Disturbed Areas.

Once the Contract has been awarded, the Superintendent's Contract Management Team (or equivalent roles) are to ensure that the requirements are implemented by the Contractor.

**Avoiding, Mitigating and Managing the Impacts of Clearing**

A number of measures were undertaken to during the development and design of the proposal to reduce its impact the environment.

For further information on the alternatives that were considered during the proposal development, please go to Section 1.5 of the Clearing Assessment Report for the proposal.

For further information on the measures undertaken to avoid, minimise, reduce and manage the proposal's clearing impacts, please go to Section 1.6 of the Clearing Assessment Report for the proposal.

**VMP Actions**

General vegetation management actions to be undertaken is shown in Appendix 1.1: General Vegetation Management Actions for Clearing.

## Appendix 2.1: General vegetation management actions for clearing

| Management Action | Responsibility | Timing |
|---|---|---|
| Ensure plant, machinery and equipment, is cleaned down prior to arrival to the site. | Project Delivery Manager | During construction |
| Vehicle hygiene inspection checklists will be utilised to manage potential weed/dieback spread on earth-moving machinery. | Project Delivery Manager | During construction |
| No known infested soil, mulch, fill or other material will be permitted into the works area. | Project Delivery Manager | During construction |
| All Clearing must be undertaken in such a way to allow fauna to move out of the Clearing area. | Project Delivery Manager | During construction |
| The Limits of Vegetation Clearing will be demarcated on site prior to the commencement of clearing to prevent entry into areas of native vegetation. | Project Delivery Manager | During construction |
| Natural drainage pathways will not be obstructed from stockpile gravel, crushed rock and excavated material. | Project Delivery Manager | During construction |
| All recently cleared, exposed and loose surface areas shall be protected from wind, water and soil erosion. | Project Delivery Manager | During construction |
| The clearing of native vegetation is only undertaken in dry conditions, unless otherwise approved and / or directed by the Project Delivery Manager. | Project Delivery Manager | During construction |
| All Special Environmental Areas will be pegged in accordance with Main Roads' Drawing 201928-0001-1 Construction Peg Colour Code (https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/standard-contract-drawings/vegetation/construction-environmental-management/201928-0001-construction-peg-colour-code-drawing.pdf?v=49bd3b). | Project Delivery Manager | During construction |
| A Site induction training program as part of the CEMP that includes as a minimum, the significant environmental impacts, actual or potential, of work activities associated with the project. | Project Delivery Manager | During construction |

Main Roads' preclearing **Hold Point** applies to all projects that require vegetation clearing, as documented within Specification 301 (301.12 PRE-CLEARING PROCESS). Accordingly, all Hold Point actions must be signed off prior to clearing commencing. This Hold Point comprises the following actions:

1. Prior to the commencement of any clearing operations, the Contractor must certify for the Superintendent's verification and approval that the following activities have been completed in accordance with the relevant specification:

   a) The pegging of limits of vegetation clearing has been undertaken.

   b) The pegged vegetation clearing area does not exceed the Limits of Vegetation Clearing.

   c) Mature trees have been conserved as far as practicable.

   d) The pegging of special environmental areas has been undertaken.

   f) All pre-clearing weed control has been undertaken.

   g) All pre-clearing fauna operational controls have been undertaken.

   h) Suitable and unsuitable topsoil zones have been identified.

   i) Vegetation and topsoil stockpile locations have been identified.

   j) All clearing machinery is compliant with controls.

**Monitoring and Maintenance Program**

The Project Delivery Manager(or equivalent role(s)) shall monitor the implementation of management actions that are a **Hold Point**. **Hold Point** actions must be signed off by the Project Delivery Manager's Representative to confirm it has occurred and recorded within the relevant Management Plan(s).

**Non-Compliance**

Non-compliance with management actions will trigger corrective actions, preventative actions and/or an incident investigation. Non-compliances will be recorded with Main Roads incident management system and reviewed by Main Roads Manager Environment.

The need for reporting non-compliances with VMP management actions to DWER will be determined as part of an incident investigation.

**Revegetation**

Revegetation will be undertaken in accordance with Condition 9 of CPS 818. Relevant requirements from Condition 9 have been incorporated into Project Revegetation Plan Template. The elements to be implemented by the Contractor will be incorporated into the relevant Specification 304.