GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9024/1
Permit Holder:	Public Transport Authority
Duration of Permit:	From 17 December 2020 to 17 December 2025

The permit holder is authorised to clear native vegetation subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear native vegetation for the purpose of relocating services to outside of the Thornlie-Cockburn Link project development envelope.

2. Land on which clearing is to be done

Lot 1 on Deposited Plan 27679, Canning Vale

Lot 1 on Deposited Plan 36034, Canning Vale

Lot 1008 on Plan 16227, Canning Vale

Lot 102 on Deposited Plan 408586, Canning Vale

Lot 103 on Deposited Plan 62427, Canning Vale

Lot 104 on Deposited Plan 21679 (PIN 1179576, PIN 1329209), Canning Vale

Lot 12 on Deposited Plan 40949, Jandakot

Lot 157 on Deposited Plan 226118, Canning Vale

Lot 17 on Deposited Plan 70681, Canning Vale

Lot 243 on Deposited Plan 13626 (PIN 330294), Canning Vale

Lot 2965 on Deposited Plan 214331, Jandakot

Lot 40 on Deposited Plan 99099, Canning Vale

Lot 4258 on Deposited Plan 22423, Canning Vale

Lot 431 on Deposited Plan 17926 (PIN 1043252), Canning Vale

Lot 4973 on Deposited Plan 36744, East Cannington

Lot 587 on Deposited Plan 19373, Canning Vale

Lot 659 on Deposited Plan 19847, Canning Vale

Lot 67 on Deposited Plan 796 (PIN 11825701), Beckenham

Lot 672 on Deposited Plan 20188, Canning Vale

Lot 70 on Deposited Plan 10040, South Lake and Bibra Lake

Lot 721 on Deposited Plan 19373, Canning Vale

Lot 789 on Deposited Plan 195512, Leeming

Lot 800 on Deposited Plan 195493, Canning Vale

Lot 802 on Deposited Plan 195493, Canning Vale

Lot 803 on Deposited Plan 35031, Canning Vale

Lot 834 on Deposited Plan 24229, Canning Vale

Lot 9 on Deposited Plan 16075 (PINs 306658, 1064834), Canning Vale

Hughes Street road reserve (PIN 11806449), Canning Vale

Mclean Road reserve (PIN 11806450), Canning Vale

Hope Road reserve (PIN 11824306, Jandakot

3. Clearing authorised

The permit holder must not clear more than 3.3 hectares of native vegetation within the combined areas cross-hatched yellow in Figure 1, Figure 2, Figure 3, Figure 4, and Figure 5 of Schedule 1.

4. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Railway (METRONET) Act, 2018* or any other written law.

PART II – MANAGEMENT CONDITIONS

5. 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.

6. 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.

7. Offset – Lot 301 on Plan 77559 (Lowlands Nature Reserve), Mardella

(a) By 7 June 2021, the Permit Holder shall provide to the *CEO* a copy of the executed change in purpose of the area hatched red on Figure 6 within Lot 301 on Plan 77559, Mardella, to Class 'A' Conservation Reserve, to be managed by the Department of Biodiversity Conservation and Attractions.

(b) In the event that the change in purpose of Lot 301 on Plan 77559, Mardella, is not achieved in accordance with condition 7(a):

(i) the Permit Holder must submit a new offset proposal for the *CEO*'s approval by 17 June 2021; and

(ii) in preparing an offset proposal in accordance with condition 7(b)(i), the Permit Holder must comply with the principles in the Government of Western Australia's *WA Environmental Offsets Policy* (September 2011) and have regard to the *WA Environmental Offsets Guidelines* (August 2014).

PART III - RECORD KEEPING AND REPORTING

8. 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 Geocentric Datum Australia 1994 (GDA94), 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); and (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and (f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 6; and (g) actions taken in accordance with condition 7.

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 of this permit when requested by the *CEO*.

DEFINITIONS.

In this permit, the terms in Table 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*.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of *Phytophthora* species on native vegetation.
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.
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
A/Manager
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

24 November 2020

Schedule 1

The boundary of the areas authorised to be cleared and subject to conditions are shown in the maps below (Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 and Figure 6).

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

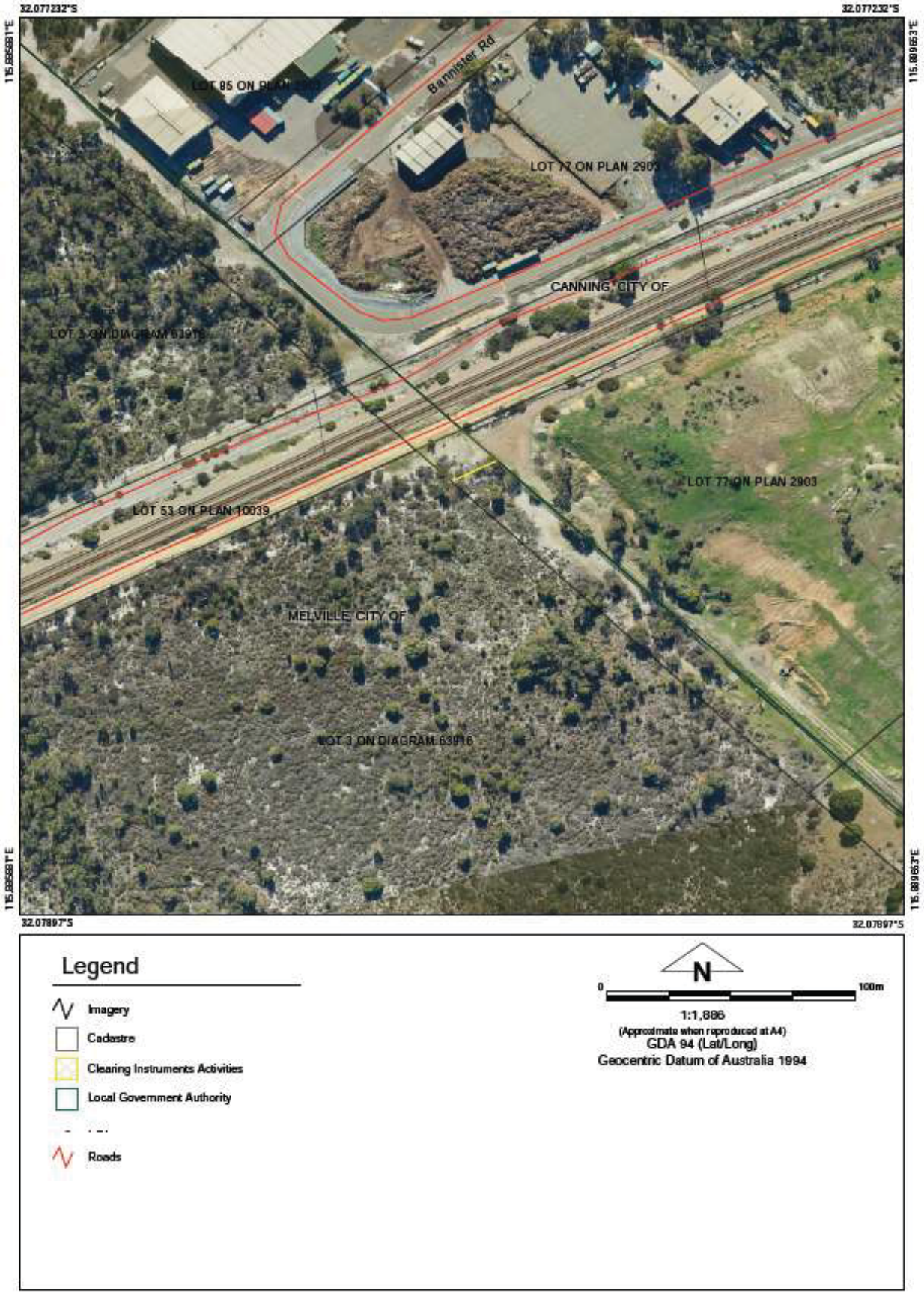

Figure 2: Map of the boundary of the area within which clearing may occur

Figure 3: Map of the boundary of the area within which clearing may occur

Figure 4: Map of the boundary of the area within which clearing may occur

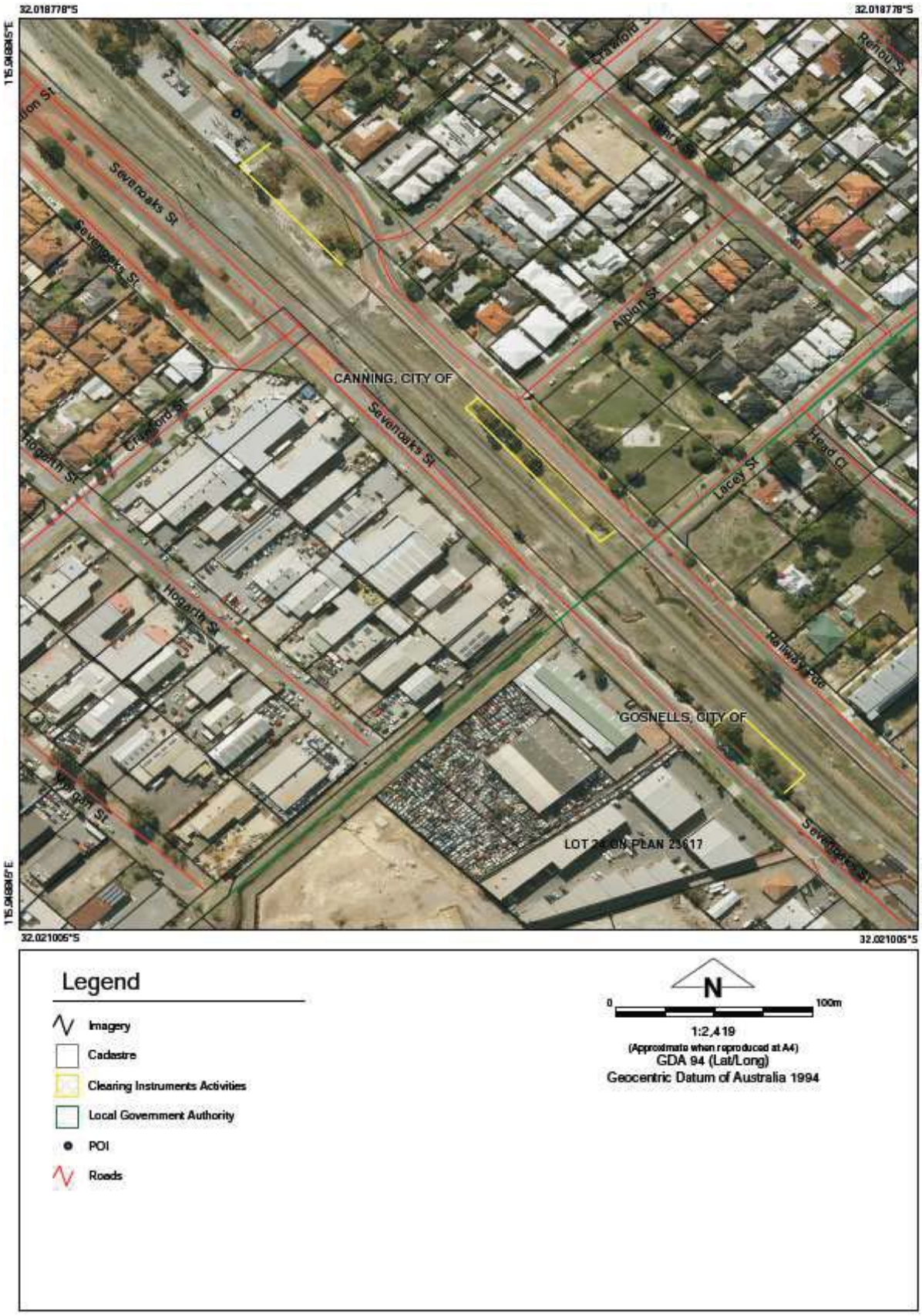

Figure 5: Map of the boundary of the area within which clearing may occur

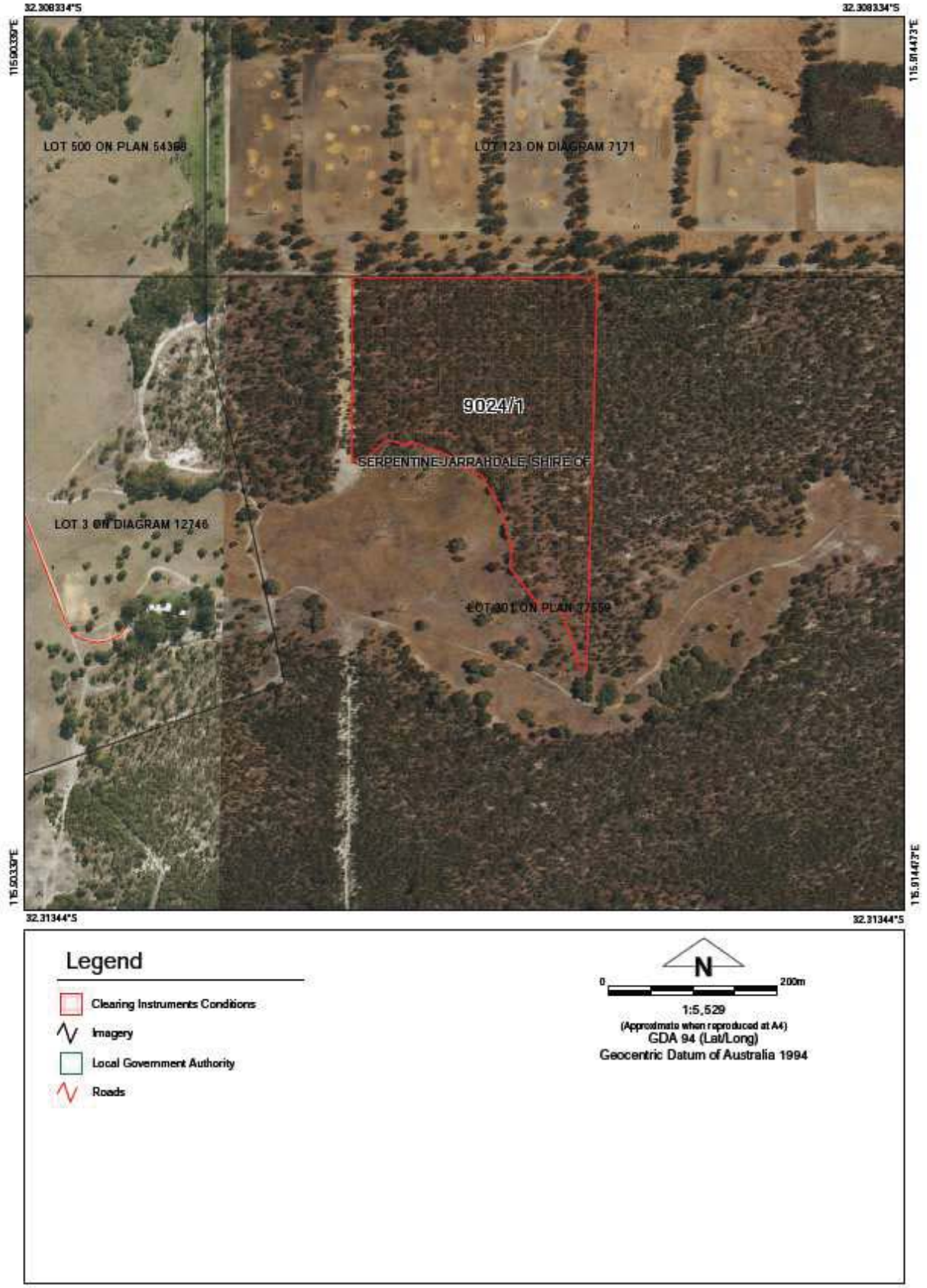

Figure 6: Map of the boundary of the offset area

Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 9024/1
Permit type:	Purpose permit
Applicant name:	Public Transport Authority
Application received:	26 August 2020
Application area:	3.3 hectares (ha) of native vegetation
Purpose of clearing:	Relocation of services
Method of clearing:	Mechanical clearing
Property:	Lot 1 on Deposited Plan 27679, Canning Vale Lot 1 on Deposited Plan 36034, Canning Vale Lot 1008 on Plan 16227, Canning Vale Lot 102 on Deposited Plan 408586, Canning Vale Lot 103 on Deposited Plan 62427, Canning Vale Lot 104 on Deposited Plan 21679 (PIN 1179576, PIN 1329209), Canning Vale Lot 12 on Deposited Plan 40949, Jandakot Lot 157 on Deposited Plan 226118, Canning Vale Lot 17 on Deposited Plan 70681, Canning Vale Lot 243 on Deposited Plan 13626 (PIN 330294), Canning Vale Lot 2965 on Deposited Plan 214331, Jandakot Lot 40 on Deposited Plan 99099, Canning Vale Lot 4258 on Deposited Plan 22423, Canning Vale Lot 431 on Deposited Plan 17926 (PIN 1043252), Canning Vale Lot 4973 on Deposited Plan 36744, East Cannington Lot 587 on Deposited Plan 19373, Canning Vale Lot 659 on Deposited Plan 19847, Canning Vale Lot 67 on Deposited Plan 796 (PIN 11825701), Beckenham Lot 672 on Deposited Plan 20188, Canning Vale Lot 70 on Deposited Plan 10040, South Lake and Bibra Lake Lot 721 on Deposited Plan 19373, Canning Vale Lot 789 on Deposited Plan 195512, Leeming Lot 800 on Deposited Plan 195493, Canning Vale Lot 802 on Deposited Plan 195493, Canning Vale Lot 803 on Deposited Plan 35031, Canning Vale Lot 834 on Deposited Plan 24229, Canning Vale Lot 9 on Deposited Plan 16075 (PINs 306658, 1064834), Canning Vale

	Hughes Street road reserve (PIN 11806449), Canning Vale Mclean Road reserve (PIN 11806450), Canning Vale Hope Road reserve (PIN 11824306), Jandakot
Location (LGA area/s):	City of Canning
Localities (suburb/s):	Jandakot, Leeming, Canning Vale, South Lake, Beckenham, Cannington, Bibra Lake

1.2. Description of clearing activities

The vegetation applied to be cleared is distributed across 21 separate areas within a 16 kilometre railway reserve (see Figure 1 to 12, Section 1.5).

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	24 November 2020
Decision area:	3.33 hectares (ha) of native vegetation as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 26 August 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking their assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (see Sections 3 and 4).

In particular, the Delegated Officer has determined that:

- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1);
- the implementation of a suitable weed and dieback management condition is appropriate to mitigate the impact of spreading weeds and dieback into adjacent vegetation (see Section 3.2.4);
- the clearing is likely to have a significant residual impact through the loss of 0.803 hectares of significant foraging habitat for Carnaby's cockatoo (Calyptorhynchus latirostris) (see section 3.2.1); and
- the conservation of 9.43 hectares of Lot 301 on Plan 77559 (Lowlands Nature Reserve) as an offset, is sufficient to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat (see Section 4).

In determining to grant a clearing permit subject to avoid and minimise, weed and dieback, offset, and reporting and recording conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

1.5. Site map

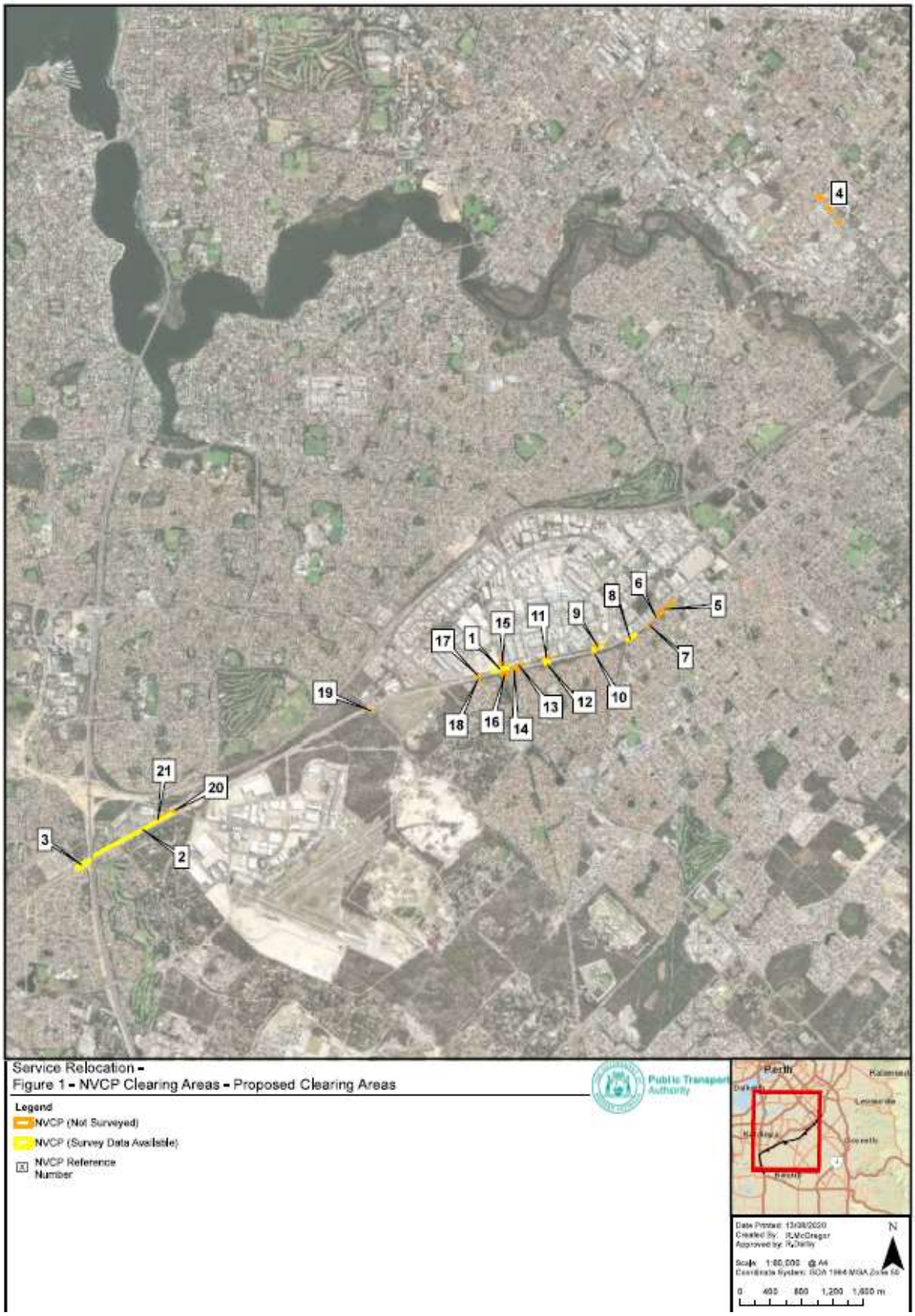

Figure 1. Context Map of application area showing location of all 21 areas under application.

Figure 2. Application areas 5 to 7.

Figure 3. Application area 8.

Figure 4. Application areas 11 and 12.

Figure 5. Application areas 1, 13 to 16

Figure 6. Application Areas 1, 15 and 16

Figure 7. Application areas 17 and 18

Figure 8. Application area 19

Figure 9. Application areas 2, 20 and 21

Figure 10. Application area 2

Figure 11. Application area 2

Figure 12. Application areas 2 and 3.

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

1. the precautionary principle;
2. the principle of intergenerational equity;
3. the principle of the conservation of biological diversity and ecological integrity; and
4. the polluter pays principle.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment were:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant (PTA, 2020a), demonstrating that:

- Avoidance of the clearing of high -quality native vegetation, minimise the amount of vegetation to be cleared and reduce the impact of clearing on environmental values were done at the planning stage. Further methods to avoid, minimise and reduce the impacts of clearing will be determined, where practicable, during the detailed design phase.
- The PTA will ensure the following management measures are implemented to minimise impacts to environmental values during the ground disturbance and clearing works:
  - Survey personnel will flag/demarcate clearing areas prior to clearing works commencing.
  - The PTA (or its Contractor) will issue internal ground disturbance permits prior to any clearing works
  - Pre-start meeting to be held with contractors to highlight the requirements to stay within approved clearing areas only and minimise impacts to vegetation. All clearing and survey works will be supervised by environmental personnel.
- Environmental management measures will be employed by the Public Transport Authority (PTA) to reduce the impacts on environmental values including flora, vegetation, ecological communities, fauna, fauna habitat and biological diversity, including utilizing existing cleared areas for laydown and temporary construction areas.
- Dieback and weed management protocols will also be implemented to minimise impacts on these environmental values.

This adequately demonstrated that all reasonable efforts had been taken to avoid and minimise potential impacts of the clearing on environmental values.

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to significant foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*) was necessary (see section 3.2.1). In accordance with the WA State Government's Environmental Offsets Policy and Environmental Offsets Guidelines, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided is summarised in Section 4.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix B) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix C.

This assessment identified that the clearing may pose a risk to the environmental value(s) of biological values, significant remnant vegetation and conservation areas, and that these required further consideration. The detailed consideration and assessment of the clearing impacts against the specific environmental values is provided below. Where the assessment found that the clearing presents an unacceptable risk to environmental values, conditions aimed at controlling and/or ameliorating the impacts have been imposed under sections 51H and 51I of the EP Act. These are also identified below.

3.2.1. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment:
Available databases have recorded 24 conservation significant fauna species (excluding exclusively marine migratory/marine species) within the local area. Consideration of the site characteristics of the proposed clearing areas, as well as the results of a fauna survey (GHD, 2019) and site photographs provided by the applicant (PTA, 2020), the proposed clearing areas are likely to contain suitable habitat for the forest red-tailed black cockatoo (*Calyptorhynchus banksii naso)* listed as Vulnerable under both the EPBC Act and BC Act , the Carnaby's black cockatoo (*Calyptorhynchus latirostris*) listed as Endangered under both EPBC Act and BC Act and the southern brown bandicoot (*Isoodon obesulus fusciventer*) listed as Priority 4 by DBCA.

Black Cockatoos

The proposed clearing areas occur within the modelled foraging and breeding distribution for the forest red-tailed black cockatoo and foraging distribution for the Carnaby's cockatoo (Commonwealth of Australia, 2012). Available databases indicate that numerous roosting sites have been recorded within the local area for Carnaby's cockatoo with the closest being 1.8 kilometre away.

Black cockatoo species are known to nest in hollows of live and dead trees, including marri (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*), karri (*Eucalyptus diversicolor*), wandoo *(Eucalyptus wandoo*), tuart (*Eucalyptus gomphocephala*), flooded gum (*Eucalyptus rudis*), and other Eucalyptus spp. (Commonwealth of Australia, 2012). 'Breeding habitat' for black cockatoos includes trees of these species that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow, where suitable DBH for nest hollows is 500 millimetres for most tree species (Commonwealth of Australia, 2012). While breeding, black cockatoos also generally forage within a 6 to 12 km radius of their nesting site (Commonwealth of Australia, 2012). Black cockatoo species are noted to forage on a range of plant species, predominantly the seeds and flowers of marri, jarrah and proteaceous species (e.g. Banskia spp., Hakea spp. and Grevillea spp.) (Commonwealth of Australia, 2012).

The fauna and flora surveys (GHD 2019 & 2020) recorded evidence of foraging by black cockatoo species within Area 2 and observed the forest red-tailed black cockatoo within the application area (GHD, 2019). In addition, forest red-tailed black cockatoo have also been observed during the PTA site inspection in Area 4 (PTA, 2020a). The applicant has advised that a draft flora and fauna survey undertaken by GHD in July 2020 has identified 2.43 hectares of foraging habitat for Carnaby's cockatoo and the forest red-tailed black cockatoo within the application area (PTA, 2020b).

Critical habitat for the forest red-tailed black cockatoo is defined as all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (DEC, 2008). Given the application area includes remnant and scattered Eucalyptus and a small Banksia woodland area on the Swan Coastal Plain, the application area is not likely to meet the definition of critical habitat for this species and, while the application area may have foraging value, it is unlikely to be significant for the ongoing maintenance of this species.

However, critical habitat for Carnaby's cockatoo includes any habitat that provides for feeding, watering, regular night roosting and potential for breeding (DPAW, 2013). Noting that the application area includes 2.43 hectares of foraging habitat, occurs within 12 kilometres of known roosting sites for Carnaby's cockatoo and that evidence of foraging has been observed within the application areas, it is likely that the proposed clearing area includes significant habitat for this species.

Maintaining foraging habitat for Carnaby's cockatoo irrespective of size has been noted as particularly important within the Perth Metropolitan Region, due to the role of these feeding areas in the survival of young birds and the maintenance of the population between breeding seasons, coupled with the lack of habitat remaining in this region

and its connectivity values for birds migrating between regions (Commonwealth of Australia, 2012). As assessed under section 3.2.3, remnant vegetation is sparse within the local area and, according to available databases, potential foraging habitat for Carnaby's cockatoo in the local area is limited to a subset of these remaining remnants. Noting the above, the loss of 2.43 hectares of foraging habitat is likely to represent a significant impact to Carnaby's cockatoo.

Six potential black cockatoo breeding trees were identified during the PTA site inspection within Area 12. These were noted as Tuarts (*Eucalyptus gomphocephala*) and all six had a diameter breast height (DBH) greater than 500mm. No hollows were observed during the inspection, and there was no noted evidence of Black cockatoo foraging activities within this area (PTA, 2020a). Given the lack of suitable hollows, it is not considered for the proposed clearing to impact on significant breeding habitat for black cockatoo species.

Noting that the local area is highly modified, and a large degree of historical clearing has occurred, the application areas may also provide an ecological linkage for black cockatoo species moving through the local area. Given forest red-tailed black cockatoos were observed within the development envelope during the fauna survey and site visit (GHD, 2019, PTA 2020a), it is likely that black cockatoos are using the proposed clearing area as an ecological linkage. However, given that the proposed clearing is scattered along a 16 kilometre length and remnant vegetation will remain, it is unlikely that the proposed clearing of 3.33 hectares will significantly reduce the capacity of the remaining vegetation within the railway reserve to act as an ecological linkage.

Quenda

The Quenda is listed as priority 4 by DBCA. Priority 4 is defined as species that are managed under a specific conservation program, the cessation of which would result in the species becoming threatened. Quenda inhabit scrubby, often swampy vegetation with dense cover up to 1 metre high (DEC 2012). Evidence of Quenda were observed within Area 2 of the application areas during the fauna survey (GHD, 2019).

Given that the proposed clearing is scattered along a 16 kilometre length and remnant vegetation will remain, it is unlikely that the proposed clearing of 3.33 hectares will greatly impact significant habitat for the Quenda.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to an offset to mitigate the impact to significant foraging habitat for Carnaby's cockatoo.

Conditions:

To address the above impacts, the following conditions will be added to the permit:

- Offset condition

3.2.2. Environmental value: biological values (flora) – Clearing Principles (a) to (d)

Assessment:

Flora

According to available databases nine Priority 1, 13 Priority 2, 35 Priority 3 and 19 Priority 4 flora species listed by DBCA have been recorded within the local area. In addition, 22 threatened flora species listed under the *Biodiversity Conservation Act 2016* have been recorded within the local area. Based on the site characteristics of the proposed clearing areas and preferred habitat of these species, it may be considered for the Area 2 of the proposed clearing areas to provide suitable habitat for *Caladenia huegelli* (T), *Drakaea micrantha* (T*), Conospermum undlatum* (T), *Thelymitra variegate* (P2), *Comesperma griffinii* (P2), *Haemodorum loratum* (P3), *Isopogon drummondii* (P3), and. *Phlebocarya pilosissima* subsp. *pilosissima* (P3).

- *Caladenia huegelii* is generally found in deep sandy soils of Banksia spp. Eucalyptus marginata woodlands and favours areas of dense undergrowth (Brown et al. 2008).
- *Drakaea micrantha* occurs in infertile grey sands, in Jarrah (*Eucalyptus marginata*) and Common Sheoak (*Allocasuarina fraseriana*) woodland or forest associated with Banksia species (Brown et al. 2008).
- *Conospermum undulatum* occurs within grey or yellow orange clayey sands (Brown et al. 2008).
- *Thelymitra variegate* has been recorded in yellows and associated with *Banksia attenuata, Allocasuarina* fraseriana and *Hibbertia hypericoides* in the Jandakot area (GHD, 2019).
- *Comesperma griffinii* occurs on yellow and grey sand plains (GHD, 2019).
- *Haemodorum loratum* occurs within grey or yellow sand with gravel (WA Herbarium, 2008-).
- *Isopogon drummondii* and *Phlebocarya pilosissima* subsp. *pilosissima* (P3) are associated with Banksia woodland (GHD, 2019).

A spring Flora and Vegetation survey was conducted within Areas 1 to 3 by GHD (GHD, 2019,2020). Within Area 2, 0.11 hectares consist of *Banksia menziesii* and *B. attenuata* woodland (VT01) which meets the habitat requirements for the threatened and priority flora species listed above. This area was extensively searched during the flowering period for these species with no threatened or DBCA priority listed flora species identified (GHD 2019, 2020).

Areas 4 to 21 of the proposed clearing areas have not been surveyed; however, a flora and vegetation survey of vegetation directly adjacent to these areas did not record any priority or threatened flora species (GHD, 2019). A site inspection has been undertaken by PTA personnel in July 2020 (PTA, 2020a) and photographs indicate that Areas 4 to 21 occur in a degraded to completely degraded (Keighery, 1994) condition and generally consist of native or planted trees and shrubs over an introduced grassland (PTA, 2020). Given the lack of understory species and condition of these areas, it is not considered likely for these areas to contain suitable habitat for threatened or DBCA priority listed flora species.

Vegetation

According to available databases and with consideration of the site characteristics of the proposed clearing areas (see Appendix B), a state-listed priority ecological community (PEC), the "Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region" (Banksia WL SCP), is considered likely to occur within Area 2. The Banksia WL SCP is considered a Priority 3 ecological community under the BC Act and is listed as a threatened ecological community (TEC) with the status of Endangered under the Commonwealth EPBC Act.

A flora and vegetation survey has recorded 0.11 hectares of this PEC within Area 2. Based on aerial imagery and the vegetation and flora survey conducted by GHD (2019), Area 2 is part of a larger patch of vegetation that contains approximately 0.3 hectares of this PEC in good to degraded (Keighery, 1994) condition (GHD, 2019).

Noting this, the application area is likely to fall below the minimum patch size and condition thresholds to be considered as part of the EPBC Act listed TEC (TSSC, 2016), however is still considered to be consistent with the Banksia WL SCP PEC.

Given the above, the proposed clearing will result in the loss of 0.11 hectares of vegetation representative of the Banksia WL SCP PEC and is likely to impact on adjacent vegetation representing this PEC. However, given this patch occurs within a highly developed and disturbed local area and has been subject to significant disturbance from weed invasion, as well as adjacent road and residential infrastructure, it is likely that this vegetation will be subject to ongoing degradation from edge effects. Further, given the small patch size of the occurrence, its isolation from other remnants of vegetation, the existing vegetation condition, and the highly disturbed surrounding land uses, it is unlikely that the 0.30 hectares of vegetation representative of the Banksia WL SCP PEC will be viable in the future. Given the above, it is unlikely that the application area is necessary for the maintenance of the Banksia WL SCP or that the proposed clearing will significantly impact the extent or conservation status of this PEC.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions (see below) in relation to this environmental value.

Conditions:

To address the above impacts, the following conditions will be added to the permit:

- Weed and Dieback management.

3.2.3. Environmental value: significant remnant vegetation and conservation areas – Clearing Principles (e) and (h)

Assessment:

Significant Remnant

The application area is located within a local area that retains approximately 12 per cent native vegetation. The National Objectives and Targets for Biodiversity Conservation 2001-2005 include 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 (Commonwealth of Australia, 2001). The mapped vegetation complex and the local area fall below the threshold level of 30 per cent and therefore the application area is located within an area that has been extensively cleared.

The application area contains vegetation that represents a PEC and provides significant habitat for black cockatoos. Therefore, the proposed clearing areas are considered part of a significant remnant of native vegetation.

However, the Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region as a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008a). The current vegetation extent for the Swan Coastal Plain IBRA Bioregion, the Bassendean Complex – Central and South and Beard vegetation association 1001 and the local area are all above the 10 per cent threshold

for constrained areas (see Appendix B). Further it is noted that the proposed clearing areas comprise of several small, scattered patches of native vegetation in a predominantly degraded to completely degraded (Keighery, 1994) condition within a highly disturbed urbanised local area which is likely to be subjected to ongoing degradation and disturbance. Noting this the proposed clearing is not considered likely to have a significant impact on vegetation extent within the extensively cleared local area.

Ecological Linkages

The majority of the vegetation within the application area is in a degraded to completely degraded (Keighery 1994) condition. The native vegetation within the railway reserve is not considered to function as an ecological linkage between Bush Forever sites and other remnants of native vegetation within the local area given the predominantly degraded to completely degraded condition. Given this, it is not considered for the proposed clearing to contribute to the degradation of an ecological linkage.

Conservation Areas

It is noted that, as the application area is in good to completely degraded (Keighery, 1994) condition and has been subject to weed invasion, the proposed clearing may facilitate the spread of weeds and dieback to adjacent retained areas.

Area 19 (see Figure 1) of the application areas is adjacent to Bush Forever site 245: Ken Hurst Park. The proposed clearing may introduce and spread weeds and dieback into this conservation area. A weed and dieback condition is considered to minimise this risk.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions (see below) in relation to this environmental value.

Conditions:

To address the above impacts, the following conditions will be added to the permit:

- Weed and Dieback management.

3.2.4. Environmental value: land and water resources – Clearing Principles (f),

Assessment:

Area 19 (0.04 hectares) falls within the north-eastern corner of a conservation category (CCW) dampland. CCWs are wetlands that support a high level of wetland attributes and functions and the objective is to preserve and protect the existing conservation values of these wetlands (EPA, 2008b).

Aerial imagery and photographs provided by the applicant (PTA, 2020b) indicate that approximately 0.017 hectares of (Keighery 1994) condition vegetation occurs within this area. Photographs indicate that no riparian vegetation is present (PTA 2020b) and the applicant has advised that the existing cleared area within Area 19 will be utilized as much as possible. The entire CCW is 7.244 hectares in size and the proposed clearing will be impacting on 0.0023 per cent of this wetland. Given the condition of the vegetation, the small size of the proposed clearing in this area and that it occurs on the north-eastern edge of the wetland adjacent to the existing cleared railway reserve, it is not considered for the proposed clearing to significantly impact the environmental values of this wetland.

A weed and dieback management condition will also prevent the spread of weeds into this CCW.

Multiple use wetlands are mapped over Areas 16, 14, 13, 8 and 6. Multiple use wetlands are wetlands that have very few remaining important wetland attributes and functions (EPA, 2008b). These Areas occur in a degraded to completely degraded (Keighery, 1994) condition and photographs of these areas do not indicate the presence of wetland dependent vegetation (PTA, 2020).

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions (see below) in relation to this environmental value.

Conditions:

To address the above impacts, the following conditions will be added to the permit:

- Weed and dieback management.

3.3. Relevant planning instruments and other matters

The applicant is proposing to clear native vegetation, required to relocate services/utilities within proximity to the METRONET Thornlie-Cockburn Link (TCL) project which is currently being formally assessed by the Environmental Protection Authority (EPA). The TCL project includes the connection of the existing Thornlie Station (located on a spur from the Armadale line), to the Cockburn Central Station on the Mandurah line. The TCL project includes construction of 14.5 kilometre (km) of new dual railway track within existing railway and road reserves, to extend the

existing Thornlie passenger line to Cockburn Central Station as well as the duplication of 3 km of railway track between Beckenham Junction and Thornlie station. To enable the construction of the dual passenger line, approximately 11 km of existing freight line will be relocated to the north within the railway reserve.

The scope of works within this clearing application will involve the temporary or permanent relocation of services from within the rail corridor to outside of the rail corridor or TCL development envelope. This scope is separate to, and does not involve the implementation of the TCL project which is currently being assessed by the EPA.

The clearing permit application was advertised on the Department of Water and Environmental Regulation's website on 29 September 2020, inviting submissions from the public within a 21 day period. No submissions were received in relation to this application.

The City of Canning, City of Cockburn and the City of Gosnells advised DWER that local government approvals are not required and advised that the proposal is consistent with the Town Planning Schemes.

Proposed clearing sites 1 to 4 are classes as contaminated sites under the *Contaminated Sites Act 2003*, however the contamination status of these sites is unlikely to be relevant to the proposed clearing of native vegetation. The applicant has developed a construction environmental management plan (CEMP) which considers the potential disturbance of known or suspected contamination.

One Aboriginal site of significance occurs within Area 5. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4. Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- 2.43 ha of significant Carnaby's cockatoo foraging habitat.

The applicant proposed an environmental offset consisting of 9.43 hectares of high-quality foraging habitat for Carnaby's cockatoo within Lot 301 on Plan 77559, Mardella.

Lots 300 and 301 on Plan 77559, Mardella, were purchased by the Western Australian Government from a private landholder in 2014, for the purposes of providing advanced environmental offsets for a range of Government projects, were applied a Class 'A' conservation status in 2015, and both lots were subsequently termed Lowlands Nature Reserve (Public Transport Authority, 2020c; 2020d). Lot 300 on Plan 77559, Mardella, was determined to be a suitable environmental offset for the Gateway WA project (Clearing Permit CPS 5242/5) in 2014 (Public Transport Authority, 2020d). Lot 301 on Plan 77559, Mardella, remained as a "pre-impact" or "banked" offset, as outlined in the *Environmental Offsets Guidelines* (2014), and was intended for use as an environmental offset for the Government's strategic assessment of the Perth and Peel Regions of Western Australia (SAPPR) project, within which the environmental impacts for a number of METRONET rail projects were included in overall impact calculations (PTA, 2020b).

The applicant has committed to securing a 9.43 hectare portion of the existing banked offset site within Lowlands Nature Reserve, to counterbalance the significant residual impacts of the proposed clearing (please see Figure 13 below). Lowlands Nature Reserve will be managed in perpetuity by the Department of Biodiversity Conservation and Attractions (DBCA) and ongoing management will be funded by the applicant between 2021 and 2027 (PTA 2020b). The environmental values represented within Lowlands Nature Reserve are summarised in Table 1.

While it is noted that Lowlands Nature Reserve is approximately 46 kilometres south of the proposed clearing area for CPS 9024/1, noting it is to be used as a strategic offset for several other METRONET projects, and noting it's location within an extensively cleared landscape despite the distance to the proposed clearing, the proposed offset is considered to deliver an adequate environmental benefit to counterbalance the impacts of the proposed clearing.

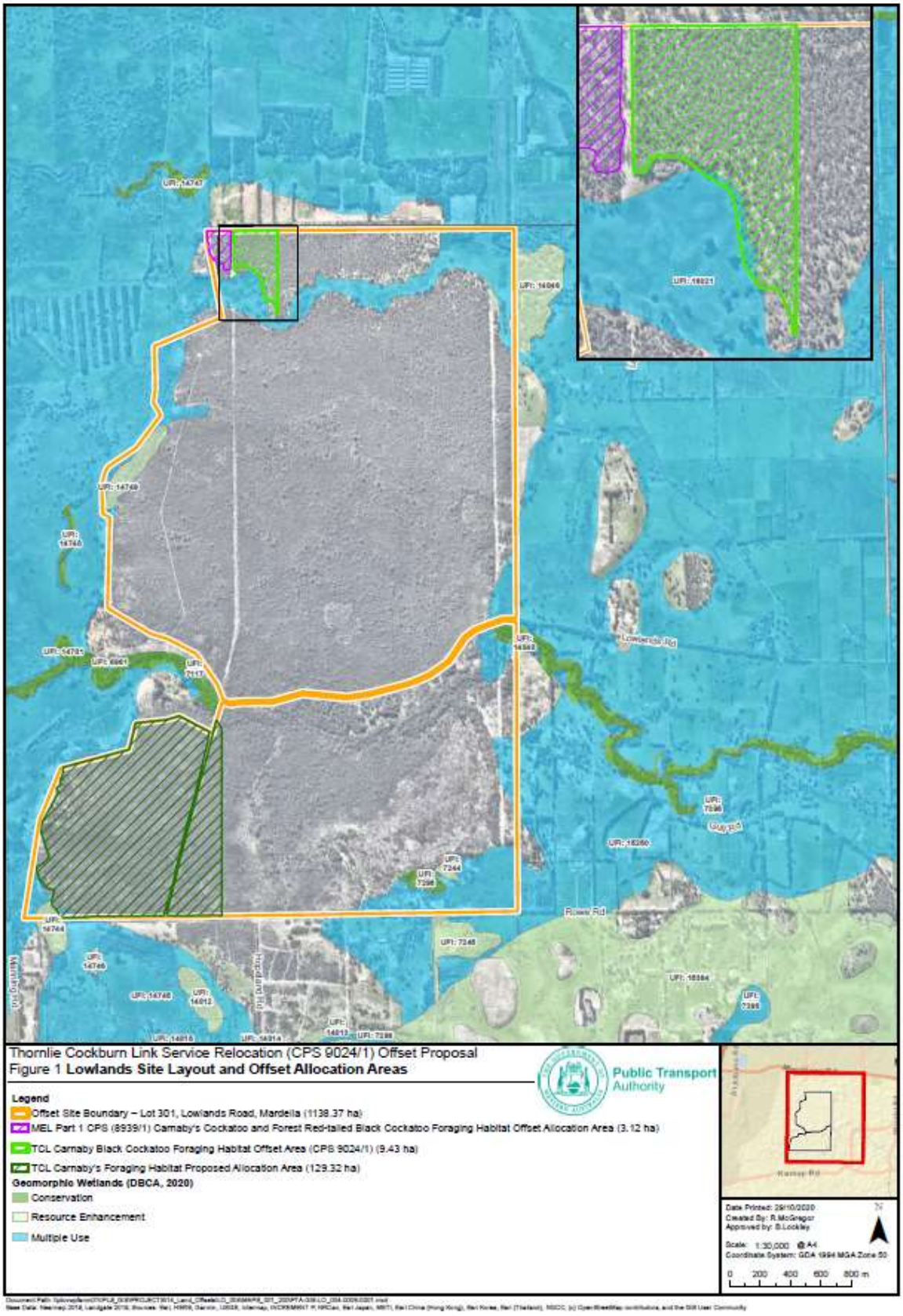

Figure 13: Lowland offset site with offset for CPS 9024/1 hacthed light green.

Table 1. Lowlands Nature Reserve environmental values (PTA, 2020b).

Environmental Value	Description of Environmental Value
Native vegetation	The site consists of approximately 1001.5 ha of native vegetation, in Excellent to Degraded condition, with the majority of the vegetation in Excellent or Very Good condition. The site is mostly covered by vegetation, with some access tracks and fire breaks.
Regional vegetation complexes	Southern River Complex; Dardanup Complex; Guildford Complex; and Bassendean Complex-Central and South Complexes are present at the site.
Vegetation types	The following vegetation types are present at the site: • 712.6 ha - *Eucalyptus Banksia* woodland (EBw) (FCT21a and 23a); • 63.2 ha - *Allocasuarina Banksia woodland (ABw)* (FCT21c); • ha - Banksia ilicifolia woodland (Biw) (FCT22); • 14.4 ha - *Corymbia calophylla* open woodland (Cw); • 143.9 ha - *Banksia Kunzea* woodland (BKw) (FCT21c); • 19.7 ha - *Eucalyptus Melaleuca* woodland (EMw) (FCT4); • 36 ha - *Eucalyptus rudis* forest (Ef) (FCT11); • 4.8 ha - *Melaleuca* woodland (Mw) (FCT5); • 0.6 ha - Tuart woodland (Tw); • 120.6 ha - Scattered natives over weeds (Sn); and • 16.9 ha - Tracks.
Vegetation condition	The vegetation condition of the site varies largely by vegetation type: • *Eucalyptus Banksia* woodland (EBw) (FCT21a and 23a) consists of 312.7 ha in Excellent, 300.44 ha in Very Good and 99.45 ha in Good (Keighery, 1994) condition; • *Allocasuarina Banksia woodland (ABw)* (FCT21c) consists of 42.18 ha in Excellent and 21.05 ha in Very Good (Keighery, 1994) condition; • *Banksia ilicifolia* woodland (Biw) (FCT22) consists of 3.27 ha in Good (Keighery, 1994) condition; • *Corymbia calophylla* open woodland (Cw) consists of 14.37 ha in Good (Keighery, 1994) condition; • *Banksia Kunzea* woodland (BKw) (FCT21c) consists of 82.5 ha in Very Good; 63.06 ha in Good, and 1.35 ha in Degraded (Keighery, 1994) condition; • *Eucalyptus Melaleuca* woodland (EMw) (FCT4) consists of 3.4 ha in Very Good, 15.57 ha in Good, and 0.55 ha in Degraded (Keighery, 1994) condition; • *Eucalyptus rudis* forest (Ef) (FCT11) consists of 34.51 ha in Very Good and 1.53 ha in Good (Keighery, 1994) condition; • *Melaleuca* woodland (Mw) (FCT5) consists of 4.66 ha in Good and 0.17 ha in Degraded (Keighery, 1994) condition; • Tuart woodland (Tw) 0.57 ha in Good (Keighery, 1994) condition; • Scattered natives over weeds (Sn) consists of 120.66 ha in Degraded (Keighery, 1994) condition; and • Tracks consists of 16.69 ha in Completely Degraded (Keighery, 1994) condition.
Conservation significant communities	Four conservation significant ecological communities are represented at the site: • Banksia woodlands of the SCP TEC; • Low lying *Banksia attenuata* woodlands or shrublands (SCP21c) PEC; • Banksia dominated woodlands of the SCP IBRA region PEC; and • Tuart (*Eucalyptus gomphocephala*) woodlands of the SCP PEC.
Priority flora	Four conservation significant flora have historically been recorded within the survey area: • *Caladenia huegelii* (listed as Endangered under the EPBC Act and Critically Endangered under the BC Act);

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<tr><td></td><td>

Drakaea elastica (listed as Endangered under the EPBC Act and Critically Endangered under the BC Act);
Johnsonia pubescens subsp. cygnorum (P2) listed by DBCA; and
Dillwynia dillwynioides (P3) listed by DBCA.

During the field survey a new location of Johnsonia pubescens subsp. cygnorum (Priority 2) was recorded.
</td></tr>
<tr><td>Fauna habitat types</td><td>
Four broad fauna habitats were identified within the survey area based on the mapped vegetation types:

Mixed Eucalyptus Banksia woodland;
Flooded Gum Melaleuca woodlands;
Riparian; and
Pasture with scattered trees.

</td></tr>
<tr><td>Black cockatoo habitat</td><td>
Carnaby's cockatoo were seen and heard calling by GHD (2020a) during the environmental survey. Forest red-tailed black cockatoos were also observed feeding at two locations during the field survey (GHD, 2020a).

GHD (2020a) identified the following habitats as suitable for foraging for both Carnaby's cockatoos and forest red-tailed black cockatoos at Lowlands:

Mixed Eucalyptus Banksia woodland (940.3 ha), and
Pasture with scattered trees (120.6 ha).

Foraging evidence (chewed marri, jarrah, Banksia and Allocasuarina nuts) was recorded extensively throughout the Mixed Eucalyptus Banksia Woodlands and pasture with scattered trees habitat types. Foraging evidence showed the presence of both Carnaby's cockatoo and forest red-tailed black cockatoo distinctive mandible marks (GHD, 2020a).

A summary of the Black cockatoo habitat is provided below (GHD 2020a):
<table>
<tr><th>Habitat Type</th><th>Extent (ha)</th><th>Comments</th></tr>
<tr><td>Breeding</td><td>1,122</td><td>Each of the habitat types provides for potential breeding habitat.</td></tr>
<tr><td>Foraging</td><td>1,122</td><td>The Mixed Eucalyptus Banksia Woodland provide high foraging potential, and the scattered natives, Flooded Gum Melaleuca woodlands and Riparian habitat provide low to moderate potential foraging habitat.</td></tr>
<tr><td>Roosting</td><td>36.6</td><td>Only the Riparian habitat was identified as being suitable for roosting activities.</td></tr>
</table>
</td></tr>
<tr><td>Wetlands and watercourses</td><td>
According to GHD (2020a) and based on the DBCA Geomorphic Wetlands SCP Database, there are eight wetlands that occur within or intersect the Lowlands site:

Two CCWs totalling 4.6 ha (3.17 ha - UFI 7296; 1.43 ha - UFI 14848)
Four REWs totalling 10.64 ha (1.77 ha - UFI 7244; 1.6 ha - UFI 14744; 6.42 ha - UFI 14749; and 0.85 ha - UFI 14846); and
Two MUWs totalling 104.89 ha (31.67 ha - UFI 15250; and 73.22 ha – UFI 16021).
Serpentine River is located within the Lowlands site.

</td></tr>
</table>

Noting the above, the proposed offset area of 9.43 hectares within Lowlands Nature Reserve includes the following environmental values and qualities:

- 9.43 hectares of mixed Eucalyptus and Banksia woodland habitat in Good (Keighery, 1994) condition;
- 9.43 hectares of high-quality foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo;
- Potential breeding and roosting habitat for all three black cockatoo species; and
- Proximity to water resources through the Serpentine River.

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above.

The justification for the values used in the offset calculation is provided in Appendix E.

Appendix A – Additional information provided by applicant

Summary of comments	Consideration of comment
Further information regarding avoidance and minimisation measures undertaken within CCW mapped at Area 19 was provided by the applicant on 30 October 2020.	This information was included in the consideration of avoidance and minimisation measures (refer to Section 3.1) and the consideration of relevant planning instruments and other matters (refer to Section 3.3).
An offset proposal was provided by the applicant on 30 October 2020	This information was considered in the assessment of impacts to environmental values (refer to Section 3.2.1), assessment of offset suitability (refer to Section 4), and outlined further in Appendix D.

Appendix B – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

1. Site characteristics

Site characteristic	Details
Local context	The proposed clearing areas comprise of 21 areas scattered along a highly disturbed railway reserve over a length of 16 kilometres. The railway reserve is surrounded by industrial and residential areas. The proposed clearing occurs within a greater developmental envelope that is to facilitate the Thornlie to Cockburn railway link project within the METRONET program. This larger project is currently being formally assessed by the Environmental Protection Authority (EPA). Aerial imagery indicates the local area (10km radius of the proposed clearing area) retains approximately 12 per cent of the original native vegetation cover. Please see below for the size of proposed clearing within the 21 areas: Area No. Size (in ha) 1 0.33 2 0.73 3 0.78 4 0.36 5 0.26 6 0.02 7 0.01 8 0.30 9 0.20 10 0.03 11 0.11 12 0.07 13 0.14 14 0.14 15 0.30

Site characteristic	Details
	16 0.25 17 0.02 18 0.06 19 0.04 20 0.03 21 0.12
Vegetation description	Photographs supplied by the applicant (PTA, 2020a) and Vegetation survey (GHD, 2019) indicate the vegetation within the proposed clearing area consists of: • Vt06 - Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland. Including planted vegetation. • VT0I – Eucalyptus todtiana, Nuytsia floribunda, Banksia illicifolia isolated trees over B. menziesii, B attenuata woodland over Xanthorrhoea preissii, Hibbertia spp. sparse shrubland over diverse heathland. • VT04 - Corymbia calophylla, Eucalyptus todtiana isolated clumps of trees over Adenanthos cygnorum sparse shrubland over *Cenchrus setaceus sparse grassland. Representative photos and full survey descriptions are available in Appendix F. This is consistent with the mapped vegetation type: • Heddle Vegetation Complex: Bassendean Complex – Central and South which is described as woodland to low woodland and sedgelands (Heddle et al. 1980).
Vegetation condition	Photographs supplied by the applicant and vegetation surveys (GHD, 2019 and GHD 2020) indicate the vegetation within the proposed clearing area is in Completely Degraded to Good (Keighery, 1994) condition, described as: • Completely Degraded • Degraded • Good The full Keighery condition rating scale is provided in Appendix E, below. Representative photos and full survey descriptions and mapping are available in Appendix F.
Soil description	The soil is mapped as: Bassendean B1 Phase described as Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant (DPIRD, 2007-). And; EnvGeol S8 Phase described as SAND - very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin (DPIRD, 2007-).

<table>
<tr><th>Site characteristic</th><th>Details</th></tr>
<tr><td>Land degradation risk</td><td>Table 1: Land Degradation Risk
<table>
<tr><td>Land Degradation</td><td>Bassendean B1 Phase</td><td>EnvGeol S8 Phase</td></tr>
<tr><td>Salinity</td><td>10-30% of map unit has a moderate to high salinity risk or is presently saline</td><td>Less than 3 per cent of the map unit has a moderate or high hazard or is presently saline</td></tr>
<tr><td>Wind erosion</td><td>30-50% of map unit has a high to extreme wind erosion risk</td><td>Greater than 70 per cent of map unit has a high to extreme wind erosion risk</td></tr>
<tr><td>Water erosion</td><td>10-30% of map has a high to extreme water erosion risk</td><td>Less than 3 per cent of the map unit has a high to extreme water erosion risk</td></tr>
<tr><td>Waterlogging</td><td>50-70% of map unit has a moderate to very high waterlogging risk</td><td>3-10 per cent of the map unit has a moderate to very high waterlogging risk</td></tr>
<tr><td>Flooding</td><td>30-50 % of the map unit has a moderate to high flood risk</td><td>Less than 3 per cent of the map unit has a high flood risk</td></tr>
</table></td></tr>
<tr><td>Waterbodies</td><td>Area 19 (0.04ha) falls within a conservation category (CCW) dampland. Approximately 0.017 ha of wetland vegetation occurs within this area. The entire CCW is 7.244 ha in size and the proposed clearing will be impact on 0.0023 per cent of this wetland.
A main drain occurs 124 metres south of Area 8.
Multiple use wetlands are mapped over Areas 16, 14, 13, 8 and 6. No wetland dependent vegetation occur within these areas (PTA, 2020a, GHD, 2019).</td></tr>
<tr><td>Conservation areas</td><td>According to available databases, several conservation areas occur within one kilometre of the proposed clearing areas, including:
Bush Forever site 456 is 952 m north east.
Bush Forever site 245 is 550 m south west.
Bush Forever site 388 is directly adjacent to Area 19</td></tr>
<tr><td>Climate</td><td>The proposed clearing area occurs within a Mediterranean climate, with an average annual rainfall of 731 millimetres, an average annual evapotranspiration rate of 700 millimetres, and average monthly maximum temperatures ranging from 19.2°C to 34.6°C.</td></tr>
</table>

2. Flora, fauna and ecosystem analysis

With consideration for the site characteristics set out above, relevant datasets (see Appendix G), and biological survey information the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Carnaby's cockatoo (*Calyptorhynchus latirostris*)	1.8 kilometres	N/A	N/A	Y	Y-
Forest red-tailed black cockatoo	5.6 kilometres	N/A	N/A	Y	Y

Species / Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Suitable habitat features (fauna)	Are surveys adequate to identify? (Y, N, N/A)
Quenda	Within Area 2	N/A	N/A	Y	Y
SCP 21C PEC	Within Area 2	Y	Y	N/A	Y
Banksia SCP TEC	Intersecting application area	Y	Y	N/A	Y
Caladenia huegelii (T)	50 meters north of Area 19	Y	Y	N/A	Y
Haemodorum Loratum (P3)	1.0 km	Y	Y	N/A	Y
Drakaea micrantha (T),	1.25 km	Y	Y	N/A	Y
Conospermum undlatum (T),	2.4 km	Y	Y	N/A	Y
Thelymitra variegate (P2),	3.0 km	Y	Y	N/A	Y
Comesperma griffinii (P2),	3.5 km	Y	Y	N/A	Y
Isopogon drummondii (P3),	2.8 km	Y	Y	N/A	Y
Phlebocarya pilosissima subsp. *pilosissima* (P3).	4.0 km	Y	Y	N/A	Y

3. Vegetation extent

Vegetation representation statistics (Government of Western Australia, 2019).

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA bioregion					
Swan Coastal Plain	1,501,221	579,813	38.62	222,916	1,501,221
Swan Coastal Plain vegetation complex					
Bassendean Complex Central and South	87,476	23,509	26.87	4,377	5

Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The majority of the proposed clearing is in a degraded to completely degraded condition and does not represent significant habitat for TECs, PECs or rare and priority flora.	Not likely to be at variance	No
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 proposed clearing area contains significant foraging habitat for the conservation significant fauna, Carnaby's black cockatoo and forest red-tailed black cockatoo.	At variance	Yes Refer to Section 3.2.2 above.
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The proposed clearing area is unlikely to contain habitat for flora species listed under the BC Act.	Not likely to be at variance	Yes Refer to Section 3.2.2 above.
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 proposed clearing area does not contain vegetation that indicates a threatened ecological community.	Not likely to be at variance	Yes Refer to Section 3.2.2 above.
Environmental values: 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 and contains significant habitat for conservation significant fauna species and a PEC. Vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance	Yes Refer to Section 3.2.2 above.
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 may impact on the environmental values of adjacent conservation areas through the introduction and spread of weeds and dieback.	May be at variance	Yes Refer to Section 3.2.2 above.
Environmental values: 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."*	At variance	Yes

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Assessment: Area 19 (0.04ha) falls within a conservation category (CCW) dampland. Approximately 0.017 ha of wetland vegetation occurs within this area. The entire CCW is 7.244 ha in size and the proposed clearing will be impact on 0.0023 per cent of this wetland.		Refer to Section 3.2.2 above.
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Noting the relatively small extent of the proposed clearing and that the clearing is spread over 21 small and isolated patches along a length of 14 km, the proposed clearing is not likely to cause appreciable 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: Both mapped soil types within the proposed clearing area have low salinity risk. The proposed clearing of 0.017 ha of wetland vegetation may cause sedimentation of surface water within the CCW mapped over Area 19. However, given the size of the proposed clearing this impact is likely to be minor and short term.	Not likely to be at variance	No
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: Area 19 (0.04ha) falls within a conservation category (CCW) dampland. Approximately 0.017 ha of wetland vegetation occurs within this area. The entire CCW is 7.244 ha in size and the proposed clearing will be impact on 0.0023 per cent of this wetland. Given the small amount of proposed clearing within this wetland, the proposed clearing is not considered to exacerbate 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.

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 – Offset calculator value justification

Offset Calculation 1: Lowlands Nature Reserve

Field Name	Description	Field Name
IUCN Criteria	The IUCN criteria for the value being impacted	1.2% - offset mitigates the loss of vegetation that comprises significant foraging habitat for Carnaby's cockatoo (Endangered under EPBC Act), which has annual probability of extinction 1.2%.
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	2.43 - application area in hectares considered to comprise significant foraging habitat, identified through black cockatoo habitat assessment
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	5 - Native vegetation condition ranges from Completely Degraded to Good condition, however vegetation value is considered higher as assessment identified evidence of foraging has been observed within the development envelope and foraging habitat is restricted in the local area.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	20 year - The proposed offset is a Class 'A' conservation reserve in secure tenure, therefore the maximum of 20 years is applied.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	0 year - The offset site is already a Class 'A' conservation reserve in secure tenure, the reserve will be under management by DBCA from January 2021, so ecological benefit is immediate.
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	9.43 hectares - reverse-calculated using the 'what if' function to achieve 100% offset based on assumptions.
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	8 - Native vegetation at the offset site is in Good condition, but comprises high-quality and significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, and is a significant remnant within a extensively cleared area.
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	7 - Without ongoing management from DBCA through the offset, the vegetation at the offset site may experience some degradation from weed incursion and dieback.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	8 - As the offset site already exists and ongoing management will occur through the offset, it is expected that the quality of the vegetation is unlikely to change.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	15% - Prior to acquisition by the State, the offset site was privately owned rural zoned land. However, the site was recognised as having high conservation value, and was classified as Bush Forever Site 368, limiting the potential for development. Therefore, there is a low risk that the offset site would be developed.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	5% - It is considered that the risk of development will be significantly reduced with the designation of Class 'A' conservation reserve over the offset site. Risk of catastrophic events still remain (e.g. bush fire, dieback).
Confidence in result (%) – risk of loss (habitat/community)	The capacity of measures to mitigate risk of loss of the proposed offset site	90% - It is considered that there is a high level of confidence that the level of risk of future development is low, given the designation of Class 'A' conservation reserve over the offset site.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	85% - Given ongoing management from DBCA, it is considered that there is a high level of confidence that vegetation quality will be maintained.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100% - reverse-calculated using the 'what if' function to achieve 100% offset based on assumptions.
Other comments	Include here any relevant additional comments (e.g. the size of offset required to offset 100% of the residual impacts)	100% of the residual impacts resulting from the clearing of 2.43 hectares of significant foraging habitat for Carnaby's cockatoo will be offset through the acquisition of 9.43 hectares of native vegetation within a Class 'A' conservation reserve.

Appendix F – Biological survey information excerpts / photographs of the vegetation

Vegetation description within the application areas based on vegetation survey (GHD, 2019) and site photos provided by applicant (PTA, 2020a).

Area No	Size (in ha)	Vegetation condition	Vegetation description
1	0.33	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland and cleared areas.
2	0.73	Good to completely degraded	*Banksia menziesii* and *Banksia attenuatta* woodland (0.11 ha) *Corymbia calophylla, Eucalyptus todtiana* isolated clumps of trees over *Adenanthos cygnorum* sparse shrubland over **Cenchrus setaceus* sparse grassland (0.62ha)
3	0.78	Degraded completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland.
4	0.36	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
5	0.26	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
6	0.02	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
7	0.01	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
8	0.30	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
9	0.20	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
10	0.03	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland.
11	0.11	Degraded to Completely degraded	*Corymbia calophylla, Eucalyptus todtiana* isolated clumps of trees over *Adenanthos cygnorum* sparse shrubland over **Cenchrus setaceus* sparse grassland.
12	0.07	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland

13	0.14	Degraded to Completely degraded	Native shrubs, Allocasurina introduced Eucalyptus over introduced herbland/grassland.
14	0.14	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
15	0.30	Degraded to Completely degraded .	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
16	0.25	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
17	0.02	Degraded to Completely degraded	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
18	0.06	Degraded to Completely degraded.	*Corymbia calophylla/ Eucalyptus rudis/ E. todtiana/ E. gomphocephala*/ *Eucalyptus spp. isolated trees over introduced herbland/ grassland
19	0.04	Degraded to Completely degraded.	*Adenanthos cygnorum* sparse shrubland.
20	0.03	Degraded to Completely degraded	*Corymbia calophylla, Eucalyptus todtiana* isolated clumps of trees over *Adenanthos cygnorum* sparse shrubland over **Cenchrus setaceus* sparse grassland
21	0.12	Degraded to Completely degraded	*Corymbia calophylla, Eucalyptus todtiana* isolated clumps of trees over *Adenanthos cygnorum* sparse shrubland over **Cenchrus setaceus* sparse grassland

Photograph 4-1: Isolated *Eucalyptus* and *Corymbia* trees located in the northwest end of proposed clearing Area 4.

Photograph 4-4: Four isolated *Eucalyptus* and *Corymbia* trees located inside the rail corridor within proposed clearing Area 4.

Photograph 5-1: Planted *Melaleuca* trees alongside McLean Road verge outside the existing rail corridor (Area 5).

Photograph 5-3: Planted *Agonis flexuosa*, *Eucalyptus, Melaleuca* and *Acacia* trees alongside McLean Road verge. Note patches of bare ground and exotic grasses in the understory (Area 5).

Photograph 6-1: *Acacia trees* and shrubs alongside McLean Road outside the existing rail corridor (Area 6).

Photograph 7-1: Isolated Planted *Adenanthos* and *Eucalyptus* trees over bare mulch (Area 7).

Photograph 9-1: Native vegetation within proposed clearing Area 9. Extensive littering and dead branches were observed throughout the area.

Photograph 9-2: Dead trees and branches observed throughout proposed clearing Area 9.

Photograph 10-1: Planted *Allocasuarina* trees over bare ground located at the northern end of proposed clearing Area 10.

Photograph 10-2: Planted *Banksia* and *Grevillea* shrubs at the southern boundary of proposed clearing Area 10.

Photograph 10-3: Planted *Eucalyptus* tree and *Banksia* shrubs between the existing pedestrian footpath and southern boundary of proposed clearing area 10. Note that the *Eucalyptus* tree will be avoided during the clearing works.

Photograph 11-1: Native trees and shrubs over bare sand located at the northern end of proposed clearing Area 11.

Photograph 11-2: Bare sand under existing power lines with regrowth of *Adenanthos* shrubs and *Eucalyptus* trees.

Photograph 11-3: Bare sand under existing power lines with *Hakea* shrubs. Widespread presence of exotic grasses and herbs were observed along the fence line.

Photograph 12-3: Planted *Eucalyptus* trees south of the existing footpath.

Photograph 12-4: Planted *Corymbia* and *Eucalyptus* trees with extensive exotic grasses along the southern boundary of proposed clearing Area 12.

Photograph 13-1: Native vegetation on the southern boundary of proposed clearing Area 13. Significant edge effects from the existing rail corridor and access track can be observed.

Photograph 13-2: Regrowth vegetation bordering the existing cleared access track within proposed clearing Area 13. Littering was observed throughout the area.

Photograph 14-1: Planted *Allocasuarina* trees on the southwestern boundary of proposed clearing Area 14.

Photograph 14-2: Planted *Corymbia* and *Allocasuarina* trees within proposed clearing Area 14. Dead shrubs and significant weed presence were observed.

Photograph 13-3: Planted *Eucalyptus* and *Melaleuca* trees and *Adenanthos* shrubs located at the southern border of proposed clearing Area 12.

Photograph 13-4: Planted native trees and shrubs adjacent to the existing rail access track. Disturbance is evident through widespread exotic grasses and presence of littering.

Photograph 14-3: Native *Corymbia* trees and *Banksia menziesii* shrubs along the northern boundary of proposed clearing Area 14. Dead shrubs and branches were widespread throughout the area.

Photograph 14-4: Planted *Eucalyptus* trees and *Adenanthos* shrubs over bare mulch and sparse weeds, north of the existing pedestrian footpath.

Photograph 15-1: Significant disturbance was observed within proposed clearing Area 15 through extensive presence of exotic species, littering and areas of bare ground.

Photograph 15-2: Dead vegetation and littering amongst native and introduced shrubs.

Photograph 17-1: Regrowth and planted *Chamelaucium uncinatum* shrubs over bare ground with sparse exotic grasses.

Photograph 17-2: Regrowth and planted *Chamelaucium uncinatum* shrubs over bare sand at the southern boundary of proposed clearing Area 17. Several dead shrubs were observed within the area.

Photograph 16–3: Planted native trees and shrubs south of the existing pedestrian footpath. Disturbance from previous service works is evident adjacent to the footpath.

Photograph 16–4: Planted *Eucalyptus* trees and native shrubs north of the existing footpath. Extensive weed cover and dead branches were observed.

Photograph 17-3: Regrowth and planted dense *Chamelaucium uncinatum* shrubs at the southwestern boundary.

Photograph 17-4: Regrowth and planted dense *Chamelaucium uncinatum* shrubs at the southern boundary. Edge effects from the surrounding cleared area and littering are evident.

Photograph 18-3: Planted *Allocasuarina* trees over bare ground with sparse exotic grass. Several dead shrubs were observed.

Photograph 19-1: Native *Adenanthos* and *Myrtaceae* shrubs located at the western border of clearing Area 19 (located beyond the fenceline).

Photograph 20-1: Cleared access track on the road verge northeast of Hope Road. Vegetation consisted predominantly of exotic *Cenchrus* grasses with some isolated *Acacia* shrubs.

Photograph 20-2: Regrown *Acacia* and *Adenanthos* shrubs bordering Hope Road. This vegetation consists of regrowth following clearing of the area between 2008 and 2010 (Landgate 2020).

Photograph 19-2: Previously cleared area within proposed clearing Area 19,

Photograph 19-3: Remnant native vegetation within proposed clearing Area 19. Extensive disturbance, dead shrubs and littering were observed.

Photograph 21-3: Exotic *Cenchrus* grasses and a single *Banksia attenuata* shrub on the road verge north of Training Place.

Photograph 21-4: Bare gravel with sparse exotic *Cenchrus* grasses and *Pelargonium* herbs at the eastern boundary of proposed clearing Area 21. The native vegetation along the fenceline has been avoided and is outside of the clearing area.

Appendix G – References and databases

1. GIS datasets

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available
- Bush Forever Area 2000 (DPLH – 019)

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
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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PTA (2020b) Additional information and proposed offset proposal for CPS 9024/1. Perth Transport Authority, Western Australia. DWER ref DWERDT358813

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