GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9994/1
Permit Holder:	City of Gosnells
Duration of Permit:	From 30 September 2023 to 30 September 2033

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 construction of the new Station Street Bridge.

2. Land on which clearing is to be done

Lot 313 on Deposited Plan 47440, Gosnells

Station Street Road reserve (PINs 11717367, 11717368, 12262297 and 12262298), Gosnells

3. Clearing authorised

The permit holder must not clear more than 0.36 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 30 September 2028.

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. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner from southeast to northwest to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

8. Offset – revegetation and rehabilitation

The permit holder must within 12 months of undertaking clearing authorised under this permit:

(a) undertake deliberate *planting* of at least 95 *Eucalyptus rudis* trees and 10 *Corymbia calophylla* trees within the areas crosshatched red in Figure 2 of Schedule 1, by:

  i. ensuring only *local provenance* species are used;

  ii. ensuring *planting* is undertaken at the *optimal time*;

(b) undertake *weed* control and watering of *plantings* for at least three years post planting;

(c) the permit holder must within 24 months of *planting* the 95 *Eucalyptus rudis* trees and 10 *Corymbia calophylla* trees in accordance with condition 8(a) of this permit:

  i. engage an *environmental specialist* to make a determination of the survival of the 95 *Eucalyptus rudis* trees and 10 *Corymbia calophylla* trees.

  ii. if the determination made by the *environmental specialist* under condition 8(c)(i) that 95 *Eucalyptus rudis* trees and 10 *Corymbia calophylla* trees have not survived or appear they will not survive, the permit holder must plant additional trees that will result in 95 *Eucalyptus rudis* trees and 10 *Corymbia calophylla* trees persisting within the area crosshatched red in Figure 2 of Schedule 1.

(d) where additional *planting* of trees is undertaken in accordance with condition 8(c), the permit holder must repeat the activities required by condition 8(a), 8(b) and 8(c) of this permit. If infill tree planting is undertaken following the assessment after 24 months, these must be managed as required by 8(b), for a minimum of one year.

9. Fauna management – Carter's freshwater mussel

Prior to the clearing, the permit holder must provide to the *CEO* a copy of the fauna licence obtained under Section 40 of the *Biodiversity Conservation Act 2016* for the translocation of Carter's freshwater mussel (*Westralunio carteri*).

PART III - RECORD KEEPING AND REPORTING

10. 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 2020 (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 5; (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 9.
2.	In relation to *revegetation* and *rehabilitation* pursuant to condition 8	a) the date(s) that the *revegetation* and *rehabilitation* occurred; b) the size of the areas *revegetated* and *rehabilitated*; c) the location of the *revegetation* and *rehabilitation* 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; d) a description of the *revegetation* and *rehabilitation* activities undertaken; e) a list of species, including quantities, used for *revegetation* and *rehabilitation* in accordance with the requirements of conditions 8(a); and f) a description of the infill planting (if any) in accordance with the requirements of condition 8(c)(ii).

11. Reporting

(a) The permit holder must provide to the *CEO*, on or before 30 June of each calendar year, a written report containing:

i. the records required to be kept under condition 10; and

ii. records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.

(b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken, must be provided to the *CEO* on or before 30 June of each calendar year.

(c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 10, where these records have not already been provided under condition 11(a).

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.
fill	means material used to increase the ground level, or to fill a depression.
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.
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)
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 August for undertaking planting.
planting	means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species.

Term	Definition
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

6 September 2023

Schedule 1

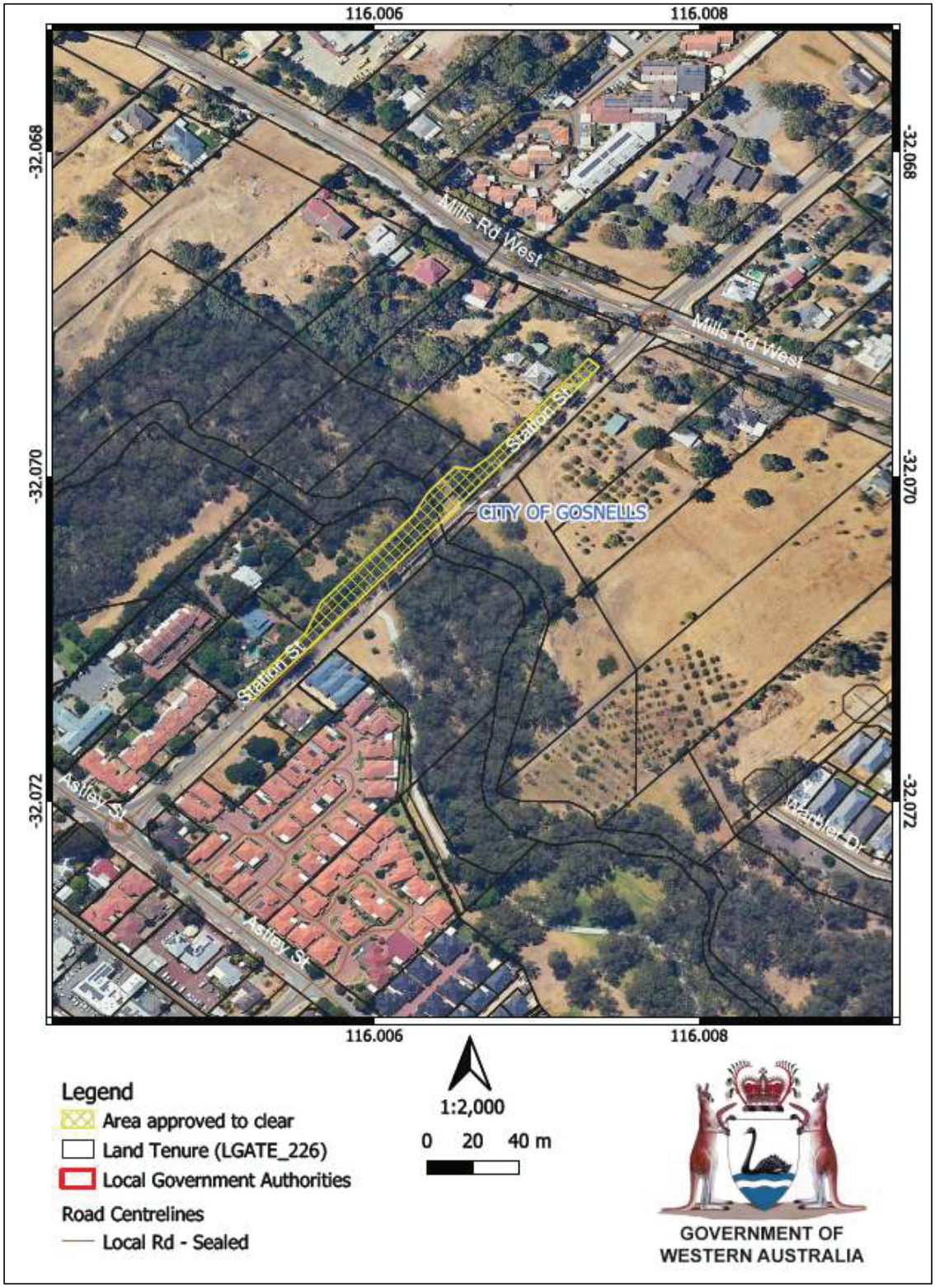

Figure 1: Map of the boundary of the area within which clearing may occur

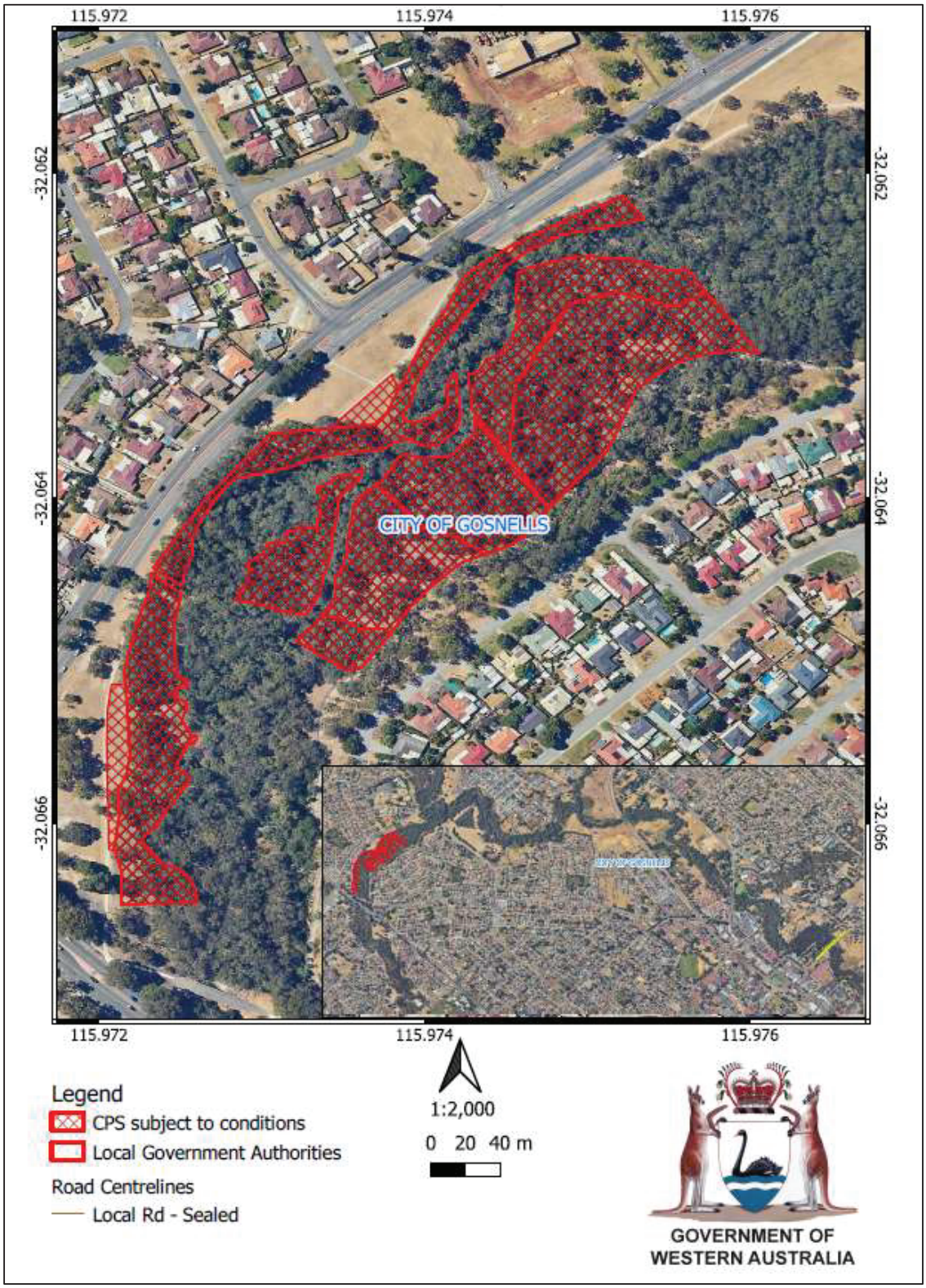

Figure 2: Map of the boundary of the revegetation and rehabilitation areas

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 9994/1
Permit type:	Area permit
Applicant name:	City of Gosnells
Application received:	02/12/2022
Application area:	0.36 hectares of native vegetation, which includes 21 mature native trees
Purpose of clearing:	Construction of new Station Street Bridge
Method of clearing:	Mechanical
Property:	Lot 313 on Deposited Plan 47440 Station Street Road reserve (PINs 11717367, 11717368, 12262297 and 12262298)
Location (LGA area/s):	City of Gosnells
Localities (suburb/s):	Gosnells

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area, within the within Station Street Road reserve (PINs 11717367 and 11717368) and portion Lot 313 on Deposited Plan 47440), Gosnells for the purpose of constructing a road bridge.

A new bridge for vehicles will be installed adjacent to the existing Station Street Bridge (constructed in 1938) which will be retained and be used for pedestrian and cycle traffic only (City of Gosnells, 2023a).

The proposed new concrete Station Street Bridge design will include (City of Gosnells, 2022):

- Two lanes with an overall deck width of 9.04 metres, increasing traffic capacity.
- A three-span 55-metre-long bridge, consisting of 20 metres, 21.5 metres and 13.5 metres spans with the central span over the Canning River.
- The bridge superstructure comprises of 650-millimetre-deep precast concrete beams and a minimum 200 millimetre deep *in situ* concrete deck.
- The bridge substructure comprises of three no. 900 millimetre diameter concrete bored piles per pier supporting a 1400-millimetre-wide by 800-millimetre-deep *in situ* concrete headstock, which supports the planks (beams) on bearings.
- The bridge substructure comprises of three no. 900 millimetre diameter concrete bored piles per abutment supporting a 500-millimetre-thick concrete abutment wall and return wingwalls.
- The bridge will have a 100-year design life; accommodate T44 and Group 1 vehicles (i.e., heavy trucks up to 30 tonnes).
- Contain provision for pedestrian access walkway to be added in the future once the existing bridge is demolished (in future once the existing services supported by the bridge have been relocated). This walkway will comprise of a 2.5-metre-wide steel structure which can be bolted to the adjacent kerb.

The proposed road design works to merge with existing road:

- The road alignment on the new bridge will consist of two 3.5 metre lanes (one in each direction of travel) and ties into the existing road 125 metre from each abutment (i.e.at chainage 60 metre and chainage 365 metre).
- The road will consist of a 235-millimetre-thick granular pavement, a two-coat seal and 30 mm asphalt. The granular pavement will extend 4.1 metre each side of the road centreline.
- Drainage structures will be installed including six gullies, approximately 100 metre of reinforced concrete pipes and two gross pollutant traps that will treat stormwater before it is discharged into the Canning River.
- Road safety barriers will be installed along the new bridge and road alignment, extending approximately 50 metres from each abutment.
- A dual use footpath (pedestrians and cyclists) is proposed to be constructed for approximately 278 metre adjacent to the proposed road alignment.
- Installation of road signs (speed zoning and warning signs), street lighting and pavement marking through the works boundary.
- Relocation of existing services is proposed at the site. Approximately 145 metres of Atco medium pressure gas line and 170 metres of Telstra fibre optic and copper cables will require relocation.
- Approximately 170 square metres of ground improvement by mass soil mixing (MSM) will be undertaken beneath the proposed retaining wall at Abutment 1 to a depth of approximately 4 metres below ground level.

The new bridge with two traffic lanes (as opposed to the existing single lane bridge), will have a substantially larger loading capacity and improve vehicle access and safety. The provision for two full lanes will reduce traffic delays, reduce vehicle operating costs and improve travel time (City of Gosnells, 2023b).

The size of the area and amount of clearing proposed were reduced during assessment. The application was revised during the assessment, in response to the condition 2 under the Department of Biodiversity Conservation and Attractions (DBCA) Permit 2022-252 to avoid and minimise the clearing impacts. The changes include (City of Gosnells, 2023d):

- Reduction in the amount of clearing from 0.41 hectares to 0.36 hectares; and
- Retention of five mature *Eucalyptus rudis* trees and one mature *Corymbia calophylla* tree. The number of mature trees to be cleared is reduced to 21, which includes 19 *Eucalyptus rudis* and two *Corymbia calophylla*.

Figure 1. Map showing the reduction of the application area
(crosshatched yellow area: initial application; crosshatched blue area: adjusted application area)

1.3. Decision on application

Decision:	Granted
Decision date:	6 September 2023
Decision area:	0.36 hectares of native vegetation, as depicted in Section 1.5, below.

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 during that period. However, one submission was submitted outside the regulated submission period. Consideration of matters raised in this public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix H.1), the findings of a flora and vegetation survey (see Appendix G), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of clearing which is for bridge construction to improve the traffic condition in the area.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation including 21 mature native trees that provides future breeding habitat and foraging habitat for black cockatoos;
- significant impacts on the Carter's freshwater mussels (*Westralunio carteri)* at a local scale;
- impacts on fauna individuals if present at the time of the clearing;
- the loss of native vegetation including 21 mature native trees within the Bush Forever site 246; 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 that some of the impacts of the proposed clearing, including impacts fauna individuals, and the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning. Impacts to the local population of the Carter's freshwater mussel can be managed and mitigated via the Section 40 authorisation under the *Biodiversity Conservation Act 2016* . However, impacts on suitable habitat for black cockatoos and Bush Forever site 246 remained significant even after the application of minimisation and mitigation measures and constituted a significant residual impact.

The Delegated Officer determined that the planting of at least 10 trees of *Corymbia calophylla* and 95 trees of *Eucalyptus rudis* within Bush Forever site 246, was sufficient to counterbalance the significant residual impacts of the proposed clearing (see Section 4).

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;
- Undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;A requirement to obtain a section 40 authorisation under the BC Act to relocate Carter's freshwater mussels upstream prior to the clearing; and
- Offset – revegetation and rehabilitation within the Bush Forever site 246.

1.5. Site map

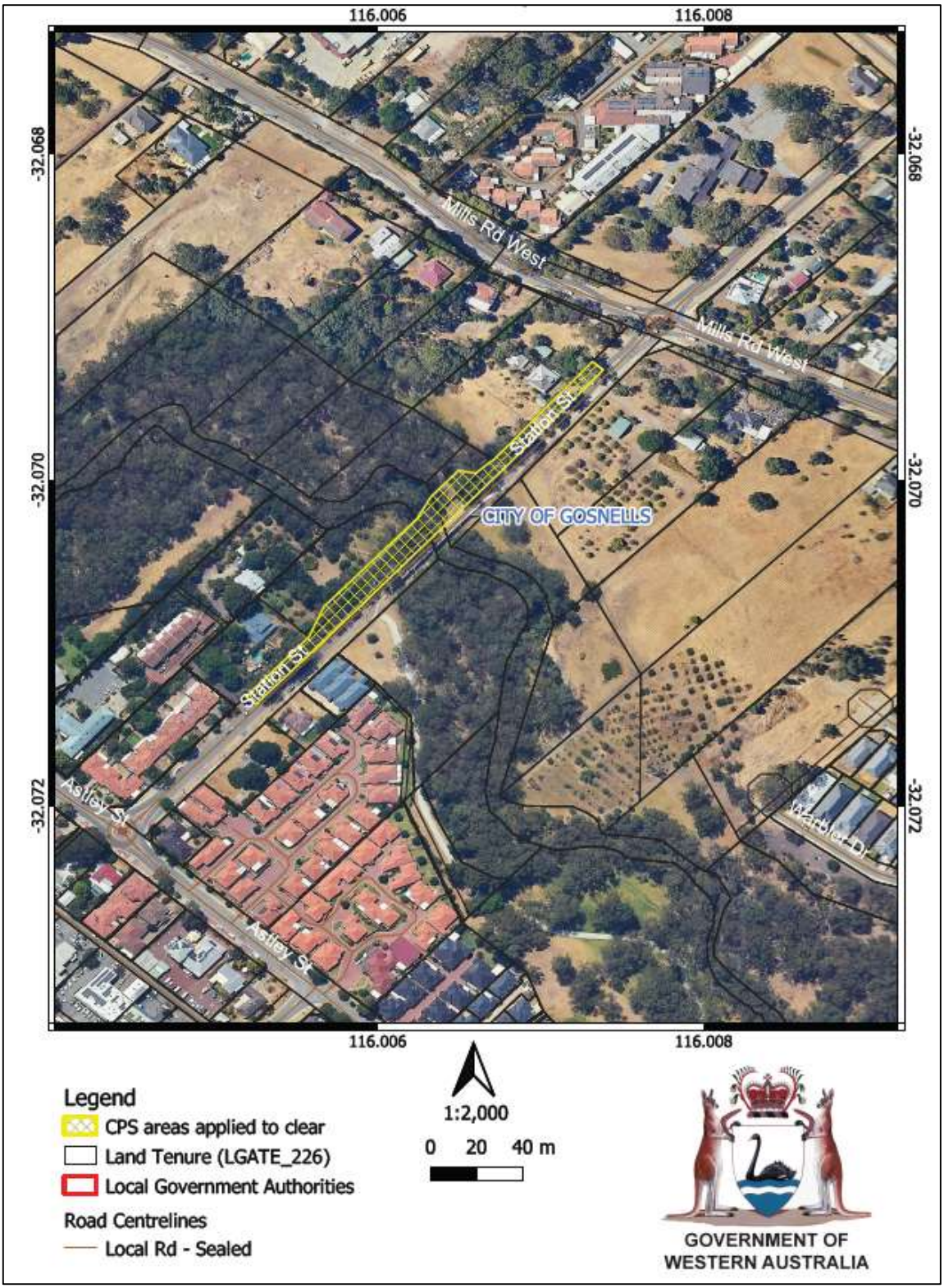

Figure 2. Map of the application area

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Swan and Canning Rivers Management Act 2006* (SCRM Act).
- *Rights in Water and Irrigation Act 1914* (RiWI Act).

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011) 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)
- *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

Further information was submitted by the applicant, showing that the construction of a new bridge in the application area has been selected after five options were considered during the planning phase, as follows:

- Option 1: Replace the existing single land bridge with a new two-lane concrete bridge, including a new dual use path (DUP).
- Option 2: Preserve the existing bridge and construct a new two-lane concrete bridge, without a DUP. The existing bridge will serve as a DUP.
- Option 3: Replace the existing bridge with a new two-lane concrete bridge, and a separate DUP.
- Option4: Temporarily retain the existing bridge, and construct new two-lane concrete bridge without the DUP. A new DUP to be retrofitted to the new concrete bridge at a later stage.
- Option 5: Widen existing bridge by adding one lane to provide two-way traffic.

After assessing the pros and cons of the above options, option 2 has been selected as it avoids significant costs to relocate services (including high voltage overhead power), no diversion of traffic is required during construction phase, and the existing Municipal Heritage listed bridge can be retained (City of Gosnells, 2023c).

The applicant committed to the following mitigation measures (City of Gosnells, 2023a):

- Restrict vegetation clearing to the minimum area required for construction works.
    - Develop a clearing plan to limit clearing, where practical, to existing cleared or disturbed areas.
    - Where practicable, minimise disturbance to the minimum land area required for construction of the proposed bridge.
- Clearing restricted to area within DWER clearing permit.
    - Clearly demarcate (e.g. signage and fencing) the approved clearing area and the vegetated areas to be protected from clearing and disturbance.
    - Establish tree protection zones, as advised by an arborist, to protect retained vegetation.
    - Educate site personnel on vegetation conservation areas.

The area and amount of native vegetation are also reduced during the assessment process, from 0.41 hectares to 0.36 hectares to retain six mature trees that can provide habitat for black cockatoos (Figure 1).

The applicant is applying for a section 40 authorisation from DBCA to take threatened fauna (Carter's freshwater mussels - CFWM) to relocate CFWM being impacted by the proposed clearing area and subsequent bridge construction activities (City of Gosnells, 2023c).

The cleared area will be rehabilitated in accordance with a Rehabilitation Plan approved by DBCA as per DBCA Permit condition (2022-2526, Permit SAU11137). In addition, the applicant has committed to undertake revegetation and rehabilitation with similar tree species proposed to be cleared (*Eucalyptus rudis* and *Corymbia calophylla*) as well as other species that provide foraging habitat for black cockatoos, including Hakea and Banksia species, at a location within the Bush Forever site 246, approximately three kilometres from the application area (City of Gosnells, 2023d). Details of the offset proposal can be found in Section 4.

The 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 C) 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 D) identified that the impacts of the proposed clearing present a risk to biological values (fauna), significant remnant vegetation and conservation areas, 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 (b)

Assessment

The flora and fauna assessment (ecologia Environment, 2022) identified two fauna habitat types within the application area: open woodland (41.14 per cent of the area) and creekline (5.06 per cent of the area) in degraded to poor condition. The remaining area was identified as cleared (road/verge or parkland) (ecologia Environment, 2022) (Figure G.3 in Appendix G).

According to available databases, 50 conservation fauna species have been recoded within the local area. Nineteen of the fauna species locally recorded are seabirds and shorebirds associated with marine, coastal, and estuarine habitats that do not occur within the application area and these have not been considered further. In determining the likelihood of conservation significant fauna occurring within the application area, consideration was given to the results of the preferred habitat types, proximity of records to the application area, and the type and condition of the vegetation within the application area. Based on these factors, five bird species, five mammal species and one invertebrate species are considered to potentially occur in the application area. A brief fauna analysis is presented in Appendix C.3 and a likelihood assessment of these species is presented below.

Birds

Black cockatoos (BC)

Based on known distribution and habitat preference of bird species recorded, all three conservation significant black cockatoo species are likely to utilise the application area. Within the local area (10-kilometre radius from the application area), there are 1965 records of Carnaby's cockatoo (*Zanda latirostris*), 198 records of Baudin's cockatoo (*Zanda baudinii*), 102 records of forest-tailed black cockatoos (*Calyptorhynchus banksii naso*) (with the closest distance of approximately 0.37, 2.26, and 1.28 kilometres, respectively, from the application area).

The application area is located within the mapped distribution areas of all three black cockatoo species, and it occurs in the potential breeding range of Carnaby's cockatoos. The closest black cockatoo roost is recorded approximate one kilometre away from the proposed clearing area. The flora and fauna assessment (ecologia Environment, 2022) recorded nine Carnaby's cockatoos foraging within the application area on a small marri tree, at the time of survey. A previous survey conducted for the same footprint recorded Baudin's cockatoos within the application area (ecologia Environment, 2022).

There are three key components of black cockatoo habitat: foraging habitat; roosting habitat; and breeding habitat. The quality of BC foraging habitat to support populations at breeding sites or night roosting sites varies depending upon how BC utilise the habitat in that particular location. Any tall trees, generally close to riparian environment, can be potential roosting habitat of BC (DSEWPC, 2012). A tree suitable for a black cockatoo breeding is defined as a

tree with a diameter of 50 centimetres or greater at a height of 1.5 metres (diameter at breast height – DBH) above the ground. BC generally forage within six kilometres of a night roost site and, while nesting, within a 12 kilometres radius of their nest site (DSEWPC, 2012).

The initial application area comprised 27 potential BC habitat trees (DBH of more than 50 centimetres), including 24 flooded gum (*Eucalyptus rudis)* trees and three marri *(Corymbia calophylla)* trees (ecologica Environment, 2022). Flooded gum is identified as suitable breeding and roosting habitat for Carnaby's cockatoo (DSEWPC, 2012, Bamford, 2013), whilst marri trees provide foraging, roosting and breeding habitat for all three species of BC (DSEWPC, 2012). Eleven potentially suitable hollows were recorded within seven trees (ecologica Environment, 2022)). A further hollow assessment was conducted and found that among these 11 hollows, only three hollows are actual ones, and the remaining eight are false hollows, i.e. broken limbs that have not yet formed a hollow (Biologic, 2023). The three real hollows were identified as not suitable to support BC breeding due to their structure or size (too fragile, depth of less than 1 metre or too small internal diameter) (Biologic, 2023) (Figure G.4, Appendix G).

The Department of Biodiversity Conservation and Attractions (DBCA) advised that it may take more than 120 years for trees to develop hollows in suitable size for BC and it is not possible to identify which trees may produce hollows in the future. The preservation of a range of tree ages and maturity, including those yet to form hollow, is important to conserve BC breeding habitat (DBCA, 2023). Therefore, DBCA requires to retain six of the abovementioned 27 trees as a condition in the DBCA Permit (2022-2526, Permit SAU11137) to authorize the clearing of native vegetation for construction of Station Street Bridge under Part 4 (Regulation 29) of the Swan and Canning Rivers Management Regulations 2007 (City of Gosnells, 2023b). Pursuant to DBCA Permit's condition, the proposed clearing area was amended to retain these six trees and the amended application area consists of 21 potential BC habitat trees, including 19 flooded gum trees and two marri trees, three of which contains hollows that are not suitable for BC breeding.

Even though no hollows were found to be suitable breeding habitat of BC at the time of survey, these trees can be considered as future breeding habitat as per DBCA advice. Furthermore, considering the close distance of mapped records and the observations of BC foraging in the area in relevant surveys, the application area is considered suitable foraging habitat of this species. Therefore, the proposed clearing is likely to impact the foraging and future breeding habitat for black cockatoos.

Peregrine falcon

The peregrine falcon (*Falco peregrinus* - other specially protected species) typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (Australian Museum, 2019). Given its woodland structure and distance to the closest record (0.7 kilometres), the application area may provide suitable foraging habitat for the peregrine falcon. However, noting that the peregrine falcon is a highly mobile species with a large home range that does not rely on special niche habitats, the peregrine falcon is likely to be transient in the application area and it is unlikely that the application area represents significant habitat for the species. Further, noting the extent of native vegetation adjacent the application area within the Bush Forever site 246, it is unlikely that the peregrine falcon would be reliant on the application area for foraging in the local area.

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 63 records of this species within the local area, with the closest record of 1.1 kilometres from the application area. Their breeding habitat is typically secluded densely vegetated situations, 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). A river tributary intersecting the application area may provide suitable habitat for this species. However, the proposed clearing activities will happen on land and may only indirectly impact on the blue-billed ducks due to the impact on surface water quality. Considering the small clearing extent and the measures to mitigate the impact on surface water quality committed by the applicant (see 3.2.3), the impact of the proposed clearing on this bird species is unlikely to be significant.

Mammals

Chuditch

Chuditch (*Dasyurus geoffroii* – Vulnerable) are carnivorous marsupials, typically associated with riparian jarrah forest or other forest, woodland or shrubland habitats that contain suitable den sites, including hollow logs and tree hollows, and sufficient prey biomass (DEC, 2012a). There are 25 records of this species within the local area, with the closest record of 2.3 kilometres from the application area. Given the application area includes eucalyptus woodland and

riparian area, it may provide suitable habitat for chuditch. However, noting the small extent clearing area, its location along an existing urban road and the presence of higher quality remnant vegetation along the river, the proposed clearing is unlikely to result in impacts to significant habitat for this species.

Quenda

Quenda (*Isoodon fusciventer* – Priority 4) are ground-dwelling marsupials, typically associated with forest or woodlands near watercourses, where understorey consists of dense scrub and leaf litter is abundant. It is understood that individuals have overlapping home ranges between 1-2 hectares (DEC, 2012b). This species is known from 591 records within the local area occurring as close as 700 meters from the application area. Quendas are likely to be transient visitors to the application area while moving through adjacent vegetation. Given that the application area is located along an existing road and the proposed clearing area is small, it is unlikely to represent significant habitat for this species.

Western brush wallaby

The western brush wallaby (*Notamacropus Irma* – Priority 4) was common in WA in the past, but its population reduced significantly due to agricultural development. Their preferable habitat is associated with open, seasonally wet flats with low grasses and open scrubby thickets (DEC, 2012c). There are 17 records of this species in the local area, with the closest record is mapped approximately 3.7 kilometres from the application area. However, given the limited number of records, the distance of closest record and the extent of remnant adjacent native vegetation, this site is unlikely to be significant habitat for this species.

Water rat (or rakali)

Water rats (*Hydromys chrysogaster* - Priority 4) are amphibious or semiaquatic mammals reaching up to 70 centimetres in length, feeding largely underwater, on a wide range of prey including large insects, crustaceans, mussels and fishes, and even frogs, lizards, small mammals and water birds (DWER, 2023). There are 11 records of the rakali in the local area and the closest record is approximately 4.7 kilometres from the application area. Although dependent on water for foraging, rakalis live on land, in burrows on low banks of rivers, lakes, wetlands, and estuaries including coastal areas. Intact riparian vegetation and associated bank stability is critical to their survival (DWER, 2023).

Rakalis have not been recorded in the application area, however this species may range through the application area, as ranging territory can be up to 4 kilometres of riverbank (DWER, 2023). Furthermore, the application area consists of Carter's freshwater mussel which is a feeding source of the rakalis (DBCA, 2023). The clearing activities may impact on the stability of the riverbank and subsequently impact on the rakali habitat. However, considering the small extent of the proposed clearing area, the existence of similar or higher quality habitat in adjacent remnant vegetation along the river, and the applicant's proposed mitigation measures (refer section 3.1 above), it is unlikely the proposed clearing will significantly impact the habitat of this species.

South-western brush-tailed phascogale

The south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger* - conservation dependent fauna) is an arboreal dasyurid, associated with dry sclerophyll forests and open woodlands that contain hollow-bearing trees, characterised by high canopy cover and connectivity (DEC, 2012d). Twenty-five records of this species are mapped within the local area with the closest distance of 700 metres from the application area. The proposed clearing area with woodland and connecting canopy structure may provide suitable habitat for this phascogale species. However, noting the small extent of the clearing area, the location of along an urban road, and the existence of adjacent remnant vegetation, the proposed clearing area is unlikely comprises significant habitat for this species.

However, there is a chance that the proposed clearing may result in impacts to individuals if they happen to be transiting across the application area during the time of the clearing.

Invertebrate

Carter's freshwater mussel (CFWM) (*Westralunio carteri* – Vulnerable) and it habits sandy/muddy sediments of freshwater lakes, rivers and streams, usually associated with woody debris and overhanging riparian vegetation. The current distribution of CFWM is bounded by Gingin Brook in the north to the Kent, Goodga and Waychinicup Rivers in the south, within 50-100 kilometres of the coast (TSSC, 2018). In the available database, there are 49 records of CFWM mapped within the local area and the closest record is 300 metres away from the application area.

An assessment (Indo-Pacific Environmental, 2023) targeted on CFWM was commissioned by the applicant in April 2023 to determine whether the CFWM was present within a 200-metre stretch of Canning River likely to be impacted by the Station Street bridge upgrade project. The assessment found a population of CFM occurred in the Canning River at Station Street Bridge with 648 CFWM individuals observed. This population contained CFWM of multiple size classes, indicating successful recruitment (Indo-Pacific Environmental, 2023).

The CFWM is potentially significantly impacted by at a local scale if there is significant erosion and siltation of the stream caused by the proposed clearing (DBCA, 2023). However, given the suitable habitat is relatively small and this species is recorded in several locations, the impacts is unlikely to be significant at the species level (DBCA, 2023).

To minimize the impact of the proposed clearing on the identified CFWM population, DBCA recommended to relocate this CFWM population upstream temporarily or permanently, followed by a post-activity monitoring. As CFWM is listed as a threatened species, a section 40 authorisation under the *Biodiversity Conservation Act 2016* (BC Act) is required for the relocation of this species within the application area (DBCA, 2023). The applicant is in the process of obtaining this section 40 authorisation from the DBCA (City of Gosnells, 2023c).

Ecological linkages

The application area is within the mapped Perth Regional Ecological Linkages, however, it is located along an existing urban road and bridge. Given this, the proposed clearing is unlikely to exacerbate edge effects within adjacent vegetation and is unlikely to disrupt fauna movement within the linkages. As such, the proposed clearing is unlikely to impact the ecological linkages any further than is already being impacted by the existing road. Weed and dieback management will mitigate impacts to vegetation adjacent to the application area.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of foraging and future breeding habitat for black cockatoos as well as have significant impacts on a Carter's freshwater mussel population identified in the area. It will also potentially impact ground-dwelling fauna that may be utilising the application area at the time of clearing.

For the reasons set out above, it is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction and spread of weeds, slow directional clearing to allow fauna to move into adjacent vegetation, relocating the Carter's freshwater mussel population upstream under a section 40 authorisation under the BC Act, and mitigation measures to minimize the impacts on surface water quality. However, the proposed clearing is still considered to constitute a significant residual impact due to the loss of black cockatoo habitat. In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), this significant residual impact is addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

Conditions

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

- Weed control and management.
- Directional clearing, which requires slow, progressive, one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.
- A requirement to obtain a section 40 authorisation under the BC Act to relocate of Carter's freshwater mussels upstream prior to the clearing.
- Offset – revegetation and rehabilitation within the Bush Forever site 246.

3.2.2. Significant remnant vegetation and conservation areas - Clearing Principles (e) and (h)

Assessment

Conservation areas

The application area lies entirely or partly within several two conservation areas including River Reserve 48327 claimed under the *Swan and Canning Rivers Management Act 2006* (SCRM Act) and the Bush Forever Site No. 246.

The proposed clearing may cause disturbance on the bed and banks of the Swan River tributary within the applicant area (discussed in detailed in Section 3.2.3). The applicant has received a permit from DBCA (2022-2526, Permit SAU11137) to authorize the clearing of native vegetation for construction of Station Street Bridge under Part 4 (Regulation 29) of the *Swan and Canning Rivers Management Regulations 2007* (City of Gosnells, 2023c). They also received the Permit to obstruct or interfere (S17) (Instrument No, PMB200909(2)) granted by DWER to conduct the proposed works.

DWER sought advice from the Department of Planning, Lands and Heritage (DPLH) on the proposed clearing regarding the Bush Forever site management. The advice received noted that "*the proposal* (construction of a new Station Street bridge) *can be justified for wider social needs, and therefore can be considered consistent with State Planning Policy (SPP) 2.8*" (DPLH, 2023).

In relation to undertaking clearing within the Bush Forever site 246, DPLH advised "*at least 5 new trees to be planted for each medium mature tree removed*". This recommendation has been considered and incorporated into the offset requirements, as outlined in Section 4.

As the application area is along an existing urban road, edge effects on adjacent vegetation already occur through normal use of the road. The proposed clearing is unlikely to increase edge effects for vegetation adjacent to the application area. However, there is potential the proposed clearing could impact on the environmental values of the nearby conservation areas through the introduction or spread of weeds and dieback into adjacent vegetation.

Remnant vegetation

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e., pre-European settlement), below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is located within the Swan Coastal Plain IBRA Bioregion which retains approximately 38.6 per cent of its pre-European vegetation extent (Appendix C.2.) (Government of Western Australia, 2019a). The application area is mapped within the Swan Complex (System 33) vegetation community, which vegetation extent falls below the national target with approximately 13.6 per cent of its pre-European vegetation extent (Government of Western Australia, 2019b). The vegetation within the application area is considered to be representative of this community. The vegetation extent within the local area retains approximately 32.5 per cent of pre-European vegetation remaining.

The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region to be a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008). The current vegetation extent for the Swan Coastal Plain IBRA Bioregion, the Swan complex, and the local area are all above the 10 per cent threshold for constrained areas.

Given the application area comprises linear remnants of native vegetation in completely degraded (Keighery, 1994) condition, within a highly urbanised local area likely to be subject to ongoing disturbance, the proposed clearing is not considered likely to have a significant impact on remnant vegetation within the extensively cleared local area. Furthermore, the loss of mature trees within the application area will be mitigated through revegetation and rehabilitation within the same Bush Forever site, which is outlined in Section 4.

Conclusion

Based on the above assessment, the proposed clearing is considered unlikely to have a significant impact on extent of remnant vegetation in the local area, however, it has impacts on the Bush Forever site 246.

There is potential the proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation. It is considered that impacts to adjacent vegetation can be managed by requiring the applicant to undertake weed and dieback management.

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;
- Offset – revegetation and rehabilitation within the Bush Forever site 246.

3.2.3. Land and water resources - Clearing Principles (f), (i), (j) and (g)

Assessment

Watercourses

A tributary of Canning River intersects the application area. A portion of the application area also lies within a mapped wetland, the Canning River Floodplain. Given the presence of the watercourse within the area under application, the vegetation proposed to be cleared is considered to be growing in association with a watercourse and includes riparian vegetation (flooded gum trees). In addition, the proposed clearing is likely to result in deterioration of surface water quality through soil erosion, sedimentation, turbidity increase and then impacts on aquatic fauna.

The applicant obtained a Permit to obstruct or interfere (S17) (Instrument No, PMB200909(2)) under the RiWi Act granted by DWER, to undertake the proposed works (construction of a bridge) on the riverbed and banks.

To minimize and manage the impacts on surface water quality resulting from the proposed clearing and subsequent activities, the applicant has committed to implement following mitigation measures (City of Gosnells, 2023c):

- Relocate the population of Carter's freshwater mussels upstream.
- Develop and implement site-specific drainage and sediment control plan to prevent the transportation of sediment off-site, displacement of sediments off-site into the Canning River, prevent the transport of contaminated materials offsite, and capture contaminated stormwater flow.
- Implement sedimentation control, such as silt curtains, or otherwise appropriate, to prevent the deterioration of water quality in the river.
- Ensure that existing natural drainage paths and channels in the vicinity of the application area are not unnecessarily blocked or restricted.
- Ensure that runoff from disturbed areas or diversion are effectively managed to minimise adverse impacts on surrounding watercourses by redirecting water flows from the Canning River.
- Ensure that adequate spill control equipment (i.e. silt socks, geofabric, porous material, etc.) is stored at critical locations to allow for a quick response to accidental spills.
- No refuelling of any equipment, vehicles or other machinery shall take place within the Swan Canning Development Control Area.
- Daily visual monitoring of surface water quality during clearing activities and reporting any findings which are of concern to the relevant authorities. Reassessment of controls will be undertaken if turbidity or sedimentation is visible.

Given the small area under application (0.36 hectares) and the mitigation measures committed by the applicant, the clearing as proposed is not likely to have a long-term and significant impact on the environmental values of the watercourse and mapped wetland.

The application area falls within the Perth Groundwater Area as proclaimed under the RiWI Act. This matter is discussed under section 3.2.3.

Land

Soils within the application area present a high risk of land degradation resulting from water erosion, waterlogging, flooding, subsurface acidification and phosphorus export. It is noted that the final land use purpose of the application area will be road and bridge. However, during the time of construction, the soils will be exposed to weathering and have risk of degradation resulting from these abovementioned parameters.

To minimize and manage the land degradation risks, the applicants has committed to implement following mitigation measures (City of Gosnells, 2023c):

- Consider scheduling clearing activities during dry conditions to reduce the potential of soil erosion and drainage line siltation.
- Implement erosion controls, such as geo-fabric installation, to reduce the erosion of riverbed and banks.
- Protect and stabilise stockpiles using appropriate measures to minimise erosion and loss of materials i.e. site surfaces shaped to avoid pooling/ponding, cover stockpiles from wind/rainfall.
- Installation of temporary erosion controls such as silt fencing and rock berms, or appropriate alternative to minimise silt/soil transport into the Canning River.
- Temporary drainage systems may be installed to direct water away from areas where excavation and foundation construction work is taking place, or from any other area where the accumulation of water could cause delay and damage to works.
- Ensure that the bridge upgrade works do not act as an artificial barrier or levee, causing water to pond upstream.
- Notify the DBCA and DWER if any inadvertent damage to the foreshore, riverbank or waterway (including infrastructure and vegetation) occurs beyond the scope of the approved works within 48 hours.
- All the works will be undertaken in accordance with the construction environmental management plan approved by DBCA.
- Required rehabilitation of the project area will be undertaken as per the rehabilitation plan approved by DBCA.
- All the fill soil and topsoil to be brought to the site will be free from contamination, rubble, weeds, and disease.

Given that the area proposed to clear is relatively small, the mitigation measures committed by the applicant and the final land use is an urban road and bridge, land degradation risks are likely to be short term and minimal.

Conclusion

For the reasons set out above, the impacts of the proposed clearing on water resource and land values can be considered not significant.

Conditions
No management conditions required.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005* (issued by the Western Australian Planning Commission - WAPC).
- Permit to undertake works in a Development Control Area under Part 5 of the *Swan and Canning Rivers Management Act 2006* (issued by DBCA).
- Permit to interfere with bed and banks under the *Rights in Water and Irrigation Act 1914*.
- Licence to abstract water under the *Rights in Water and Irrigation Act 1914*.

The application area is partly located within the Swan Canning Riverpark and Development Control Area and subject to State Planning Policy 2.10 Swan-Canning River System. The proposed work has received a Permit under Part 4 (Regulation 29) of the Swan and Canning Rivers Management Regulations 2007 from DBCA to authorize the clearing of native vegetation for the construction of the Station Street Bridge (2022-2526, Permit SAU11137) (City of Gosnells, 2023c). An application for approval to commence development has been submitted to WAPC. The applicant informed that the development is expected to be approved soon (City of Gosnells, 2023d).

A DWER Permit to obstruct or interfere (S17) (Instrument No, PMB200909(2)) to undertake the proposed works (construction of a bridge) on the riverbed and banks has been obtained and is valid until 16 October 2024 (City of Gosnells, 2022).

The application area falls within the Perth Groundwater Area as proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act). A Section 5C license to take groundwater is required prior to works commencing if removal of groundwater is necessary as part of the bridge construction works.

The application area intersects the Canning River, which is registered as an Aboriginal Heritage Place (ID 3538). In a heritage assessment conducted in 2017, no cultural material was identified within the application area (City of Gosnells, 2022). The applicant has obtained a consent granted by the DPLH (reference 69-02913 dated 15 August 2017) (City of Gosnells, 2022). It is the permit holder's responsibility to comply with relevant legislation 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:

- Native vegetation including 21 mature native trees that grows within the Bush Forever Site No. 246 and provides suitable future breeding habitat and foraging habitat for black cockatoos.

The applicant proposed an environmental offset consisting of the revegetation and rehabilitation in the Southern River Confluence, approximately three kilometres northwest of the application area (Figure 3), within the Bush Forever site 246 as required by DPLH (DPLH, 2023). Vegetation within the revegetation and rehabilitation site was identified in good to completely degraded condition with 74.0 per cent overstorey cover, 2.8 per cent of mid-storey cover and 17.9 per cent of understorey cover (City of Gosnells, 2021). In addition to 0.16 hectares of bare ground, the site includes several areas devoid of canopy cover or with notable breaks in canopy (City of Gosnells, 2023e). The black cockatoo foraging value of the site is currently low. The majority of large trees on site are Melaleucas (no black cockatoo foraging value), followed by *Eucalyptus rudis* with *Corymbia calophylla* present in low numbers along the drier slopes (City of Gosnells, 2023e).

Revegetation and rehabilitation works are predominantly infill with species and seeding numbers taking into consideration existing vegetation to recreate the natural diversity and density that would have originally occurred. The revegetation includes 125 seedlings of *Corymbia calophylla*, 270 seedlings of *Eucalyptus rudis*, 280 seedlings of *Banksia* sp. and 1,170 seedlings of *Hakea* sp.. The revegetation and rehabilitation is scheduled in winter 2024 and 2025 (City of Gosnells, 2023d). Planting densities (of all species, including trees, sedges, reeds, and other low-growing species) across the site range from 2 to 3 plants per square metres for revegetation and rehabilitation in winter 2024, and from 1 to 1.5 plants per square metres for winter 2025, taking into consideration existing vegetation density, as well as growth form/size (City of Gosnells, 2023e).

Figure 3. Context map showing the application area (yellow) and revegetation and rehabilitation areas (green) at the Southern River Confluence (City of Gosnells, 2023d). Black hatched area showing the Bush Forever site 246.

DPLH advised that "*to ensure the integrity of Bush Forever area 246 is not compromised, and in accordance with SPP 2.8, an offset package need to be prepared and approved by the Department of Water and Environmental Regulation prior to the clearing of any native vegetation, in accordance with the WA Environmental Offsets Policy (2011) and Appendix 4 of SPP 2.8. It would be recommended, that there is an environmental gain for any clearing undertaken, i.e. at least 5 new trees to be planted for each medium mature tree removed as part of permitted clearing. The planting should be onsite at Bush Forever area 246*".

There are 19 mature *Eucalyptus rudis* trees and two mature *Corymbia calophylla* trees (DHB of more than 500 milimetres) removed under this permit. Therefore, the number of trees to be planted in accordance with the SPP 2.8 should be at least 95 and 10 *Eucalyptus rudis* and *Corymbia calophylla*, respectively.

In assessing whether the proposed offset is adequately proportionate to the significance of the BC habitat values being impacted, DWER undertook a calculation using the WA Environmental Offsets Metric. The calculation determined that the replanting of at least 32 similar species trees can counterbalance the loss of 21 trees to be cleared.

It is acknowledged that the applicant has proposed the replanting of 125 seedlings of *Corymbia calophylla* and 270 seedlings of *Eucalyptus rudis* within the Bush Forever site 246, which exceeds the calculated offset required to counterbalance the significant residual impacts of the proposed clearing.

It is noted that in addition to 21 trees taken into account for the offset calculation, the application area includes smaller trees of *Corymbia calophylla*, *Eucalyptus rudis* and *Melaleuca rhaphiophylla* (ecologia Environment, 2022). Noting that the the number of seedlings in the revegetation plan proposed by the applicant exceeds the number of trees required to be planted to counterbalance the significant residual impacts, and considering that the revegetation and rehabilitation consists of other flora species that provide foraging habitat for black cockatoos, the proposed revegetation and rehabilitation is considered to adequately counterbalance impacts caused by the loss of these smaller trees.

The Delegated Officer considers that the proposed offset is consistent with the *Environmental Offsets Policy* (2011) and the *Environmental Offsets Guidelines* (2014), and adequately counterbalances the significant residual impacts listed above. The justification for the values used in the offset calculation for impacts to black cockatoo habitat is provided in Appendix F.

End

Appendix A. Additional information provided by applicant

Summary of further information provided	Consideration of information
Evidence of efforts taken to avoid (reduction of application area) and mitigate significant environmental impacts	This information is presented in Section 3.1 of the Report
Mitigation measures to manage land degradation risks and impacts to surface water quality	This information is presented in Section 3.2.3 of the Report
Hollow assessment for black cockatoo habitat, assessment of impacts to Carter's freshwater mussels	The results of these assessment are incorporated in Section 3.2.1 of the Report
Information on relevant approvals from other agencies	This information is presented in Section 3.3 of the Report
Offset proposal	This information is presented in Section 4 of the Report

Appendix B. Details of public submissions

The application was advertised for 21 days, and no submissions were received during that period. However, one submission was submitted outside the regulated submission period. The Submission (2023) objected the proposed clearing due to following reasons:

- There was no proper public consultation for the bridge construction.
- The observed traffic volume is much below what is claimed by the City of Gosnells for the bridge construction rationale.
- The loss of mature trees, especially in the highly cleared context of the local area.

The first reasons are for the City of Gosnell's consideration and is beyond the scope of the native vegetation clearing permit application assessment and therefore were not addressed in this Report. The third reason is addressed in Section 3.2.1 and 3.2.2 of the Report.

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is a part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is along an existing urban road and intersects a river. The proposed clearing area is part of a large area of vegetation. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 32.5 per cent of the original native vegetation cover.
Ecological linkage	The application area lies within the Perth Regional Ecological Linkages
Conservation areas	The application area lies entirely or partly within several conservation areas including: the River Reserve 48327 claimed under the *Swan and Canning Rivers Management Act 2006*, Bush Forever Site No. 246, and within a mapped occurrence of the Perth Regional Ecological Linkage.
Vegetation description	Flora and fauna assessment (ecologia Environment, 2022) indicates the vegetation within the proposed clearing area consists of *Eucalyptus rudis* subsp. *rudis* open forest, **Furmaria capreolata*, **Oxalis pescaprae* herbland, **Holcus lanatus* forbland/grassland. The survey map is available in Appendix G. This is consistent with the mapped vegetation type(s):

Characteristic	Details
	• Swan complex 33, which is described as fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark). (Heddle et al., 1980) The mapped vegetation type retain approximately 13.6 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	Flora and fauna assessment (ecologia Environment, 2022) indicates the vegetation within the proposed clearing area is in completely degraded (Keighery, 1994) condition, described as: • 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. The full Keighery (1994) condition rating scale is provided in Appendix E. The survey mapping is available in Appendix G.
Climate and landform	Climate: Mean maximum temperature is 25.5 degrees Celsius. Mean minimum temperature is 13.5 degrees Celsius. Rainfall: Mean annual rainfall is 776.9 millimetres. (BOM, 2023) Landform: the application area lies within three landforms: • Northeast part: Moderately well drained, very gently undulating plain • Middle part: Poorly drained incised drainage channels • Southwest part: Imperfectly drained, level to very gently inclined alluvial fans
Soil description	The soils are mapped as: • Northeast part: Pinjarra, Phase Gf1 (213Pj__Gf1), described as yellow duplex or gradational soils with sand to sandy loam topsoil • Middle part: Pinjarra, Phase Gf5 (213Pj__Gf5), described as gradational mottled yellow earths • Southwest part: Pinjarra, Phase Gf4 (213Pj__Gf4), described as Variable imperfectly drained soils with layers of sand, sandy loam, clay, grit and weathered granitic detritus
Land degradation risk	The soil types within the application area are mapped as having a low risk of wind erosion, having medium risk of salinity, but having high risks for water erosion, subsurface acidification, flood risk, water logging and phosphorus export risk (DPIRD, 2019).
Waterbodies	The desktop assessment and aerial imagery indicated that a major, perennial watercourse (a tributary of Canning River) transects the area proposed to be cleared.
Hydrogeography	The application area falls within the Perth Groundwater Area proclaimed under the *Right in Water and Irrigation Act 1914* (RiWI Act). Groundwater salinity within the application area is mapped as from 500 to 1000 milligrams per litre total dissolved solids.
Flora	There are 104 conservation significant flora species mapped within the local area, including 25 threatened species and 79 priority species. None of these is recorded within the application area. The closest recorded conservation significant species is *Acacia lasiocarpa* var. *bracteolata* long peduncle variant (G.J. Keighery 5026), mapped approximately 270 metres from the application area. There are seven species found on the same soil type and vegetation type as the application area.
Ecological communities	The application area is not mapped within any threatened or priority ecological communities. There are 15 types of threatened ecological communities and priority ecological communities recorded within the local area. The closest record is Banksia

Characteristic	Details
	Dominated Woodlands of the Swan Coastal Plain IBRA Region, approximately 0.77 kilometres from the application area.
Fauna	The desktop assessment identified that a total of 50 threatened or priority fauna species have been recorded within the local area, including 16 threatened fauna species, 14 priority fauna species, and 20 specially protected fauna species. The most frequently recorded species is Carnaby's cockatoo, followed by the quenda. The species recorded at the closest distance is the Carter's freshwater mussel, located approximately 300 metres from the application area. There are 52 black cockatoo roosting sites identified in the local area with the closest one recorded approximately 900 metres from the application area.

C.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*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex**					
Swan Complex 33	15,194.13	2,062.03	13.57	140.58	0.93
Local area					
10km radius	32,055.40	10,404.14	32.46	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

C.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [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]
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	1.28	102	Y
Zanda baudinii (Baudin's cockatoo)	EN	Y	2.26	198	Y
Zanda latirostris (Carnaby's cockatoo)	EN	Y	0.37	1965	Y
Dasyurus geoffroii (Chuditch)	VU	Y	2.25	25	N/A
Falco peregrinus (Peregrine falcon)	OS	Y	0.70	24	N/A
Hydromys chrysogaster (Water-rat)	P4	Y	4.68	11	N/A
Isoodon fusciventer (Quenda)	P4	N	0.7	591	N/A
Notamacropus irma (Western brush wallaby)	P4	Y	3.65	17	N/A
Oxyura australis (Blue-billed duck)	P4	Y	1.09	63	N/A
Phascogale tapoatafa wambenger (South-western brush-tailed phascogale)	CD	Y	0.70	25	N/A
Westralunio carteri (Carter's freshwater mussel)	VU	Y	0.30	49	Y

CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, CD: Species of special conservation interest (conservation dependent fauna), OS: Other specially protected species

C.4. Land degradation risk table

Risk categories	Soil unit 213Pj__Gf1	Soil unit 213Pj__Gf5	Soil unit 213Pj__Gf4
Wind erosion	L1	L1	L1
Water erosion	L1	H1	H1
Salinity	M1	M2	M1
Subsurface Acidification	M2	H2	H1
Flood risk	L1	H2	H2
Water logging	M1	H2	H2
Phosphorus export risk	M2	H2	H2

Note:

L1 <3% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

L2 3-10% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

M1 10-30% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

M2 30-50% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

H1 50-70% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

H2 >70% of map unit has a moderate/high to high/extreme (or is presently acid/saline for the risk of subsurface acidification/salinity)

Appendix D. 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 vegetation in completely degraded condition and no threatened/priority flora species. However, the application area comprises suitable habitats for threatened fauna species.	May 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 *Eucalyptus rudis* and *Corymbia calophylla* which provide foraging, roosting and breeding habitat for black cockatoos. The clearing activities also impact on the riverbed within the application area which provides suitable habitat for Carter's freshwater mussels.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment:	Not at variance	No .

Assessment against the clearing principles	Variance level	Is further consideration required?
The area proposed to be cleared is unlikely to contain flora species listed under the BC Act.		
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 does not contains species that can indicate a threatened ecological community.	Not 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 the mapped vegetation type is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is considered to be part of a significant ecological linkage in the local area.	May 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 that the application area is located within the Bush Forever Site No. 246, the Conservation Canning River Floodplain and the Aboriginal Habitat Site of Canning River, the proposed clearing may have an impact on the environmental values of these conservation areas.	At variance	Yes *Refer to Section 3.2.2, above.*
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 intersecting a tributary of Canning 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 /surveyed soils are highly susceptible to water erosion, waterlogging, flooding, subsurface acidification and phosphorus export. Noting the location of the application area, the proposed clearing is likely to have an appreciable impact on land degradation.	May be at variance	Yes *Refer to Section 3.2.3, above.*
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: Given a tributary of Canning River is recorded within the application area, the proposed clearing may impact surface or ground water quality.	May be at variance	Yes *Refer to Section 3.2.3, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: The mapped soils and topographic contours in the surrounding area indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Given one watercourse is recorded within the application area, the proposed clearing may contribute to waterlogging.	May be at variance	Yes *Refer to Section 3.2.3, above.*

Appendix E. 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 F. Offset calculator value justification

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation	Score (Feature)	Rationale
Conservation significance		

Calculation	Score (Feature)	Rationale
Description	BC habitat	21 mature trees of *Eucalyptus rudis* and *Corymbia calophylla* that provides suitable future breeding habitat and foraging habitat for black cockatoos (all three threatened species)
Type of environmental value	Species (flora/fauna)	BC species are listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened species - endangered	The highest value of Endangered is used as both Carnaby's cockatoo Baudin's cockatoo are listed as Endangered under both the EPBC Act and BC Act.
Landscape-level value impacted	yes/no	The impact is to an area of foraging habitat in feature.
Significant impact		
Description	Clearing of native vegetation that provides suitable future breeding habitat and foraging habitat for black cockatoos.	21 mature trees of *Eucalyptus rudis* and *Corymbia calophylla* that provides suitable future breeding habitat and foraging habitat for black cockatoos
Significant impact (hectares) / Type of feature	Trees	Clearing of 21 mature trees of *Eucalyptus rudis* (19 trees) and *Corymbia calophylla* (2 trees) that includes habitat for black cockatoos.
Quality (scale) / Number	21	While the vegetation is in degraded to completely degraded condition (lack of mid and understory), considering the maturity of the trees proposed to clear (21 trees with DBH>50cm) within a Bush Forever site and the closest distances of recorded BC foraging area (25m), BC roosting area (900m), BC breeding site (5.3km), the application area is considered to provide high quality future breeding and foraging habitat for black cockatoos.
Rehabilitation credit		
N/A	N/A	The final land use is for road and bridge. The rehabilitation area within the application area is negligible
Offset		
Description	revegetation and rehabilitation of native vegetation that comprises habitat for black cockatoo	Revegetation and rehabilitation of adjacent Bush Forever Site 246 to improve the quality of the black cockatoo habitat present.
Current quality of offset site / Start number (of type of feature)	0.00	Assuming that very minimal natural recruitment of foraging trees would occur within the offset area within Bush Forever Site 246.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	0.00	Assume that no change with no management actions to improve the condition within Bush Forever Site 246.
Future quality WITH offset (scale) / Future number WITH offset	31.39	The number of trees (rounded to 32) required to be rehabilitated to mitigate the significant residual impacts by 100%.
Time until ecological benefit (years)	15.00	The time between clearing the site and the ecological benefit is expected to be 15 years, allowing time for the vegetation to reach a sufficient size to provide foraging value.
Confidence in offset result (%)	0.8	Assuming revegetation and rehabilitation will be undertaken by a suitably qualified specialist, with ongoing monitoring and maintenance to ensure the revegetation is successful.

Appendix G. Biological survey information excerpts / photographs of the vegetation / DWER site inspection report

Figure G.1. Vegetation types within the initial application area (before adjustment) (ecologia Environment, 2022)

Figure G.2. Vegetation condition within the initial application area (before adjustment) (ecologia Environment, 2022)

Figure G.3. Representative photos of the fauna habitat within the application area (ecologia Environment, 2022)
Left: open woodland; Right: creekline

Not Suitable

Hollow depth not suitable (< 1 m)

Not Suitable

Hollow depth not suitable (< 1 m) and internal diameter too small (< 100 mm).

Not Suitable

Hollow walls are significantly cracked. Too exposed and fragile to be suitable.

Figure G.4. The photo of hollows that is not suitable to support BC breeding (Biologic, 2023)

Appendix H. Sources of information

H.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- 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)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)

- 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

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