Clearing Assessment Report – CPS 818

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Northam-Pithara Road (M032) Seal Widening SLK 5.8 – 27.00

December 2021

2185

D21#880801

Contents

1 PURPOSE

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

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

2 SCOPE

2.1 Project Scope

Project Name: Northam-Pithara Road (M032) Seal Widening SLK 5.8-27

Project Purpose / Components: The project involves the widening of Northam-Pithara Road between Straight Line Kilometre (SLK) 5.8 and SLK 27 to accommodate a 9m sealed formation. The aim of this project is to reduce the number of 'run off road' crashes by improving the safety and functionality within this road segment. The M032 road upgrade comprises:

- Widening to a 9m sealed formation;
- Culvert extensions as required to achieve 9m formation;
- Construction of table drains; and
- Rehabilitation of SLK 21 – 27.

The proposed clearing undertaking using CPS 818 is: Up to 1.45 ha.

The proposed temporary clearing undertaking using CPS 818 is: None.

Project Location(s): The project area is located on Northam-Pithara Road (M032), between the towns of Northam and Goomalling (SLK 5.8-27), within the Shires of Northam and Goomalling as shown in Figure 1.

The location of the proposed works is at Figure 1, with map series provided in Appendix 1.

2.2 Assessment Report Scope

The assessment area, see Figure 2, is confined to a local area of a 20km radius.

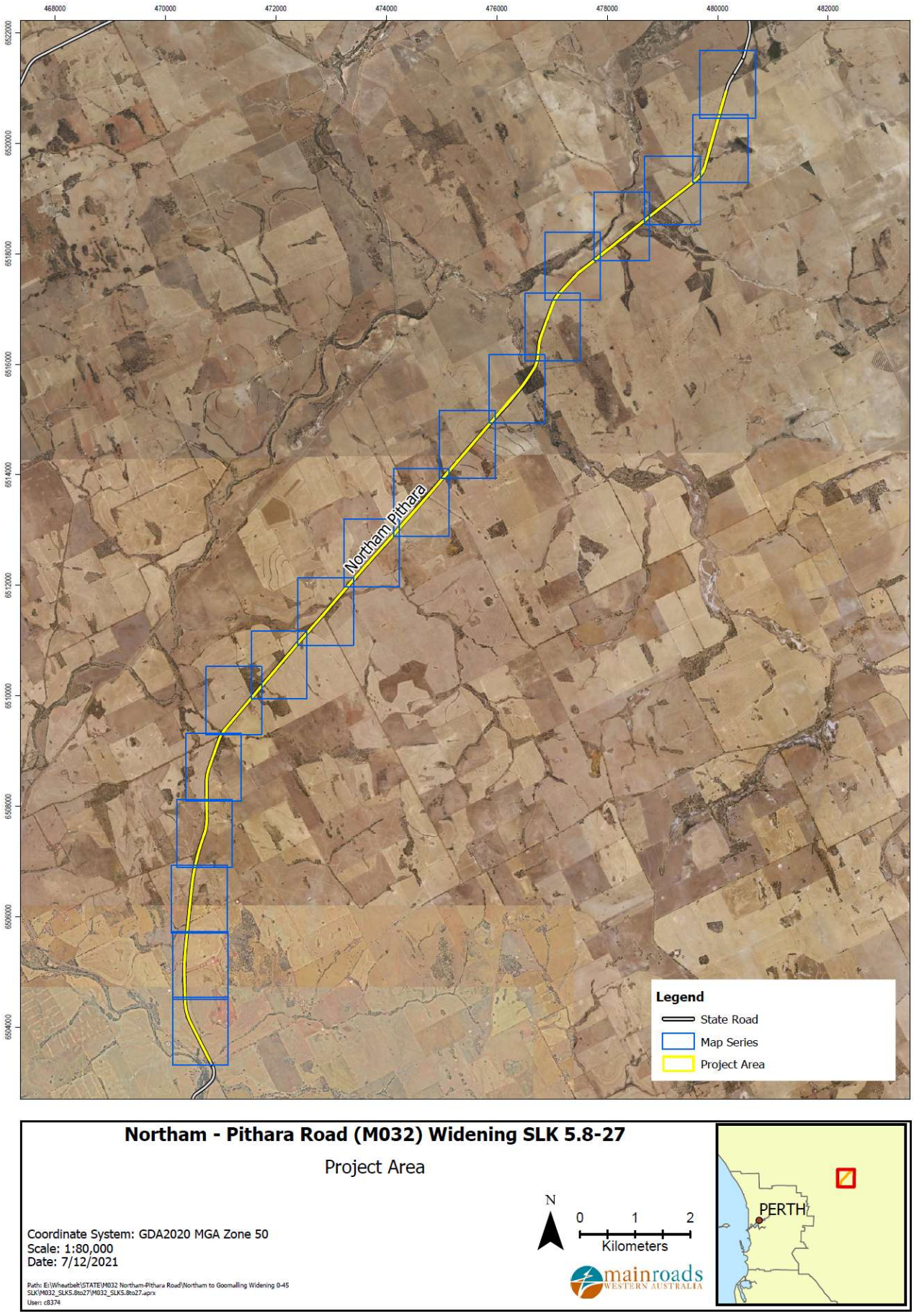

Figure 1. Project Area

Figure 2. Assessment Area

2.3 Alternatives to clearing

Alternatives to clearing were not feasible as the proposal involves widening the existing M032 road. Existing cleared areas along the roadside will be utilised where possible to reduce clearing.

The proposed road improvements will enhance road user safety by providing a widened sealed shoulder.

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

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

Table 1. Measures undertaken to Avoid, Minimise, Reduce and Manage the Project Clearing Impacts

Design or Management Measure	Discussion and Justification
Steepen batter slopes	The chosen work method of profiling and exsitu stabilisation of the road shoulders will mean that there will be limited intrusion into the adjacent verge, almost all of the work to form and seal the shoulders being able to be done from the roadway. However where the table drains need to be re-formed, such as at locations where the culverts need to be extended, the cut batter slopes on the back side of the drains can be formed steeper to lessen the clearing required to form the drains. Front batter has been reduced from the maximum requirement of 1:6 pavement batter to 1:4 minimum that can be adopted to reduce the clearing impact.
Installation of safety barriers	Between SLK 18.2-SLK 18.7, clearing footprint has been reduced to 6.5 m to save 18 trees and it has been proposed to install safety barrier in this location based on assessment during construction.
Alignment to one side of existing road	This is not a suitable measure as the works are being undertaken on the existing formation and within the maintenance areas, i.e. there is no realignment or adding of additional traffic lanes involved.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	This is not a suitable measure as the works are being undertaken on the existing formation and within the maintenance areas, i.e. there is no realignment or adding of additional traffic lanes involved.
Installation of kerbing	As the works are for the most part being done on the existing rural open road highway raised formation and within the existing maintenance zone, incorporating kerbing would not provide any material benefit in lessening the construction footprint but would significantly add to the cost of the works.
Simplification of design to reduce number of lanes and/or complexity of intersections	The design is already very simple, with works outside of the existing road formation footprint and maintenance zone kept to a minimum. The widening works cannot be further simplified whilst retaining the necessary safety benefits and construction integrity. Locations where there are side roads the seal should tie into existing road without environmental impact.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	All the works will utilise where possible existing cleared areas other than the localised clearing needed for the shoulder/formation width and culvert extensions. No clearing will be required for access tracks, construction storage and stockpiling.
Drainage modification	Refer above to "steepen batter slopes"
Other Design Treatments	Pavement thickness has been reduced to 200mm with stabilisation from 250mm un-stabilised pavement thickness to minimise the construction footprint, hence also minimising environmental clearing footprint.

2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* (EP Act) and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations)*.

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

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

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

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

3 SUMMARY OF SURVEYS

3.1 Summary of Biological Survey

The M032 Northam Pithara Road 0 – 45 SLK Widening Biological Survey was conducted on 9-14 November 2020 by Ecoscape (Australia) Pty Ltd (Ecoscape 2021, D21#333294). The survey included a desktop study, followed by detailed and targeted flora and vegetation survey, basic fauna survey and a targeted Black Cockatoo habitat assessment. It is noted that this survey covered areas beyond the current proposal.

The key findings of the biological field survey are detailed below.

Flora:

- at least 151 vascular flora species (including 48 introduced species) were recorded from 28 floristic quadrats and during opportunistic observations
- no Threatened or Priority flora were recorded
- one Declared Pest plant (**Echium plantagineum*, Patterson's Curse, recorded sporadically) and one Weed of National Significance (**Tamarix aphylla*, Athel Pine, recorded from two locations). None were recorded within the current proposal area.

Vegetation:

- six native vegetation types:
  - **AcGpRpS**: *Allocasuarina campestris, Grevillea paniculata* and *Rhagodia preissii subsp. preissii* tall shrubland/chenopod shrubland
  - **ElAaW**: *Eucalyptus loxophleba subsp. loxophleba* and *Acacia acuminata* mid woodland
  - **EsElW**: *Eucalyptus salmonophloia* and *Eucalyptus loxophleba subsp. loxophleba* mid woodland
  - **EwAaW**: *Eucalyptus wandoo* and *Acacia acuminata* mid woodland
  - **CoF**: *Casuarina obesa* mid open forest (wetland or wetland fringe)
  - **TlFpSS**: *Tecticornia lepidosperma* and *Frankenia pauciflora* mid samphire shrubland/shrubland (wetland)
- each patch of the Eucalypt woodland vegetation types (**ElAaW**, **EsElW** and **EwAaW**) were assessed for inclusion in the TEC/PEC; three occurrences of the Eucalypt woodlands of the Western Australian Wheatbelt (federal TEC, state PEC Priority 3) were identified
- the vegetation condition ranged from Completely Degraded to Very Good, with the majority of the survey area being devoid of native vegetation (61.91 ha; 36.39%) or in Degraded-Completely Degraded condition (104.08 ha; 61.19%). 4.11 ha (2.42%) was in Very Good-Good condition.
- wetlands occur in un-named Nature Reserve R 1563 and Cartamulligan Well Nature Reserve and associated with Jennapullin Brook, although the vegetation in this latter area is Degraded-Completely Degraded or absent.

Fauna:

- two fauna habitat types in native vegetation (Woodland (107 ha; 62.97%) and Samphire Shrubland (1.07 ha; 0.63%)), plus Cleared/Farmland habitat (61.91 ha; 36.39%).
- 35 vertebrate fauna species were recorded including Carnaby's Cockatoo (*Calyptorhynchus latirostris*), listed as Endangered under the EPBC and BC Acts, and Rainbow Bee-eater (*Merops ornata*) listed as Marine under the EPBC Act, as well as Common Brushtail Possum (*Trichosurus vulpecula hypoleucos*) which, although not conservation-listed, is uncommon in the area.
- 289 trees of suitable diameter at breast height (DBH) to be Black Cockatoo habitat trees were recorded; two are Class 2 trees with hollows suitable for use by Black Cockatoo species and

evidence of use (both Salmon Gum); 46 were Class 3 (having suitable hollows but no evidence of use) and 241 were Class 4 or Class 5 that are of suitable size to potentially develop nest hollows in the future.

- the Woodland habitat type is considered as medium-poor quality foraging habitat for Carnaby's Cockatoo; the Samphire Shrubland is unlikely to provide foraging habitat for Carnaby's Cockatoo.
- Western Quolls have a Medium likelihood of occurring within the survey area, although only as occasional visitors and not dependent on the habitat available within it.
- Peregrine Falcon have a Medium likelihood of occurring as occasional visitors.
- Red-necked Stint and Wood Sandpiper – Migratory Species (MI) and Blue-billed Duck – DBCA P4 have a Medium likelihood of occurring but would not be dependent on the habitat available within the survey area and would only occur briefly or overflying the site.

3.2 Summary of Potential Black Cockatoo Breeding Hollow Survey

Tony Kirkby completed a field survey on 28th July 2021 (D21#794634) to assess the potential Black Cockatoo breeding trees identified during Ecoscape (2021) survey. The identified trees were of suitable DBH for use by Black Cockatoos and contained hollows.

Hollows were inspected from ground level using binoculars for signs of chewing and wear at the entrance, followed by inspection using a pole camera to assess entrance and internal size.

41 tree hollows present in 29 trees were inspected and assessed for the presence/suitability of breeding by Black Cockatoos.

The key findings of the survey were as follows (Kirkby. A, 2021):

- None of the hollows identified were suitable for use by Black Cockatoos as breeding hollows.
- 29 hollows were too small at the entrance (<100 mm). The two hollows noted as having chew markings, were also found to be too small with the marking likely made by parrots.
- Hollows with suitable entrance (>100 mm) were found to be blocked, too small internally or not actual hollows.
- 1 hollow was found to contain duck eggs, however the internal diameter was approximately 200 mm and too small to be used by Black Cockatoos as a breeding hollow.

3.3 Summary of Dieback Review

The project area receives an average rainfall between 425.7mm (Northam) and 363.8 mm (Goomalling) per year (BOM, 2021 & BOM, 2021a). The need for a dieback survey was reviewed in consultation with a *Phytophthora* dieback specialist who advised that given the majority of the proposed native vegetation to be cleared is in degraded to completely degraded condition, it would be deemed uninterpretable for dieback and therefore no assessment would be required.

The Wheatbelt TEC/PEC and DBCA managed lands adjacent to the project area are within a rainfall area of <400 mm/year and therefor have a lower risk of dieback. Biological Survey (Ecoscape, 2021) covered a 40 m corridor (centred over the road) with the vegetation condition of DBCA managed lands abutting the road reserve mapped as being in degraded.

Main Roads considers that dieback can be effectively managed through the Project Environmental Management Requirements.

4 VEGETATION DETAILS

4.1 Project Site Vegetation Description

The proposal is located in the Avon Wheatbelt bioregion within the shires of Northam and Goomalling. Cleared agricultural land and patches of remnant native vegetation surround the proposal area.

The vegetation of the local area is highly disturbed, with little or no remnant native understory and infestations of introduced pastoral grasses and weeds. The vegetation to be cleared occurs along an existing transport corridor with approximately 95.8% of the proposal area already cleared (road) or non-native vegetation (pastoral grasses/weeds).

A biological survey conducted along the Northam-Pithara Road mapped four native vegetation associations within the clearing area (Ecoscape, 2021), as described in Table 2.

The condition of the native vegetation within the clearing area ranges from good to completely degraded as detailed in Table 3.

Table 2. Native vegetation types to be cleared under CPS 818-15

Vegetation Type	Description	Proposed Clearing Area (ha)
ElAaW	*Eucalyptus loxophleba* subsp. *Loxophleba* and *Acacia acuminata* mid woodland over *Rhagodia preissii* subsp. *preissii* mid sparse chenopod shrubland over *Austrostipa elegantissima*, **Avena barbata* and **Ehrharta longiflora* low tussock grassland/grassland	1.13
EsElW	*Eucalyptus salmonophloia* and *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over *Atriplex semibaccata, Maireana brevifolia* and **Avena barbata* low open chenopod shrubland/grassland	0.23
EwAaW	Eucalyptus wandoo and *Acacia acuminata* mid woodland over *Grevillea paniculate* and *Trymalium daphnifolium* mid open shrubland over *Austrostipa elegantissima*, *Gastrolobium plicatum* and **Avena barbata* low tussock grassland/shrubland/grassland	0.02
CoF	*Casuarina obesa* mid open forest over *Rhagodia preissii* subsp. *preissii*, **Ehrharta longiflora* and *Frankenia pauciflora* midlow chenopod shrubland/grassland/shrubland	0.07
Total		**1.45**

Table 3. Native Vegetation Condition to be cleared under CPS 818-15

Vegetation condition (EPA, 2019)	Proposed Clearing Area (ha)
Good	0.07
Degraded	0.24
Completely Degraded	1.14
Total	**1.45**

Tables 4 and 5 provide details of the Pre-European Vegetation Associations within the project area and the remaining extents of these associations. Vegetation associations 352 and 1049 have less than 30% of its pre-European extent remaining in the State, bioregion, subregion and Local Government Shire (Table 5). Vegetation Association 988 has less than 30% of its pre-European extent remaining in the bioregion.

According to the current mapped remnant vegetation (Geographic Information Services, D. 2016), 13% of the study area, 20 km radius, is remnant vegetation.

Table 4. Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 352 described as a Medium woodland; York gum (Government of Western Australia, 2019)	Clearing of up to 1.45 ha for road widening and overlay on Northam-Pithara Road.	Degraded to Completely Degraded (EPA 2016)	Vegetation description and condition determined from biological survey (Ecoscape, 2021)
Vegetation Association 988 described as a Succulent steppe with thicket; *Melaleuca thyoides* over samphire (Government of Western Australia, 2019)		Degraded to Completely Degraded (EPA 2016)	
Vegetation Association 1049 described as a Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet		Good to Completely Degraded (EPA 2016)	

Table 5. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 352	**Statewide** *352 (York)*	*724,268.73*	*142,012.22*	*19.61*	*1.75*
	IBRA Bioregion *Avon Wheatbelt*	*630,577.61*	*108,887.52*	*17.27*	*1.62*
	IBRA Sub-region *Katanning*	*337,871.73*	*36,295.58*	*10.74*	*0.23*
	Local Government Authority *Northam*	*66,825.54*	*7,623.24*	*11.41*	*0.45*
Veg Assoc No. 988	**Statewide** *988 (Goomalling)*	*96,635.23*	*29,324.55*	*30.35*	*4.60*
	IBRA Bioregion *Avon Wheatbelt*	*94,338.35*	*27,553.73*	*29.21*	*3.88*
	IBRA Sub-region *Katanning*	*27,112.25*	*8,712.67*	*32.14*	*1.19*
	Local Government Authority *Goomalling*	*14,452.44*	*8,910.00*	*61.65*	*0.56*

Veg Assoc No. 1049	**Statewide** *1049 (York)*	*833,384.77*	*56,618.34*	*6.79*	*0.41*
	IBRA Bioregion *Avon Wheatbelt*	*833,384.77*	*56,618.34*	*6.79*	*0.41*
	IBRA Sub-region *Katanning*	*255,402.63*	*20,572.75*	*8.06*	*0.15*
	Local Government Authority *Northam*	*14,932.70*	*851.56*	*5.70*	-
	Local Government Authority *Goomalling*	*79,902.05*	*8,861.02*	*11.09*	*0.04*

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with DWER's 'A Guide to the Assessment of Applications to Clear Native Vegetation' and other relevant CPS Decision Reports prepared by DWER.

The proposed clearing is at or may be at variance with one or more of the 10 Clearing Principles.

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

Proposed clearing may be at variance to this Principle

Comment

The project will require the clearing of up to 1.45 ha of native vegetation. Condition of the vegetation proposed to be cleared ranges between good and completely degraded, with majority of the vegetation (82%) in completely degraded condition.

The project area comprises the following four vegetation types (Ecoscape 2021), which are considered typical of those occurring in the local area:

- **ElAaW**: *Eucalyptus loxophleba subsp. loxophleba* and *Acacia acuminata* mid woodland
- **EsElW**: *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland
- **EwAaW**: *Eucalyptus wandoo* and *Acacia acuminata* mid woodland
- **CoF**: *Casuarina obesa* mid open forest (wetland or wetland fringe)

Database searches indicated that 33 Threatened and 63 Priority flora species have been recorded or may be likely to occur within 20km of the survey area. Two Threatened flora and 3 Priority flora were considered by Ecoscape (2021) as having a Possible likelihood of occurring within the project area (prior to field survey).

A detailed and targeted survey for vegetation and flora was undertaken in November 2020 (Ecoscape, 2021), extending well beyond the boundary of the current project area. It identified 151 vascular flora species within the survey area. 48 flora species identified were introduced, including one Declared Pest plant (**Echium plantagineum*, Patterson's Curse, recorded sporadically) and one Weed of National Significance (**Tamarix aphylla*, Athel Pine, recorded from two locations). *Tamarix aphylla* was located two the east of the proposal area (25.8 SLK and 11.7 SLK) and *Echium plantagineum* was located west of the proposal area (9.54 SLK).

None of the identified flora species were Threatened or Priority species. Furthermore, the post-survey assessment considered that all significant flora species were either unlikely or highly unlikely to occur within the project area (Ecoscape, 2021).

A desktop study indicated that the project area intersects potential occurrences of, or the buffer of, the *Eucalypt Woodlands of the Western Australian Wheatbelt* federal TEC / state PEC (Wheatbelt TEC/PEC). The biological survey (Ecoscape, 2021) identified one area of vegetation within the proposed clearing area that represents Wheatbelt TEC/PEC. The project proposes to clear 0.06 ha along the edge of an 8.71 ha patch of Wheatbelt TEC/PEC within the road reserve on the eastern side of the Northam-Pithara road. The vegetation to be cleared equates to 0.61% of the total Wheatbelt TEC/PEC patch area and is within the original construction footprint of the roadway.

The proposed clearing area comprises one fauna habitat type: Woodland.

Database searches identified 33 significant fauna species as having been recorded or potentially occurring within 20km of the project area. Three were assessed as having a high likelihood of occurring (prior to field survey), being:

- Western Quoll (*Dasyurus geoffroii fortis*)
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*)
- Peregrine Falcon (*Falco peregrinus*)

Thirty six (36) vertebrate fauna were recorded during the biological survey (Ecoscape, 2021) consisting of four mammals (two introduced), 30 birds and two reptiles. Results of the post survey assessment of likelihood of occurrence indicated that the following species retained a high likelihood of occurrence or were recorded within the survey area.

- Carnaby's Cockatoo (recorded)

As assessed under principle b, the proposed clearing area comprises 1.45 ha of suitable foraging habitat (low to medium quality) for Carnaby's Cockatoo and 88 DBH trees, with no hollows suitable for black cockatoo breeding (Ecoscape 2021, Kirkby 2021).

The native vegetation proposed to be cleared is not considered to comprise a high level of biological diversity due to its largely degraded condition and lack of significant fauna and flora species. However, as the proposed clearing area contains 0.06 ha of the Wheatbelt TEC/PEC, the clearing may be at variance to this principle.

Methodology

Biological Survey (Ecoscape, 2021)
DBCA shapefiles
Department of Natural Resources and Environment (2002)
EPA (2016, 2020)
Government of WA (2013)
Main Roads GIS Shapefiles
Kirkby (2021)

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

Proposed clearing is at variance to this Principle

Comment

The proposed 1.45 ha clearing area comprises one fauna habitat type: Woodland, in mostly Completely Degraded condition (79%). The woodland habitat type provides potentially suitable habitat for a range of fauna species and is widespread in the region.

Based on the desktop likelihood assessment the following fauna species were considered by Ecoscape (2021) as having a high likelihood of occurrence within the project area (prior to field survey).

- Western Quoll (*Dasyurus geoffroii fortis*) – Threatened, Vulnerable
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – Threatened, Endangered
- Peregrine Falcon (*Falco peregrinus*) – Other specially protected species

The following species were considered to have a medium likelihood of occurrence.

- Red-necked Stint (*Calidris ruficollis*) - Migratory
- Black Bittern (*Ixobrychus flavicollis australis* (southwest subpop.)) – Priority 2
- Blue Billed Duck (*Oxyura australis*) – Priority 4
- Wood Sandpiper (*Tringa glareola*) - Migratory

- Shield Backed Trap Door Spider (*Idiosoma nigrum*) – Threatened, Endangered (WA), Vulnerable (federal)
- Mortlock River Shield Backed Trapdoor Spider (*Idiosoma schoknechtorum*) – Priority 3

Thirty six (36) vertebrate fauna were recorded during the biological survey (Ecoscape ,2021) with results of the post survey assessment of likelihood of occurrence indicating that the following species retained a high likelihood of occurrence or were recorded within the survey area.

- Carnaby's Cockatoo (recorded)

Five other species retained/were assessed as medium likelihood of occurrence post-survey.

- Western Quoll (likely occasional visitor)
- Peregrine Falcon
- Red-necked Stint
- Blue Billed Duck
- Wood Sandpiper
- Shield Backed Trap Door Spider
- Mortlock River Shield Backed Trapdoor Spider

Black Cockatoo Habitat Assessment

The project occurs within the mapped distribution of the Carnaby's Cockatoo (EPA, 2019), and the clearing area includes 1.45 ha of potentially suitable (low-medium quality) foraging habitat for Carnaby's Cockatoo.

Ecoscape (2021) concluded that, Carnaby's Cockatoo generally roost at night in riparian areas near fresh water (DSEWPaC 2012), none of which was recorded within the proposal area as all creek crossings were in saline areas or without water. There may be farm dams with fresh water nearby and as such the survey area may be used as a night roosting area. Tall trees within the survey area indicated that day roosting may occur however, overall, the foraging habitat is likely to be considered as low-medium quality due to the lack of suitable foraging species.

Carnaby's Cockatoo have been recorded from near Northam, although there are no recorded roost sites nearby. No Carnaby's Cockatoo breeding sites have been recorded within the survey areas or context area, with the nearest confirmed breeding area indicated by buffer edges approximately 11-33 km west of the proposed clearing areas.

168 trees with Diameter Breast Height (DBH) suitable for future nesting hollow development were recorded within or adjacent to the project area. Proposed clearing will result in the removal of up to 88 DBH trees, with a further 80 DBH trees retained. An assessment of 41 hollows present in 29 trees, within and adjacent to the proposal area found no hollows suitable for breeding by Black Cockatoos (Kirkby, 2021).

Overall, the species may utilise the clearing area for occasional foraging but is unlikely to currently utilise any of the identified trees or habitat within the clearing area for breeding or roosting.

Assessment of other Conservation Significant Fauna

Both the Western Quoll (*Dasyurus geoffroii*), also known as Chuditch, and Peregrine Falcon (*Falco peregrinus*) were considered pre-survey to have a High Likelihood of occurring with the area. Post survey the Western Quoll was re-evaluated as having a Medium Likelihood of occurring within the survey area, although only as occasional visitor and not depended on the habitat available within it, with riparian areas likely to be used during traverses on occasion. The Peregrine Falcon was re-evaluated as having a medium likelihood post survey, of occurring as occasional visitors due to the lack of rocky cliffs or significant rocky outcrops within the survey area.

Three species of waterbirds retained a medium post-survey likelihood of occurring in the area, being:

- Red-necked Stint (*Calidris ruficollis*)
- Wood Sandpiper (*Tringa glareola*)
- Blue-billed Duck (*Oxyura australis*)

None of these bird species would be dependent on the habitat or resources available with the proposal area and are considered likely to overfly the survey area during searches for more suitable habitat as there is no suitable habitat for these species present.

In the Wheatbelt, habitat critical to the Shield-backed Trapdoor Spider is identified as open York gum, Salmon Gum and Wheatbelt Wandoo woodland, where JAM (Acacia acuminata) forms a sparse understory in heavy clay soils (Department of the Environment, 2021). Within the project area 1.15 ha of vegetation types EwAaW and ElAaW represent the habitat suitable for Shield-backed Trapdoor Spider species. This area represents 70% of the total native vegetation unit to be cleared. Whilst the vegetation type is a suitable habitat, the soil type of the vegetation unit is described by Ecoscape (2021) as being red brown sandy loam and pale sandy clay. This soil type does not represent the heavy clay soils preferred by the species. The nearest record which dates back to 1952 is located 1.1 km east of the project area in a patch of remnant vegetation.

The Shield-backed Trapdoor spider is not expected to occur in the project area as it was not recorded during the biological survey and the soil of the project area is sandy rather than clayey. In addition, the vegetation to be cleared is located largely in disturbed areas that have been invaded by weeds and only a narrow strip on the roadside will be cleared. As such the vegetation proposed to be cleared does not represent significant habitat.

The Mortlock River Shield Backed Trapdoor Spider (*Idiosoma schoknechtorum)* is a recently recognised species with a restricted distribution in the central-western Wheatbelt and north-eastern Jarrah Forest bioregion of south-western Western Australia (Rix et al, 2018). Limited information is available regarding the biology and habitat requirements of the species, however Rix et al. (2018) describes the species as being very similar to *Idiosoma nigrum* in most respects. As such Main Roads assumes the species is likely to have similar habitat requirements and that the vegetation proposed to be cleared does not represent significant habitat.

Based on the above assessment, the vegetation proposed to be cleared is not expected to represent significant habitat for native fauna species. However, considering the extensively cleared nature of the local area, the proposed clearing is at variance with this principle.

Methodology

Biological Survey (Ecoscape 2021)
DBCA Shapefiles
DBCA website
EPA (2016, 2020)
Kirkby (2021)

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

Proposal is not at variance to this Principle

Comment

Database searches identified 13 Threatened flora species that are known to occur in the study area (20 km radius). Ecoscape (2021) conducted a pre-survey likelihood of occurrence assessment of Threatened flora and identified the following two flora species as having the potential to occur in the project area:

- *Daviesia euphorbioides*
- *Grevillea christineae*

No Threatened flora were recorded during the project biological survey that included targeted searches (Ecoscape, 2021), with post-survey assessment considering the two species identified above being unlikely to occur.

- *Daviesia euphorbioides* is known to occur in a wide variety of soil types (Collins 2009) and has been observed by the surveyor growing on the edges of unsealed roads indicating it is likely to be a disturbance opportunist or highly tolerant of disturbance. It is a very distinctive plant that was not observed during the field survey and is therefore, as a result of the search effort, considered Unlikely to occur within the survey area.
- *Grevillea christineae* is an open wiry shrub to 1 m high with distinctive zig-zag stems; it occurs in a variety of habitats (Collins 2009). No similar shrub was observed thus it is unlikely that it occurs within the survey area.

On this basis the proposed native vegetation clearing is not at variance to this principle.

Methodology
Biological Survey (Ecoscape, 2021)
DBCA shapefiles
EPA (2016)

(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

Comment
A desktop assessment did not identify any State-listed TECs as occurring in close proximity to the project area and none were recorded during the field assessment.

Based on the above, the proposed native vegetation clearing is not at variance to this principle.

Methodology
Biological Survey (Ecoscape, 2021)
DBCA shapefiles
EPA (2016)

(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 at variance to this Principle

Comment

According to a broad scale mapping undertaken by Beard (Shepherd et al 2001), the project area lies within vegetation associations 352, 988 and1049 (see Table 4). Within the 20km study area there is approximately 13% of native vegetation remaining.

Vegetation units 352 and 1049 have less than 30% of its pre-European extent remaining at all scales, whilst vegetation unit 988 has less than 30% of its pre-European extent remining in the IBRA Bioregion (refer to Table 5). However, as only 0.07 ha of the proposed clearing area is in Good condition and the rest is in Completely Degraded (1.14 ha) or Degraded (0.24 ha) condition, the great majority of the vegetation proposed to be cleared is no longer representative of the original vegetation associations.

Given that the project area has a very narrow and linear geometry and the vegetation is predominantly disturbed and immediately adjacent to the existing road, it is unlikely that the removal of a small amount of native vegetation (1.45 ha) along a stretch of 21.2 km will reduce the ecosystem functioning or will be a barrier to ecological linkages.

Noting the project area contains under-represented vegetation associations, and occurs in an extensively cleared landscape, the proposed clearing is considered at variance to this principle, however given the degraded condition of the vegetation, the impact is considered minor. Impacts to remnant vegetation as a result of the clearing will be managed by the implementation of an offset.

Methodology

Aerial photography
Biological Survey (Ecoscape, 2021)
EPA (2016)
Government of Western Australia (2017)
Shepherd (2009)

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

Proposed clearing is not at variance to this Principle

Comment

The biological survey (Ecoscape, 2021) included mapping of riparian vegetation, typically associated with non-perennial drainage lines. No such vegetation is included in the proposed clearing area. No swamps or lakes intersect the project area.

As no native vegetation growing in or in association with a wetland or watercourse is proposed to be cleared under CPS 818, the proposed clearing is not at variance to this principle.

Methodology

Biological Survey (Ecoscape, 2021)
DWER and DBCA shapefiles

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

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

Comment

The proposed clearing intersects the following Land Systems:

- Avon Flats System - Alluvial flats, in the northern Zone of Rejuvenated Drainage, with brown loamy earth, grey non-cracking clay and brown deep sand. York gum-salmon gum-flooded gum-sheoak woodland.
- Goomalling System - Poorly drained valley flats, in the northern Zone of Rejuvenated Drainage, with grey deep sandy duplex (sometimes alkaline) and saline wet soil. York Gum-Jam-Wandoo-Salmon Gum-Sheoak woodland.
- Greenhills Sytems - Undulating granitic terrain, in the northern Zone of Rejuvenated Drainage, with deep sandy duplex (grey and red), red/brown deep loamy duplex, bare rock and shallow loamy duplex. York Gum-Jam-Salmon Gum-Wandoo-Sheoak woodland.
- Jelcobine System - Isolated steep low hills with undulating low granite hills and isolated lateritic remnants in the Zone of Rejuvenated Drainage. Gravels, and grey shallow to deep sandy duplexes. Wandoo, york gum, Jam and Casuarina woodland predominate.
- Morbinning System - Undulating sandplain remnants, breakaways and slopes, in the northern Zone of Rejuvenated Drainage, with grey deep sandy duplex (often alkaline), pale deep sand and yellow sandy earth. Wandoo-jam-salmon gum woodland and heath.

Jelcobine, Goomalling and Greenhills are the dominant Land System types.

Natural Resource Management and CSIRO risk mapping indicates the soils of the project area have generally low to moderate risk of land degradation.

In addition, it is unlikely that acid sulphate soils will be an issue as the area is classified as low risk and there will be no dewatering or excavation below the water table.

Given the minor scale and linear nature of the clearing, the largely Completely Degraded condition of the vegetation and the sealing of areas for road construction, the proposed clearing is not likely to lead to an appreciable increase in land degradation. Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of wind erosion.

Aspect	Risk
Flood Risk	Majority of the project area has <3% and 3-10% of map unit has a moderate to high flood risk. Smaller sections of the project area have 50-70% and >70% of map unit having moderate to high flood risk.
Salinity	Majority of the project area has <3% and 3-10% map unit has a moderate to high salinity risk or is presently saline. Smaller sections of the project area have 10-30% and 30-50% of map unit has a moderate to high salinity or is presently saline.
Waterlogging	Majority of the project area has <3% of map unit has moderate to very high waterlogging risk. Smaller sections of the project area have 10-30%, 50-70% and >70% of map unit have a moderate to very high waterlogging risk.
Water Erosion	Majority of the project area has <3% and 3-10% of map unit has high to extreme water erosion risk. Smaller sections of the project area have 10-30% and 50-70% of unit have high to extreme water erosion risk.
Wind Erosion	Majority of the project area has 3-10% and 10-30% of map unit has a high to extreme wind erosion risk. Smaller sections of the project area have 30-50% and 50-70% of map unit have high to extreme wind erosion risk.
Acid Sulphate Soils (ASS)	Extremely Low and Low Probability of Occurrence

Based on the above, the proposed clearing of native vegetation is not likely to be at variance with this principle.

Methodology
DAFWA Risk Mapping shapefiles
DAFWA/DPIRD Soil Landscape Systems shapefiles
CSIRO Acid Sulfate Soils shapefile

(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 likely to be at variance to this Principle

Comment
At approximately SLK 20.23, the project area intersects one DBCA managed land, being the Cartamulligan Well Nature Reserve (R737, Class A), vested to the Conservation Commission of WA for the purpose of conservation of flora and fauna. Whilst the project area intersects the reserve, the road reserve has been excised from the DBCA managed land. All proposed works will remain within the road reserve area and therefore there will be no direct impact on the reserve.

The clearing adjacent to the reserve is limited to 0.07 ha of vegetation in Degraded condition immediately adjacent to the existing road (Ecoscape, 2021). The vegetation proposed to be cleared at this location was not found to be representative of the Wheatbelt TEC/PEC (Ecoscape, 2021), however DBCA mapping indicates that Wheatbelt TEC/PEC may be present in the adjacent reserve. The clearing adjacent to the reserve is occurring in an area with a rainfall of <400 mm/year and therefore *Phytophthora* dieback is not expected to occur. No Declared Plants or Weeds of National Significance have been recorded in the road

reserve in the vicinity of the reserve and Main Roads' standard weed management and hygiene measures will be sufficient to avoid potential indirect weed impacts to the reserve.

Due to the nature of the project, being widening of an existing road, it is not expected that the works will break any linkages or impact on the environmental values of the conservation area.

Activities associated with the vegetation clearing (e.g. hydrocarbon storage) will be managed in accordance project Construction Environmental Management Plan (CEMP) to ensure there are no impacts to the adjacent reserve.

The next nearest DBCA managed land is located 1.1 km north north-west of the project area, being an unnamed reserve, R1563, vested in the Conservation Commission of WA for the purpose of conservation of Flora and Fauna. No impact to this reserve is expected.

Based on the above, the proposed clearing of native vegetation is not likely to be at variance to this principle.

Methodology

Biological Survey (Ecoscape, 2021)
DBCA shapefiles
EPA (2016)
Cadastre shapefiles

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

Proposed clearing is not at variance to this Principle

Comment

No clearing of vegetation associated with watercourses or wetlands is proposed be undertaken under CPS 818 and existing drainage will be maintained by the works. Given the nature of the proposed works, being the widening of an existing roadway, it is unlikely that there will be any change to the water quality of this area. No adverse surface water or drainage impacts are anticipated as a result of the proposed clearing.

Clearing of the small area of native vegetation proposed across a long section of the existing road will not raise the water table. The project does not occur in the vicinity of a mapped Public Drinking Water Source Areas or their protection zones. The works are scheduled to be undertaken during summer dry season and no dewatering is proposed as part of the project works. The proposed clearing is not expected to cause any deterioration in the quality of groundwater.

The proposed clearing of native vegetation is not at variance to this principle.

Methodology

DWER and DBCA shapefiles
EPA (2016)

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

Proposed clearing is not at variance to this Principle
Comment The study area receives an average rainfall between 425.7mm (Northam) and 363.8 mm (Goomalling) per year (BOM, 2021) and the desktop assessment identified that there is a low risk of waterlogging or flooding in the area, as discussed in principle (g). Accordingly, the small area of proposed clearing (1.45 ha) along 21.2 km of existing road is unlikely to cause or exacerbate the incidence or intensity of flooding. Additionally, the project design incorporates drainage design measures to prevent localised flooding and maintain existing water flow paths. The proposed clearing of native vegetation is not at variance to this principle.
Methodology Natural Resource Management Soil Systems Risk Mapping shapefiles BOM (2021)

6 ADDITIONAL ACTIONS REQUIRED

Table 5 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

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

Impact of Clearing	Yes/No or NA	*Further Action Required*
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or (iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.	**Yes**	**1.** Submissions will be sought from relevant parties, including the LGA, in accordance with Condition 8 of CPS 818/15 published on the website. **2.** VMP has been completed, refer to Appendix 2. **3.** An offset proposal for approval by DWER is required where clearing is 'at variance'. The offset proposal proposes to offset the project clearing impacts through financial contribution to the DWER offsets fund. The offset proposal must be approved prior to undertaking clearing of the area to which the offset is related.
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. The project involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
4 a. Project is within Region that: - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for **uninfested** areas to be impacted	**Possible**	No further action required. A *Phytophthora* dieback specialist has advised that given majority of the proposed native vegetation is in degraded to completed degraded condition, it would be deemed uninterpretable and therefore no assessment is necessary.

Impact of Clearing	Yes/No or NA	*Further Action Required*
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	**No**	Works adjacent to the DBCA estate will be conducted in dry conditions. It is also noted that the works adjacent to the DBCA estate occur in an area with <400mm average annual rainfall and therefore dieback is not expected to occur.
5. 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.
6. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition	**No**	No further action required.

7 STAKEHOLDER CONSULTATION

Main Roads will undertake stakeholder consultation in accordance with CPS 818/15 Condition 8.

Table 6 provides a summary of stakeholder consultation undertaken.

Table 6. Stakeholder Consultation

Stakeholder	Date	Comments
Shire of Goomalling	17/09/2021	Invited (via email) to comment on proposal. No comments received.
Shire of Northam	17/09/2021	Invited (via email) to comment on proposal. No comments received.
Wildflower Society – Brett Loney	17/09/2021	Invited (via email) to comment on proposal. Submission received via email to Environmental Officer (21/10/2021). Response is provided in Appendix 3.

8 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 project (refer to Appendix 2).

9 REFERENCES

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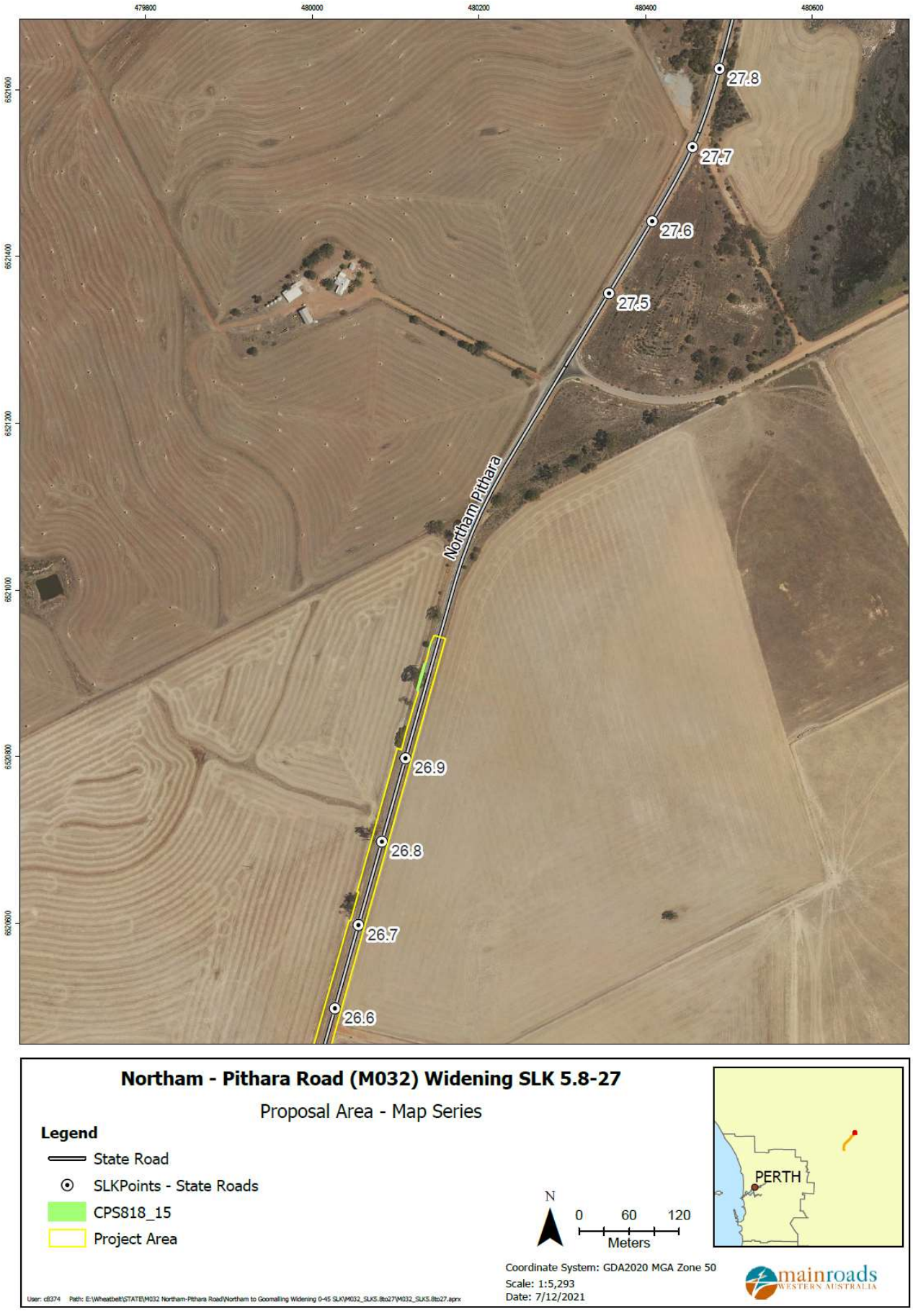
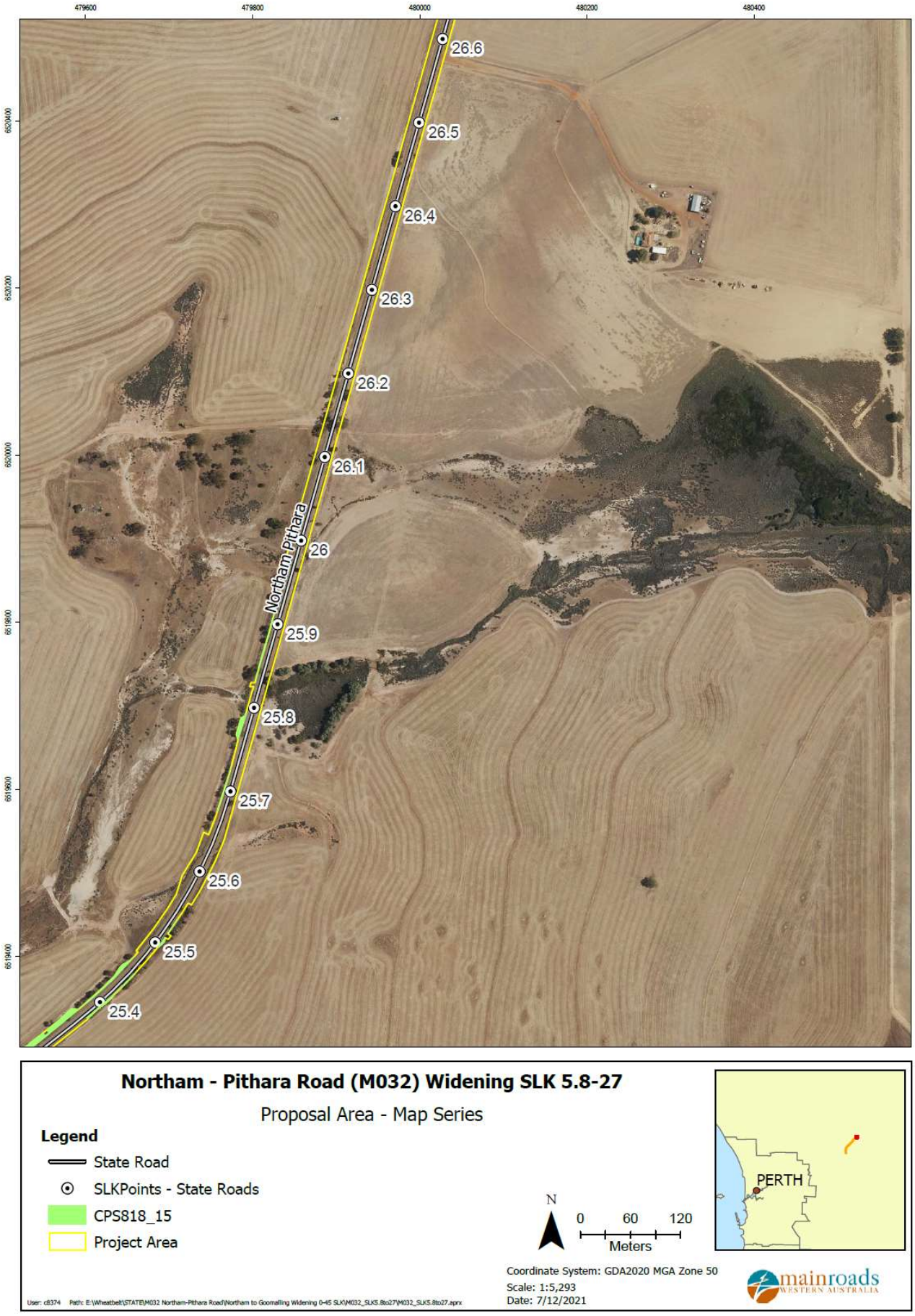
10 APPENDICES

Appendix	Title
Appendix 1	Project Overview – Map Series
Appendix 2	Vegetation Management Plan
Appendix 3	Response to Submissions

Appendix 1: Project Overview – Map Series

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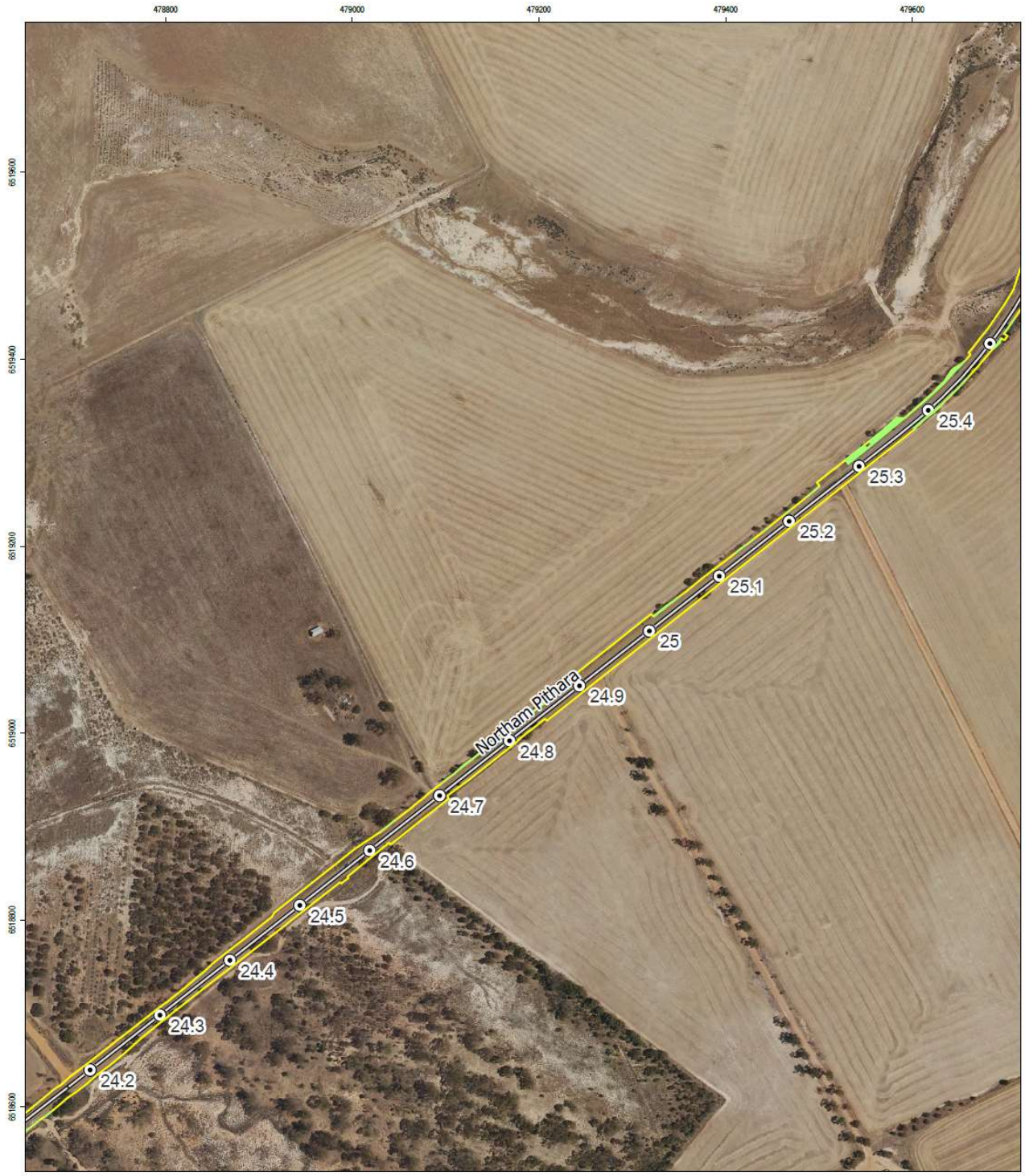

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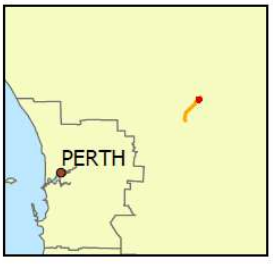

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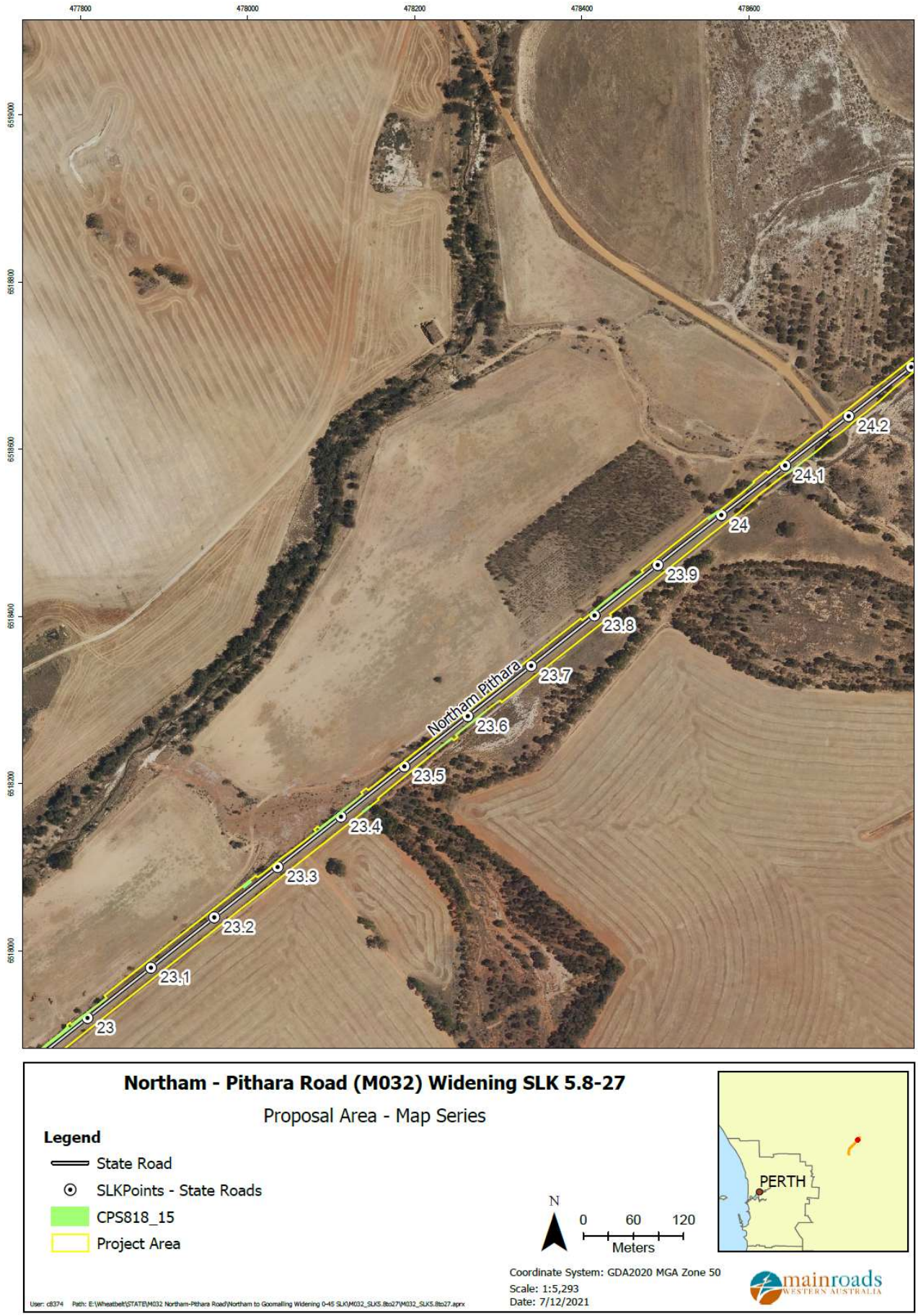
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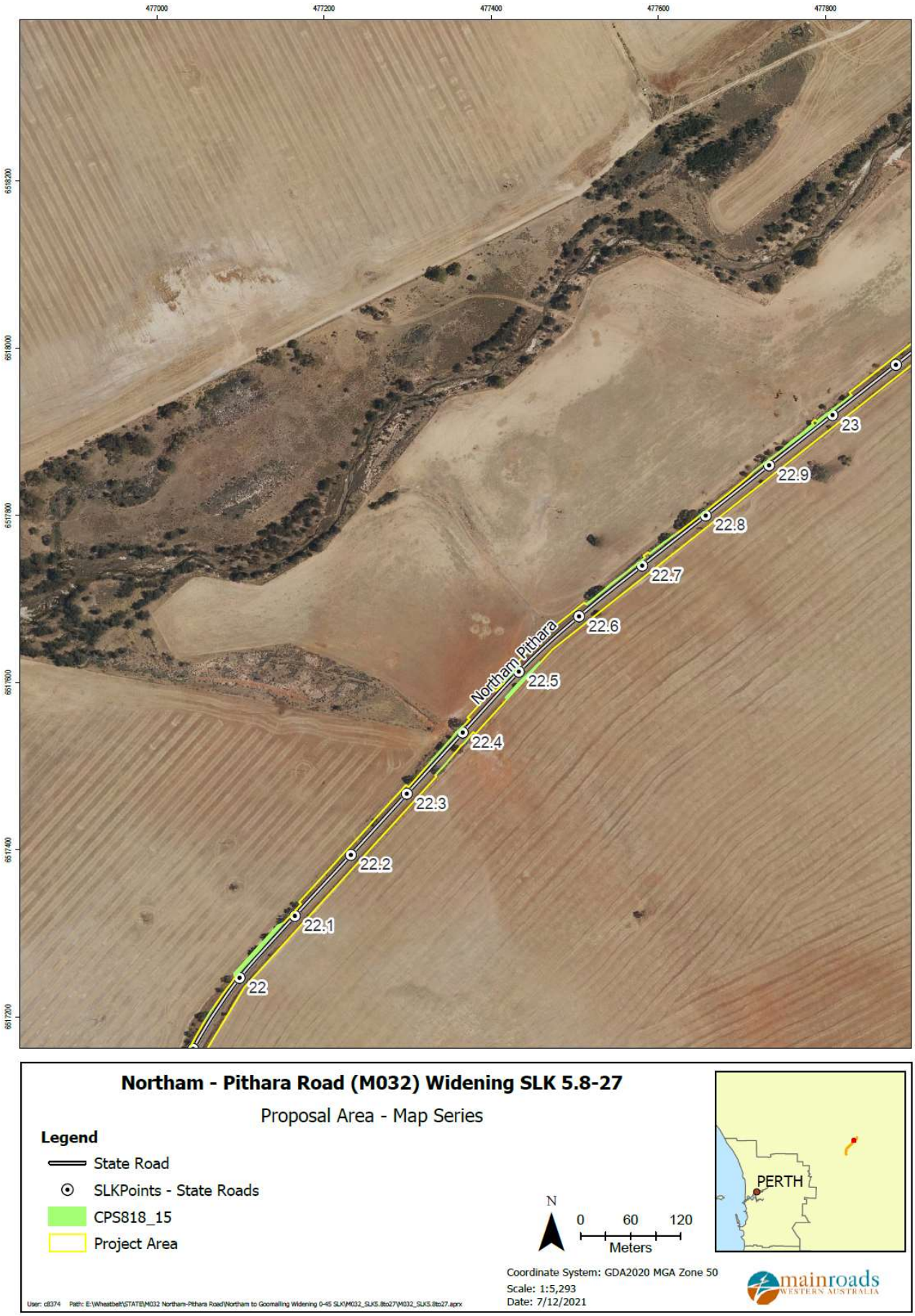
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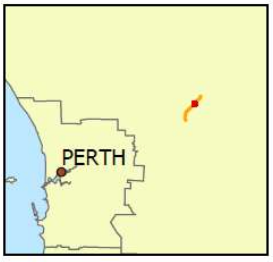

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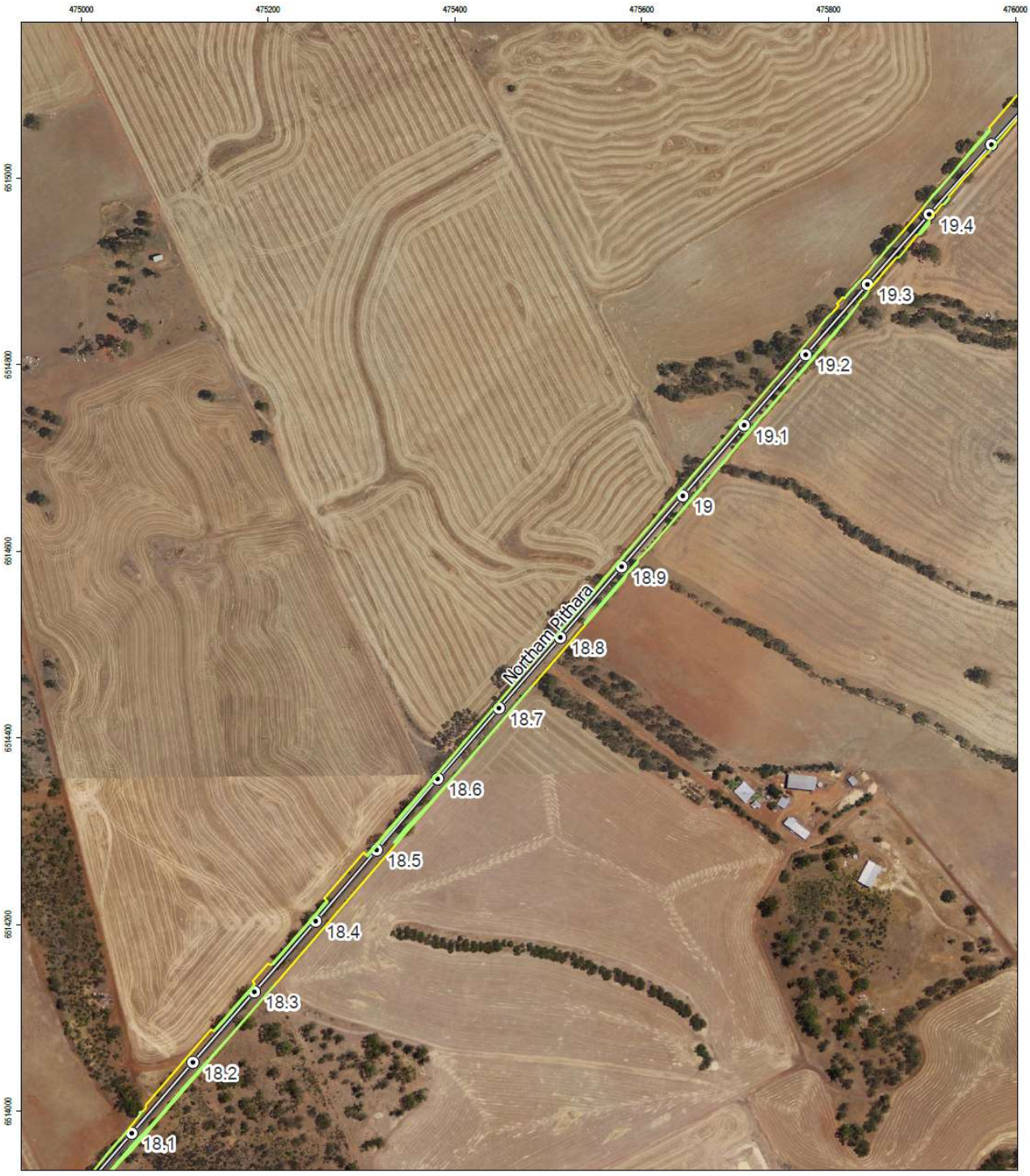

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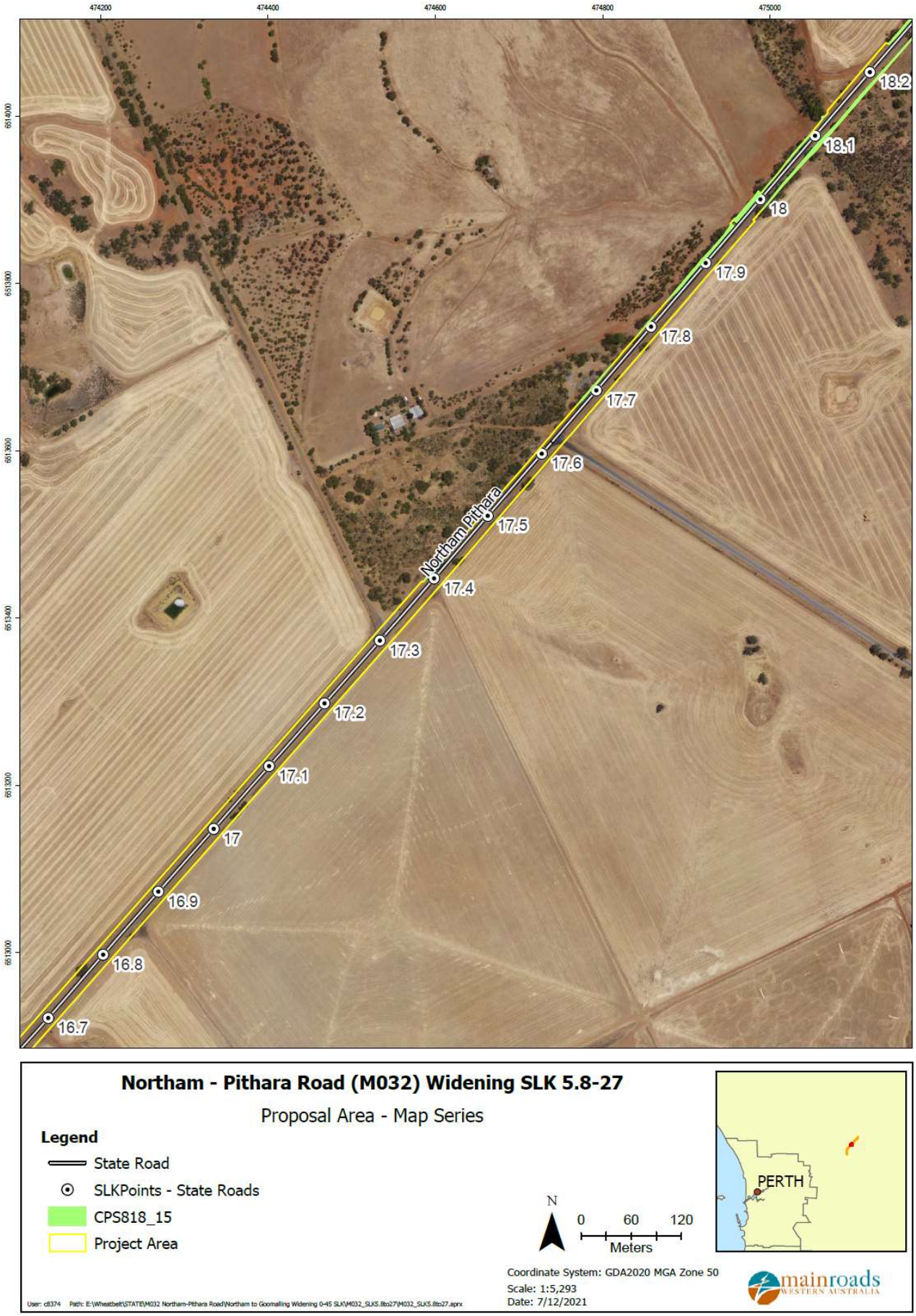
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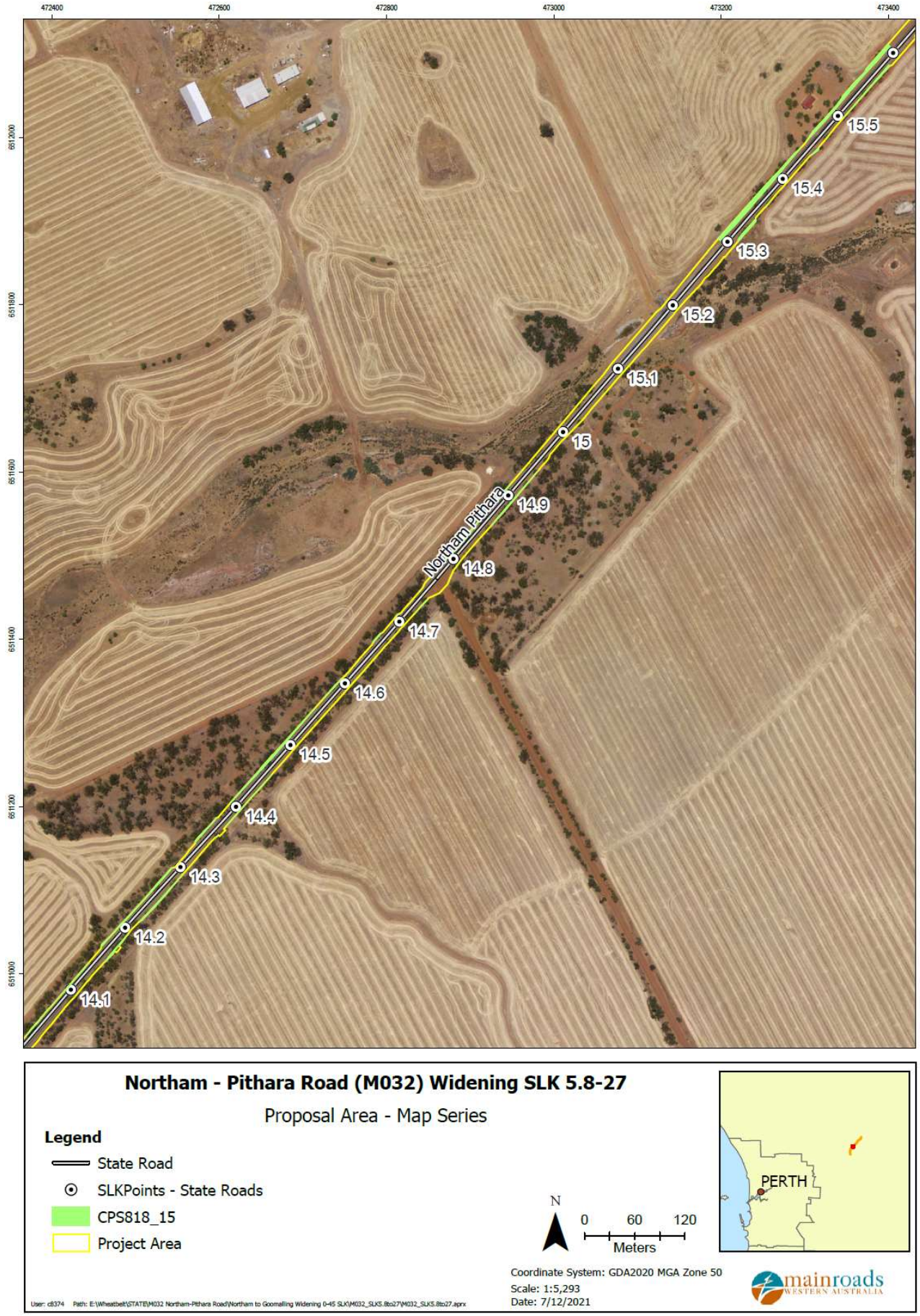
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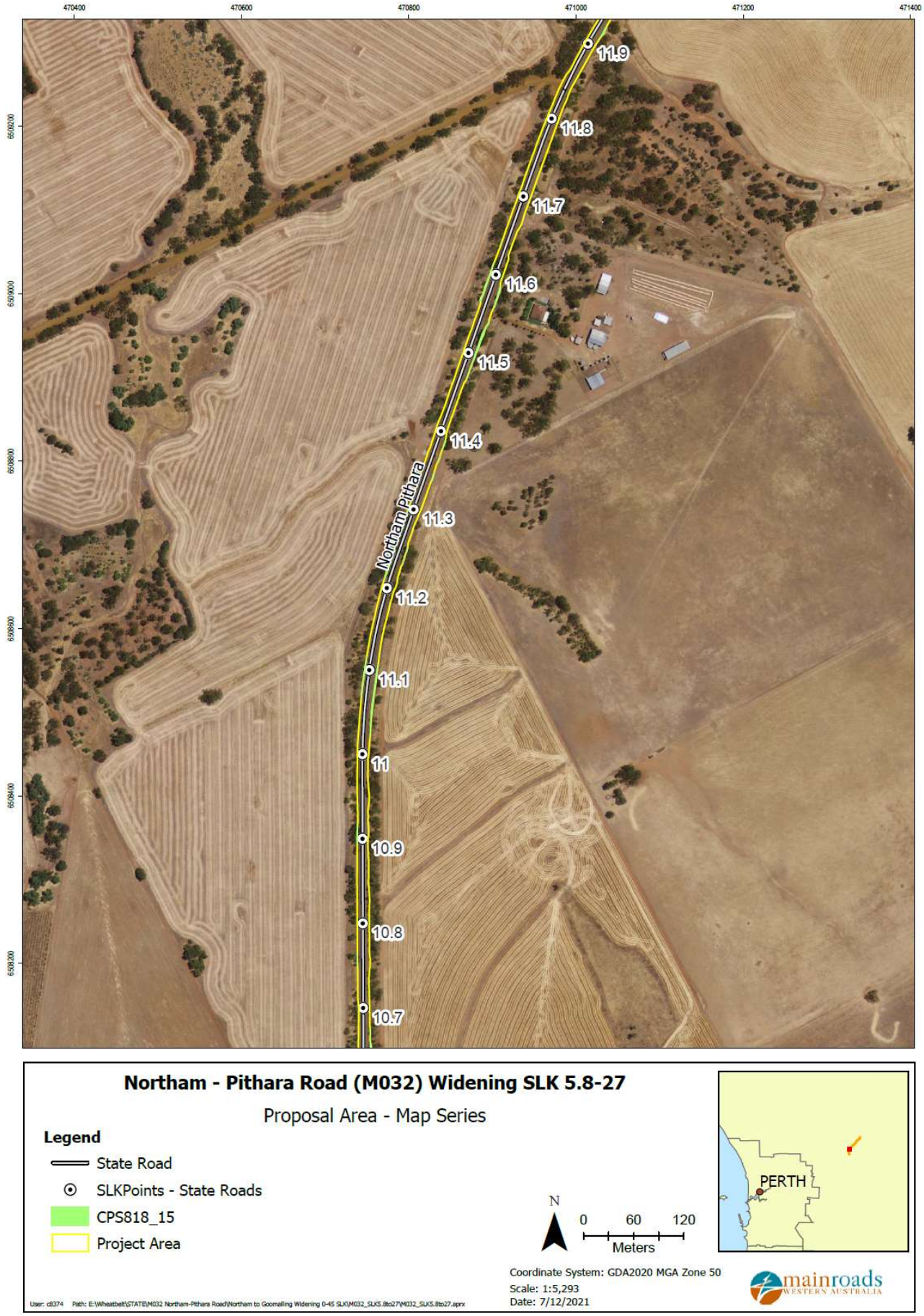
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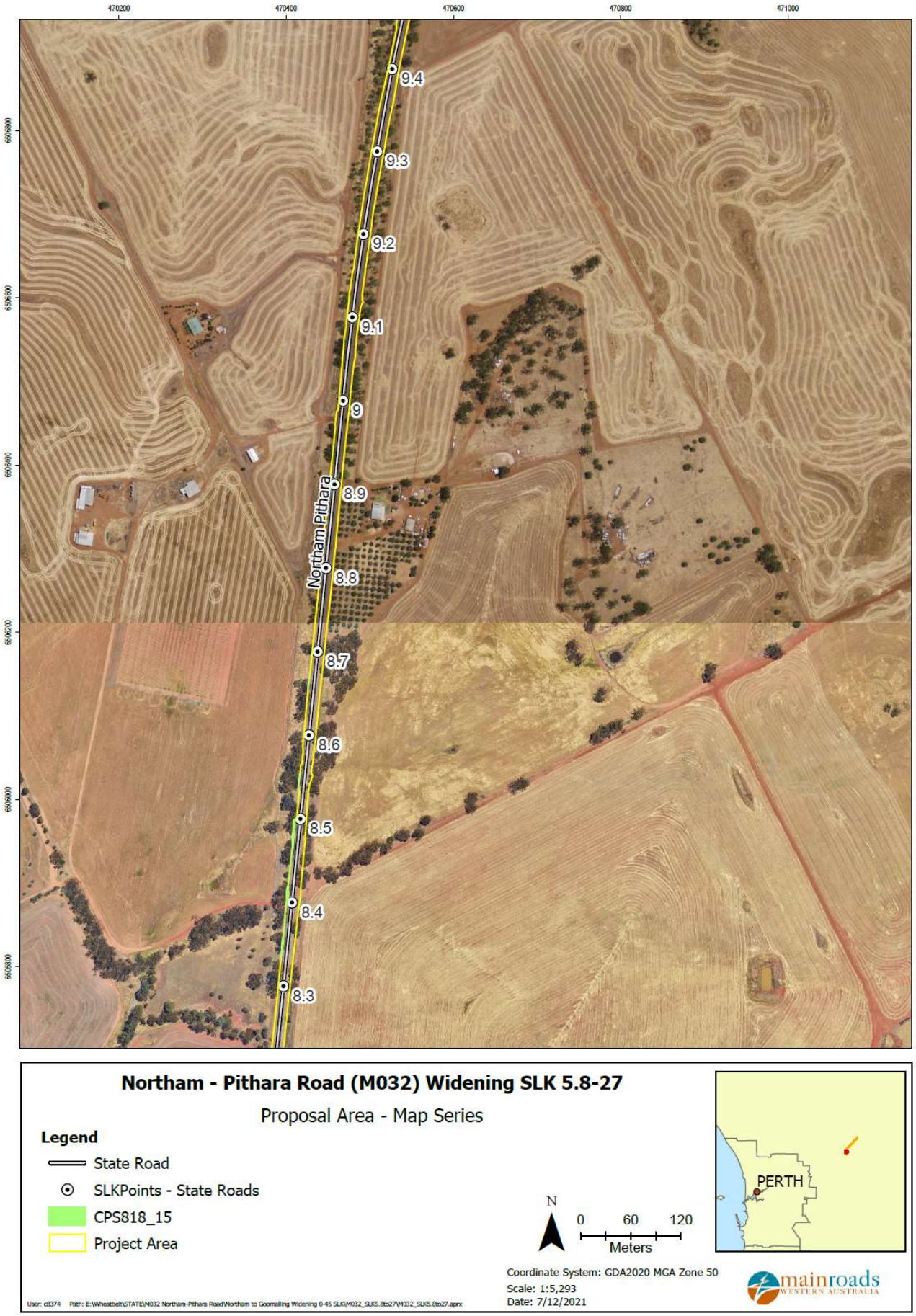
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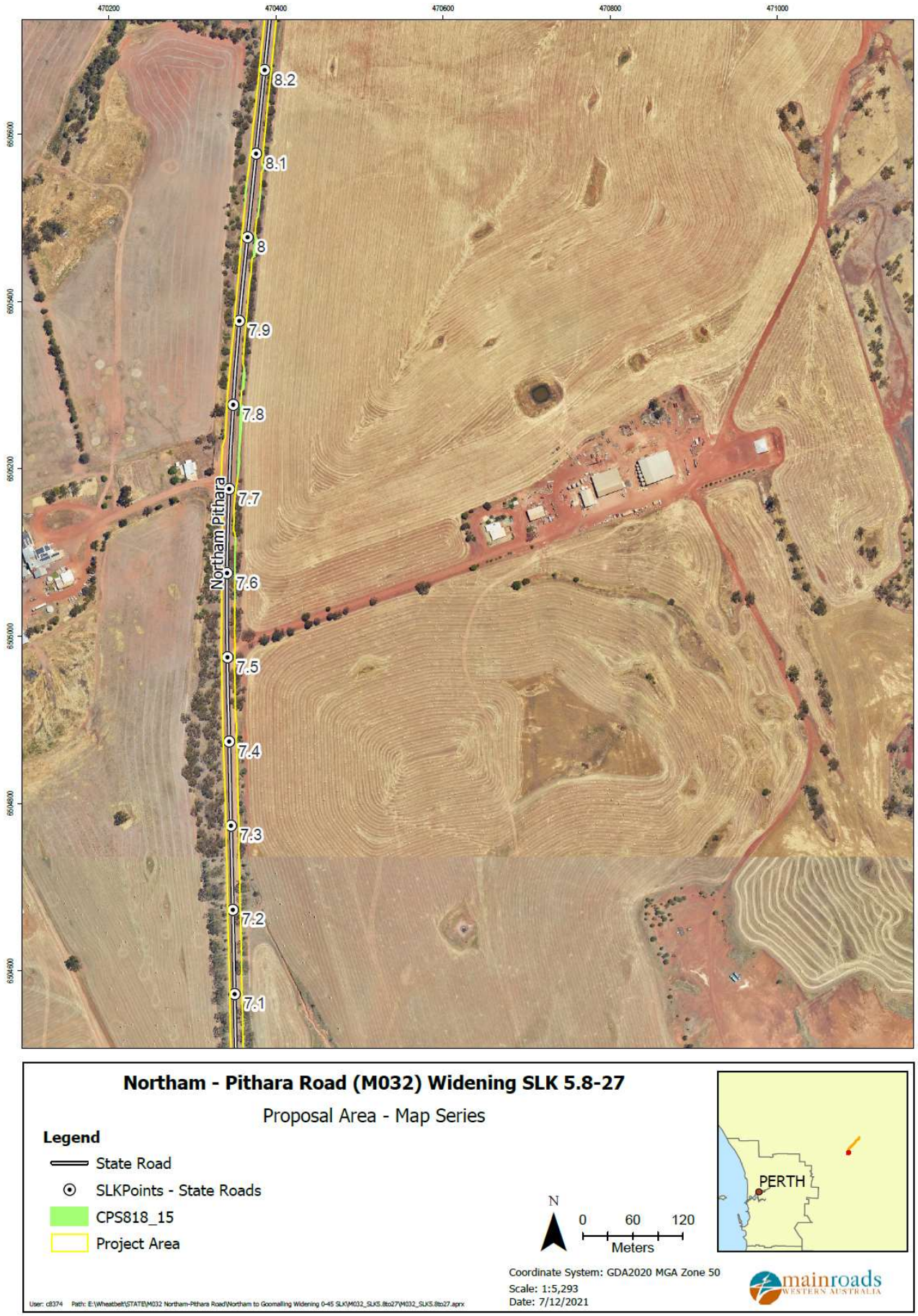
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Northam - Pithara Road (M032) Widening SLK 5.8-27

Proposal Area - Map Series

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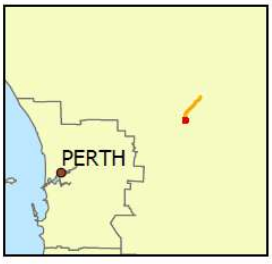

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Appendix 2: Vegetation Management Plan

NORTHAM-PITHARA (M032) SEAL WIDENING SLK 5.8 – 27

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 Northam-Pithara (M032) Seal Widening SLK 5.8 - 27 project.

The project involves the widening of Northam-Pithara Road between Straight Line Kilometre (SLK) 5.8 and SLK 27 to accommodate a 9m sealed formation. The aim of this project is to reduce the number of 'run off road' crashes by improving the safety and functionality within this road segment. The M032 road upgrade comprises:

- Widening to a 9m sealed formation;
- Culvert extensions as required to achieve 9m formation;
- Construction of table drains; and
- Rehabilitation of SLK 22 – 27.

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

Action

Appendix 2.1 references the standard Principal Environmental Management Requirements (PEMRs) (Table's 1 to 9) that will be utilised for all projects that involve clearing to avoid, mitigate and manage the environmental impacts of the project.

Project Specific Environmental Management Requirements are contained in Table 1-8.

Timeframes

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

Responsibilities

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

Appendix 2.1: Vegetation Management

VMP Requirement	Standard Management Action	Specific Management Action
Clearing	Refer to Table 1: Clearing PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition • Environment Measurement and Evaluation Checklist (for release of HOLD POINTS) Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	• Prior to construction, a qualified surveyor will clearly and accurately demarcate the Limits of Vegetation Clearing. • During clearing activities, daily pre-start meetings attended by all clearing crews will thoroughly review and discuss approved clearing maps, planned clearing activities, methodologies and controls to prevent unapproved clearing. These pre-start meetings attendance forms will be signed by all in attendance and forwarded to the Superintendent each day. • The locations of mapped patches of the Eucalypt woodlands TEC/PEC and the requirements to protect vegetation outside of the pegged clearing line will be clearly communicated through site inductions and pre-start meetings, particularly on dates when clearing is undertaken. • DBH trees located within the Limits of Vegetation clearing or within 5m that are to be retained will be demarcated.
Dieback Management	Refer to Table 2: Dieback PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	• Works adjacent to the DBCA estate will be conducted in dry conditions.

VMP Requirement	Standard Management Action	Specific Management Action
Erosion and Sedimentation Control	Refer to Table 3: Erosion and Sedimentation Control PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Fauna	Refer to Table 4: Fauna PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Machinery and Vehicle Management	Refer to Table 5: Machinery and Vehicle Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Copies of completed Vehicle/Machinery Hygiene Checklists will be provided by the contractor within two weeks of completion of site works.
Mulch and Topsoil Management	Refer to Table 6: Mulch and Topsoil Management • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing • Specification 304 Revegetation and Landscaping Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Pegging and Flagging	Refer to Table 7: Pegging and Flagging PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan	• Areas where the patches of the Eucalypt woodlands TEC/PEC occur will be pegged at 10m intervals to ensure no entry to areas beyond the Limits of Vegetation Clearing.

VMP Requirement	Standard Management Action	Specific Management Action
	• Specification 301 Vegetation Clearing and Demolition Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	
Water Drainage Management	Refer to Table 8: Water Drainage PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan	Not Applicable
Weed Management	Refer to Table 9: Weed Management PEMR • Specification 204 Environmental Management • Construction Environmental Management Plan Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	Not Applicable
Monitoring	• Specification 204 Environmental Management • Construction Environmental Management Plan • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	
Auditing	• Specification 204 Environmental Management • Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/	

Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

STANDARD MANAGEMENT ACTIONS

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery does not occur outside of the Limits of Vegetation Clearing. This must include all turnaround areas. 2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible.
DURING WORKS 1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident. 2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works 3. The Contractor must undertake the clearing in accordance with the Fauna PEMR.
POST WORKS 1. NIL

Table 2: Dieback PEMR

STANDARD MANAGEMENT ACTIONS

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. Contractor's Pre-starts must detail the requirements from the DMP/HMP, where relevant, dieback management areas and the requirements of each area, maps of infested and uninfected locations, and hygiene requirements 2. Where relevant a copy of the DMP/HMP must be onsite. This plan will include maps of management areas and obligatory control actions 3. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works. 4. Use the Plant, Vehicle and Equipment Hygiene Checklist or equivalent Hygiene form to check that all machinery and vehicles are clean on entry (i.e. free of soil and vegetation).
DURING WORKS 1. If required, locations of dieback infested or dieback free areas and hygiene control locations marked on site in accordance with contract HMP or DMP. 2. Hygiene works to be undertaken as per the HMP or DMP, where required. 3. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing. 4. Ensure no known weed affected soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing. 5. Ensure cleared materials are stockpiled or disposed at waste at the locations approved by the Superintendent.
POST WORKS 1. Record that the project was undertaken in dry soil conditions (unless an approved DMP authorises otherwise). 2. Use the Plant, Vehicle and Equipment Hygiene Checklist to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation).

Table 3: Erosion and Sedimentation

PRE WORKS

1. The Contractor must develop, implement and maintain processes and procedures to ensure that:
   - The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas.
   - Prevent water and wind soil erosion within and adjacent to the works areas.
   - Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area.
   - Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated.
   - Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion.
   - Minimise exposed soil working surfaces or protect them from stormwater erosion.
   - Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.
   - Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.

DURING WORKS

1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.

POST WORKS

1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates.
2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.

Table 4: Fauna

PRE WORKS

1. The Contractor must ensure that fauna management requirements are communicated to the crew undertaking the clearing works during the induction and pre-start meeting.
2. Where active nests, burrows or dens are identified, works must not proceed until the Contractor obtains the Superintendents approval of the management of active nests, burrows or dens adheres to the Superintendents advice.

DURING WORKS

1. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;
   i. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate.
   ii. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.
2. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident.
3. The Contractor must ensure that;
   i. No pets, traps or firearms are brought into the project area.
   ii. Fauna are not fed
   iii. Fauna are not intentionally harmed or killed
   iv. Fauna that venture into the work area are encouraged to leave in a manner that does not harm the animal or operator (loud noise, slowly approaching in a vehicle etc.)
4. The Contractor must ensure that in the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance. The Contractor must maintain records of any animal taken to a wildlife carer.

POST WORKS

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

Table 5: Machinery and Vehicle Management

PRE WORKS

1. The Contractor must ensure that all areas associated with the storage, parking, servicing, wash down and refuelling of all vehicles, plant and machinery is located within the Limits of Clearing and approved by the Superintendent.
2. The Contractor must ensure that all vehicles, machinery and plant are clean on entry (i.e. free of all soil and vegetation material) and comply with the requirements of 204.B.32.
3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent.
4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities.

DURING WORKS

1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.

POST WORKS

Table 6: Mulch and Topsoil Management

PRE WORKS

1. The Contractor must ensure that the movement of soil and vegetation is only undertaken in dry conditions unless otherwise approved and / or directed by the Superintendent.
2. The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.

DURING WORKS

1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds.
2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction.
3. The Contractor must ensure that Dieback and weed infected topsoil and mulch vegetation must be handled separately to minimise the risk of spreading dieback and weed species across the site and stockpiles.
4. The Contractor must ensure that stockpiling operations must occur in a manner to ensure that the properties of the topsoil are not degraded and the topsoil made unsuitable for use in revegetation.

POST WORKS

Table 7: Pegging and Flagging

PRE WORKS 1. Pegging must be done in accordance with the requirements detailed in Specification 301. 2. The Contractor must clearly communicate, either at the pre-start meeting or equivalent, to the crew undertaking the clearing works, through clear maps and other additional means, what the Pegging represents.
DURING WORKS 1. The Contractor must peg the Limits of Clearing by PINK flagging tape. 2. The Contractor peg/demarcate vegetation proposed to be retained is demarcated by WHITE flagging tape. 3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas.
POST WORKS 1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once project works are completed.

Table 8: Water Drainage

PRE WORKS

1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary

DURING WORKS

1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted.
2. Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work.
3. Maintain these drainage systems in proper working order at all times.
4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.
5. Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts.

POST WORKS

1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).
2. Prior to backfilling the completed pipe work certify that the entire system is flushed clean and tested
3. Disturbed areas will be stabilised soon after construction activities are completed.
4. Culvert and drainage structures will be free of all grass, weeds, silt and debris

Table 9: Weed Management

PRE WORKS

1. The Contractor must remove or kill any weeds growing in project area that are likely to spread and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.
2. The Contractor must develop, implement and maintain procedures to identify and control declared and invasive weed species within the Contract areas, to the satisfaction of the Superintendent.
3. The Contractor must prepare a weed control program, for nominated weed species for control and disposal, to the satisfaction of the Superintendent.
4. The Contractor must undertake weed management in Stockpiles as directed by the Superintendent.

DURING WORKS

1. The Contractor must implement the weed control procedures and management plan and record and manage records of its implementation.
2. The Contractor must treat nominated weed infestations as many times as necessary to control and eradicate the weed species in accordance with the approved weed control program
3. The contractor must ensure that no known weed, pest or diseased affected soil, mulch, fill or other material is brought into the Site.

POST WORKS

1. The relevant Vegetation Maintenance Record Sheets available at: https://www.mainroads.wa.gov.au/BuildingRoads/Contracting/Pages/ReportingForms.aspx must be completed and sent to the Superintendent.

Appendix 3: Response to Submissions

Submission (Wildflower Society: letter dated 20 October 2021 and site visit 10 November 2021)	Main Roads WA Response
Mapping provided in the CAR was not adequate in establishing the actual areas to be cleared and to identify the location of the vegetation types described. The mapping does not allow detail of the areas of vegetation to be identified or verified when completing a site inspection as there is no mapping of these areas provided.	The level of detail provided within the figures within the CAR is similar to the figures for comparable projects that have been assessed by DWER. It is a balance between having too many figures and not showing enough details. The follow up site visit Main Roads undertook with members of the Wildflower Society, immediately following their submission, would have assisted the members to gain a better understanding of the works proposed.
The supporting survey documentation should be appended to allow the vegetation details and biological features to be reviewed by WSWA as part of their coverall consideration of the clearing proposal.	In accordance with CPS 818/15, Main Roads provided a summary of the flora and fauna surveys that were undertaken to inform the assessment. A summary is provided to ensure sensitive information (such as localities of threatened species) is not unknowingly released, especially given the heightened transparency the Main Roads website provides. The surveys completed for the proposal were undertaken by highly regarded botanists and environmental scientists, with the methodology and survey effort reviewed by internal technical experts. Final versions of the biological reports are provided to Department of Water and Environmental Regulation (DWER) as part of its assessment of the CAR. Vegetation condition and association mapping has since been provided to the Wildflower Society.
WSWA is of the view that the project should be modified to widen the road section under consideration to the east (right hand) side of the road to allow of the conservation of the ages trees that are predominantly on the west (left hand) side of the road. WSWA recognises that this modification will require acquisition	In accordance with National and State Government road safety policies, Main Roads is 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 road infrastructure. In 2020-21, we undertook the first year of one of the largest regional road safety improvement programs across WA. The program used low-cost treatments, including shoulder sealing and installation of audible edge lines, to help

of land and modification of the road design to accommodate such change.	prevent run-off road crashes. This nine-year program, through its lifecycle, will see more than 17,000 kilometres of rural roads treated and is a huge step towards preventing deaths or serious injury on our regional road network. Upgrading a road by sealing the shoulder to provide an eight metre wide seal and installation of audible edge lines reduces the risk of run off road fatalities or serious injury as it provides a greater distance for drivers who veer off the road to recover, and provides more time for drivers who have left the road to reduce speed before encountering hard immoveable objects such as trees. There has been a total of 16 crashes on this section of road between 2016-2020. Five of these crashes involved collisions with a tree including one fatality during 2016. There was a state coroner inquest into this fatality and the crash corrective action reported three major recommendations for Main Roads: Remove non-frangible items from the clear zone or provide suitable protection for errant vehicles in accordance with Austroads guidelines Extend sealed surface to provide 7.0m seal width with 1.0m sealed shoulders in accordance with Austroads and Main Roads guidelines Review edge line marking with a view to placement of audible edge lines along the entire road section in accordance with Austroads guidelines and Main Roads policy initiative. Although work proposed will not remove all non-frangible items from the clear zone, the minor amount of clearing proposed to accommodate the proposed works will make the road substantially safer.
The significance of the vegetation in this area should not be assessed through the presence/absence of individual species. The significance lies in its existence as remnant, despite the overall condition and extent of the remnant within the project area.	Main Roads understands the value of the vegetation present is more than just the presence or absence of species. This position is highlighted within the assessment of clearing principle (e) where the CAR states that "Noting the project area contains under-represented vegetation associations, and occurs in an extensively cleared landscape, the proposed clearing is considered at variance to this principle, however given the degraded condition of the vegetation, the impact is considered minor. Impacts to remnant vegetation as a result of the clearing will be managed by the implementation of an offset". In addition to clearing principle (e), the CAR also discusses the biodiversity values of the vegetation to be cleared. The CAR has appropriately assessed the impacts to remnant vegetation in accordance with DWER's "A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the Environmental Protection Act 1986".

	Main Roads has consulted with the Department of Water and Environmental Regulation (DWER) on the variance levels assigned and an appropriate offset for the Proposal.
WSWA expressed their position for none of the larger trees along the project to be removed.	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 projects have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting and enhancing the natural environment. 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 offsetting our environmental impacts. This has been achieved through changes in project scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for projects, 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. MRWA recognises the value of the trees along the Northam-Pithara Road and has reviewed and amended the design to minimise the number of trees to be removed, whilst still maintaining the integrity and safety of the design. In particular the section SLK 18.2 – 18.9 the design requires no table drain on the LHS due to the road level sitting higher and the steeper longitudinal grading which allows for the natural flow of water off the pavement surface. This has allowed for a reduction in the number of trees to be removed from this section.
WSWA recommends that a reduction of speed limit is implemented to avoid the need for clearing	Credible speed limits throughout the State ensure safe and efficient road networks. For speed limits to be effective, they need to be both appropriate for the environment and aligned with both the actual and perceived risk for individual road users. The Northam Pithara Road is predominately 110 km/hr, excluding small sections of rail crossings and townsites where speed is reduced to 80 km/hr to assist with the deceleration and acceleration process. Reducing the speed to 80 km/h on a six-meter wide seal has no provisions for a recovery zone and does not allow for audible warning. Reducing the speed limit of more than 12 kilometres of the road will also create compliance issues as the current environment on the Northam Pithara Road does not encourage road users to reduce their speed. This proposed reduction will have some drivers comply, while others will drive at or over the posted speed limit. This speed behavioural differential will create an unsafe road environment and increase the likelihood of crashes.

	Australia is dependent on efficient truck movements to support the economy, with road transport being the most common form of transport to move goods and commodities for industry, business, agriculture and mining. The future vision is to have Northam Pithara Rd link Northam to Great Northern Hwy and the northern parts of the state to support the economic development and growth of the Wheatbelt Region. This requires the route to be widened to facilitate larger truck movements from Northam right through to Great Northern Hwy. Reducing the speed limit will degrade the efficiency of this important transport route. Whilst reducing the road speed limit has been successful in some limited instances, mainly when speed reductions are only 10 km/hr less than the posted, and the traffic configurations are mostly light vehicles. However, this is not considered to be a credible option on the Northam Pithara Road to achieve road efficiency and safety outcomes.
WSWA requested access to the incident data	Data related to road safety incidents can be accessed via the Main Roads Open Data, Maps and Apps website (https://www.mainroads.wa.gov.au/technical-commercial/open-data-maps-apps/), with incident information available under the Road Safety Data Section.