GOVERNMENT OF WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Area Permit Number:	CPS 10747/1
File Number:	DWERVT16152
Duration of Permit:	9 September 2026 to 9 September 2036

ADVICE NOTE

Allocation of offset area and revegetation mitigation area

The offset referred to in *condition* 7 is intended to ensure the protection in perpetuity of 14.27 hectares of *native vegetation* within Lot 5011 on Deposited Plan 192309 (Crown Reserve R43808), Forest Grove, through the registration of a memorial under section 17 of the *Land Administration Act 1997*. The offset area includes high quality habitat for Carnaby's cockatoo, Baudin's cockatoo, forest red-tailed black cockatoo and western ringtail possum.

The *revegetation* referred to under *condition* 8, is intended to *revegetate* a 2.86-hectare cleared portion of the offset area with *native vegetation* that provides preferred habitat for Carnaby's cockatoo, Baudin's cockatoo, forest red-tailed black cockatoo and western ringtail possum.

PERMIT HOLDER

Shire of Augusta Margaret River

LAND ON WHICH CLEARING IS TO BE DONE

Lot 5011 on Deposited Plan 192309 (Crown Reserve R43808), Forest Grove

AUTHORISED ACTIVITY

The permit holder must not clear more than 2.56 hectares of *native vegetation* within the combined areas cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 9 September 2028.

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

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

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

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

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

3. Weed and dieback management

When undertaking any *clearing* 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*-affected or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared;

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

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

(e) only move soils in *dry conditions*.

4. Demarcation of the clearing area

Prior to undertaking any *clearing* under this permit that is adjacent to other *native vegetation*, the permit holder must demarcate the *clearing* area to avoid the inadvertent removal of adjacent *native vegetation*.

5. Erosion management

The permit holder must:

(a) implement and maintain *erosion and sediment control measures*:

(i) within, or adjacent to, areas cleared for permanent drainage infrastructure until the drainage infrastructure is constructed;

(ii) between temporary cleared areas and surrounding vegetation and watercourses until vegetation cover has substantially established within those temporary cleared areas; and

(iii) on stockpiled material derived from *clearing* authorised under this permit;

(b) monitor cleared areas for evidence of erosion and, where erosion attributable to *clearing* is identified, implement additional *erosion and sediment control measures* until the erosion is stabilised.

6. Fauna management

(a) The permit holder must:

(i) engage a *fauna specialist* to traverse the area cross-hatched yellow in Figure 1 of Schedule 1 immediately prior to, and during, *clearing* operations, ahead of clearing machinery, to identify the presence of any native vertebrate fauna;

(ii) ensure that a *fauna specialist* inspects all *suitable trees* to be cleared within the areas cross-hatched yellow in Figure 1 of Schedule 1, immediately prior to *clearing*, for the presence of south-western brush-tailed phascogale(s)

(*Phascogale tapoatafa wambenger*) and western ringtail possum (*Pseudocheirus occidentalis*); and

(iii) undertake *clearing* in a slow and progressive manner, in one direction towards adjacent *native vegetation* and away from existing cleared areas, to allow native fauna to move into adjacent *native vegetation* ahead of *clearing*.

(b) *Clearing* must cease in any area where native vertebrate fauna are identified under *condition* 6(a), and must not recommence until those individuals have, after being encouraged to disperse by a *fauna specialist*, independently moved into adjoining *native vegetation*;

(c) Where western ringtail possums (*Pseudocheirus occidentalis*) do not independently move after being encouraged to disperse under *condition* 6(b), the permit holder must engage a *western ringtail possum specialist* to remove and relocate those individuals to adjoining *suitable habitat*; and

(d) Where native vertebrate fauna other than western ringtail possum (*Pseudocheirus occidentalis*) do not independently move on after being encouraged to disperse under *condition* 6(b), the permit holder must engage a *fauna specialist* to remove and relocate those individuals to adjoining *suitable habitat*.

(e) Where *conservation significant fauna* are identified under *condition* 6(a), the permit holder must include the following in a report submitted to the *CEO* within three months of undertaking any *clearing* under this permit:

(i) the species and number of each *conservation significant fauna* individual identified, and whether they required removal and relocation;

(ii) the date each individual was identified, and if applicable, removed and relocated;

(iii) the location where each individual was identified and removed and relocated to, 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;

(iv) the name and relevant qualifications of any *fauna specialist(s)* engaged under *condition* 6(a) and *condition* 6(d);

(v) the name and relevant qualifications of any *western ringtail possum specialist* engaged under *condition* 6(c); and

(vi) details pertaining to the circumstances of any death of, or injury sustained by, *conservation significant fauna* individuals.

7. Memorial – offset

Within 24 months of commencing *clearing* authorised under this permit, and no later than 9 September 2028, the permit holder must provide to the *CEO* a copy of a memorial, registered under section 17 of the *Land Administration Act 1997*, identifying that the 14.27 hectare area cross-hatched red in Figure 2 of Schedule 1, being part of Lot 5011 on Deposited Plan 192309, Forest Grove, is for conservation purposes.

8. Revegetation – mitigation

(a) Within 12 months of commencing *clearing* under this permit, and no later than 9 September 2028, the permit holder must submit a *Project Revegetation Plan* to the *CEO* for approval, for the *revegetation* of 2.86 hectares of *native vegetation*

in the area cross-hatched red in Figure 3 of Schedule 1, being part of Lot 5011 on Deposited Plan 192309, Forest Grove.

(b) The *Project Revegetation Plan* must be:

(i) in accordance with the *revegetation guideline*; and

(ii) prepared by an *environmental specialist*.

(c) The *Project Revegetation Plan* must include:

(i) the location of the proposed *revegetation* area, 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;

(ii) *site preparation* actions;

(iii) *weed* control actions;

(iv) *direct seeding* and / or *planting* of *local provenance* at an *optimal time*, with species that provide foraging habitat for Carnaby's cockatoo (*Zanda latirostris*), Baudin's cockatoo (*Zanda baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), and habitat for western ringtail possum (*Pseudocheirus occidentalis*);

(v) a *vegetation establishment period*;

(vi) *revegetation* completion criteria based on appropriate *reference sites*, including target *weed* cover, vegetation condition, vegetation structure, species diversity and species density;

(vii) *remedial actions* to be implemented if completion criteria are not met;

(viii) fencing or other measures where practicable, to prevent adverse impacts to the *revegetation* area from the surrounding land use;

(ix) monitoring of a minimum of four quadrats within the area to be *revegetated* by an *environmental specialist* for a minimum of five years;

(x) timeframes for the implementation of *revegetation* activities;

(xi) management commitments; and

(xii) annual reporting against the *revegetation* completion criteria using quadrat monitoring data.

(d) If the *CEO* does not approve the *Project Revegetation Plan*, the permit holder must revise and resubmit the *Project Revegetation Plan* for the *CEO's* approval within one month of the decision.

(e) If the *CEO* does not approve a resubmitted *Project Revegetation Plan*, the permit holder must continue to revise and resubmit the *Project Revegetation Plan*, as directed by the *CEO*, until it is approved.

(f) The permit holder must obtain approval of the *CEO* prior to implementing the *Project Revegetation Plan*.

(g) The permit holder must commence implementation of the approved *Project Revegetation Plan* within 12 months of the date of *CEO* approval.

(h) The permit holder must achieve the completion criteria within the timeframes specified in the approved *Project Revegetation Plan*.

9. 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, vegetation structure, and density of the cleared area; (b) the location where the *clearing* occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the coordinates in Eastings and Northings or decimal degrees; (c) the date the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of *clearing* in accordance with *condition* 2; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with *condition* 3; (g) actions taken to demarcate the *clearing* area in accordance with *condition* 4; and (h) actions taken to manage erosion in accordance with *condition* 5.
2.	In relation to fauna management pursuant to *condition* 6	(a) actions taken to avoid impacts to native vertebrate fauna in accordance with *condition* 6; and (b) a copy of the report required under *condition* 6(e).
3.	In relation to the registration of the memorial pursuant to *condition* 7	(a) the location and boundary of the allocated 14.27 hectare offset area, recorded digitally as a shapefile; and (b) a copy of the registered memorial under section 17 of the *Land Administration Act 1997.*
4.	In relation to the *revegetation* of areas pursuant to *condition* 8	(a) the date(s) on which the *Project Revegetation Plan* was approved by the *CEO*; (b) a description of the *revegetation* activities undertaken, including: (i) *direct seeding* and *planting;* and (ii) *weed* control actions; (c) the size of the area *revegetated* (in hectares); (d) the date(s) on which *revegetation* works commenced; (e) the boundaries of the area *revegetated*, recorded digitally as a shapefile;

No.	Relevant matter	Specifications
		(f) a list of *native vegetation* species *planted* or *direct seeded*; (g) at least two photographs of the area *revegetated*, taken annually; (h) the location of monitoring quadrats, recorded using a Global Positioning System (GPS); (i) the results of annual monitoring against the completion criteria in the approved *Project Revegetation Plan* and the dates that monitoring was undertaken; (j) a description of any *remedial actions* undertaken and the reasons for those actions; (k) the date the completion criteria were met; and (l) any other actions taken in accordance with *condition* 8.

10. 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* 9; 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 days prior to the expiry date of the permit, a written report of records required under *condition* 9, where these records have not already been provided under *condition* 10(a).

DEFINITIONS

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

Table 2: Definitions

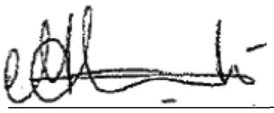
Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
conservation significant fauna	means those vertebrate fauna taxa listed as threatened or specially protected species under the *Biodiversity Conservation Act 2016* (WA), or as priority fauna classes 1, 2, 3, or 4 in the Department of Biodiversity, Conservation and Attractions Threatened and Priority Fauna List for Western Australia (as amended from time to time), and/or listed as

Term	Definition
	threatened under the *Environment Protection and Biodiversity Conservation Act 1999*.
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 2.
dieback	means the effect of *Phytophthora* species on *native vegetation*.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
dry conditions	means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches.
EP Act	*Environmental Protection Act 1986* (WA)
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has a minimum of two 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.
erosion and sediment control measures	means measures used to minimise soil erosion and sedimentation of exposed soils created through clearing under this permit, and may include but is not limited to, soil control matting, vegetative material, mulch and sediment and sand trap fencing.
fauna specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has a minimum 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or, who is approved by the *CEO* as a suitable fauna specialist for the bioregion and holds a fauna licence issued under the *Biodiversity Conservation Act 2016.*
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means *native vegetation* seeds and propagating material from natural sources within 50 km and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
mulch	means organic matter, wood chips or rocks applied to the soil surface to slow water movement and reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means a period suitable for *planting* and *direct seeding*, typically between April and July, unless otherwise approved by the *CEO*.
planted / planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
Project Revegetation Plan	means a plan required under *condition* 8.
reference sites	means nearby sites used to provide baseline data for planning a *revegetation* project. Measurements from fixed reference points or plots where biodiversity components are measured are used to set measurable *completion criteria* for *revegetation* projects. The *reference sites* must

Term	Definition
	contain the following values: • high quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris*), Baudin's cockatoo (*Zanda baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*); • habitat for western ringtail possum (*Pseudocheirus occidentalis*); and • vegetation in a Very Good (Keighery, 1994) or better condition.
revegetate/ revegetated/ revegetation	means the re-establishment of a cover of *local provenance native vegetation* in an area using methods such as natural regeneration, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-*clearing* vegetation types in that area.
remedial actions	means any activity that is required to achieve the completion criteria set out in a *CEO* approved *Project Revegetation Plan*, including the following actions: • additional infill *planting* with native tubestock and / or *direct seeding* using *local provenance* • additional, targeted, *weed* control; • additional watering, where necessary; • soil stabilisation through erosion control measures; and • feral animal control.
revegetation guideline	the document '*A Guide to Preparing Revegetation Plans for Clearing Permits*' (Department of Water and Environmental Regulation, 2018)
site preparation works	means management of existing site topsoil and preparation of the finished soil surface for revegetation, and must include: • deep ripping of the sand extraction pit along contours and any other areas of compaction; • respreading site topsoil and chipped *native vegetation* within the revegetation areas where appropriate; and • shallow ripping post topsoil respread within the revegetation areas.
suitable habitat	means habitat that supports the native vertebrate fauna species requiring relocation, within the known current distribution of the species, and where practicable, within close proximity to the site of capture. For western ringtail possum (*Pseudocheirus occidentalis*) this is typically characterised by abundant foliage, presence of suitable nesting structures such as tree hollows, as well as high canopy cover and continuity.
suitable trees	means trees that provide suitable habitat for western ringtail possum(s) (*Pseudocheirus occidentalis*) and / or south-western brush-tailed phascogale(s) (*Phascogale tapoatafa wambenger*).
vegetation establishment period	means a period of at least two summers after the *revegetation* during which time replacement and infill *revegetation* works may be required for areas in which *revegetation* has been unsuccessful and involves regular inspections of *revegetation* sites to monitor success.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and*

Term	Definition
	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.
western ringtail possum specialist	means a *fauna specialist* with at least two years' experience in the identification, survey, capture, and handling of western ringtail possums (*Pseudocheirus occidentalis*), and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.

END OF CONDITIONS



Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

17 August 2026

Schedule 1

The boundary of the area authorised to clear is shown in Figure 1. The boundary of the offset area is shown in Figure 2. The boundary of the revegetation area is shown in Figure 3.



Figure 1: The area cross-hatched yellow indicates the area authorised to clear.

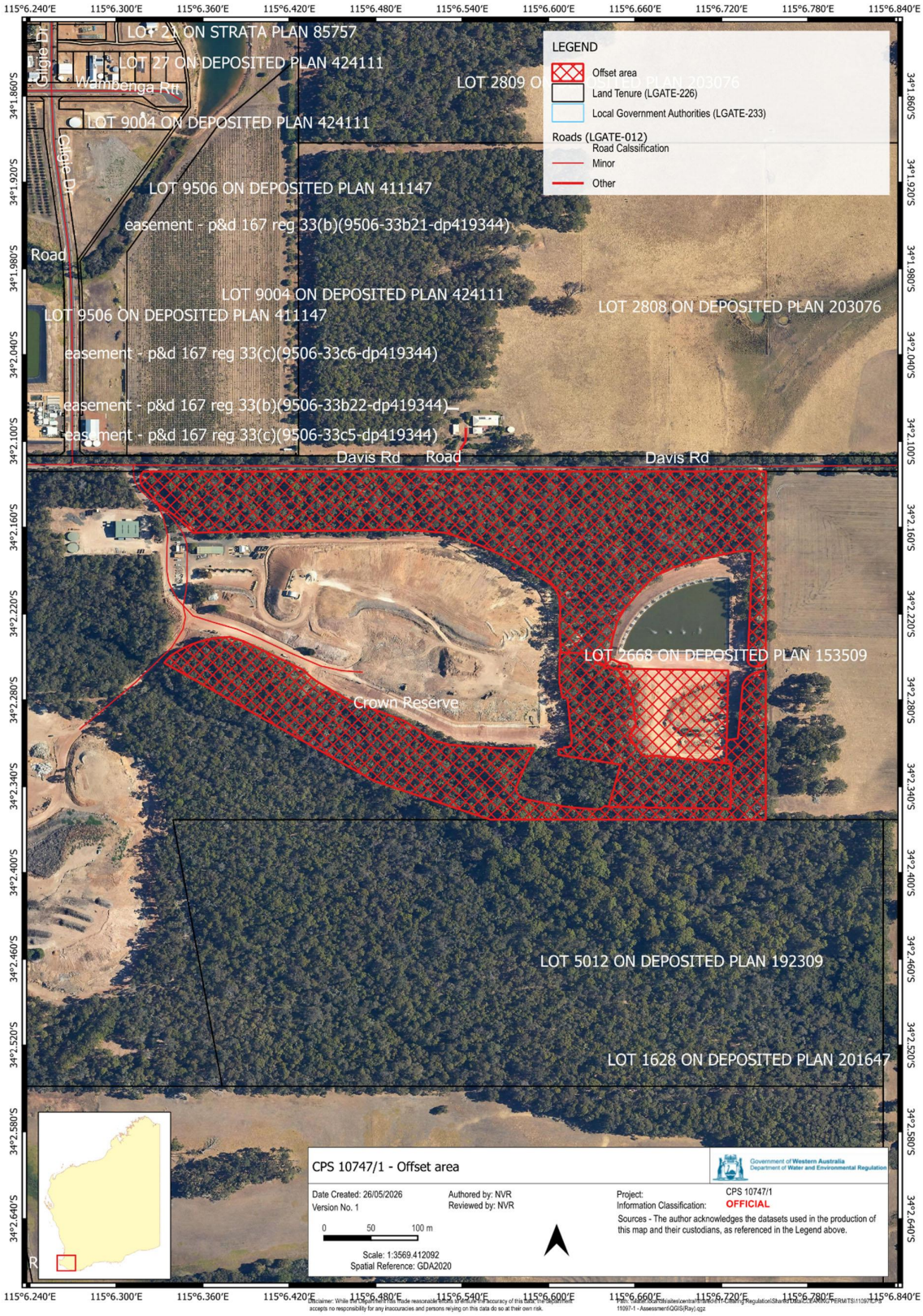


Figure 2: The area cross-hatched red indicates the offset area subject to *condition* 7.



Figure 3: The area cross-hatched red indicates the revegetation area subject to *condition* 8.

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 10747/1
Permit type:	Area permit
Applicant name:	Shire of Augusta Margaret River
Application received:	2 September 2024
Application area:	2.56 hectares of native vegetation (revised)
Purpose of clearing:	Soil extraction to cap landfill
Method of clearing:	Mechanical
Property:	Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808)
Location (LGA area/s):	Shire of Augusta Margaret River
Localities (suburb/s):	Forest Grove

1.2. Description of application

The application is to clear up to 2.56 hectares of native vegetation to facilitate capping (closure) works for the landfill cells at the Davis Road Recycling and Waste Management Facility (the facility), located on Lot 5011 Davis Road (Crown Reserve 43808), Forest Grove.

The works include the extraction of soil for landfill capping, re-profiling of landfill cells, vehicle access, and stormwater management through the construction of permanent drainage infrastructure. The works form part of the implementation of the *Closure and Post-Closure Management Plan* for the landfill cells within the facility (Emerge, 2024b).

The application area forms part of a larger remnant patch of native vegetation within Crown Reserve 43808, comprising approximately 70 hectares of native vegetation and located near the eastern boundary of the Warren Bioregion (see Figure 1, Section 1.5).

During the assessment, the application area was reduced from 2.75 hectares to 2.56 hectares to minimise impacts to native vegetation and associated environmental values.

Capping of the landfill cells is required under Licence L6989/1997/14, issued by DWER under Part V, Division 3 of the *Environmental Protection Act 1986* (EP Act) (refer to Section 3.3 for further information) (Emerge, 2024b).

1.3. Decision on application

Decision:	Granted
Decision date:	17 August 2026
Decision area:	2.56 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.

In making this decision, the Delegated Officer had regard to:

- the site characteristics of the application area (see Appendix A);
- relevant environmental datasets (see Appendix E);
- the findings of biological surveys of the application area;
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix B);
- the applicant's efforts to avoid, minimise, mitigate (see Section 3.1) and offset the environmental impacts of the proposed clearing;
- the necessity for clearing (see Section 3.1); and
- other relevant matters detailed in Section 3.

The Delegated Officer also considered the need for and justification of the proposed clearing, being the extraction of restoration soils required to undertake landfill capping works in accordance with Licence L6989/1997/14 (refer to Section 3.3).

The assessment identified that the proposed clearing may result in the following impacts:

- the loss of 2.56 hectares of significant foraging habitat for Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo (black cockatoos);
- the loss of 2.56 hectares of significant habitat for western ringtail possum;
- a risk of injury to native fauna during clearing operations;
- a risk of land degradation through wind and water erosion; and
- indirect impacts to adjacent native vegetation through the spread of weeds and dieback.

The Delegated Officer determined that the risks of erosion, weed and dieback spread, and injury or mortality to native fauna can be adequately managed through conditions of the clearing permit.

The Delegated Officer further determined that the impacts to black cockatoo foraging habitat and western ringtail possum habitat remain significant following the application of avoidance, minimisation and mitigation measures. Therefore, these impacts require counterbalancing through an environmental offset.

The Delegated Officer considered the extent of environmental impact, the necessity for clearing, and the applicant's adherence to the mitigation hierarchy, and determined that it was appropriate to grant a clearing permit subject to conditions, requiring management measures, mitigation and an adequate environmental offset.

The applicant has proposed a revegetation action as a mitigation measure, and an environmental offset, to address and counterbalance the abovementioned significant residual impacts. The offset is consistent with the Government of Western Australia's *Environmental Offsets Policy (2011)* and *Environmental Offsets Guidelines (2014)* and is considered adequate to counterbalance the significant residual impacts. The revegetation action and offset involve (respectively):

- the revegetation of 2.86 hectares of temporarily cleared land within the offset area, subject to a project revegetation plan (see Figure 3); and
- the conservation in perpetuity of 14.27 hectares of native vegetation that provides high-quality habitat for black cockatoos and western ringtail possum through the registration of a memorial under section 17 of the *Land Administration Act 1997* (the offset area) (See Figure 2) .

The offset area is located adjacent to the application area. The offset is further described under Section 4.

Given the nature and extent of impacts, the avoidance, minimisation and mitigation measures applied, and the proposed offset, the Delegated Officer determined that it is appropriate to grant a clearing permit subject to conditions. Therefore, the permit includes conditions requiring the applicant to:

- implement the approved environmental offset, conserving the offset site in perpetuity;

- revegetate temporary cleared areas in the offset area, including 2.86 hectares with species that provide suitable habitat values for black cockatoos and western ringtail possums, in accordance with a project revegetation plan;
- demarcate the clearing area to avoid the inadvertent clearing of adjacent native vegetation;
- apply avoidance and minimisation measures to reduce the impacts and extent of clearing;
- implement hygiene and weed control measures to minimise the risk of weed and dieback spread;
- implement erosion control measures to minimise the risk of land degradation;
- undertake slow, progressive, one-directional clearing to allow fauna to disperse into adjacent areas; and
- engage a fauna specialist during clearing activities to identify the presence of native vertebrate fauna, facilitate fauna dispersal, and relocate individuals that do not disperse naturally.

1.5. Site map



Figure 1 Map of the approved clearing area, as shown by the area cross-hatched yellow.

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)
- *Biosecurity and Agriculture Management Act 2007* (BAM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Land Administration Act 1997*

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, 2013)
- *Procedure: Native vegetation clearing permits* (DWER, 2019)
- *Environmental Offsets Guidelines* (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. Necessity, avoidance, minimisation and mitigation measures

Necessity for clearing

Capping of the Davis Road Recycling and Waste Management Facility landfill cells is a requirement of the Licence (L6989/1997/14) issued by DWER under Part V, Division 3 of the EP Act (Emerge, 2024b).

The applicant has advised that alternative sources of restoration soil that could be used in lieu of clearing were investigated. This included consideration of surplus material from local civil projects, a previously cleared area within Lot 5011, and external quarry suppliers (Emerge, 2024c).

These options were found to be impractical due to insufficient soil volumes, operational constraints, and the likelihood that additional clearing would still be required for access, stockpiling, or biosecurity management. Offsite sourcing would also introduce risks of contaminated or dieback-infested soil, increase heavy vehicle movements and associated community safety impacts, place pressure on local roads, delay completion of landfill capping works, and generate additional greenhouse gas emissions (Emerge, 2024c).

Therefore, the applicant determined that sourcing restoration soil onsite was the option that best avoids and minimises environmental, social, and operational impacts.

Avoidance measures

The applicant has demonstrated the following avoidance measures with respect to clearing (Emerge, 2024c):

- the borrow pit has been strategically located to maximise use of existing cleared and previously disturbed areas, reducing the extent of native vegetation clearing and avoiding the need for additional access tracks and supporting infrastructure that would be required in other parts of the site;
- alternative borrow pit locations within Lot 5011 were considered but not progressed, as they would require greater vegetation disturbance for access, stockpiling and operational infrastructure;
- vegetation previously identified for retention and protection under existing approvals, including areas containing installed artificial fauna hollows, has been excluded from the clearing footprint;

- an area originally included for heavy vehicle access, manoeuvring and soil stockpiling was removed from the application after it was confirmed that existing tracks and disturbed areas could accommodate these activities. This reduced the application area by approximately 0.09 ha and retained seven mature habitat trees; and
- the proposed layout utilises existing site infrastructure and disturbed areas wherever practicable, minimising impacts to surrounding native vegetation while enabling compliance with landfill capping requirements under Licence L6989/1997/14.

Minimisation and mitigation measures

The applicant has demonstrated the following environmental impact minimisation and mitigation measures (Emerge, 2024c):

- clearing boundaries will be clearly demarcated to prevent inadvertent disturbance outside approved areas;
- existing cleared areas will be used wherever possible for stockpiling of materials, machinery laydown and vehicle movements;
- weed and dieback hygiene controls will be implemented, including cleaning machinery, vehicles, equipment and footwear before entering work areas and limiting activities during wet conditions where practicable;
- clearing will be undertaken progressively to allow fauna to move into adjacent retained vegetation;
- a suitably qualified fauna specialist will inspect vegetation prior to clearing and provide fauna management and relocation assistance where required;
- vehicle speeds within work areas will be restricted to reduce the risk of fauna strike;
- drainage infrastructure will be designed to appropriately manage surface water runoff and minimise off-site impacts;
- erosion, sediment and dust control measures, including sediment traps, runoff controls and dust suppression, will be implemented during construction and earthworks activities; and
- onsite revegetation of 2.86 hectares will be undertaken within portions of the application area not required for ongoing landfill operations and maintenance activities. Revegetation will include native species that provide suitable habitat for black cockatoos and western ringtail possum (see Section 4 for further information).

The Delegated Officer is satisfied that the applicant has made a reasonable effort to avoid, minimise and mitigate impacts to environmental values, and that the proposed clearing is necessary to facilitate compliance with Licence L6989/1997/14.

After considering the applicant's avoidance and minimisation measures, the Delegated Officer determined that an environmental offset was required to counterbalance the remaining significant residual impacts. These impacts comprise the loss of 2.56 hectares of native vegetation that provides significant foraging habitat for black cockatoos and significant habitat for western ringtail possum.

The applicant has provided an offset proposal to address the above impacts. The offset proposal is in accordance with the Government of Western Australia's *Environmental Offsets Policy (2011)* and *Environmental Offsets Guidelines (2014)*. The offset is considered adequate to counterbalance the significant residual impacts and will be secured through conditions on the clearing permit. The nature and suitability of the offset is provided in Section 4.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer had regard for the site characteristics (see Appendix A), biological survey findings, 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 B) identified that the impacts of the proposed clearing present a risk to fauna habitat values. The consideration of this impact, 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 Principle (b)

Assessment

The applicant commissioned a Basic Fauna and Targeted Black Cockatoo Assessment (the fauna survey) over a broader area encompassing the application area (Emerge, 2024). The fauna survey identified that fauna habitat within the application area largely comprises open forest of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla*

(marri) over native shrubland, forbs, grasses and sedges. This habitat type was described as having high microhabitat complexity (Emerge, 2024).

Based on habitat suitability, vegetation condition and the proximity of known records, the application area is considered to provide suitable habitat for the following species:

- western ringtail possum (*Pseudocheirus occidentalis*) (Critically Endangered - BC Act and EPBC Act);
- Baudin's cockatoo (*Zanda baudinii*) (Endangered - BC Act and EPBC Act);
- Carnaby's cockatoo (*Zanda latirostris*) (Endangered - BC Act and EPBC Act);
- forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable - BC Act and EPBC Act);
- chuditch (*Dasyurus geoffroii*) (Vulnerable - BC Act and EPBC Act);
- south-western brush-tailed phascogale (*Phascogale tapoatafa wambenger*) – (Other specially protected fauna - BC Act);
- peregrine falcon (*Falco peregrinus*) (Other specially protected fauna - BC Act);
- Australian masked owl (*Tyto novaehollandiae novaehollandiae*) (Priority 3 - DBCA listed); and
- quenda (*Isoodon fusciventer*) (Priority 4 - DBCA listed).

The fauna survey recorded forest red-tailed black cockatoo flying overhead the application area, and evidence of foraging debris from Carnaby's cockatoo and Baudin's cockatoo within the application area. No evidence of other conservation listed fauna was identified within the application area (Emerge, 2024).

Black cockatoos (Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo)

Foraging habitat

The entire application area (2.56 hectares) provides high-value foraging habitat for black cockatoos. Vegetation within the application area is dominated by preferred foraging species, including jarrah and marri, with areas of *Hakea lissocarpha* (honeybush) and *Hakea ruscifolia* (candle hakea) in the understorey, and secondary foraging resources in the form of *Eucalyptus diversicolor* (karri).

The fauna survey identified forest red-tailed black cockatoos flying over the site. Carnaby's black cockatoo and Baudin's black cockatoo were also recorded from foraging evidence on marri fruit.

The Commonwealth referral guideline for black cockatoos (DAWE, 2022), specifies that habitat critical for their recovery includes foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding. The importance of foraging habitat for Carnaby's cockatoo increases when it occurs within foraging distance of nesting sites (about 12 kilometres) as it supports breeding effort (EPA, 2019). Food resources within the range of roost sites are also important to sustain populations of black cockatoos (EPA, 2019).

While there are no known black cockatoo breeding trees mapped in the local area (according to available datasets), with the closest 17 kilometres away, there may be unmapped breeding trees within the 12 kilometre foraging range. There are four known black cockatoo roost sites within the local area, indicating that the foraging habitat present within the application area may support roosting black cockatoos in the surrounding landscape.

The Delegated Officer determined that the proposed clearing of 2.56 hectares of high-value black cockatoo foraging habitat constitutes a significant residual impact. This determination considered:

- presence of high-value foraging habitat for black cockatoos within the application area;
- proximity to known roost sites;
- previous evidence of black cockatoos foraging within, or flying overhead the application area; and
- cumulative loss of black cockatoo foraging habitat across these species' range.

Noting the extent of the proposed impact to black cockatoo foraging habitat, and the applicant's adherence to the mitigation hierarchy (avoid, minimise, mitigate), the Delegated Officer determined that it was appropriate to consider an environmental offset to counterbalance this impact.

The applicant has proposed an adequate environmental offset to counterbalance the impact to black cockatoo foraging habitat. This offset is consistent with the key recovery actions outlined in the recovery plan for black cockatoos (see Section 4 for offset details).

Roosting and breeding habitat

'Breeding habitat' for black cockatoos includes trees that either contain a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (500 millimetres for most tree species) (DAWE, 2022).

The fauna survey identified 150 potential breeding trees with a diameter at breast height (DBH) greater than 500 millimetres within the application area. Of these, 16 were identified as containing hollows. Following internal hollow inspections, none of these hollows were considered suitable breeding habitat for black cockatoos due to their size, orientation and height (Emerge, 2024). No evidence of black cockatoo breeding activity was recorded within any of the potential breeding trees (Emerge, 2024).

Black cockatoos commonly night roost in tall eucalypts near food and water resources. Noting the presence of tall eucalypts in the application area, and proximity to foraging habitat and the Blackwood River (4 kilometres away) and its tributaries, the trees proposed to clear may provide roosting habitat for black cockatoos. The Fauna Assessment did not identify any evidence of roosting in the application area (branch clippings, droppings or feathers) (Emerge, 2024).

The loss of potential roosting habitat and potential future breeding habitat is not considered a significant residual impact in this instance, noting the absence of evidence of roosting and the lack of suitable breeding hollows within the application area (Emerge, 2024). Therefore, an offset has not been required to counterbalance this impact. The Delegated Officer notes, however, that the applicant's proposed offset includes the conservation and ongoing management in perpetuity of adjacent remnant vegetation within Lot 5011, which contains habitat values comparable to those proposed to be cleared.

Western ringtail possum

Numerous records of western ringtail possum occur within the local area, with the closest record located about 450 metres west of the application area. The fauna survey did not identify any dreys or other secondary evidence of the species within the application area. However, Emerge (2024) considered there to be a high likelihood of periodic use by western ringtail possum due to the abundance of suitable habitat within the application area and surrounding landscape.

The western ringtail possum recovery plan identifies mature peppermint woodlands, jarrah-marri forests and woodlands with limited anthropogenic disturbance, dense coastal heath, and undisturbed myrtaceous heaths and shrublands as important habitat types for the species (Parks and Wildlife, 2017). These habitats typically provide important habitat characteristics, including high nutrient foliage availability for foraging, suitable structure for nesting and refuge, and canopy continuity that facilitates movement and reduces exposure to predation and other threats (Parks and Wildlife, 2017; Commonwealth of Australia, 2017).

The application area contains several of these important habitat characteristics, including:

- high nutrient foliage availability for foraging;
- vegetation structure suitable for refuge and nesting;
- canopy continuity that facilitates movement and reduces exposure to predation; and
- jarrah-marri forest with limited direct anthropogenic disturbance.

Key threatening processes for western ringtail possum include habitat loss and fragmentation, introduced predators, climate change, timber harvesting, fire, hollow competition, habitat tree decline and disease (Parks and Wildlife, 2017).

The western ringtail possum recovery plan states that habitat where western ringtail possums occur naturally is considered critical to the survival of the species (Parks and Wildlife, 2017). While no dreys or secondary evidence of the species were recorded within the application area (Emerge, 2024), the abundance of suitable habitat, proximity of numerous records, and high likelihood of periodic use indicate that the application area provides significant habitat for western ringtail possum. Therefore, the loss of 2.56 hectares of habitat within the application area is considered to constitute a significant residual impact.

Noting the extent of the proposed impact to western ringtail possum habitat, and the applicant’s adherence to the mitigation hierarchy (avoid, minimise, mitigate), the Delegated Officer determined that it was appropriate to consider an environmental offset to counterbalance this impact.

The applicant has proposed an adequate environmental offset to counterbalance the impact to western ringtail possum habitat. This offset is consistent with the key recovery actions outlined in the recovery plan for western ringtail possums (see Section 4 for offset details).

Chuditch

Chuditch primarily inhabit jarrah forests and woodlands, mallee shrublands and heathlands. Their home ranges extend up to 15 square kilometres for males and 3 to 4 square kilometres for females. They depend on an adequate number of suitable dens and refuge sites, which are typically found in hollow logs, tree hollows, rocky outcrops and burrows. They also require sufficient prey biomass, including large invertebrates, reptiles and small mammals, to persist in an area (DEC, 2012a).

Available datasets show three records of this species within the local area, with the closest record mapped approximately 8.7 kilometres from the application area. All three records are historical and were recorded prior to 1985. Although chuditch have been recorded throughout the Warren Bioregion, a higher density of records occurs within the Jarrah Forest Bioregion, particularly in the area extending north from the Shire of Donnybrook-Balingup to the Shire of Toodyay.

The application area comprises jarrah and marri forest, which may provide suitable habitat for chuditch. However, this habitat is unlikely to be significant for the species because:

- no records of chuditch have been recorded in the local area in the last 40 years;
- the application area comprises 2.56 hectares of a larger 70-hectare remnant, and the proposed clearing will result in the loss of a small proportion of this remnant (3.65 per cent);
- chuditch habitat remains well represented in the surrounding landscape, which retains more than 50 per cent of its native vegetation extent;
- no evidence of chuditch was recorded during the fauna survey of the application area (Emerge, 2024); and
- the application area is outside the portions of the Jarrah Forest Bioregion where the highest density of chuditch records occur.

The proposed clearing is therefore unlikely to significantly impact this species.

South-western brush-tailed phascogale

The south-western brush-tailed phascogale was recorded in 2016 approximately 1.1 kilometres north of the application area within remnant vegetation that is contiguous with the application area. Available datasets also show three additional records of this species within 2 kilometres of the application area.

This species uses hollow-bearing trees in jarrah, marri and karri forests for refuge and breeding (DEC, 2012). Habitat loss, fragmentation and modification through clearing, logging and mining are recognised threats to the south-western brush-tailed phascogale, as these activities reduce the availability of hollow-bearing trees and increase susceptibility to predation by foxes and feral cats (DEC, 2012).

The application area contains suitable habitat for this species, including jarrah and marri forest with hollow-bearing trees that may provide refuge (Emerge, 2024). Evidence of this species was not recorded during the fauna survey (Emerge, 2024). However, given the proximity of recent records within contiguous vegetation and the suitability of habitat present, the species is likely to use the broader site as part of a larger home range.

While the application area may be used by this species, it comprises 2.56 hectares of a larger 70-hectare remnant, representing only 3.65 per cent of the patch. The surrounding habitat within this remnant provides habitat values similar to those present within the application area. Habitat for the species also remains well represented in the surrounding landscape, which retains more than 50 per cent of its native vegetation extent. Therefore, the proposed clearing is unlikely to impact significant habitat for the south-western brush-tailed phascogale, noting it is unlikely to affect the viability of a local population or result in a significant reduction in habitat availability.

The Delegated Officer also notes that the applicant's offset commitment to conserve 14.27 hectares of native vegetation adjacent to the application area in perpetuity, and to revegetate temporarily cleared areas with jarrah and marri forest, will assist in conserving and reinstating habitat values for this species.

Ecological linkage

The application area forms part of a larger 70-hectare patch of native vegetation within Reserve 43808 that is contiguous with vegetation identified within the South West Regional Ecological Linkages (SWREL) framework (Molloy, 2009). SWREL linkages recognise native vegetation that forms contiguous and non-contiguous habitat patches considered important for facilitating fauna movement through the landscape (Molloy, 2009).

Therefore, vegetation within the application area is likely to contribute to ecological connectivity within the local landscape and may assist fauna movement between larger areas of native vegetation identified in the SWREL framework. Beyond the SWREL considerations, the 70-hectare remnant provides a linkage between vegetation within Crown Reserve 29166 approximately 600 metres to the northwest, and vegetation associated with a minor watercourse, which extends southwest through several agricultural properties.

At a finer scale, the application area currently provides a movement pathway for terrestrial fauna between vegetation located on the northern and southern sides of the existing landfill facility within Reserve 43808. The proposed clearing would remove part of this pathway and may require fauna moving through the remnant to use alternative routes around the landfill facility, including via vegetation to the west of the landfill.

The Delegated Officer considers that the potential restriction on fauna movement within Reserve 43808 is likely to be temporary, noting the applicant's commitment to revegetate the application area and the broader landfill facility following capping. Revegetation of these areas is expected to re-establish habitat and movement opportunities within the remnant over time.

At the broader landscape scale, the proposed clearing is not likely to significantly impact ecological connectivity between remnant vegetation patches. This conclusion considers that the proposed clearing comprises 2.56 hectares of the larger 70-hectare remnant, representing 3.65 per cent of the patch, and will not sever vegetation connectivity between Crown Reserve 29166, the watercourse vegetation to the southwest, and other remnant vegetation in the surrounding landscape.

The applicant's offset commitment to conserve 14.27 hectares of the larger 70-hectare remnant in perpetuity will also assist in protecting the ecological linkage values provided by this vegetation in the long term.

Other fauna

The vegetation within the application area is unlikely to comprise significant habitat for the peregrine falcon, Australian masked owl or quenda. This conclusion takes into consideration:

- the application area comprises 2.56 hectares of a larger 70-hectare remnant, and the proposed clearing will result in the loss of only a small proportion of this remnant (3.65 per cent);
- habitat for these species remains well represented in the surrounding landscape, which retains more than 50 per cent of its native vegetation extent;
- no evidence of use by these species was recorded within the application area during the fauna survey (Emerge, 2024); and
- the known ecology and habitat requirements of these species.

Other impacts

The proposed clearing presents a risk of injury or mortality to native fauna present at the time of clearing. This risk can be appropriately managed through fauna management measures. The applicant has committed to undertake slow, progressive, one-directional clearing and engage a fauna spotter to inspect vegetation proposed for clearing, including hollow-bearing trees, and relocate any native fauna that do not naturally disperse.

Conclusion

The proposed clearing will result in the loss of 2.56 hectares of significant habitat for western ringtail possum and high-value foraging habitat for black cockatoos. These impacts constitute a significant residual impact that require counterbalancing by an environmental offset (detailed under Section 4). The Delegated Officer determined that it was appropriate to consider an environmental offset to counterbalance the significant residual impacts in this instance, noting the applicant’s adherence to the mitigation hierarchy and the extent of impact.

The proposed clearing will also increase the risk of injury or mortality to native fauna present within the application area at the time of clearing, which will require appropriate management.

Conditions

To address the identified impacts, the clearing permit includes conditions requiring the permit holder to:

- implement the approved environmental offset, conserving the 14.27 hectare offset site in perpetuity;
- revegetate temporary cleared areas (2.86 hectares) with vegetation that provides habitat for western ringtail possums and black cockatoos, in accordance with a project revegetation plan;
- demarcate the clearing area to prevent inadvertent clearing of adjacent native vegetation;
- engage a fauna specialist during clearing activities to identify the presence of native vertebrate fauna, facilitate fauna dispersal, and relocate individuals that do not disperse naturally;
- implement avoidance and minimisation measures to reduce the impacts and extent of clearing; and
- undertake slow, progressive, one-directional clearing to allow fauna to disperse into adjacent areas.

3.2.2. Land and water resource values – erosion and surface water quality - Clearing Principles (g) and (i)

Assessment

The mapped soil type within the application area, described as loamy gravel, sandy gravel and loamy earth, are mapped as having a high risk of wind erosion and a moderate risk of water erosion. The application area is around 45 metres slightly upslope of a minor non-perennial watercourse.

Noting the characteristics of the mapped soil type, proximity of the application area to the minor watercourse, and local topography, the proposed clearing may increase the susceptibility of soils to erosion when stabilising vegetation is removed. Clearing activities that expose these types of soils without appropriate stabilisation measures can result in wind erosion, water erosion and subsequent sedimentation and a deterioration in water quality of nearby watercourses. Therefore, the proposed clearing may exacerbate soil erosion and impact on surface water quality without appropriate management.

The Delegated Officer considered that these impacts can be appropriately managed through conditions of the clearing permit, given:

- the relatively small extent of clearing proposed;
- that the areas immediately surrounding the application area, including the area between the application area and the watercourse, are well vegetated and will reduce the severity of erosion; and
- the application area will be lower than the surrounding landform as material is removed for use on the landfill cells.

The Delegated Officer also considered the supporting information provided by the applicant, which advised that the following management measures would be implemented (Emerge, 2024b):

- temporary control measures, such as the installation of silt-traps and other sediment control measures to slow surface run off and minimise erosion and sedimentation during rainfall; and
- dust management including suppression during dry/windy weather periods and/or halting work during adverse weather.

Conclusion

The proposed clearing has the potential to increase the risk of land degradation, and surface water quality deterioration, through wind and water erosion. This impact is considered manageable through the implementation of appropriate erosion control and revegetation measures, enforced through clearing permit conditions.

Conditions

To address the identified impacts, the clearing permit includes conditions requiring the permit holder to:

- undertake avoid and minimise measures to reduce the impacts and extent of clearing;
- clearly demarcate the clearing area prior to clearing;
- revegetate across 2.86 hectares in temporary cleared areas of the site, in accordance with a project revegetation plan; and
- implement erosion and sediment control measures to minimise the risk of wind erosion, water erosion and sedimentation, including monitoring cleared areas for evidence of erosion and implementing additional control measures where necessary until the area is stabilised.

3.3. Relevant planning instruments and other matters

The application area is zoned 'Public Purposes' under the local planning scheme. Crown Reserve 43808 is currently vested for the purpose of a 'Gravel and Waste Management Facility'.

The applicant operates a Class II Putrescible Landfill at the Davis Road Recycling and Waste Management Facility under licence L6989/1997/14, issued by DWER pursuant to Part V, Division 3 of the *Environmental Protection Act 1986* (EP Act). The licence includes requirements relating to closure and post-closure management of the landfill.

To satisfy these requirements, the applicant has committed to closure works involving the recontouring of historic landfill cells, installation of an impermeable capping layer, and placement of restoration soils, including a 100 mm growing medium, to provide long-term slope stability and facilitate revegetation. The clearing permit application has been submitted to enable the extraction of restoration soils required for construction of the landfill cap and implementation of the approved closure works.

The applicant notes that revegetation will be undertaken using local provenance shallow-rooted native species to stabilise surface materials and integrate the landform with the surrounding environment. Trees will not be planted, as root penetration may compromise the integrity of the landfill cap. Once established, the revegetation is expected to increase native vegetation cover across approximately 5.3 ha of the site. Hydro-mulch will be applied as a temporary erosion-control measure while vegetation establishes.

The capping system is designed to minimise leachate generation by preventing stormwater infiltration into the landfill mass and directing runoff to engineered drainage infrastructure and a detention basin. Approximately 50,000 m³ (90,000 tonnes) of restoration soils are required to construct the landfill cap, with the materials required to meet specific geotechnical standards to ensure long-term stability.

DWER approved an amendment to licence L6989/1997/14 in April 2025, incorporating the Closure and Post-Closure Management Plan for the landfill. Aside from the required capping and revegetation, the approval includes a number of other regulatory controls for the closure of the waste facility, including the management of stormwater through permanent drainage infrastructure.

No Aboriginal sites of significance have been mapped within the application area. 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.

The site was classified under the *Contaminated Sites Act 2003* (CS Act) as *possibly contaminated - investigation required* on 18 April 2011 and was most recently reviewed on 5 December 2019 following submission of additional technical information. The site continues to be regulated under the CS Act. Advice from DWER subject matter experts indicates that groundwater is unlikely to be disturbed by the proposed clearing and, therefore, impacts to groundwater contamination pathways are not anticipated. However, the applicant has been advised to prepare an unexpected finds protocol to manage the potential discovery of buried landfill waste, including asbestos-containing materials, during ground-disturbing works.

4 Suitability of offsets and mitigation

Significant residual impacts

Based on the assessment outlined in Section 3.2, the Delegated Officer has determined that the following significant residual impact remains after the application of avoidance and minimisation measures (described in Section 3.1):

- the loss of 2.56 hectares of native vegetation that provides significant foraging habitat for black cockatoos; and
- the loss of 2.56 hectares of native vegetation that provides significant habitat for western ringtail possums.

The Delegated Officer considers an offset is warranted and appropriate, given the extent of the residual impacts and the applicant's implementation of avoidance and minimisation measures in accordance with the *WA Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014).

Proposed mitigation and offset

Mitigation – Revegetation

To mitigate a portion of the significant residual impacts, the applicant has committed to undertake revegetation across 2.86 hectares. The revegetation area includes a portion of the application area and an adjacent cleared area, which are not required for ongoing landfill operations and maintenance activities.

The revegetation will be undertaken in accordance with a revegetation plan, to be submitted to DWER. The revegetation will aim to reinstate habitat for western ringtail possums and black cockatoos commensurate with the surrounding native vegetation, which is expected to improve habitat values over time and contribute to the re-establishment of habitat for western ringtail possums and black cockatoos.

Offset

To counterbalance the significant residual impacts of this project, the applicant proposes to conserve in perpetuity 14.27 hectares of native vegetation within Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808), Forest Grove, through the registration of a memorial under section 17 of the *Land Administration Act 1997* (LAA Act), which will identify that the offset area is for conservation purposes only.

The offset area is adjacent to the application area, and includes the revegetation area referred to above. The offset area is zoned as 'Public purposes' under the local planning scheme. Crown Reserve 43808 is currently managed for the purpose of 'Gravel and Waste Management Facility'. Given the current land tenure and zoning arrangements, there remains a risk that vegetation within the offset area could be impacted by future land management or operational activities. Registration of the memorial would provide an additional mechanism to secure the environmental values of the offset area and reduce the likelihood of future disturbance.

The applicant enquired with the Department of Planning, Lands and Heritage (DPLH) regarding appropriate pathways to conserve the proposed offset area in perpetuity, and DPLH advised that registering a memorial over the offset area under the LAA Act was the most appropriate way that conservation could be achieved.

The offset area contains native vegetation of high conservation value, that is comparable to the application area. Specifically, the offset area contains 14.27 ha of jarrah and marri open forest in a very good (Keighery, 1994) condition. This vegetation provides high-quality habitat for both black cockatoos and western ringtail possums.

Offset adequacy

To assess whether the proposed offset appropriately counterbalances the residual impacts, DWER applied the WA Environmental Offsets Metric. The assessment determined that the conservation of 14.27 ha of native vegetation, when combined with the revegetation action (mitigation), adequately counterbalances the significant residual impacts associated with the proposed clearing.

In determining offset adequacy, the Delegated Officer also considered:

- the recovery plan for the western ringtail possum, which identifies that the protection of critical habitat within its key management zones as a key recovery action (Parks and Wildlife, 2017); and
- the recovery plan for each of the black cockatoo species, which identify the protection and management of important habitat for these species as a key recovery action (Parks and Wildlife, 2013; Department of Environment and Conservation (DEC), 2008). For Carnaby's cockatoo, a key recovery action includes improving security of tenure and management of foraging habitat, through purchase, transfer of vesting, or conservation covenant (Parks and Wildlife, 2013).

The environmental outcome of the proposed offset is therefore consistent with the recovery plans for black cockatoos and western ringtail possum.

The Delegated Officer considers that the proposed offset and revegetation action is consistent with the *WA Environmental Offsets Policy* (2011) and *WA Environmental Offsets Guidelines* (2014) and adequately counterbalances the residual impacts. Details of the offset calculation and supporting assumptions are available in Appendix D.



Figure 2. Offset area required to be conserved in perpetuity through a memorial.



Figure 3. Area required to be revegetated.

Appendices

Appendix A. Site characteristics

Characteristic	Details
Local context	The application area forms part of a larger remnant patch of native vegetation within Crown Reserve 43808, comprising approximately 70 hectares of native vegetation near the eastern boundary of the Warren Bioregion. The surrounding landscape comprises a mixture of cleared rural land and large remnant patches of native vegetation. Aerial imagery indicates that the local area (within a 10-kilometre radius of the application area) retains approximately 53.7 per cent of its native vegetation extent.
Ecological linkage	The application area is not located within a mapped ecological linkage. However, it forms part of a larger remnant patch that contributes to ecological connectivity between areas of native vegetation in the local landscape.
Conservation areas	The closest conservation area to the application area is DBCA covenanted land 900 metres north. Forest Grove National Park occurs 4.4 kilometres south of the application area.
Vegetation description	The flora survey (Emerge, 2024a) indicates the vegetation within the proposed clearing area consists of the following 3 vegetation types (where * denotes introduced species): • Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* over shrubland of *Hibbertia hypericoides, Macrozamia riedlei, Hovea elliptica, Hakea amplexicaulis* and *Hakea lissocarpha* over open forbland of *Scaevola calliptera, Agrostocrinum hirsutum, Patersonia babianoides* and *Patersonia occidentalis* over scattered grasses/sedges of *Microlaena stipoides, Tetrarrhena laevis, Morelotia octandra* and **Anthoxanthum odoratum* **(1.65 hectares of the application area (64%))** • Open forest of *Eucalyptus marginata* and *Corymbia calophylla* over tall shrubland of *Trymalium odoratissimum subsp. trifidum* over low open shrubland of *Tremandra stelligera, Hovea elliptica and Pteridium esculentum* over scattered herbs/grasses including *Lagenophora huegelii, Opercularia hispidula* and *Tetrarrhena laevis* **(0.91 hectares of the application area (36%))** • Heavily disturbed areas comprising non-native flora with scattered native plants. Tracks and areas of bare ground were also included in this unit **(0.0003 hectares (negligible)).** The recorded vegetation type is largely consistent with the broadly mapped vegetation complexes over the application area, which mostly comprise: • **Wilyabrup W1**, described as tall open forest of *Eucalyptus diversicolor, Corymbia calophylla, Allocasuarina decussata,* and *Agonis flexuosa* on deeply incised valleys in the hyperhumid zone (Mattiske and Havel, 1980) (retains 53.6 per cent of its pre-European vegetation extent). A small portion of the north west section of the application area is mapped as: • **Cowaramup C1**, which is described as o*pen to tall open forest of Eucalyptus marginata subsp. Marginata, Corymbia calophylla and Banksia grandis on lateritic uplands in the hyperhumid zone* (Mattiske and Havel, 1980) (retains 34.4 per cent of its pre-European vegetation extent).
Vegetation condition	The flora survey (Emerge, 2024a) indicates that the vegetation within the application area is largely in a very good (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The elevation of the site is relatively flat and ranges from about 70 mAHD on the southern side to 75 mAHD on the eastern and northern sides.

Characteristic	Details
	The highest rainfall in this region occurs in June and July, with the lowest rainfall in January and February. Mean annual rainfall is 1,013mm (BoM, 2024). Mean minimum temperatures are 8.2 degrees Celsius in winter and mean maximum temperatures are 27.1 degrees Celsius in summer (BoM, 2024).
Soil description	Most of the application area is mapped as the Wilyabrup undifferentiated hillslope phase (216WvWLh), which is described as slopes with gradients generally ranging from 5 to 15 per cent (and up to 30 per cent), supporting gravelly Forest Grove and Keenan soils. A small portion of the application area is mapped as the Cowaramup undifferentiated upland phase (216CoCOu), which is described as flats and gentle slopes (0 to 5 per cent gradient) with gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils.
Land degradation risk	The application area is mapped as having a high risk of wind erosion and subsurface acidification, and a low to moderate risk of water erosion.
Waterbodies	There are no watercourses or wetlands intersecting the application area. The closest watercourse is a minor, non-perennial watercourse (minor tributary of the Blackwood River) mapped 45 metres south of the application area.
Salinity	Groundwater salinity is mapped as 1000 to 3000 mgL TDS (low to moderate).
Flora	There are 30 conservation listed flora species known from the local area, comprising 3 threatened species and 27 priority species (including 4 Priority 1 species). The closest record is *Synaphea* sp. Redgate Road (J. Scott 16) (Priority 1), recorded approximately 675 metres north-west of the application area.
Ecological communities	There are no threatened or priority ecological communities mapped within or nearby the application area. The flora survey did not identify any areas that were representative of any such communities (Emerge, 2024a).
Fauna	There are 35 conservation listed fauna species known from the local area. The closest of these records to the application area is Baudin's cockatoo recorded 430 metres west. The fauna survey recorded forest red-tailed black cockatoos flying overhead the application area and evidence of foraging by Baudin's cockatoo and Carnaby's cockatoo within the application area (Emerge, 2024).

Appendix B. 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 application area was subject to an appropriately timed flora survey undertaken by Emerge (2024a) in November 2023. The survey methods align with the EPA flora and vegetation survey technical guidance (EPA, 2016) and were considered appropriate to adequately identify conservation listed flora and ecological communities known from the local area. The survey did not identify any conservation listed flora or ecological communities (Emerge, 2024a), and therefore the presence of any such species or communities within the application area is unlikely.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
A total of 75 native and 17 non-native species (including one declared pest) were recorded within the survey area (Emerge Associates 2024a). The number of species recorded is in line with the predicted species richness for jarrah and marri forest in this region. While the application area provides valuable habitat for black cockatoos and western ringtail possum, the vegetation and fauna habitat types present are well represented in the local area and broader region, and the application area is therefore unlikely to represent an area of particularly high biodiversity in a local or regional context.		
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 application area provides significant habitat for western ringtail possum and high-value foraging habitat for black cockatoos. The proposed clearing will result in the loss of 2.56 hectares of these habitat values.	At variance	Yes Refer to Section 3.2.1.
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: No threatened flora have been recorded within or adjacent to the application area. The appropriately timed flora survey did not identify any threatened flora (Emerge, 2024a), and the application area is therefore unlikely to include, or be necessary for the continued existence of threatened flora.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: No known threatened ecological communities have been recorded within or adjacent to the application area. The flora survey did not identify vegetation communities that are representative of any known threatened ecological communities (Emerge, 2024a), and the application area is therefore unlikely to comprise, or be necessary for the maintenance of, a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The national objectives and targets for biodiversity conservation in Australia identify a target to prevent the clearance of ecological communities with an extent below 30% of that present prior to 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The local area retains approximately 53.7% of its original native vegetation extent. The predominant mapped vegetation complex within the application area (W1) retains approximately 53.6% of its pre-European vegetation extent. As both the local area and the mapped vegetation complexes retain substantially more than 30% of their original extent, the application area is not considered to occur within an extensively cleared landscape.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: The closest conservation area to the application area is DBCA covenanted land 900 metres north. Noting the distance to this conservation area, and that the proposed clearing will not sever vegetation connectivity to this land or any other conservation areas, the proposed clearing is not likely to impact on the environmental values of any conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: There are no wetlands or watercourses intersecting the application area. The closest hydrological feature is a non-perennial watercourse which occurs about 45 metres south. The buffer between the application area and watercourse is heavily vegetated, and the proposed clearing is not likely to impact vegetation growing in association with this watercourse.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The soils mapped over the application area, and recorded during the flora survey, are highly susceptible to wind erosion, and moderately susceptible to water erosion. Without appropriate management, the proposed clearing may result in wind and water erosion and increase the risk of soil degradation.	May be at variance	Yes Refer to Section 3.2.2, 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: Noting the low to moderate groundwater salinity levels, and the limited extent of clearing relative to surrounding native vegetation, the proposed clearing is unlikely to impact groundwater quality. Given the closeness of a minor watercourse, the proposed clearing may impact on surface water quality if not appropriately managed.	May be at variance	Yes Refer to Section 3.2.2, above.
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: Given the mapped soils, topographic contours, and presence of well-established vegetation immediately surrounding the application area, the proposed clearing is not likely to cause or exacerbate flooding.	Not likely to be at variance	No

Appendix C. 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 D. WA Offset Metric Calculations

Offset calculation and justification for the significant residual impact to black cockatoo foraging habitat.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Carnaby's cockatoo, Baudin's cockatoo, and forest red-tailed black cockatoo foraging habitat	The application area comprises significant foraging habitat for all three species of black cockatoo, being Carnaby's cockatoo, Baudin's cockatoo, forest red-tailed black cockatoo.
Type of environmental value	Species (flora/fauna)	Foraging habitat for black cockatoos.
Conservation significance of environmental value	Rare/threatened species – Endangered	Carnaby's cockatoo and Baudin's cockatoo are listed as Endangered under the BC Act (state) and EPBC Act (federal) and forest red-tailed black cockatoo is listed as Vulnerable under the BC Act and EPBC Act. The higher conservation value of Endangered has therefore been used for this attribute.
Landscape level value impacted	Yes/No	Yes
Significant impact		
Description	Black cockatoos	Proposed clearing of native vegetation considered significant foraging habitat for black cockatoos.
Significant impact (hectares)	2.56	The extent of proposed impact to high quality foraging habitat for black cockatoos is 2.56 hectares.

Calculation	Score (Area)	Rationale
Quality (scale)	7	The application area includes 2.56 hectares of foraging habitat for black cockatoos within the Warren Bioregion. The condition of the vegetation is largely very good. While there are large areas of suitable surrounding habitat in the landscape, there are multiple known roosting sites within 6km of the application area, and multiple drinking water sources for black cockatoos in the local area. Foraging evidence was also observed in the application area. Noting the above, the application area provides relatively high value foraging habitat for black cockatoos.
Rehabilitation credit		
Description	Revegetation of temporary cleared areas in offset site	Revegetation of the proposed borrow pit post extraction and the existing cleared extraction areas.
Proposed revegetation (area in hectares)	2.86	Revegetation of 2.86 hectares is proposed.
Current quality of revegetation site / Start number	0	A start quality of 0 has been applied noting the revegetation areas will be completely devoid of native vegetation.
Future quality without revegetation	0	Without intensive revegetation there is expected to be minimal tangible change in the condition of the revegetation area.
Future quality with revegetation	5	Revegetation must be subject to a revegetation management plan, which must include site preparation, seeding / planting of black cockatoo foraging habitat, completion criteria, remedial actions, monitoring and reporting. This is expected to achieve moderate quality black cockatoo foraging habitat. This quality score also considered site context described under 'Quality (scale)' for the impact site.
Time until ecological benefit (years)	15	The benefits of revegetation are expected to be realised within 15 years, allowing foraging habitat to have matured enough to provide a black cockatoo foraging resource.
Confidence in revegetation result (%)	70	There is a relatively high level of confidence that a moderate quality of black cockatoo foraging habitat could be achieved, which accounts for general revegetation difficulties and risks.
Offset		
Description	Conservation of native vegetation within Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808)	An offset involving the conservation in perpetuity within adjacent vegetation in Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808) through the registration of a conservation memorial under the *Land Administration Act 1997*.
Proposed offset (area in hectares)	14.27	The area of native vegetation comprising black cockatoo foraging habitat that will be subject to the conservation memorial.
Current quality of offset site	7	The vegetation within the offset site is in the same condition (very good - except for the proposed revegetation area which has been considered under 'Step 2' of the offset calculation) and comprises the same vegetation type as the application area, therefore, the same value has been used as the application area.
Future quality WITHOUT offset	7	It is presumed that the offset area would remain of similar quality without specific improvement measures.

Calculation	Score (Area)	Rationale
Future quality WITH offset	7	The site is already in a very good condition (except for the proposed revegetation area which has been considered under 'Step 2' of the offset calculation), and no specific improvement measures to this high-quality habitat have been proposed or are required. Therefore, the future quality is likely to remain at a high level. The conservation benefit is derived from reducing the risk of future loss rather than improving habitat condition.
Time until ecological benefit (years)	1	Given no additional revegetation to the larger offset area is proposed (or required) the minimum value has been applied.
Confidence in offset result (%)	100	100% confidence applied noting the current quality vs future quality of the offset site is unlikely to change.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the offset site will be conserved in perpetuity.
Time until offset site secured (years)	1	It is expected the memorial can be executed within 12 months.
Risk of future loss WITHOUT offset (%)	30%	Noting the site is vested for gravel extraction and waste management the risk of future loss without an offset is low to moderate and attributed 30%.
Risk of future loss WITH offset (%)	10%	With the application of a conservation memorial over the offset area, the risk of future loss will be markedly reduced and therefore attributed 10%.

Offset calculation and justification for the significant residual impact to western ringtail possum habitat.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Western ringtail possum habitat	The application area comprises significant habitat for western ringtail possum.
Type of environmental value	Species (flora/fauna)	Habitat for western ringtail possum.
Conservation significance of environmental value	Rare/threatened species – Critically Endangered	Western ringtail possum is listed as Critically Endangered under the BC Act and EPBC Act.
Landscape level value impacted	Yes/No	Yes
Significant impact		
Description	Western ringtail possum	Proposed clearing of native vegetation considered significant habitat for western ringtail possum.
Significant impact (hectares)	2.56	The extent of proposed impact to high quality foraging habitat for Western ringtail possum is 2.56 hectares.
Quality (scale)	7	The application area includes 2.56 hectares of suitable habitat for western ringtail possum within the Warren Bioregion. The vegetation is in a very good condition. While the local area contains large areas of suitable habitat for this species, the application area contains high nutrient foliage availability for foraging, vegetation structure suitable for refuge and nesting,

Calculation	Score (Area)	Rationale
		and canopy continuity that facilitates movement and reduces exposure to predation. Although the species was not identified during a fauna survey of the application area, given the site characteristics set out above, the application area provides relatively high value habitat for western ringtail possum.
Rehabilitation credit		
Description	Revegetation of temporary cleared areas in offset site	Revegetation of the proposed borrow pit post extraction and the existing cleared extraction areas.
Proposed revegetation (area in hectares)	2.86	Revegetation of 2.86 hectares is proposed.
Current quality of revegetation site / Start number	0	A start quality of 0 has been applied noting the revegetation areas will be completely devoid of native vegetation.
Future quality without revegetation	0	Without intensive revegetation there is expected to be minimal tangible change in the condition of the revegetation area.
Future quality with revegetation	5	Revegetation must be subject to a revegetation management plan, which must include site preparation, seeding / planting of western ringtail possum habitat, completion criteria, remedial actions, monitoring and reporting. This is expected to achieve moderate quality western ringtail possum habitat. This quality score also considered site context described under 'Quality (scale)' for the impact site.
Time until ecological benefit (years)	15	The benefits of revegetation are expected to be realised within 15 years, allowing habitat to have matured enough to provide a foraging and refuge resource (canopy connectivity rather than hollows).
Confidence in revegetation result (%)	70	There is a relatively high level of confidence that a moderate quality of western ringtail possum habitat could be achieved, which accounts for general revegetation difficulties and risks.
Offset		
Description	Conservation of native vegetation within Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808)	An offset involving the conservation in perpetuity within adjacent vegetation in Lot 5011 on Deposited Plan 192309 (Crown Reserve 43808) through the registration of a conservation memorial under the *Land Administration Act 1997*.
Proposed offset (area in hectares)	14.27	The area of native vegetation comprising western ringtail possum habitat that will be subject to the conservation memorial.
Current quality of offset site	7	The vegetation within the offset site is in the same condition (very good - except for the proposed revegetation area which has been considered under 'Step 2' of the offset calculation) and comprises the same vegetation type as the application area, therefore, the same value has been used as the application area.
Future quality WITHOUT offset	7	It is presumed that the offset area would remain of similar quality without specific improvement measures.
Future quality WITH offset	7	The site is already in a very good condition (except for the proposed revegetation area which has been considered under

Calculation	Score (Area)	Rationale
		'Step 2' of the offset calculation), and no specific improvement measures to this high-quality habitat have been proposed or are required. Therefore, the future quality is likely to remain at a high level. The conservation benefit is derived from reducing the risk of future loss rather than improving habitat condition
Time until ecological benefit (years)	1	Given no additional revegetation to the larger offset area is proposed (or required) the minimum value has been applied.
Confidence in offset result (%)	100	100% confidence applied noting the current quality vs future quality of the offset site is unlikely to change.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the offset site will be conserved in perpetuity.
Time until offset site secured (years)	1	It is expected the memorial can be executed within 12 months.
Risk of future loss WITHOUT offset (%)	30%	Noting the site is vested for gravel extraction and waste management the risk of future loss without an offset is low to moderate and attributed 30%.
Risk of future loss WITH offset (%)	10%	With the application of a conservation memorial over the offset area, the risk of future loss will be markedly reduced and therefore attributed 10%.

Appendix E. Sources of information

E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- 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)
- 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)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)

- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

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