Clearing Assessment Report – CPS 818

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Northam Pithara – Widening SLK 27-45 and Overlay
Northam Pithara Road (M032)
Wheatbelt Region
2613

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1 PROPOSAL

1.1 Purpose and Justification

Northam Pithara Road forms part of the inter-regional route between the Wheatbelt and the Mid-west Gascoyne regions. The link provides inter-town access between Northam and Pithara including the towns of Goomalling and Wongan Hills for commuter traffic and serves as an agricultural freight route for the surrounding farming industry.

Northam Pithara Road is a single carriageway road starting in Northam and extending all the way to Pithara. The road currently has a lane width of 3.0m, and in some areas less than 3.0m. Current Australian practice is to provide standard traffic lane widths of 3.5m on rural roads. The narrow lane width is a safety issue for road users; therefore, increasing the lane width to 3.5m would ensure that this meets current standards to enhance overall safety of the road.

The proposed works entail widening Northam Pithara Road to have 3.5m traffic lanes and 1m sealed shoulders in each direction. Culvert extension works will also be undertaken to cater for the widening.

The intended outcome is to improve overall road safety and functionality for road users and reduce run off road crashes within this road segment.

1.1.1 Main Roads Approach to Road Safety and the Environment

Main Roads is committed to minimising the environmental impacts of all of its activities and manages the State road network to achieve balanced economic, social, safety and environmental benefits for the community. Main Roads recognises that Western Australia's environment is significant from a global perspective and the unique conservation values that are contained within its road reserve. Main Roads road network often adjoins natural areas and, in some locations, the reserve itself hosts remnant vegetation with high environmental values. Although the reserves were not established for this purpose, Main Roads recognises that it has a responsibility to conserve the environmental values that occur within the State's road network and minimise the impact its proposals have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting and enhancing the natural environment.

In accordance with National and State Government road safety policies, Main Roads is also committed to substantially reducing road trauma on the road network through Safe System principles. The Safe System approach acknowledges that more than two thirds of all serious crashes are due to human error rather than deliberate risk taking (e.g. speeding or drink driving) and seeks to improve behaviour through education and enforcement while managing the safety of vehicles, speeds and the road and road infrastructure. It is shown that improving sub-optimal road formation will substantially reduce the likelihood and severity of road crashes. For example, according to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

As the statutory authority responsible for providing and managing a safe and efficient main road network in Western Australia, Main Roads focuses on improving road safety by thoroughly considering all environmental, economic and community benefits and impacts. It operates on a hierarchy of avoiding, minimising, reducing and then, if required, offsetting our environmental impacts. This has been achieved through changes in proposal scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for proposals, steepening

batters, installing barriers, establishing borrow pits in cleared paddocks and avoiding temporary clearing for storage, stockpiles and turn around bays to avoid and minimise its impacts.

Further details on measures to avoid, minimise and reduce are provided in Section 1.5.

1.2 Proposal Scope

Main Roads proposes to undertake widening and overlay works on 18 km of the Northam Pithara Road between Northam and Goomalling. The proposed works will comprise the following:

- Widening of Northam Pithara Road to achieve a 3.5 m traffic lane with 1 m sealed shoulder in each direction.
- Culvert extensions where required to accommodate the widening.
- Audible edge and centreline marking.
- Reinstate table drains and offshoot drains as necessary to ensure no pooling of water.
- Isolated pavement repairs where required.

1.3 Proposal Location

The Clearing Area is located on the Northam Pithara Road (M032) Straight Line Kilometre (SLK) 27 and 45, between the towns of Northam and Goomalling, within the Shire of Goomalling, as shown in Figure 1.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:
Up to 3.41 hectares (ha)

Areas of Native Vegetation Clearing:
The areas of native vegetation to be cleared are shown in the map series provided in Appendix 1. An overview of the map series is shown in Figure 2.

Type of Native Vegetation:
The type of vegetation to be cleared under this Proposal is predominantly *Eucalyptus loxophelba* subsp. *loxophelba* and *Acacia acuminata* mid woodlands. A number of introduced weed species are present within the understorey vegetation which reflects the projects association with the agricultural matrix that surrounds it. Native vegetation types of the full project area are shown in Appendix 1.

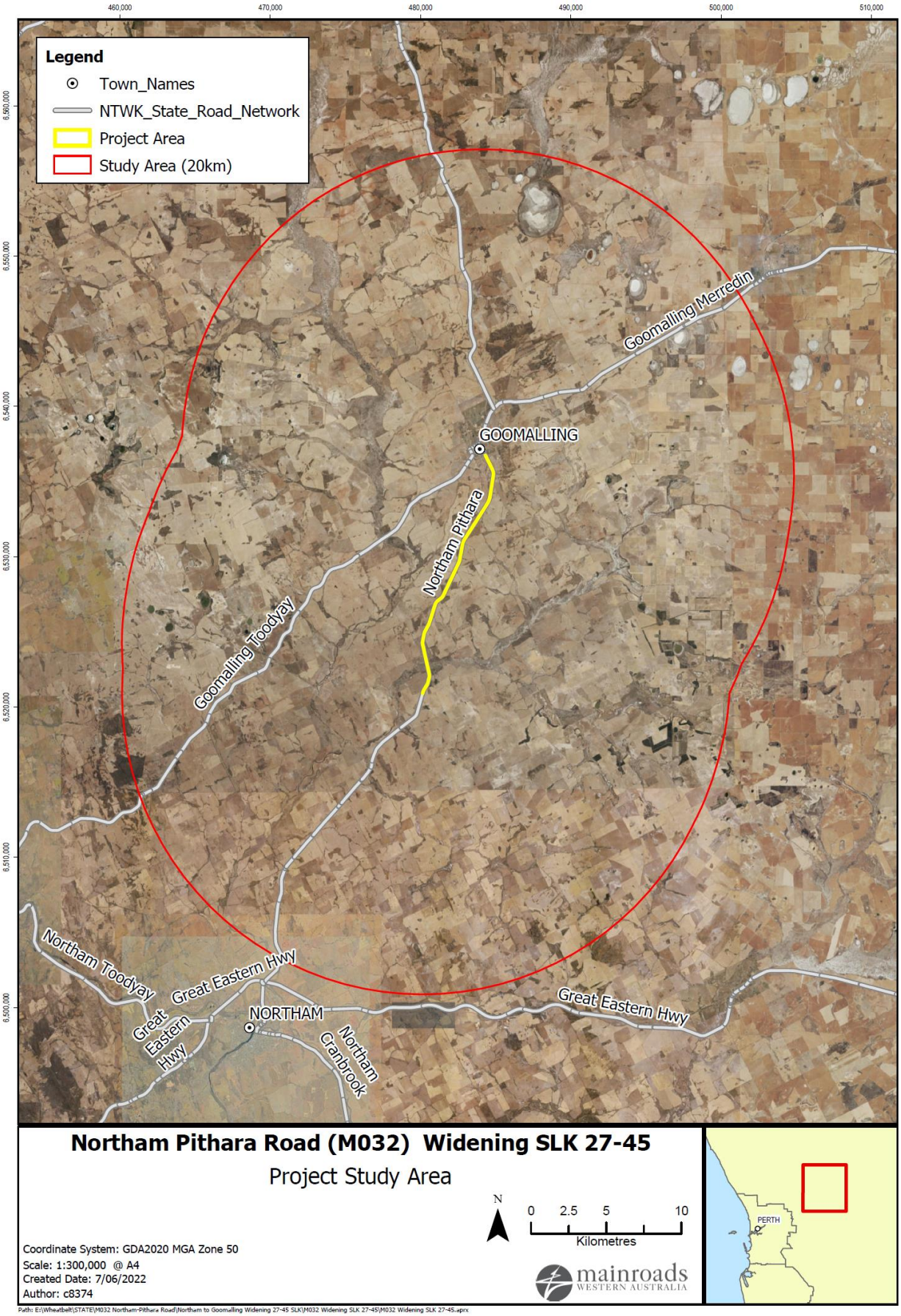

Figure 1. Project Location and Clearing Area

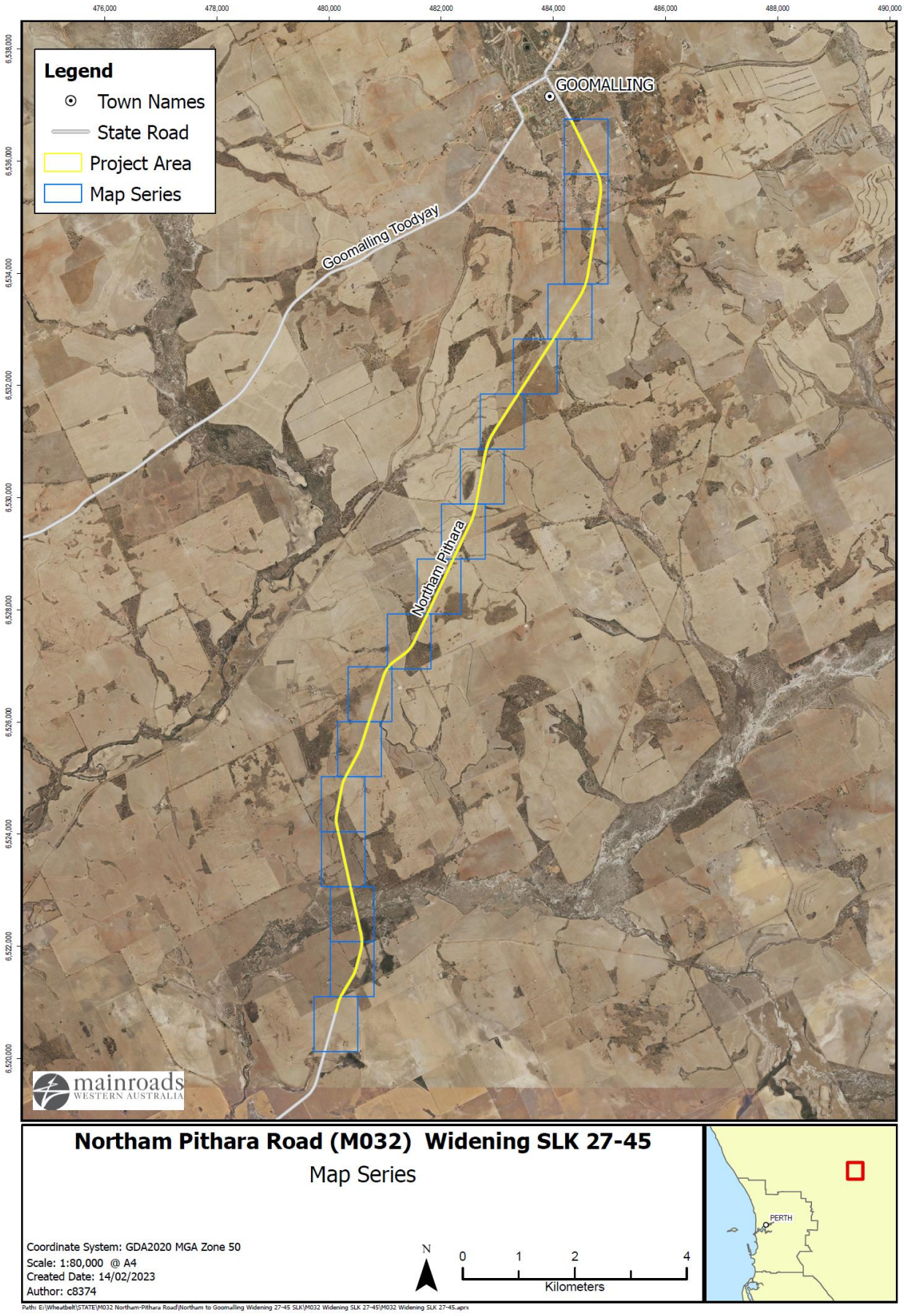

Figure 2. Vegetation within Clearing Area – Map Series (Refer to Appendix 1)

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 this was considered cost prohibitive e.g. due to cost of resumption of farmland and construction of completely new road rather than widening of existing alignment and premature redundancy of State road asset, lack of adequate funding, stakeholder engagement, resource requirements. Under this option, clearing would still be required for tie-ins to the existing road network.
- 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.
- Reducing the speed limit to minimise clearing requirements, while still balancing safety (driver fatigue) and freight efficiency.

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

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

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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	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. Changing the alignment would result in increased clearing of native vegetation.
Alternative alignment located within pasture or 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.
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.
Steepen batter slopes	The chosen work method of profiling and ex-situ 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 desirable requirement of 1:6 pavement batter to the 1:4 desirable minimum that can be adopted to reduce the clearing impact. It has been further reduced to the absolute minimum 1:3 in the TEC areas to prevent any clearing in the TEC areas.
Installation of barriers	No significant trees more than 5.6m of the centre line are being removed, therefore the installation of Guard rail would not reduce the clearing area. Existing trees are either not removed or there would not be enough space between the traffic lane and a possible barrier to meet the required safety standards.
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. It may also introduce a safety hazard, which opposes the project purpose.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Further clearing for the project will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas as much as possible.

Design or Management Measure	Discussion and Justification
Drainage modification	Culvert extensions are included to give an absolute minimum clearance of 0.5m between the new seal edge and the culvert end wall. Table drain batter slopes have been steepened to reduce the project footprint as referred to above.
Other design treatment	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.

1.7 Approved Policies and Planning Instruments

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

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

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

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

Environmental Protection Policies:

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

Other relevant policies and guidance documents:

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities.
- Referral guideline for 3 WA threatened black cockatoo species (DCCEEW, 2022)

2 SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT

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:

- **Native Vegetation 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.

- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design and is less than the development envelope. It usually includes a buffer to allow for constructability and the movement of machinery during construction.

- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 20km radius.

- **Survey Area** – Area covered by the Biological Survey, which is typically larger that the Development Envelope.

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.

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 8.

2.3 Surveys and Assessments

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

- Northam Pithara Road 0-45 SLK Widening Biological Survey (Ecoscape, 2021)
- Detailed Black Cockatoo Breeding Hollow Assessment Northam Pithara Road (Kirkby, 2022).

A summary of the methodology and the results of the above surveys are provided in Section 3.

3 SUMMARY OF SURVEYS

3.1 Overview of Surveys

Biological and targeted surveys conducted for the proposal are outlined in Table 2. A summary of the findings in these reports are presented in Sections 3.2 and 3.3.

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

Consultant & Survey Name	Survey Details
Ecoscape (Australia) Pty Ltd (2021) Northam Pithara Road 0-45 SLK Widening Biological Survey	**Survey Area:** Survey area comprised approximately 170.11 ha either side of the Northam Pithara Road between SLK 0 and 45. **Type:** Desktop assessment to identify biological features and constraints, followed by a detailed and targeted flora and vegetation survey, basic fauna survey and targeted Black Cockatoo fauna habitat assessment. **Timing:** Fieldwork conducted from 9 to 14 of November 2020. **Survey Results Shapefile TRIM Ref:** D20#792827 **Document TRIM Ref:** D21#333294
Tony Kirkby (2022) Detailed Black Cockatoo Breeding Hollow Assessment Northam Pithara Road	**Survey Area:** Survey of 28 hollows within 15 trees along the Northam Pithara Road between SLK 27 and 45. **Type:** Detailed assessment of hollows for the presence of and suitability for black cockatoo breeding hollows. **Timing:** Fieldwork conducted on 17th March 2022. **Survey Results Shapefile TRIM Ref:** N/A **Document TRIM Ref:** D22#404589
Ecoscape (Australia) Pty Ltd (2021a) 4580-20 Northam Pithara Road Widening Memo	**Survey Area:** Survey area comprised approximately 170.11 ha either side of the Northam Pithara Road between SLK 0 and 45. **Type:** Assessment of likelihood of occurrence of two species of Trapdoor Spider (*Idiosoma nigrum* and *Idiosoma schoknechtorum*) post survey. **Timing:** Fieldwork conducted from 9 to 14 of November 2020. **Survey Results Shapefile TRIM Ref:** N/A **Document TRIM Ref:** D21#985105

3.2 Summary of Flora and Vegetation Surveys

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.

Ecoscape (2021a) provided an assessment of likelihood of occurrence of the two species of Trapdoor Spider (*Idiosoma nigrum* and *Idiosoma schoknechtorum*) that were identified through the desktop assessment and a post-survey likelihood of occurrence following the field survey of the survey area, with the conclusion that that the likelihood of occurrence of the two species would be low.

3.3 Summary of Fauna Surveys

Tony Kirkby completed a field survey on 17th March 2022 (D22#404589) 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 firstly inspected from ground level using binoculars for signs of chewing or wear at the entrance indicating use as a breeding hollow. Hollows with a suitable entrance size were then inspected and photographed using a pole camera where possible.

28 tree hollows present in 15 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, 2022):

- Of the 28 hollows inspected 20 were too small at the entrance (<100 mm) and suitable for small parrots.
- Three were found not to be hollows and too shallow.
- Four trees contained five hollows with a suitable entrance size but none had any signs of use.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The proposal is located in the Avon Wheatbelt bioregion within the Shire of 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 the existing transport corridor with approximately 87% 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 proposal area (Ecoscape, 2021) as described in Table 3.

The condition of the native vegetation within the proposal areas ranges from Very Good to Completely Degraded as detailed in Table 4.

The area to be cleared whilst mapped as predominantly *Eucalyptus loxophelba* subsp. *loxophelba* and *Acacia acuminata* mid woodlands, the majority of the clearing will be of the understory which consists of grasses and introduced species.

It should be noted that the proposed clearing of 3.41 ha has been calculated based on mapping provided by Ecoscape (2021) as part of the biological survey.

Table 3 and Table 6 provide details of the vegetation types and their condition within the Proposal and the remaining extents of these associations.

Table 3. Summary of Vegetation Types within Clearing Area

Vegetation Type	Extent within Clearing Area (ha)	Total Extent Mapped (ha) within Survey Area[1]
CoF *Casuarina obesa* mid open forest over *Rhagodia preissii* subsp. *preissii, *Ehrharta longiflora* and *Frankenia pauciflora* midlow chenopod shrubland/grassland/shrubland	0.06	2.23
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	3.24	60.71
EsElW *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* subsp. *loxophleba* mid woodland over *Atriplex semibaccata*, *Maireana brevifolia* and **Avena barbata* low open chenopod shrubland/grassland	0.07	3.26
TlFpSS *Tecticornia lepidosperma* and *Frankenia pauciflora* mid samphire shrubland/shrubland	0.04	0.76
Total	**3.41**	**66.96**

* Denotes an introduced species

Table 4 Vegetation Condition within Clearing Area

Vegetation Condition (EPA, 2019)	Extent within Clearing Area (ha)	Total Extent Mapped (ha) within Survey Area
Very Good	0.01	0.30
Good	0.12	2.86
Degraded	0.72	16.19
Completely Degraded	2.55	48.03

Tables 5 provides details of the Pre-European Vegetation Associations with the project area and the remaining extents of these associations. Vegetation association 1049 has less than 30% of its pre-European extent remaining at all levels, whilst vegetation association 988 has less than 30% remaining at the bioregion level (Table 6). Majority of the project area lies within vegetation association 1049 with only approximately a 700m length area within vegetation association 988

According to the current mapped remnant vegetation (Geographic Information Services, D. 2016) 12.5 % of the study area, 20 km radius, is remnant vegetation.

[1] Biological Survey Area was from SLK 0 to SLK 45.

Table 5: Summary of Project Area's Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 1049 described as a Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet	Clearing of up to 3.41 ha for road widening and overlay on Northam Pithara Road.	Very Good 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)			

Table 6. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	% Current Extent in DBCA Managed Land (proportion of pre-European Extent)
Veg Assoc No. 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 Goomalling	79,902.05	8,861.02	11.09	0.04
Veg Assoc No. 988	**Statewide** 988 (Goomalling)	96,635.23	29,324.55	30.35	4.60
	IBRA Bio region 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

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 not likely to be at variance with the ten Clearing Principles.

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

Proposed clearing is not at variance to this Principle.

Assessment

The proposal area is narrow, long and linear over 18km and adjacent to the existing roadway, within an agricultural landscape. The project will require the clearing of up to 3.41 ha of native vegetation. Condition of the vegetation proposed to be cleared ranges between Very Good and Completely Degraded, with the majority of the vegetation (75%) in Completely Degraded condition.

It should be noted that the proposed clearing of 3.41 ha has been calculated based on mapping provided by Ecoscape (2021) as part of the biological survey. Whilst an area of 3.41 ha has been mapped within the proposal area, as shown in Appendix 1, the clearing proposed consists of predominantly the understory of these mapped vegetation types which sit adjacent to the roadside, with the overstory trees to remain with the exception of approximately 12 trees (which is inclusive of 4 DBH trees).

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
- CoF: *Casuarina obesa* mid open forest (wetland or wetland fringe)
- TlFpSS: *Tecticornia lepidosperma* and *Frankenia pauciflora* mid samphire shrubland/shrubland (wetland)

Database searches by Ecoscape (2021) 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 survey 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 proposal 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). None of the identified weed species were within the vicinity of the project area.

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 three areas of vegetation adjacent to the proposal area that represents Wheatbelt TEC/PEC. No Wheatbelt TEC/PEC will be cleared as a result of this proposal.

The proposed clearing area comprises two fauna habitat types:

- Samphire Shrubland; and
- Woodland.

Database searches by Ecoscape (2021) 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).

Other species were not considered as likely to occur based on the absence of suitable habitat.

As assessed under Principle b, the proposed clearing area comprises up to 3.41 ha of suitable foraging habitat (low to medium quality) for Carnaby's Cockatoo and 4 DBH trees, with no hollows suitable for black cockatoo breeding (Ecoscape 2021, Kirkby 2022).

The native vegetation proposed to be cleared is not considered to comprise a high level of biological diversity due to its largely Degraded condition, lack of significant fauna and flora species, and the high presence of weeds within the understory.

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

Methodology

- Biological Survey (Ecoscape, 2021)
- Kirkby (2022)
- DCCEEW Protected Matters Search Tool Report
- Department of Natural Resources and Environment (2002)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 21 February 2023)
  - DBCA Threatened and Priority flora database search (Accessed 21 February 2023)

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

Proposed clearing is not at variance to this Principle.

Assessment

The proposed clearing area comprises of two fauna habitats, in mostly Completely Degraded condition:

- Samphire Shrublands (0.1%)
- Woodland (99%).

Both habitats provide potentially suitable habitat for a range of fauna species and are 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),
- 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.

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 within 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 dependent 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 within 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 3.31 ha of vegetation types EwAaW and ElAaW represent the habitat suitable for Shield-backed Trapdoor Spider species. This area represents 97% 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 2.3 km north 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 understory 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.

Black Cockatoo Habitat Assessment

The project occurs within the mapped distribution of the Carnaby's Cockatoo (EPA, 2019). Whilst the mapped vegetation types represent potentially suitable (low-medium quality) foraging habitat for Carnaby Cockatoos, predominantly the understory vegetation within the 3.41 ha of mapped clearing extent will be removed, retaining available foraging vegetation.

99 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 4 DBH trees with all others identified to be retained. An assessment of hollows within the trees to be removed found none suitable for breeding by Black Cockatoos (Kirkby, 2022)

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

Based on the above assessment, the vegetation proposed to be cleared, which consists predominately of the understorey of the vegetation assemblage, is not expected to represent significant habitat for native fauna species.

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

Methodology

- Biological Survey (Ecoscape 2021)
- Kirkby (2022)
- DCCEEW Protected Matters Search Tool Report
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed 21 February 2023)

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

Proposal is not at variance to this Principle.

Assessment

Database searches by Ecoscape (2021) identified 13 Threatened flora species that are known to occur in the study area (20 km radius). A review of DBCA database in February 2023 did not identify any additional species than those previously noted by Ecoscape.

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)
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed 21 February 2023)

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

Proposed clearing is not at variance to this Principle.

Assessment

No State or Federally listed TECs will be cleared as part of the proposed works. Whilst some occurrences of the *Eucalypt Woodlands of the Western Australian Wheatbelt* TEC (Wheatbelt TEC) were identified during the biological survey (Ecoscape, 2021) these were excluded from the proposed clearing area and will be demarcated during works to ensure there is no impact to these areas. No works will occur within 0.5m of the base of the trees between 44.3 SLK and 44.5 SLK, that form part of the adjacent TEC area.

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

Methodology

- Biological Survey (Ecoscape, 2021)

(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 likely to be at variance to this Principle.

Assessment

According to the broad scale mapping undertaken by Beard (Shepherd et al 2001), the project area lies within vegetation associations 988 and 1049. Within the 20km study area there is approximately 12.5 % of native vegetation remaining.

- Vegetation Association 988 - described as a Succulent steppe with thicket; Melaleuca thyoides over samphire.

- Vegetation Association 1049 - described as a Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet.

Vegetation unit 1049 has less than 30% of pre-European extent remaining at all scales, whilst vegetation unit 988 has less than 30% of pre-European extent remining in the IBRA bioregion (refer to table below). However, as only 0.13 ha (0.46% of the total proposed native vegetation clearing) of proposed clearing area is in Very Good/Good Vegetation and the rest is in Completely Degraded or Degraded condition, the majority of the vegetation proposed to be cleared is no longer representative of the original vegetation associations.

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
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 Goomalling	79,902.05	8,861.02	11.09	0.04
Veg Assoc No. 988	**Statewide** 988 (Goomalling)	96,635.23	29,324.55	30.35	4.60
	IBRA Bio region 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

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 (3.41 ha) along a stretch of 18 km will reduce the ecosystem functioning or will be a barrier to ecological linkages.

The native vegetation proposed to be cleared does not include flora or communities of significance or comprise significant habitat for fauna. Additionally as shown in the figures in Appendix 1, all but 4 DBH trees will be retained along the 18 km length of the project.

As shown in Appendix 1, the majority of the overstory vegetation will be retained with the majority of the clearing being the mapped understory which consists of smaller shrubs, grasses and introduced weed species. Given the minor nature of the clearing the proposed clearing activities will have very minimal impact on the current % of remaining pre-European vegetation extent.

A previously granted clearing permit where the application area supported vegetation that retained less than 30% of its extent but was not considered to be a significant remnant by DWER is the following:

- CPS 6851 – Approximately 5ha of vegetation in Degraded to Completely Degraded condition in a linear shape was not considered to be a significant remnant.

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

Methodology

- Aerial photography
- Biological Survey (Ecoscape, 2021)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 14th February 2023)
  - Vegetation complexes (Accessed 14th February 2023)
- Statewide Vegetation Statistics (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 not likely to be at variance to this Principle.

Assessment

The following non-perennial minor watercourses cross the project area:

- Mungilan Creek at 28.65 SLK;
- Woormenning Gully 43.06 SLK; and
- Un-named watercourses at 35.8 and 39.12 SLK.

None of the culverts associated with the above watercourses are scheduled for replacement/extention and widening work will be undertaken within the existing shoulder above the watercourse.

As such no native vegetation growing in or in association with a watercourse will be cleared.

No wetlands are located within 20km of the project area.

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

Methodology

- Biological Survey (Ecoscape, 2021)
- Government GIS shapefiles:
  - Ramsar Wetlands (Accessed 14th February 2023)
  - Important Wetlands (Accessed 14th February 2023)

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

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

Assessment

The proposed clearing intersects the following Land Systems:

- Greenhills System – 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.
- 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.

- 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.

Greenhills is the dominant Land System type.

Soil Landscape Quality Mapping and CSIRO risk mapping indicates a low risk of land degradation as outlined for the aspects below:

- Flood Risk – Majority of the project area has <3% and 3-10% of the map unit having moderate to hight flood risk. One small area, associated with a non-perennial watercourse, has a >70% of the 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. A small section, associated with a non-perennial watercourse has a 30-50% map unit has a moderate to high salinity risk or is presently saline.
- Waterlogging – Majority of the project has a <3% and 3-10% of map unit having a moderte to very high waterlogging risk with a small section associated with a non-perennial watercourse which has >70% of map unit having a moderate to very high waterlogging risk.
- Water Erosion – Majority of the proiject has a <3% and 3-10% of map unit having a moderte to very high waterlogging risk.
- Wind Erosion – Majoirty of the project area has a 3-10% of map unit having a high to extreme wind erosion risk. Three smaller areas have a 30-50 and 50-70% of map unit having a high to extreme wind erosion risk. These areas are associated with a non-perennial watercourse and clearing agricultural land with higher elevation.
- Acid Sulphate Soils (ASS) – Low Probability of Occurrence

No dewatering or excavation below the water table will occur as part of the planned works.

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 any appreciable increase in land degradation. Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of localised wind erosion.

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)
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed 24th January 2023)
  - Soil landscape land quality – Water Erosion Risk (Accessed 24th January 2023)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 24th January 2023)
  - Soil landscape land quality – Salinity Risk (Accessed 24th January 2023)
  - Soil landscape land quality – Waterlogging Risk (Accessed 24th January 2023)
  - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed 24th January 2023)
  - Soil Landscape Mapping Systems (DPIRD-064) (Accessed 24th January 2023)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

Assessment

The proposed project is located adjacent to DBCA managed land (unnamed reserve R 1563, Class A), vested to the Conservation Commission of WA for the purpose of conservation of flora and fauna. The reserve is located on the eastern side of the proposed project area, between 28.16 SLK and 29.23 SLK. All works will remain within the road reserve and will have no direct impact on the reserve.

The vegetation to be cleared adjacent to the reserve is in Good to Degraded condition and was not found to be representative of the Wheatbelt TEC/PEC (Ecoscape, 2021).

Due to the nature of the project, being widening of the existing road seal and table drains, the resultant clearing will be a very narrow strip (1-2m in width) along the road edge which is not expected to break any linkages or impact on the environmental values of the adjacent conservation area (refer to figure 15 of 17 in Appendix 1). All works will remain within the existing road reserve, with the edge of the Reserve demarcated to ensure no encroachment on the area.

No trees are planned to be cleared within this area with this section of the project area being in a fill slope, allowing for tie in to existing fall away drainage, as shown in indicative photo of the vegetation in Figure 15 of 17 in Appendix 1.

Whilst no declared plants or weeds of national significance have been recorded in the road reserve in the vicinity of the conservation reserve, there is potential for the spread of weeds into the area. In order to minimise this risk Main Roads standard weed management and hygiene measure will be implemented to avoid the potential indirect weed impacts to the reserve.

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)
- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters & Lands of Interest (Accessed 14th February 2023)

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

Proposed clearing is not at variance to this Principle.

Assessment

Clearing of the narrow strips of native vegetation proposed across a long section of the existing road will not raise the water table or impact on surface water or groundwater quality within the area. The works are scheduled to be undertaken during drier months with existing drainage maintained.

The project does not occur in the vicinity of a mapped Public Drinking Water Source Area or their protection zones, and no dewatering is proposed as part of the project works.

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

Methodology

- Biological Survey (Ecoscape, 2021)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 14th February 2023)
  - RIWI Act, Groundwater Areas (Accessed 14th February 2023)

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

Proposed clearing is not at variance to this Principle.

Assessment

The study area receives an average rainfall of 364.6 mm (Goomalling) per year (BOM, 2023) 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 (3.41 ha) along 18 km of existing road is unlikely to cause or exacerbate the incidence or intensity of flooding. Additionally, the project design incorporates culvert extensions and 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

- Biological Survey (Ecoscape, 2021)
- BoM Website (Accessed 24th January 2023)

6 STAKEHOLDER CONSULTATION

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

7 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.	**No**	No further action required.
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: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • works have potential for **uninfested** areas to be impacted.	**No**	Standard Vehicle and Plant management actions from Principal Environmental Management Requirements (PEMRs) and Hygiene Checklists will be applied.
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	**No**	No further action required.
6. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback.	**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. CEMP requires that all vehicles and machinery arrive on site clean and that weed infested mulch is removed from site, therefore there is a low risk of weed spread.

Impact of Clearing	Yes/No or NA	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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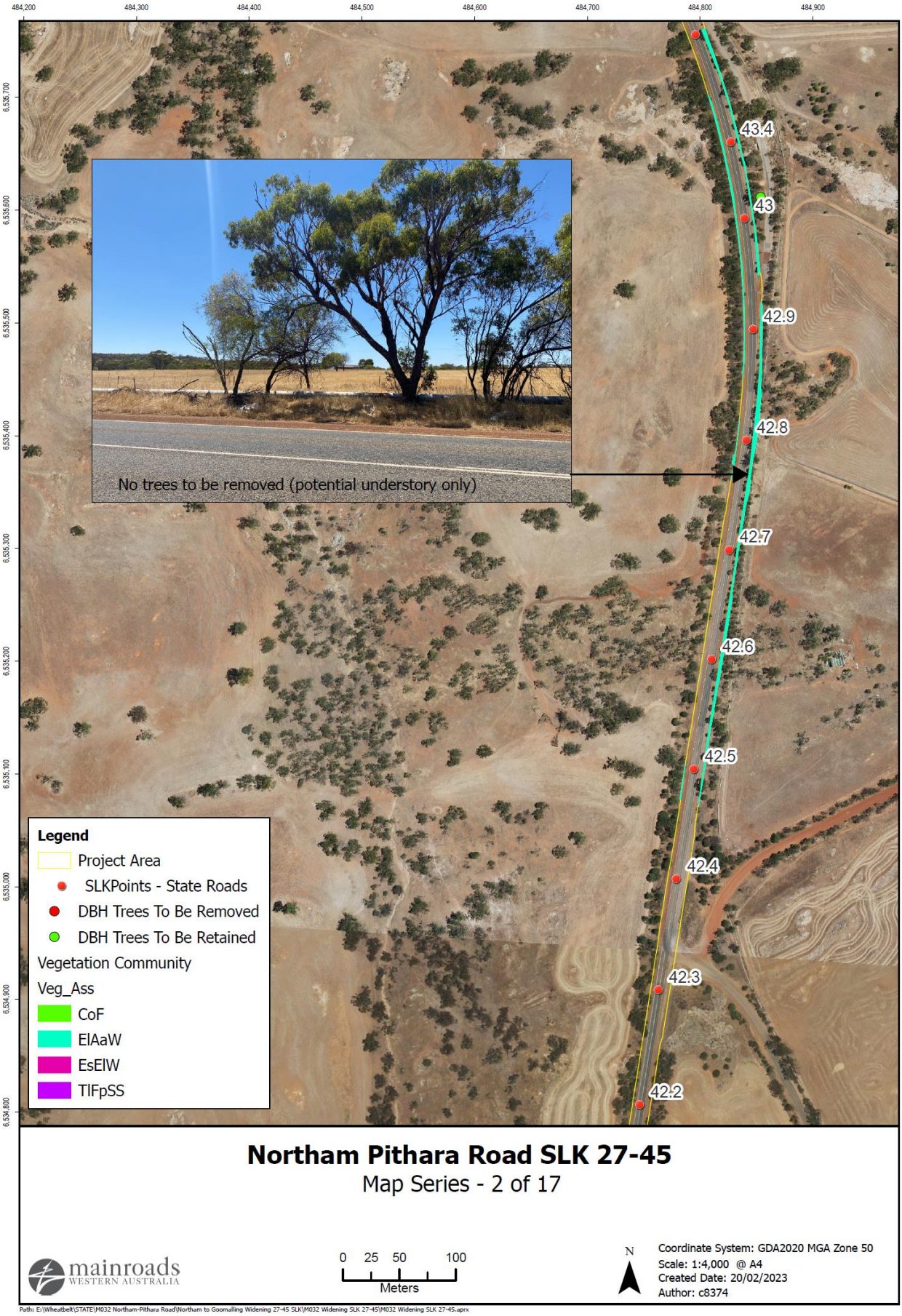
9 APPENDICES

Appendix 1: Vegetation within Clearing Area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6,534,900
6,534,800
43.4
43
42.9
42.8
42.7
42.6
42.5
42.4
42.3
42.2
No trees to be removed (potential understory only)
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 2 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
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Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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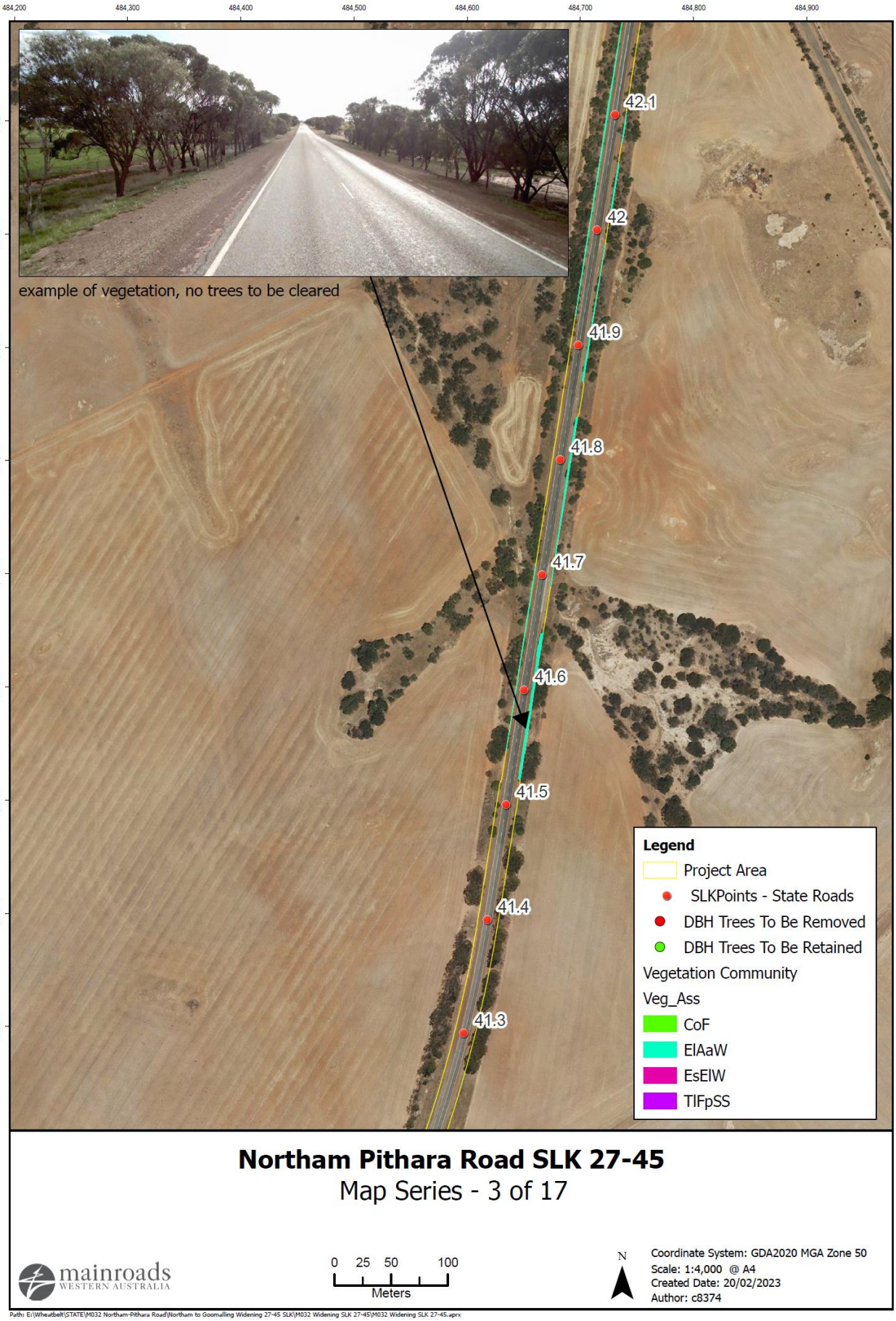
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example of vegetation, no trees to be cleared
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41.3
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
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EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 3 of 17
mainroads
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Coordinate System: GDA2020 MGA Zone 50
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Author: c8374
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6,532,900
example of vegetation, no trees to be cleared
41.1
41
40.9
40.8
40.7
40.6
40.5
40.4
40.3
40.2
40.1
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 4 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx

Northam Pithara Road SLK 27-45

Map Series - 5 of 17

mainroads WESTERN AUSTRALIA

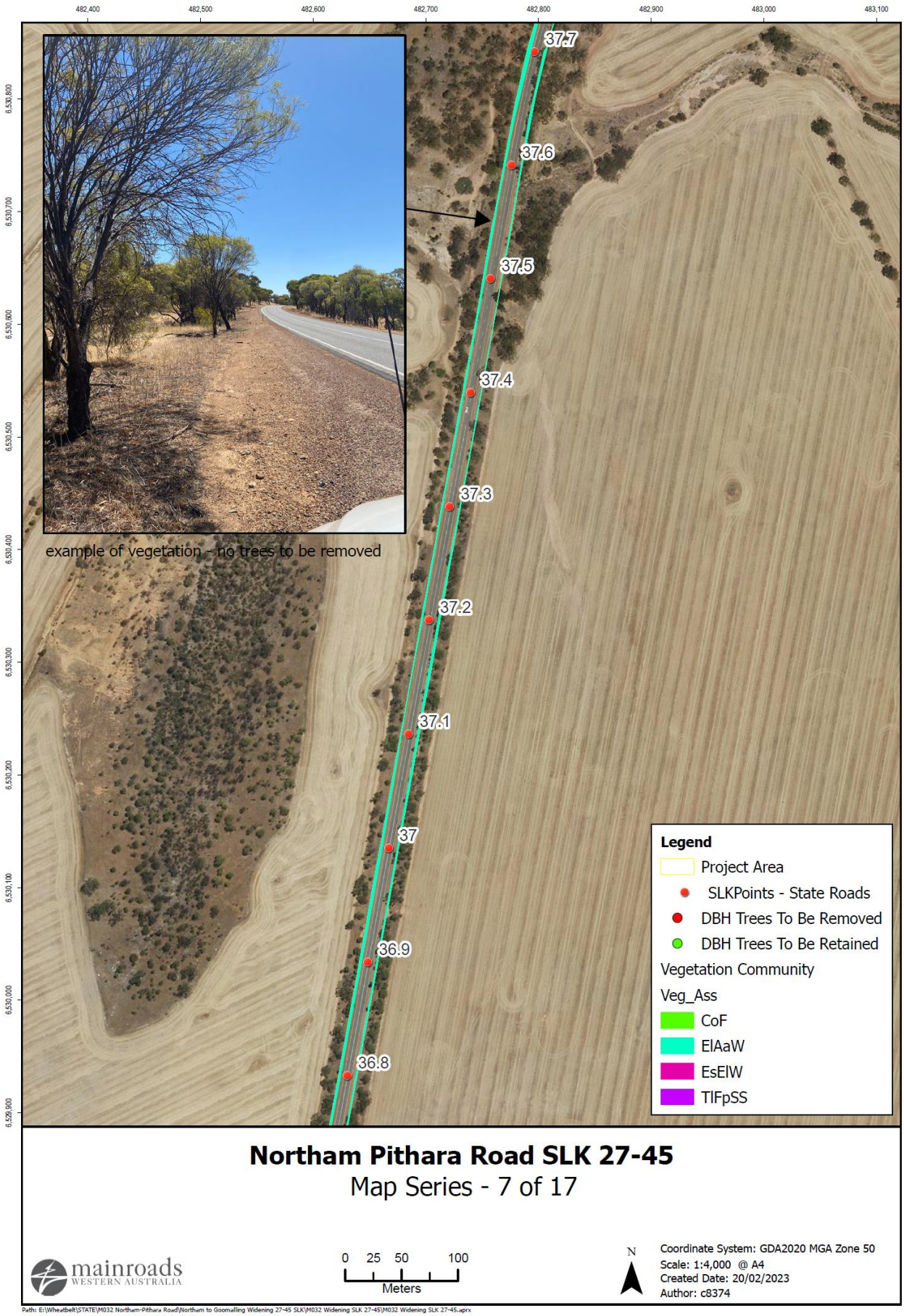
0 25 50 100
Meters

N

Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374

Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx


482,700
482,800
482,900
483,000
483,100
483,200
483,300
483,400
6,531,800
6,531,700
6,531,600
6,531,500
6,531,400
6,531,300
6,531,200
6,531,100
6,531,000
6,530,900
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
38.8
38.7
38.6
38.5
38.4
38.3
38.2
38.1
38
37.9
37.8
example of vegetation, no trees to be cleared
Northam Pithara Road SLK 27-45
Map Series - 6 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx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482,500
482,600
482,700
482,800
482,900
483,000
483,100
6,530,800
6,530,700
6,530,600
6,530,500
6,530,400
6,530,300
6,530,200
6,530,100
6,530,000
6,529,900
37.7
37.6
37.5
37.4
37.3
37.2
37.1
37
36.9
36.8
example of vegetation - no trees to be removed
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 7 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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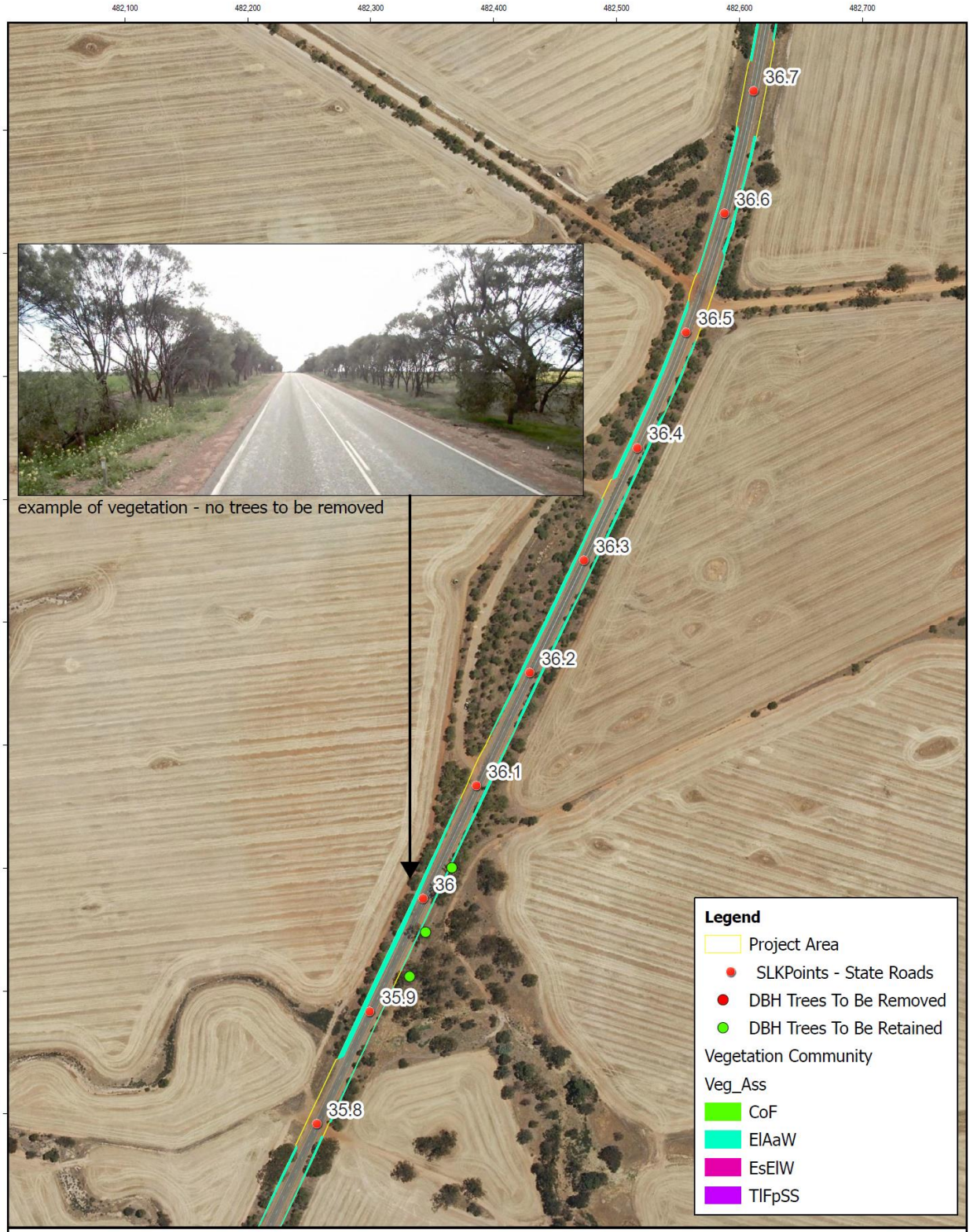

Northam Pithara Road SLK 27-45

Map Series - 8 of 17

mainroads WESTERN AUSTRALIA

0 25 50 100
Meters

N

Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374

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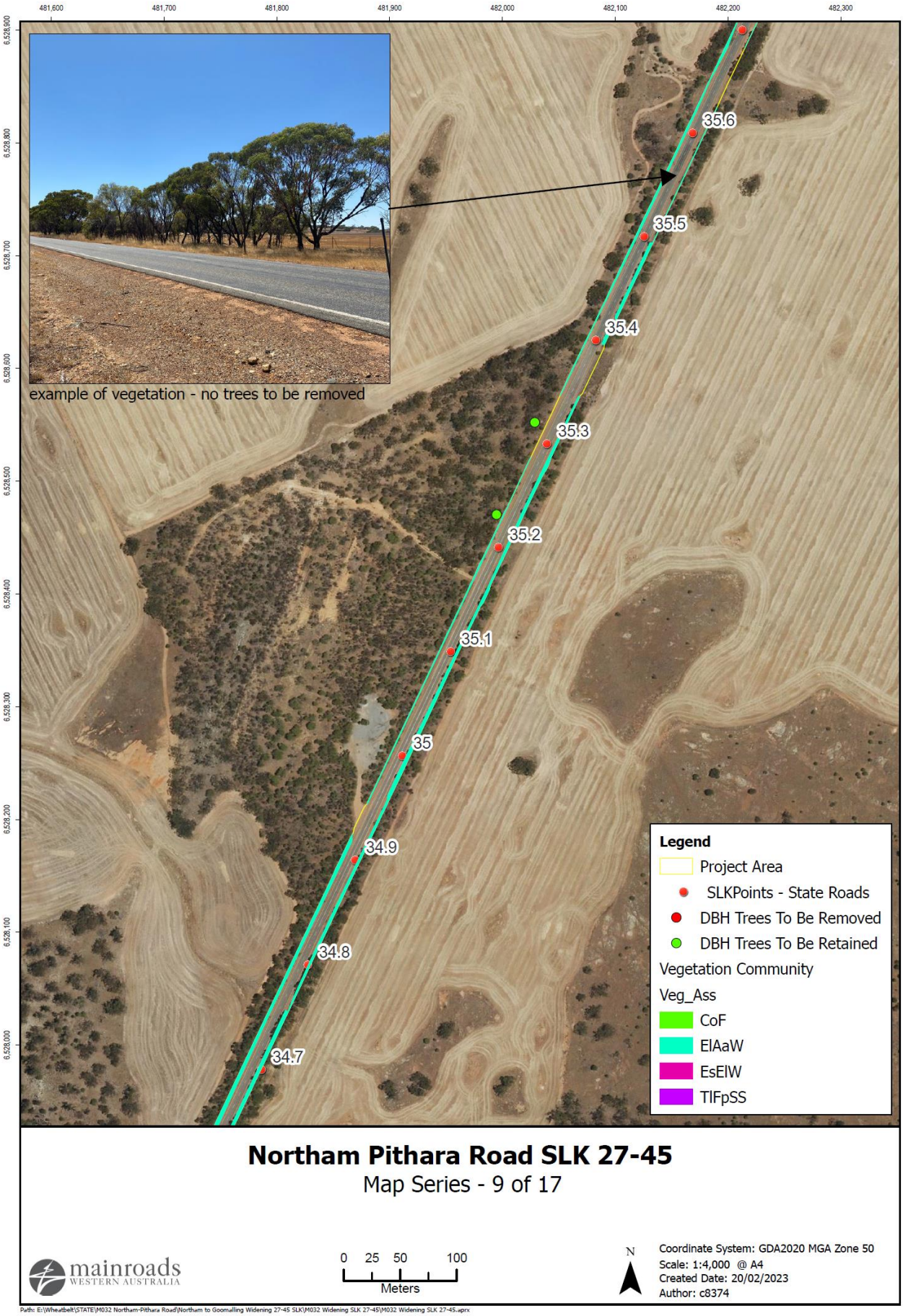
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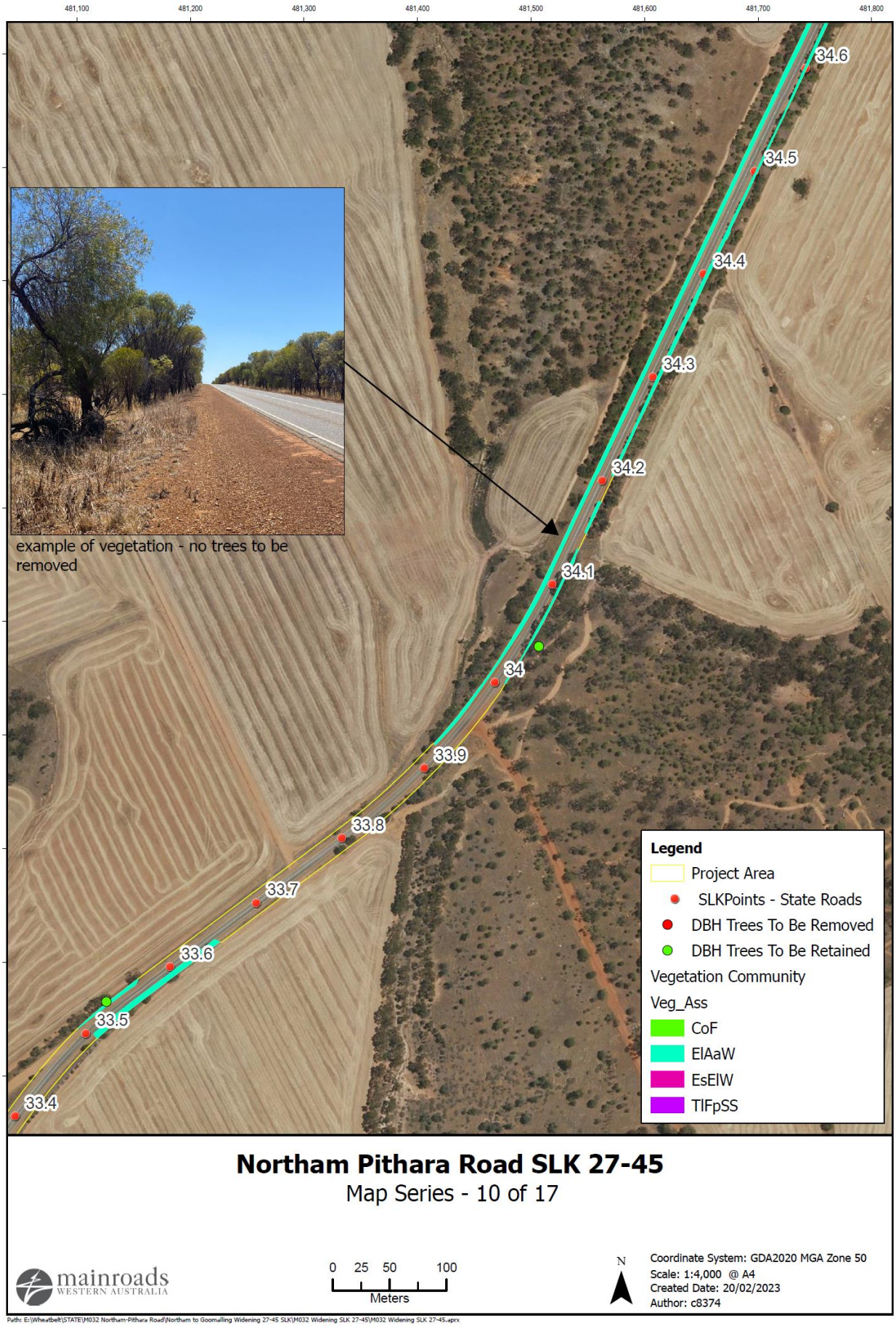
481,700
481,800
481,900
482,000
482,100
482,200
482,300
6,528,900
6,528,800
6,528,700
6,528,600
6,528,500
6,528,400
6,528,300
6,528,200
6,528,100
6,528,000
35.6
35.5
35.4
35.3
35.2
35.1
35
34.9
34.8
34.7
example of vegetation - no trees to be removed
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 9 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx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481,200
481,300
481,400
481,500
481,600
481,700
481,800
6,527,900
6,527,800
6,527,700
6,527,600
6,527,500
6,527,400
6,527,300
6,527,200
6,527,100
6,527,000
34.6
34.5
34.4
34.3
34.2
34.1
34
33.9
33.8
33.7
33.6
33.5
33.4
example of vegetation - no trees to be removed
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 10 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx


480,400
480,500
480,600
480,700
480,800
480,900
481,000
481,100
6,526,900
6,526,800
6,526,700
6,526,600
6,526,500
6,526,400
6,526,300
6,526,200
6,526,100
33.4
33.3
33.2
33.1
33
32.9
32.8
32.7
32.6
32.5
32.4
Tree to be removed
(tree on right)
Tree to be removed
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 11 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
Path: E:\Wheatbelt\STATE\M032 Northam-Pithara Road\Northam to Goomalling Widening 27-45 SLK\M032 Widening SLK 27-45\M032 Widening SLK 27-45.aprx


480,200
480,300
480,400
480,500
480,600
480,700
480,800
480,900
6,526,000
6,525,900
6,525,800
6,525,700
6,525,600
6,525,500
6,525,400
6,525,300
6,525,200
6,525,100
32.3
32.2
32.1
32
31.9
31.8
31.7
31.6
31.5
No trees to be removed, edge of understory only
Tree to be removed
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 12 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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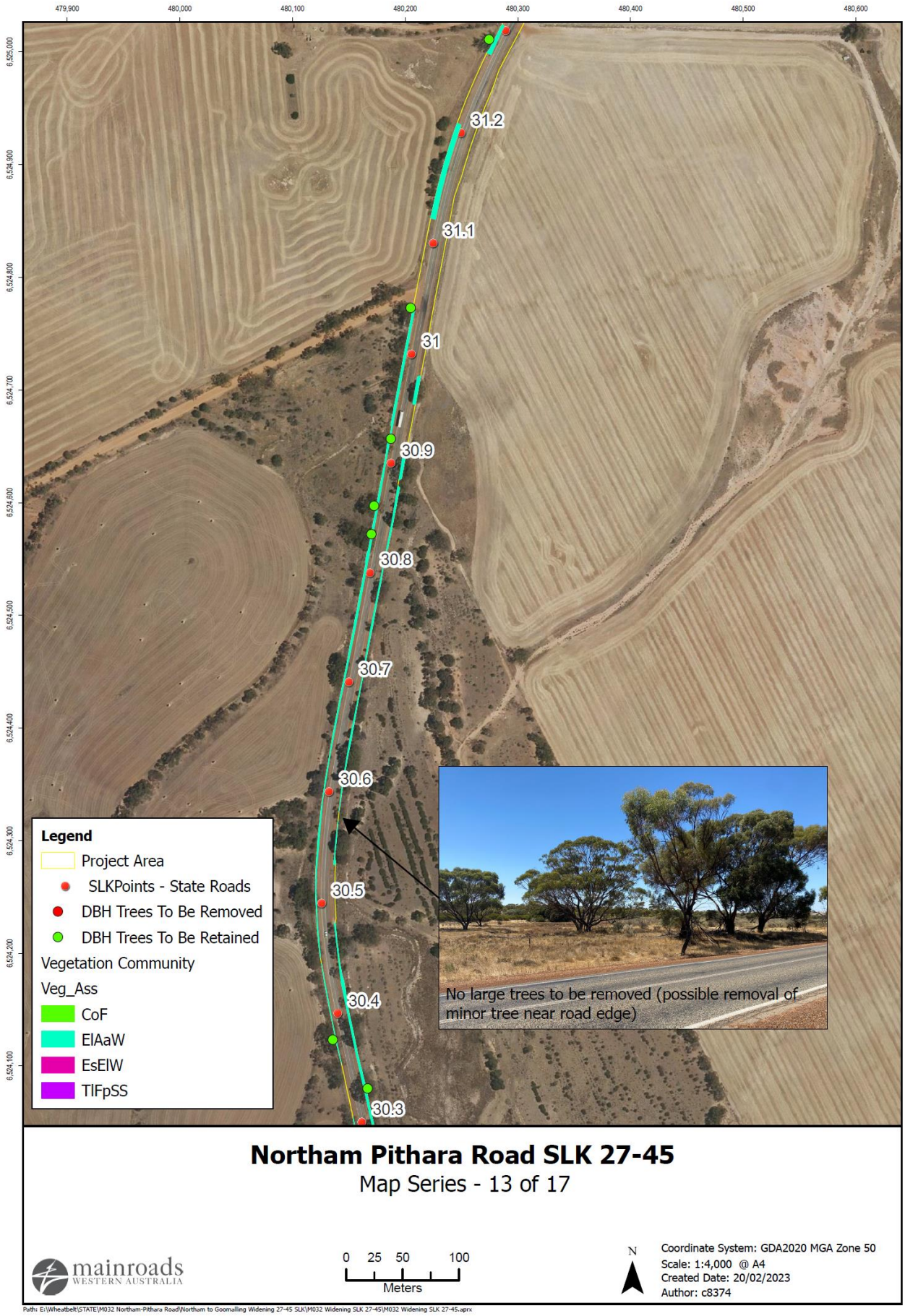
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480,100
480,200
480,300
480,400
480,500
480,600
6,525,000
6,524,900
6,524,800
6,524,700
6,524,600
6,524,500
6,524,400
6,524,300
6,524,200
6,524,100
31.2
31.1
31
30.9
30.8
30.7
30.6
30.5
30.4
30.3
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
No large trees to be removed (possible removal of minor tree near road edge)
Northam Pithara Road SLK 27-45
Map Series - 13 of 17
mainroads WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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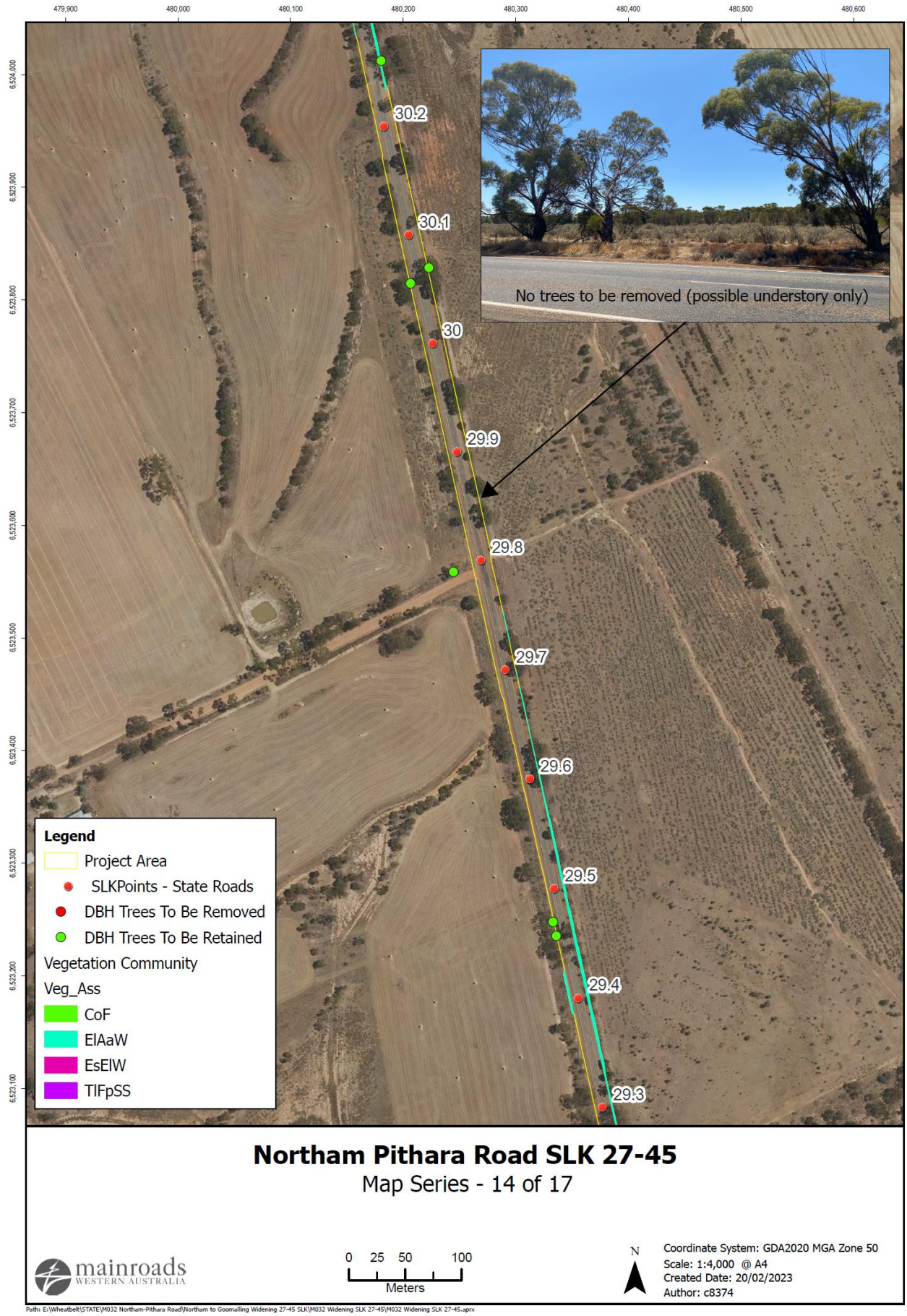
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480,200
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480,400
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480,600
6,524,000
6,523,900
6,523,800
6,523,700
6,523,600
6,523,500
6,523,400
6,523,300
6,523,200
6,523,100
30.2
30.1
30
29.9
29.8
29.7
29.6
29.5
29.4
29.3
No trees to be removed (possible understory only)
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 14 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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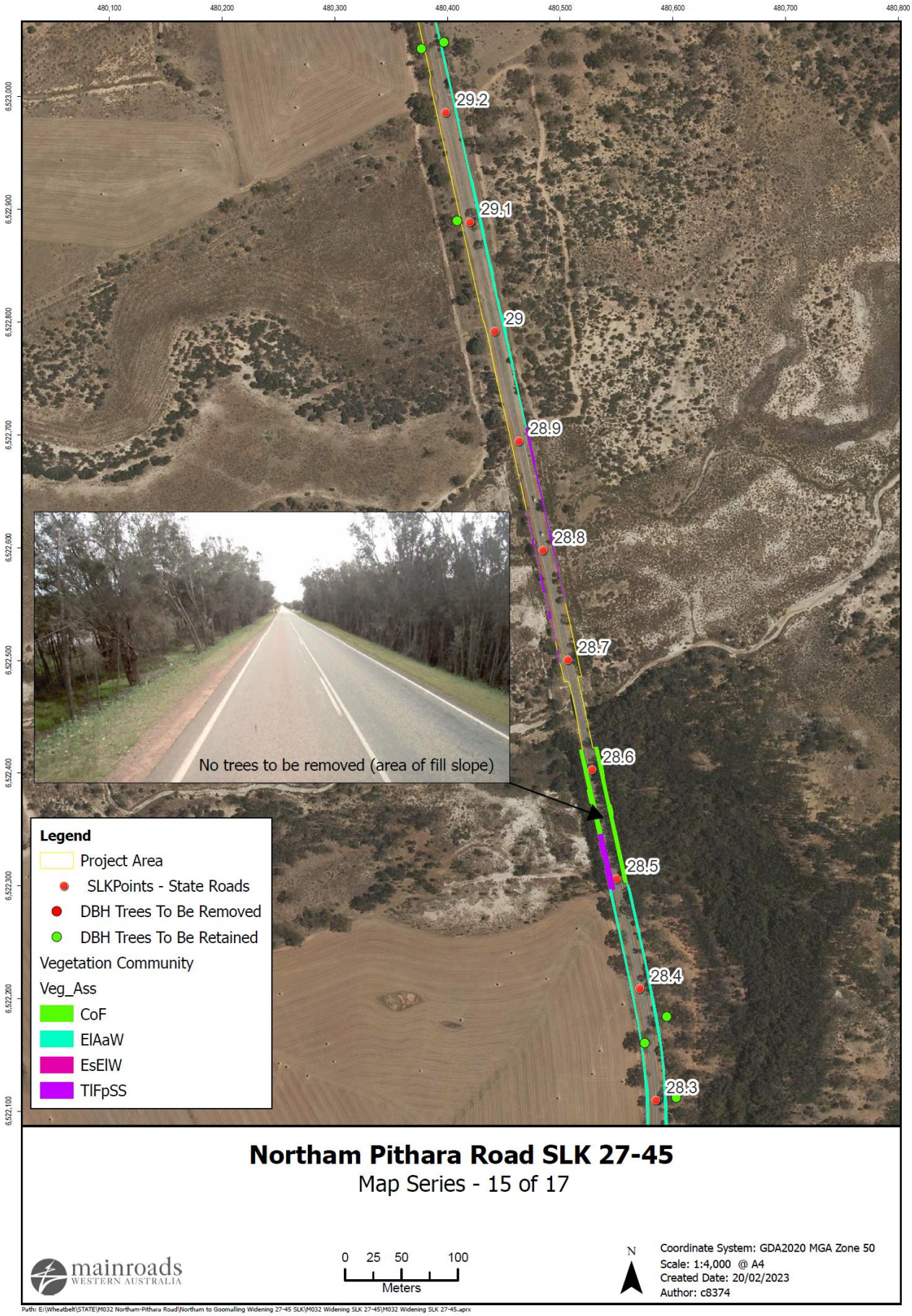
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480,700
480,800
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6,522,900
6,522,800
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6,522,600
6,522,500
6,522,400
6,522,300
6,522,200
6,522,100
29.2
29.1
29
28.9
28.8
28.7
28.6
28.5
28.4
28.3
No trees to be removed (area of fill slope)
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 15 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
Scale: 1:4,000 @ A4
Created Date: 20/02/2023
Author: c8374
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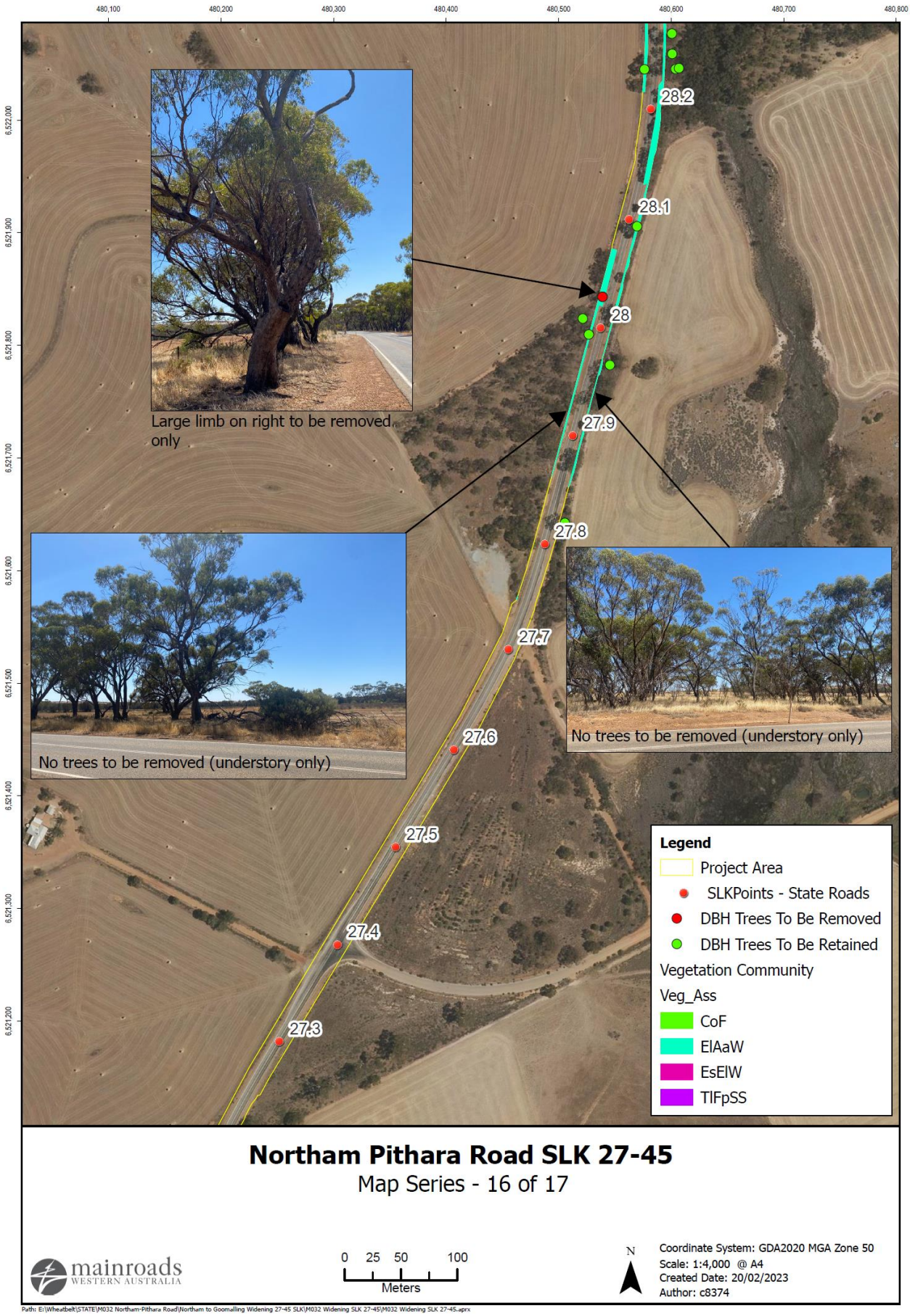
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6,522,000
6,521,900
6,521,800
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6,521,600
6,521,500
6,521,400
6,521,300
6,521,200
28.2
28.1
28
27.9
27.8
27.7
27.6
27.5
27.4
27.3
Large limb on right to be removed only
No trees to be removed (understory only)
No trees to be removed (understory only)
Legend
Project Area
SLKPoints - State Roads
DBH Trees To Be Removed
DBH Trees To Be Retained
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 16 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
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Created Date: 20/02/2023
Author: c8374
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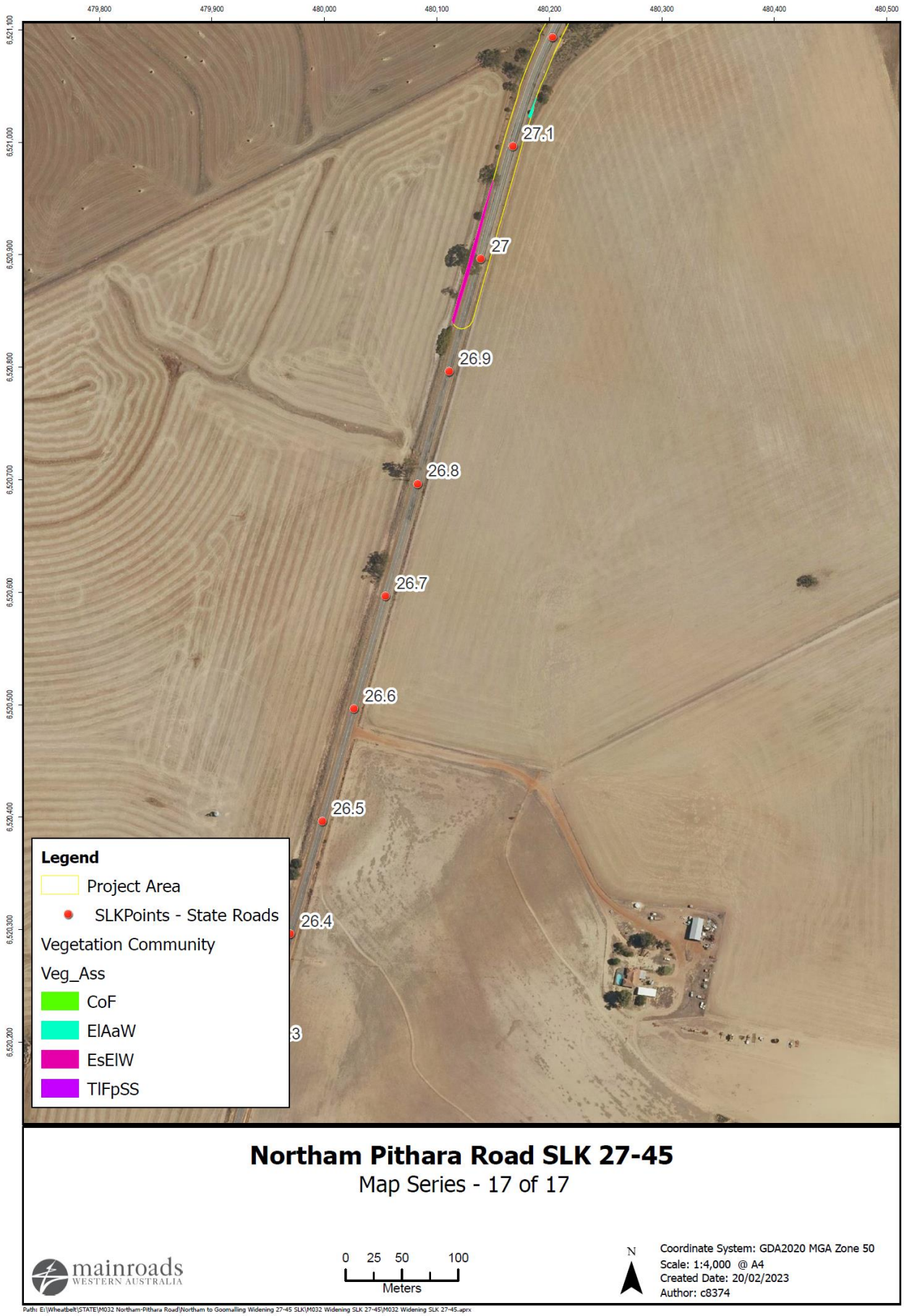
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6,521,000
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6,520,700
6,520,600
6,520,500
6,520,400
6,520,300
6,520,200
27.1
27
26.9
26.8
26.7
26.6
26.5
26.4
Legend
Project Area
SLKPoints - State Roads
Vegetation Community
Veg_Ass
CoF
ElAaW
EsElW
TlFpSS
Northam Pithara Road SLK 27-45
Map Series - 17 of 17
mainroads
WESTERN AUSTRALIA
0 25 50 100
Meters
N
Coordinate System: GDA2020 MGA Zone 50
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