GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 10102/1

File Number: DWERVT12158

Duration of Permit: From 2 October 2023 to 2 October 2030

PERMIT HOLDER

Arc Infrastructure

LAND ON WHICH CLEARING IS TO BE DONE

Water reserve (PIN 11947627), Lockier

Lot 88 on Plan 4300, Lockier

Lot 90 on Plan 4300, Lockier

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.63 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 2 October 2025.

2. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

3. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared;

(d) only move soils in *dry conditions*; and

(e) where *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is to be removed from the area to be cleared, ensure it is transferred to areas of comparable soil disease status.

4. Revegetation and Rehabilitation

The permit holder must within 12 months of undertaking clearing authorised under this permit, the permit holder shall implement and adhere to the 'Strawberry Bridge Revegetation Plan, Lockier, Revision Number 1.00', prepared by Arc Infrastructure, including but not limited to the following actions:

(a) undertake deliberate *planting* of 104 *Eucalyptus camaldulensis* trees and 15 *Acacia rostellifera* plants within the areas crosshatched red in Figure 2 of the Schedule 1, by:

  (i) ensuring only *local provenance* species are used;

  (ii) ensuring *planting* is undertaken at the *optimal time*;

(b) undertake watering and *weed* control of *plantings* for at least two years post planting to ensure the weed cover is less than 20 per cent at the end of the *revegetation* and *rehabilitation* period;

(c) the permit holder must within 24 months of *planting* the trees in accordance with condition 4(a) of this permit:

  (i) engage an *environmental specialist* to make a determination of the survival of the planted *Eucalyptus camaldulensis* trees and *Acacia rostellifera* plants;

  (ii) if the determination made by the *environmental specialist* under condition 4(c)(i) that the survival rate of the planted trees is not achieved at least 75 per cent for *Eucalyptus camaldulensis* trees (equivalent to 78 trees survived) and at least 80 per cent for *Acacia rostellifera* (equivalent to 12 trees survived), the permit holder must plant additional trees that will result in 78 *Eucalyptus camaldulensis* trees and 12 *Acacia rostellifera* trees persisting within the areas crosshatched red in Figure 2 of the Schedule 1.

(d) where additional *planting* of trees is undertaken in accordance with condition 4(c), the permit holder must repeat the activities required by condition 4(a), 4(b) and 4(c) of this permit.

5. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3.
2.	In relation to *revegetation* and *rehabilitation* pursuant to condition 4	(a) the date(s) that *revegetation* and *rehabilitation* occurred; (b) the size and location of *revegetated* and *rehabilitated* areas, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees; (c) a description of the *revegetation* and *rehabilitation* activities undertaken; (d) a list of species, including quantities used for *revegetation* and *rehabilitation* in accordance with the requirements of conditions 4(a); (e) a copy of the environmental specialist's monitoring report and determination; and (a) a description of any remedial actions undertaken pursuant to condition 4(c)(ii) and 4(d) where ethe *environmental specialist* indicated that planted trees will not survive.

6. Reporting

The permit holder must provide to the *CEO* the records required under condition 5 of this permit when requested by the *CEO*.

DEFINITIONS

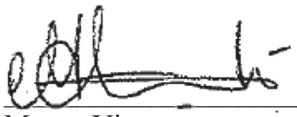
In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
dry conditions	means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
optimal time	means the period from May to July for undertaking planting.
planting	means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate / vegetated / revegetation	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and

Term	Definition
	density is similar to pre-clearing vegetation types in that area.
soil disease status	means soil types either infested, not infested, uninterpretable or not interpreted with a pathogen.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

8 September 2023

SCHEDULE 1

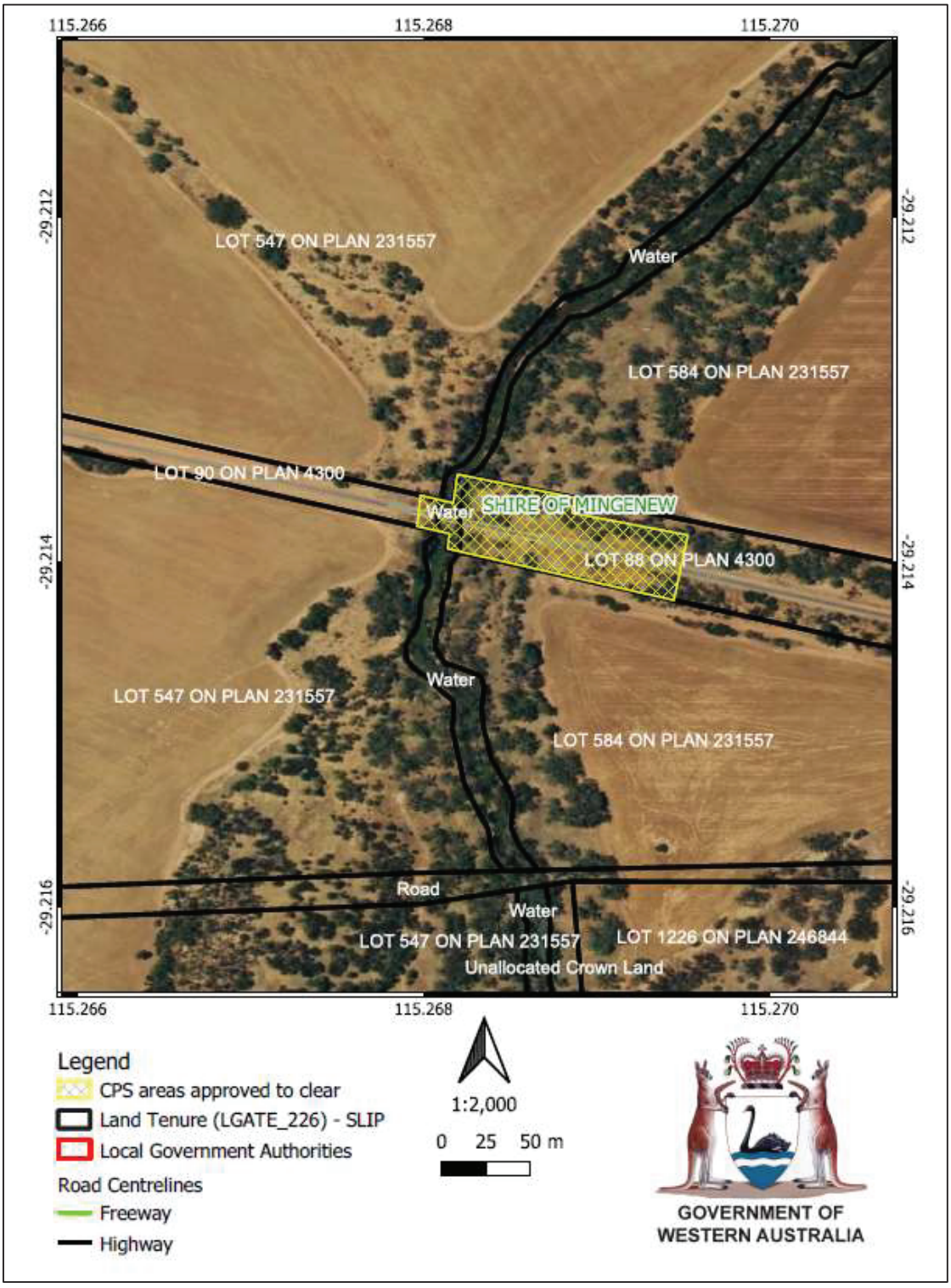


Figure 1: Map of the boundary of the area within which clearing may occur

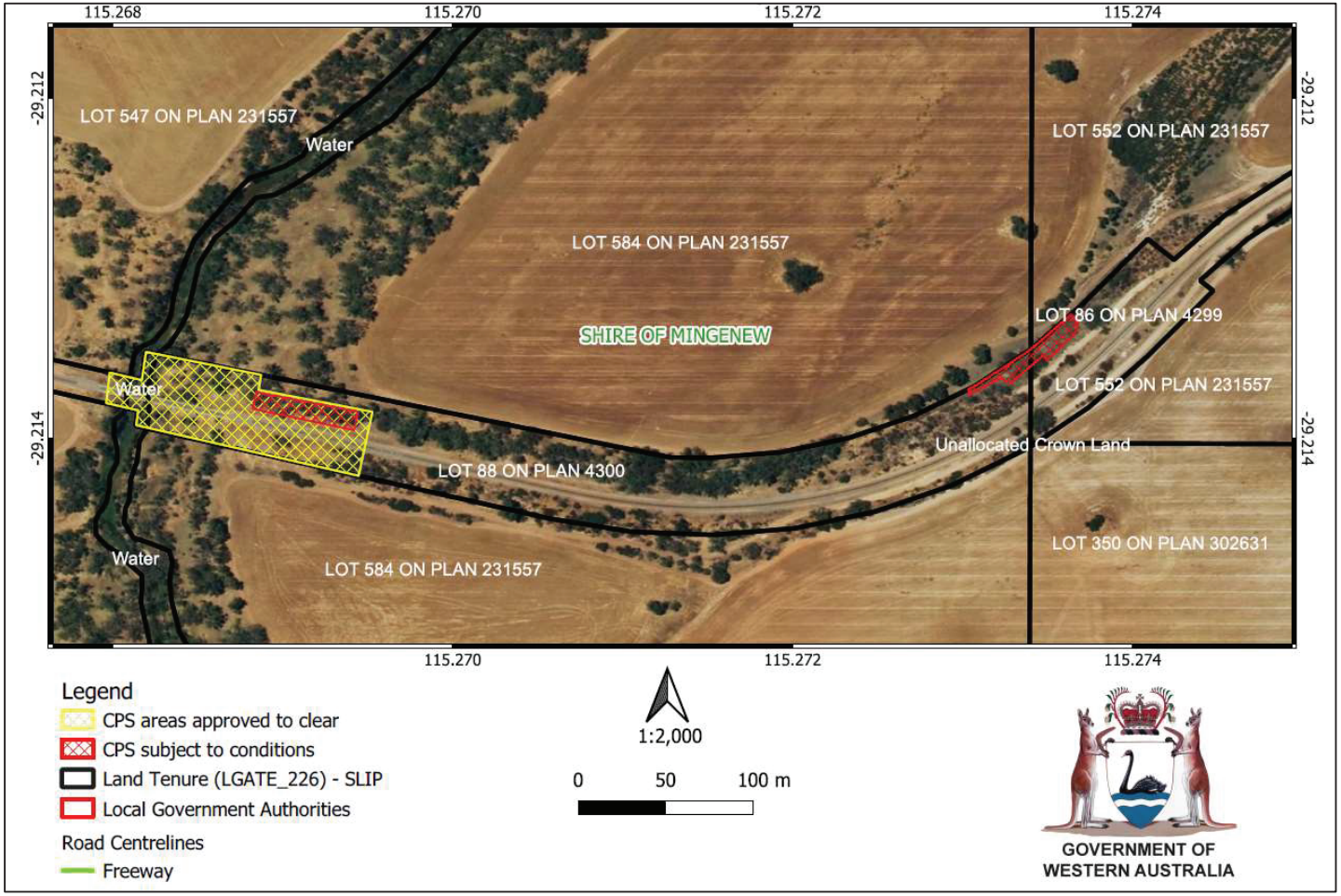


Figure 2: Map of the revegetation and rehabilitation areas (red crosshatched)

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10102/1
Permit type:	Area permit
Applicant name:	Arc Infrastructure
Application received:	3 March 2023
Application area:	0.63 hectares of native vegetation, including 52 trees of *Eucalyptus camaldulensis* and a small stand of *Acacia rostellifera*
Purpose of clearing:	Railway infrastructure maintenance, installation of rock armoury and laydown areas
Method of clearing:	Mechanical removal
Property:	Water reserve (PIN 11947627) Lot 88 on Plan 4300 Lot 90 on Plan 4300
Location (LGA area/s):	Shire of Mingenew
Localities (suburb/s):	Lockier

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5). The application is to clear 0.63 hectares of native vegetation for the purpose of railway bridge maintenance. The area proposed to be cleared is an approximately 150-metre strip within Water reserve (PIN 11947627), Lot 88 on Plan 4300 and Lot 90 on Plan 4300, Lockier. The vegetation proposed to clear includes 52 trees of *Eucalyptus camaldulensis* (river red gum) and a small stand of *Acacia rostellifera* (summer-scent wattle) (Arc Infrastructure, 2023b and 2023d).

Rail bridge maintenance work include following activities (Arc Infrastructure, 2023b):

- Repairing the footing damaged by a high rainfall event and high velocity of river water under the bridge.
- Installing rock armoury on the embankment adjacent the bridge and across the river bed.

Currently this section of rail is already under speed restrictions for trains. Without the above maintenance activities, the bridge is at greater risk of collapse, which may lead to derailment of trains in the area. Further degradation or damage to this bridge could close the rail line that is the critical railway transport for the Midwest Wheatbelt for grain and stock movement (Arc Infrastructure, 2023c).

1.3. Decision on application

Decision:	Granted
Decision date:	8 September 2023
Decision area:	0.63 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the findings of a flora and vegetation survey (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the importance of the proposed railway bridge maintenance work (see section 1.2).

The assessment identified that the proposed clearing will result in:

- loss of 0.63 hectares of native vegetation, including 52 trees of *Eucalyptus camaldulensis* and a small stand of *Acacia rostellifera,* that is a significant remnant within an extensively cleared landscape; and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values. The applicant has suitably demonstrated avoidance and minimisation measures.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation;
- revegetation as per the applicant's proposed revegetation plan.

1.5. Site map

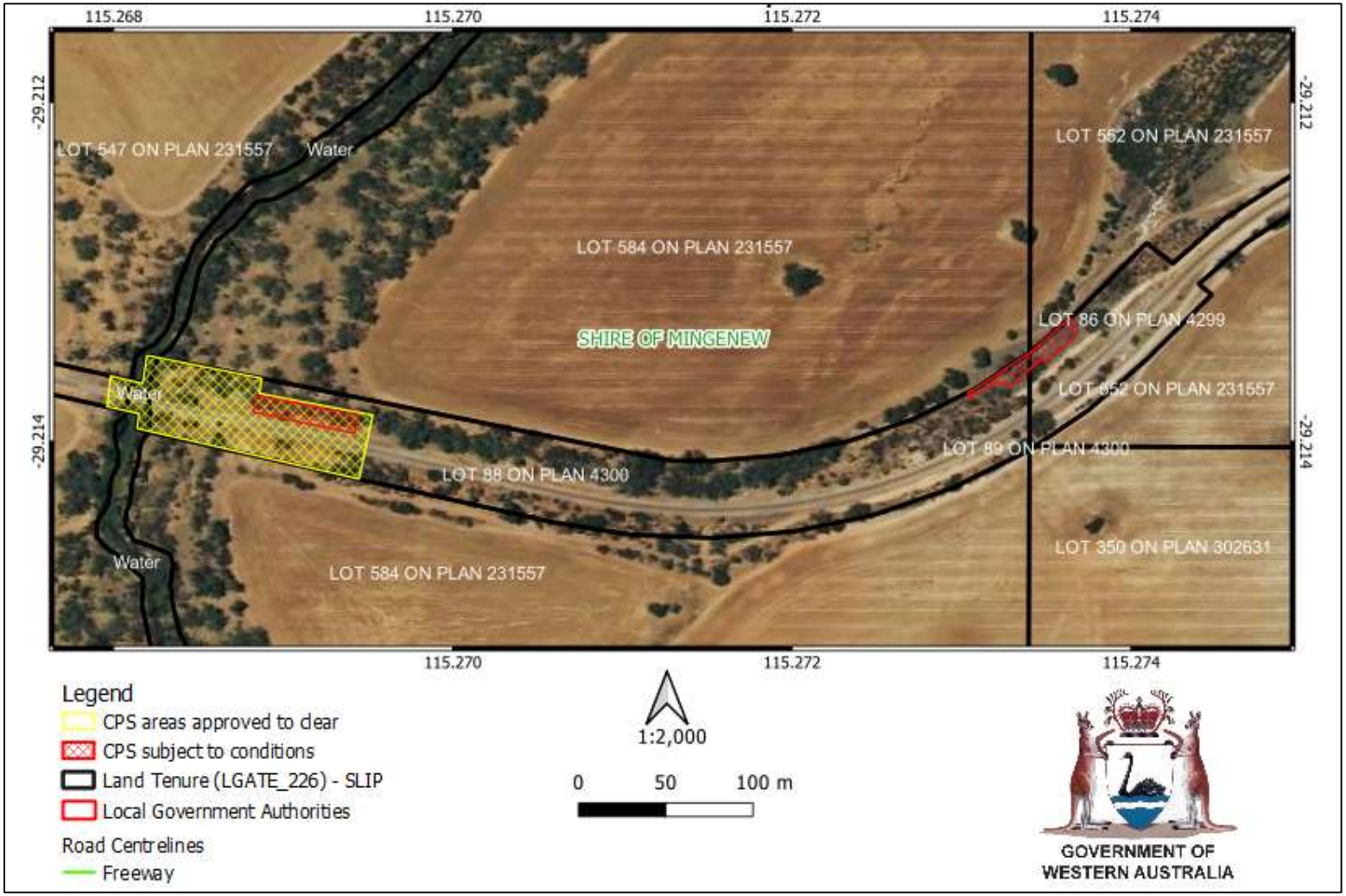


Figure 1 Map of the application area

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit. The areas cross-hatched red indicates areas within which specific conditions apply.

2 Legislative context

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 (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle.
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Information submitted by the applicant (Arc Infrastructure, 2023a, 2023c) advised that following measures have been / will be taken:

- The engineering design has been reduced by 100 metres from the original proposal of the rock armoury for the bridge, to maintain the works within the rail network.
- An agreement with the adjacent private owner has been made to allow a temporary stockpile to be installed on empty paddock land, which provides further reduction of the clearing footprint and laydown areas required within the rail corridor.
- Areas that are not required to be cleared along the Irwin River will be left vegetated which will be decided during project works on site.
- Clearing of native trees will be avoided as much as is practicable. The larger trees on the northeast boundary of the works area will be avoided during clearing.
- Revegetation: The north-east laydown within the application area will be revegetated after construction works completed; Another area within the rail corridor in proximity of the application area is also proposed to be revegetated. The number of trees to be planted will be double the number of trees to be removed under this application. A summary of the proposed revegetation is below.
    - The revegetation will be undertaken in two areas (Figure 2):
        - Revegetation site 1 - is within the original clearing area on the north-east embankment adjacent the Irwin River (706.2 square metres)
        - Revegetation site 2 – occurs 348 metres east of site 1 on the boundary of the rail corridor where the vegetation in the area was consistent with site 1, being completely degraded and lacking an overstorey (655 square metres).
    - Number of trees to be planted:
        - Revegetation site 1 - 57 *Eucalyptus camaldulensis* trees and 15 *Acacia rostellifera* trees.
        - Revegetation site 1 - 47 *E. camaldulensis* trees.
    - Planting density: One *E. camaldulensis* / ten square metres, one *A. rostellifera* / three square metres.
    - Time of planting: May/June 2024 and two additional years of monitoring and maintenance to ensure revegetation success.
    - Management measures: weed control, feral fauna control (if needed).
    - Completion criteria:
        - Achieve the survival of at least 75% of *E. camaldulensis* trees planted (equivalent to 78 trees);
        - Achieve the survival of at least 80% of *A. rostellifera* trees planted (equivalent to 12 trees);
        - Less than 25% weed cover on site at the end of the revegetation period.

Figure 2. Location of two proposed revegetation areas (green areas) in relation to the application area (yellow hatched areas) (Arc Infrastructure, 2023c)

Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna), significant remnant vegetation, and land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

According to available databases, three conservation significant fauna species have been recorded in the local area. In forming a view on the likelihood of each species occurring within the application area, the following was considered:

- the preferred habitat and vegetation types of the species,
- their recorded proximity to the application, and
- the total number of records within the local area (See Appendix B.3).

Flora and vegetation survey (Arc Infrastructure, 2023b) indicated that vegetation in the proposal area is dominated by *Eucalyptus camaldulensis* (river red gum) over *Cynodon dactylon* introduced grassland and scattered *Acacia rostellifera, Ricinus communis,* and *Casuarina obsea* plants and occurs in a degraded to completely degraded (Keighery, 1994) condition.

Three fauna species recorded within the local area include:

- *Zanda latirostris* (Carnaby's cockatoo)
- *Leipoa ocellata* (Malleefowl)
- *Oxyura australis* (Blue-billed duck)

Carnaby's Cockatoo

Carnaby's cockatoos (*Zanda latirostris*) are listed as endangered under the *Biodiversity Conservation Act 2016* (BC Act). The application area is mapped within in a likely Carnaby's cockatoo distribution area. There are eight records of Carnaby's cockatoos mapped within the local area, with the distance of the closest record to the application area of approximately 16 kilometres.

According to the referral guideline for threatened black cockatoo species (DCCEEW, 2022), habitat critical for recovery of black cockatoos include foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding. Suitable breeding habitat for black cockatoos includes trees which have a suitable nest hollow (DCCEEW, 2022). As the tree habitat assessment did not record nesting habitat within the proposed clearing area (Arc Infrastructure, 2023b), the application area is not likely to provide suitable breeding habitat for Carnaby's cockatoos.

Black cockatoos roost in tall trees often near riparian environments or a permanent water source (DCCEEW, 2022). Among the 52 *Eucalyptus camaldulensis* trees in the application area, there are 10 trees that exceeded 300 millimetres diameter criteria for habitat trees for threatened black cockatoos in the Avon Wheatbelt region (Arc Infrastructure, 2023b). The large river red gums within the application area could be used as night roosting habitat by Carnaby's black cockatoos as the application area intersects the Irwin River watercourse.

However, considering that *Eucalyptus camaldulensis* is listed as a less important food source and low priority roosting habitat for Carnaby's cockatoo (DPAW, 2011) and the distance of the closest record of Carnaby's cockatoo from the application area, it is unlikely that the application area provides significant habitat for this species.

Malleefowl

Malleefowl (*Leipoa ocellata* - vulnerable) is a large ground dwelling bird found in semi-arid to arid shrublands (Benshemesh, 2007). Malleefowl occur in woodlands dominated by multi-stemmed 'mallee' Eucalyptus species. The vegetation in the application area does fit the criteria for critical habitat for the malleefowl as the site is dominated by mallee form trees of *Eucalyptus camaldulensis*. However, as vegetation within the application area is in degraded to completely degraded condition, it is unlikely that this fauna species occupy this area since they require sandy areas with abundant leaf litter. Therefore, the site is not considered as providing significant habitat for the Malleefowl. It is also noted, only one record of malleefowl occurs in the local area, which was recorded back in 1988, with the distance of 16 kilometres from the application area. Given the distance to the record and the date of the record, it is unlikely malleefowl are found within the application area or its vicinity.

Blue-billed duck

Blue-billed duck (*Oxyura australis* - Priority 4) is an almost wholly aquatic species and seldom seen on land (Australia Museum, 2020). There are four records of this species within the local area, with the closest record 13.3 kilometres from the application area. Their breeding habitat is typically secluded densely vegetated areas, with the nest constructed in Typha beds or other vegetation, in permanent water. Common foraging sources of this species are aquatic insects (including chironomid fly larvae, caddis flies, dragonflies, flies and water beetle larvae) and seeds, buds, stems, leaves and fruit of a wide variety of plants (Australia Museum, 2020). Although the application area intersects the Irwin River which might provide a possible watercourse for the blue-billed duck, it is unlikely that the blue-billed duck occupies the application area with degraded to completely degraded vegetation condition which provides unsuitable foraging habitat. Therefore, the application area is not likely a suitable habitat for the blue-billed duck.

Conclusion
Based on the above assessment, the application area does not contain significant habitat for Carnaby's cockatoo as well as suitable habitat for other conservation significant fauna species.

Conditions
No management conditions required.

3.2.2. Significant remnant vegetation - Clearing Principles (e)

Assessment

The National Objectives and Targets for Biodiversity Conservation 2001-2005 includes a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present

pre-1750 (i.e., pre-European settlement). This is the threshold level below which species loss appears to accelerate exponentially (Commonwealth of Australia, 2001).

The application area is located within the Geraldton Sandplains IBRA Bioregion which retains approximately 44.8 per cent of its pre-European vegetation extent (Appendix B.2.) (Government of Western Australia, 2019). The application area is mapped within the Irwin Complex (System 352) vegetation community, which retains its vegetation extent below the national target, with approximately 20.7 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2019). The vegetation within the application area is considered to be representative of this community. The vegetation extent within the local area retains approximately 10.3 per cent of pre-European vegetation remaining. Given the above, the proposed clearing is considered likely to have a significant impact on remnant vegetation of the Irwin Complex (System 352) vegetation community and on remnant vegetation in the local area.

Given the extent to which the local area has been previously cleared, the application area may contribute towards fauna dispersal within the landscape. However, considering the small extent of clearing area and the applicant's proposed revegetation plan (section 3.1), the proposed clearing is not likely to have a significant impact to linkage and dispersal values.

There is also the potential for the proposed clearing to impact adjacent remnant native vegetation through the introduction or spread of weeds and dieback.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.63 hectares of native vegetation, including 52 trees of *Eucalyptus camaldulensis* and a small stand of *Acacia rostellifera,* that is a significant remnant within an extensively cleared landscape. This impact can be mitigated by undertaking revegetation of the same flora species as indicated in the applicant's proposed revegetation plan.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Avoidance and minimisation to reduce the impacts and extent of clearing;
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation;
- Revegetation as per the applicant's proposed revegetation plan.

3.2.3. Environmental Value: Land and Water resources - Clearing Principles (f), (i), and (j)

Assessment

The application area intersects a watercourse, the Irwin River. This river is 140 kilometres in length and runs west to east. The proposed clearing occurs approximately at the centre of the river approximately 700 metres from the river bifurcation. The vegetation proposed to be cleared constitutes riparian vegetation.

The clearing may generate localised sedimentation of stormwater and lead to the deterioration of surface water quality. However, the final land use of clearing is for installing rock armoury on the embankment which will not let the soil exposed to the weather and help minimize erosion (DWER, 2023). Noting the purpose of clearing and considering the small extent of the application area, the proposed clearing is not expected to result in impacts to water quality.

Conclusion
Based on the above assessment, the proposed clearing is unlikely to impact water quality within the application area.

Conditions
No management conditions required.

3.3. Relevant planning instruments and other matters

Shire of Mingenew (the Shire) advised that the proposed railway bridge maintenance works is in accordance with the land zone as "railway" under the Shire Local Planning Scheme No.4 and is exempt from the requirement for planning consent. The Shire also advise that they have no objection to the proposed railway bridge maintenance works (Shire of Mingenew, 2023).

DWER'S Mid-West Gascoyne Region branch advised that the application area falls within the Arrowsmith groundwater Area, as proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The applicant has

advised that no groundwater abstraction will be required (Arc Infrastructure, 2023a). As the application does not fall within a proclaimed surface water area and the proposed activities are minor and for maintenance and are not related to diverting, taking or storing water, a permit to modify bed and banks is not required (DWER, 2023). The Mid-West Gascoyne Region branch also advised they have no objections to the proposed clearing due to the purpose of the clearing being for bridge maintenance and rock armouring to minimise erosion and will not alter the hydrogeology of the Irwin River (DWER, 2023).

The application area is mapped within one Aboriginal site of significance (name: Irwin River, ID: 18907). It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Summary of further information provided	Consideration of information
Importance of works (rail bridge maintenance)	This information is presented in Section 1.2 of the Report
Avoidance and mitigation measures, including revegetation plan	This information is presented in Section 3.1 of the Report

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is surrounded by intensively cleared parcels and has a river running through the site. The proposed clearing is part of a large area of vegetation. Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 10.3 per cent of the original native vegetation cover.
Ecological linkage	The application area is not within any mapped linkages.
Conservation areas	There are no mapped conservation areas within the application area. The closest conservation area is a DPIRD Conservation Covenant, located approximately 7.8 kilometres north of the application area
Vegetation description	The flora and vegetation survey (Arc Infrastructure, 2023b) indicates that the vegetation within the proposed clearing area comprises of: • One vegetation community, namely *Eucalyptus camaldulensis* Woodland over **Cynodon dactylon* Dense Low Grass. • The remediation site was parkland cleared with majority of the site consisting of *E. camaldulensis* over introduces grasses, with a few *Casuarina obesa* (Swamp Sheoak) trees and **Ricinus communis* shrubs scattered throughout and a small stand of *Acacia rostellifera* (Summer-scented Wattle). The photographs of vegetation in the application area are available in Appendix E. This is consistent with the mapped vegetation type(s): • Irwin Complex_352, which is described as Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris, E. oleosa.* Riverine; rivergum *E. camaldulensis*. Tropical; messmate, woolyb (Shepherd et al, 2001). The mapped vegetation type retains approximately 20.7 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	The flora and vegetation survey (Arc Infrastructure, 2023) indicates that the vegetation within the proposed clearing area is in degraded to completely degraded (Keighery, 1994) condition, described as: • Degraded – Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.

Characteristic	Details
	• Completed degraded – The structure of the vegetation is no longer intact and the area us completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. The full Keighery (1994) condition rating scale is provided in 0.
Climate and landform	Climate: Mean maximum temperature is 27.7 degrees Celsius. Mean minimum temperature is 12.6 degrees Celsius. Rainfall: Mean annual rainfall is 392.3 millimetres. (BOM, 2023) Landform: Recent stream channels and channel slopes/ River flats.
Soil description	The soils are mapped as (DPIRD, 2022): • Irwin subsystem 2, river channel phase (224Ir_2Dr), described as drainage lines in the alluvial plain; red sandy earth and loams and Semi-wet soils (western portion) • Irwin 2 subsystem (224Ir_2), described as level alluvial flats with sandy and loamy duplex soils (eastern portion).
Land degradation risk	The mapped soils over the application area are highly susceptible to water erosion, waterlogging, flooding and subsurface acidification, and phosphorus export (see Appendix C.4 for details).
Waterbodies	The application area is mapped over the Arrowsmith hydrological zone of western Australia, described as: • Gently undulating, dissected sandplain & dunes on sandstone & other sedimentary rocks. Bounded in the east by the Dandaragan Scarp & in the west by the Indian Ocean. sandy & gravelly soils formed in colluvium & rock weathered in situ. The desktop assessment and aerial imagery indicated that the area proposed to be cleared intersects the Irwin River (Object ID: 20183).
Hydrogeography	The application area falls within the Arrowsmith Groundwater Area as proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act). The application area is not subject to an area protected under the Country Water Supply Act 1917 or Public Drinking water source area. The groundwater salinity level (Total Dissolved Solids) is mapped as 500-1000 milligrams per litre.
Flora	The desktop assessment identified 50 conservation specific flora within the local area, six of which are found on the same soil type and vegetation type as the application area. The nearest record to a conservation specific flora was for *Chorizema humile,* located 2.33 kilometres away, although this species was not recorded on the same soil type and vegetation type as the application area.
Ecological communities	No conservation significant ecological communities are mapped over the application area or within the local area. The closest mapped TEC is the Eucalypt woodland of the Western Australian Wheatbelt which is recorded 33 kilometres from the proposed site (Object ID: 111080).
Fauna	The desktop assessment identified three conservation significant fauna species within the local area. The closest record is of *Zanda latirostris* (Carnaby's cockatoo) recorded 3.7 kilometres from the application area. This is also the most frequently occurring species within the local area with 8 records. The closest known black cockatoo roost site is 17 kilometres from the application area. The application area is mapped as a likely suitable habitat for Carnaby's cockatoo.

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Geraldton Sandplains	3,136,037.83	1,404,424.32	44.78	568,255.10	18.12
Vegetation complex					
Irwin Complex 352	19,711.46	4,080.13	20.70	503.49	2.55
Local area					
20km radius	126,408.70	13,017.30	10.30	-	-

*Government of Western Australia (2019)

B.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records in the local area	Are surveys adequate to identify? [Y, N, N/A]
Zanda latirostris (formerly *Calyptorhynchus latirostris*) (Carnaby's cockatoo)	EN	Y	Y	3.7	8	Y
Leipoa ocellata (malleefowl)	VU	N	Y	16.0	1	Y
Oxyura australis (Blue-billed duck)	P4	N	N	13.2	4	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

B.4. Land degradation risk table

Risk categories	*224Ir_2Dr*	*224Ir_2*
Wind erosion	L1: <3% of map unit has a high to extreme wind erosion risk	
Water erosion	H2: >70% of map unit has a high to extreme water erosion risk	L1: <3% of map unit has a high to extreme water erosion risk
Salinity	L1: <3% of map unit has a moderate to high salinity risk or is presently saline	
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	
Flood risk	H2: >70% of the map unit has a moderate to high flood risk	M1: 10-30% of the map unit has a moderate to high flood risk
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk	M1: 10-30% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk	M1: 10-30% of map unit has a high to extreme phosphorus export risk

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared contains habitat for conservation significant fauna species (Carnaby's black cockatoos), however, does not represent significant habitat for the species. The application area does not contain suitable habitat for conservation significant ecological communities or flora.	Not likely to be at variance	*Yes* *Refer to Section 3.2.1, above.*
Principle (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."* Assessment: The area proposed to be cleared contains some roosting habitat for Carnaby's black cockatoos, however is not likely to be used due to the distance to known records.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle ©: *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act. The application area is highly degraded with little to no native understory present. The species recorded in the application area are not listed under the BC Act.	Not likely to be at variance	No
Principle (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."* Assessment: The area proposed to be cleared contains *Eucalyptus camaldulensis* trees, which is one of the species present within the threatened ecological community (TEC) Eucalyptus woodlands of the Western Australian Wheatbelt (WA Wheatbelt Woodlands). However, considering the dominance of mallee form of most trees within the application area (Arc infrastructure, 2023b), the application area is unlikely to represent the WA Wheatbelt Woodlands TEC (Commonwealth of Australia, 2015).	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (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."* Assessment: The extent of native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	At variance	Yes *Refer to Section 3.2.2, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (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."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given the application area intersects the Irwin River, the proposed clearing is likely to impact on- or off-site hydrology and water quality.	May be at variance	Yes *Refer to Section 3.2.3, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are highly susceptible to water erosion, water logging, subsurface acidification, and phosphorous export. However, noting the small extent of the application area, and that the final land use is for installing rock armoury on the embankment which will not let the soil exposed to the weather and help minimize erosion, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not likely to be at variance	No
Principle (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."* Assessment: Even though the application area intersects the Irwin River, considering that application area is not within a proclaimed surface water area and proposed subsequent activities (for maintenance) are minor, the proposed clearing is unlikely to significantly impact surface or ground water quality (DWER. 2023).	Not likely to be at variance	Yes *Refer to Section 3.2.3, above.*
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: A portion of the applicant area is mapped with relatively high risk of flooding due to its location of along a river. However, considering the small proposed clearing area and that a part of the cleared area will be revegetated after the railway bridge maintenance completes, the proposed clearing is not likely to contribute to increased incidence or intensity of flooding.	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types. Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Photographs of the vegetation

Figure E. Representative photos of vegetation in the application area
(top: *Eucalyptus camaldulensis* trees, bottom: a stand of *Acacia rostellifera*) (Arc Infrastructure, 2023b)

Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities

F.2. References

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