GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9344/1
Permit Holder:	Bunbury Water Corporation T/A Aqwest
Duration of Permit:	From 15/06/2025 to 15/06/2035

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of construction of a water resource recovery facility.

2. Land on which clearing is to be done

Lot 5262 on Deposited Plan 183085, Dalyellup

3. Clearing authorised

The permit holder must not clear more than 2.85 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 15 June 2030.

PART II – MANAGEMENT CONDITIONS

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

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

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

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

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

6. Weed and dieback management

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

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

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

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

7. Directional clearing

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

8. Fauna management – western ringtail possums

(a) In relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect that area immediately prior to, and for the duration of clearing activities, for the presence of western ringtail possum(s) (*Pseudocheirus occidentalis*).

(b) Clearing activities must cease in any area where fauna referred to in condition 8(a) are identified until either:

  (i) the western ringtail possum(s) individual has moved on from that area to adjoining *suitable habitat*; or
  (ii) the western ringtail possum(s) individual has been removed by a *western ringtail possum specialist*.

(c) Any western ringtail possum(s) individual removed in accordance with condition 8(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat*.

(d) Where fauna is identified under condition 8(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

  (i) the number of individuals identified;
  (ii) the date each individual was identified;
  (iii) the location where each individual was identified 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 number of individuals removed and relocated;
  (v) the relevant qualifications of the *western ringtail possum specialist* undertaking removal and relocation;
  (vi) the date each individual was removed;
  (vii) the method of removal;
  (viii) the date each individual was relocated;
  (ix) the location where each individual was relocated to, recorded using a GPS unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and
  (x) details pertaining to the circumstances of any death of, or injury sustained by, an individual.

9. Revegetation and rehabilitation – retention of vegetative material and topsoil

The permit holder must:

(a) retain the vegetative material and topsoil removed by *clearing* authorised under this permit and stockpile the vegetative material and topsoil in an area that has already been cleared;

(b) within two years following clearing authorised under this permit, *revegetate* and *rehabilitate* the area the area cross-hatched red in Figure 2 of Schedule 1 by:

(i) ripping the ground on the contour to remove soil compaction;

(ii) laying the vegetative material and topsoil retained under condition 9(a) on the cleared area(s);

(iii) undertake *weed* control activities on an 'as needed' basis to reduce *weed* cover within the cleared areas to no greater than the *weed* cover within the surrounding five metres of uncleared land; and

(iv) *planting* of species that provide *suitable habitat* for western ringtail possums

(c) The permit holder must within 18 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 9(b) of this permit:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area revegetated and rehabilitated; and

(ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 9(c)(i) of this permit will, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.

(d) If the determination made by the *environmental specialist* under condition 9(c)(ii) is that the species composition, structure, and density determined under condition 9(c)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation seeds that will result in a similar species composition, structure, and density of native vegetation to pre-clearing vegetation types in that area.

(e) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 9(d), the permit holder must repeat the activities required by condition 9(c) and 9(d) within 18 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

(f) Where a determination is made by an *environmental specialist* under condition 9(c)(ii) that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, that determination shall be submitted to the *CEO* within three months of the determination being made by the *environmental specialist*.

10. Wind erosion management

The permit holder must commence construction of the water resource recovery facility no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

PART III - RECORD KEEPING AND REPORTING

11. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 6; (g) actions undertaken in accordance with condition 7; (h) actions taken to manage and mitigate impacts to western ringtail possums in accordance with condition 8; and (i) actions undertaken in accordance with condition 10.
2.	In relation to revegetation and rehabilitation pursuant to condition 9.	(a) actions taken in accordance with condition 9(b) to *revegetate* and *rehabilitate* cleared areas; (b) the size of the area *revegetated* and *rehabilitated*; (c) the date(s) on which the area *revegetation* and *rehabilitation* was undertaken; (d) the boundaries of the area(s) *revegetated* and *rehabilitated* (recorded digitally as a shapefile).

12. Reporting

The permit holder must provide to the *CEO* the records required under condition 11 of

this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
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.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the CEO as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 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 who holds a valid 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 kilometres and the same IBRA subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from May to October for undertaking planting and seeding.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing *native vegetation* in order to improve the ecological function of that area.
revegetate / vegetated / revegetation	means the re-establishment of a cover of local provenance *native vegetation* in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

Term	Definition
suitable habitat (western ringtail possum)	means habitat known to support western ringtail possums (*Pseudocheirus occidentalis*) within the known current distribution of the species, typically characterised by abundant foliage, presence of suitable nesting structures such as tree hollows, as well as high canopy cover and continuity. Known habitat includes peppermint (*Agonis flexuosa*) dominated woodlands, jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests, riparian vegetation with a canopy of Bullich (*Eucalyptus megacarpa*) or flooded gum (*Eucalyptus rudis*), karri (*Eucalyptus diversicolor*) forests, sheoak (*Allocasuarina fraseriana*) dominated woodlands, and other stands of myrtaceous trees growing near swamps, watercourses or floodplains.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.
western ringtail possum specialist	means a *fauna specialist* who holds a tertiary qualification specialising in environmental science or equivalent, has a minimum of two years of work experience in western ringtail possum (*Pseudocheirus occidentalis*) identification, surveys of western ringtail possums and capture and handling of western ringtail possums, and holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.

END OF CONDITIONS

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Date: 2025.05.23 12:24:16 +08'00'

Caitlin Conway
A/MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20 of the Environmental Protection Act 1986

23 May 2025

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

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

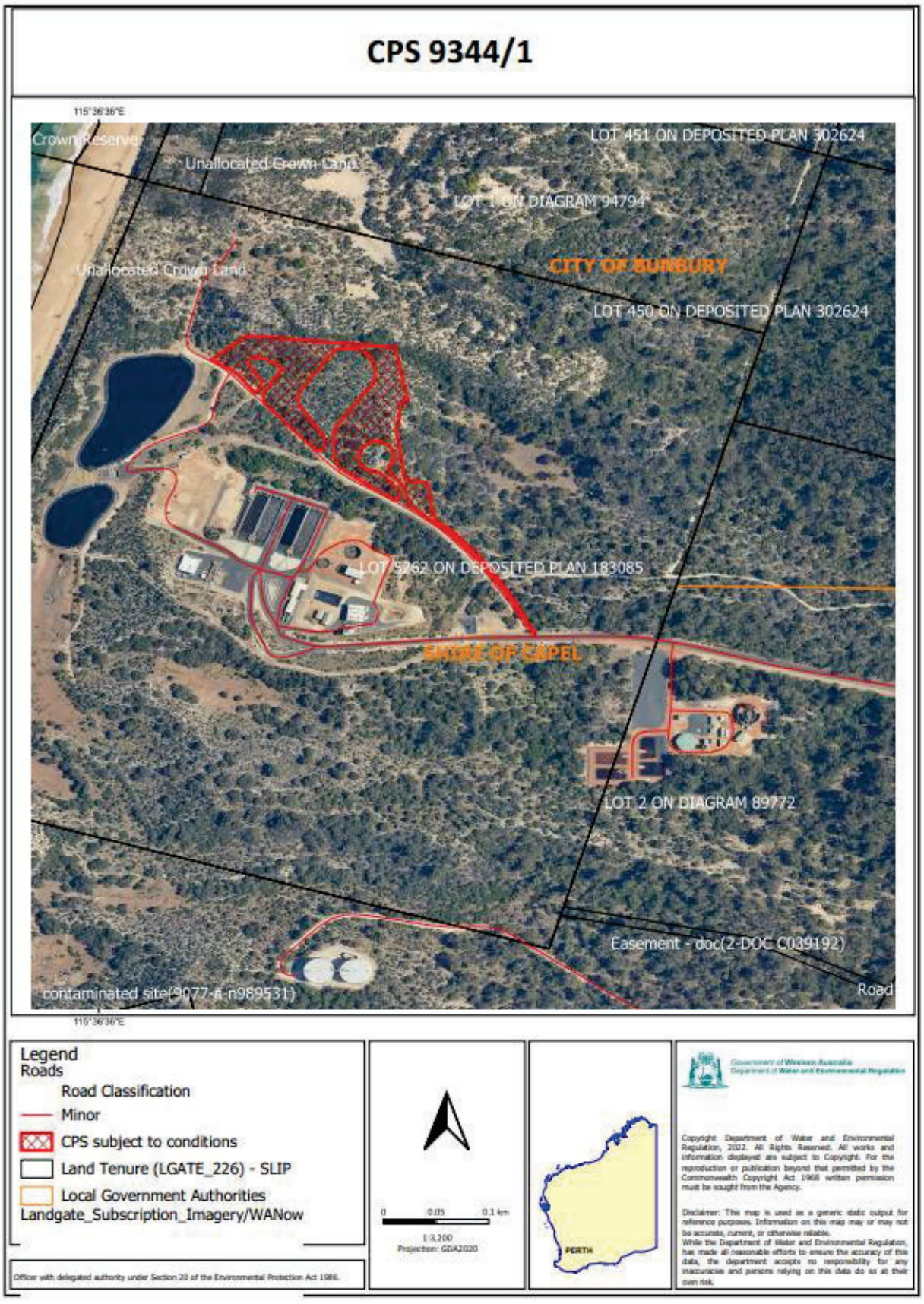

Figure 2: Map of the boundary of the area within which conditions apply

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 9344/1
Permit type:	Purpose permit
Applicant name:	Bunbury Water Corporation, T/A Aqwest
Application received:	29 June 2021
Application area:	2.85 hectares of native vegetation
Purpose of clearing:	For the construction of a water resource recovery facility to supply recycled wastewater to irrigate public open spaces and major infrastructure projects.
Method of clearing:	Mechanical removal
Property:	Lot 5262 on Deposited Plan 183085
Location (LGA area/s):	Shire of Capel
Localities (suburb/s):	Dalyellup

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous 2.85 hectare area (see Figure 1, Section 1.5).

The proposed clearing is for the purpose of constructing a water resource recovery facility to supply recycled wastewater to irrigate public open spaces and major infrastructure projects. Of the area proposed to be cleared, approximately 0.97 hectares will only be temporarily cleared to allow works to occur, with 1.45 hectares being permanently cleared. The applicant does not plan to clear the remaining 0.42 hectares within the application area, however, incidental temporary clearing in this area may occur.

1.3. Decision on application

Decision:	Granted
Decision date:	23 May 2025
Decision area:	2.85 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix G.1), the findings of flora and fauna surveys (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing:

- will result in the loss of 0.95 hectares of secondary habitat for western ringtail possums, of which 0.38 hectares is a permanent loss;
- will result in the loss of 2.42 hectares of vegetation, of which 1.45 hectares is a permanent loss, that may provide habitat for quokka, Coastal Plains skink, quenda, Swan Coastal Plain shield-backed trapdoor spider, quenda, western brush wallaby and Peregrine falcon;
- will result in the loss of 0.36 hectares of vegetation (of which 0.08 hectares is a permanent loss) of a patch of Tuart PEC/TEC in Very Good to Excellent condition but not containing any tuart trees, and an additional 0.54 hectares of native vegetation (of which 0.18 hectares is a permanent loss) in predominantly Very Good to Excellent condition that should preferably be retained as a buffer for this species.
- will result in the loss of 2.42 hectares of vegetation (of which 1.45 hectares is a permanent loss) associated with a South West Regional Ecological Linkage line;
- is unlikely to result in significant wind erosion, water erosion and phosphorus export in the long term, and that wind erosion management conditions will further decrease the risk of wind erosion during clearing.

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

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

- avoid, minimise to reduce the impacts and extent of clearing;
- weed and dieback control conditions to minimise impacts to the Tuart TEC/PEC and vegetation associated with a South West Regional Ecological Linkage line;
- Western ringtail possum (WRP) management conditions to mitigate impacts to WRP individuals;
- directional clearing to minimise impacts to fauna species;
- rehabilitation of areas of temporary clearing (shown in Figure 2 below) to reinstate fauna habitat, the Tuart TEC/PEC and associated buffer vegetation and vegetation associated with a South West Regional Ecological Linkage line; and
- wind erosion management conditions.

1.5. Site map

Figure 1. Map of the application area. The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

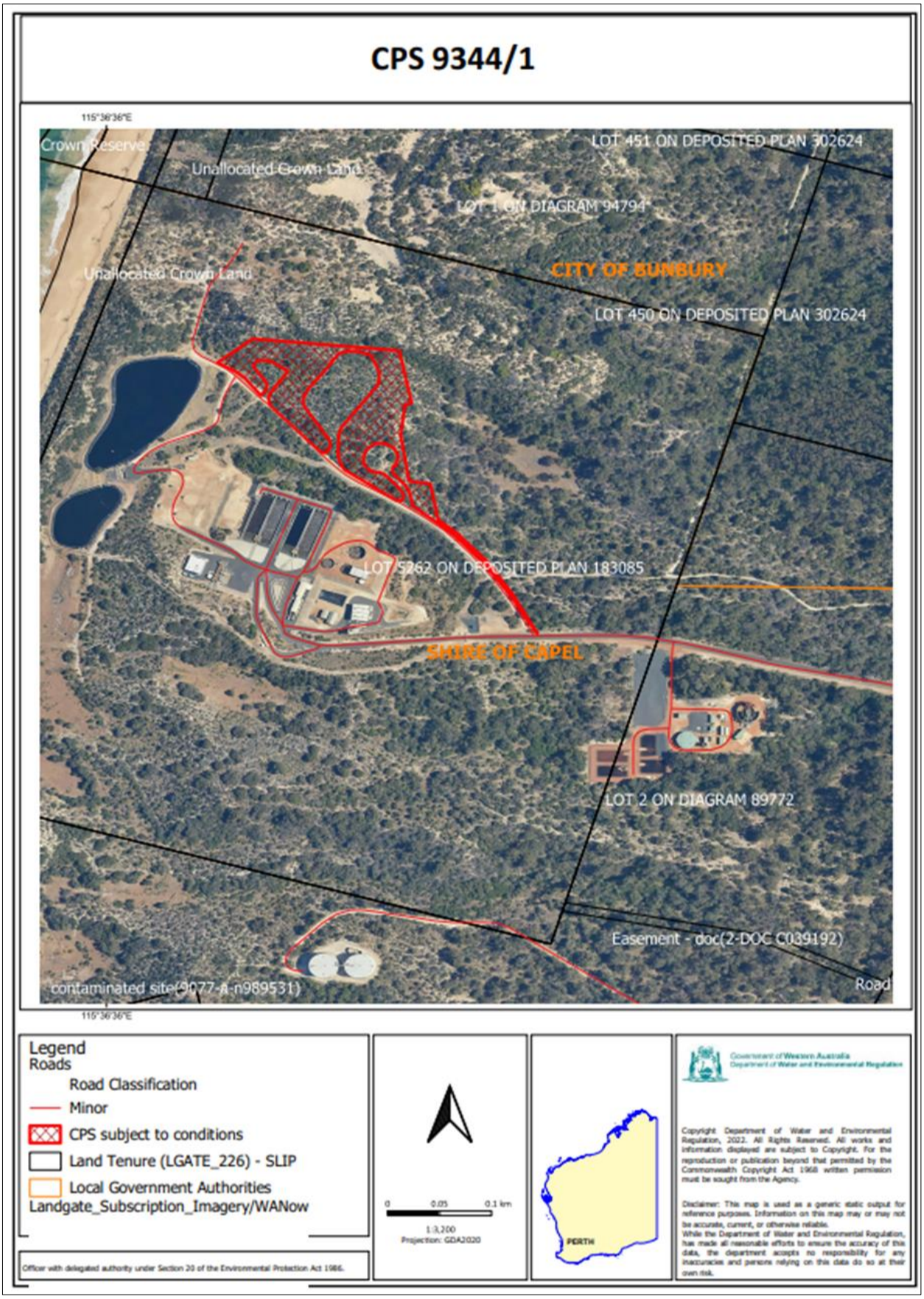

Figure 2. Map of areas subject to conditions (cross-hatched red).

2 Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

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

Other legislation of relevance for this assessment include:

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

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant initially submitted the following evidence that avoidance and minimisation efforts had been undertaken (Aqwest, 2021):

- Avoidance of native vegetation clearing was a key consideration in the preparation and planning of the proposal alignment and infrastructure areas. Several site and layout options were explored, with the pipe route and infrastructure footprint with the lowest potential to impact on environmental factors selected as the preferred, following biological surveys and consultation with Department of Biodiversity Conservation and Attractions (DBCA) amongst other stakeholders.
- The area proposed to be cleared has been designed to entirely avoid any direct and indirect impact to the core habitat type Tuart/Peppermint woodland, and all locations where WRP were recorded. The design also minimises impacting areas of Peppermint on scrubland on dunes habitat, with the majority of the footprint located on Coastal low open heath habitat, which was classified as not suitable habitat for the species. Existing roads will be utilised to transport construction equipment to the site. The location of the Plant is not considered likely to significantly impact the WRP population recorded 100 metres to the east and south of the Plant.
- In addition to the strategic location of the Plant, the potential for impact to WRP will be further minimised and mitigated through the following clearing and construction management controls:
    - Minimising the potential clearing footprint during the final design of the Plant
    - Utilising staged directional clearing to direct displaced native fauna to surrounding vegetation
    - Machinery hygiene measures to prevent introduction of pathogens
    - Allowing areas of temporary clearing to return to previous condition or be revegetated
    - Applying relevant operation controls as required to the constructed plant to prevent impact to surrounding fauna habitat.
- The area proposed to be cleared and the Plant design has been specifically modified to avoid and minimise the risk of impacts to the Tuart TEC vegetation. As discussed, the NVCP application area has been designed to completely avoid directly impacting Tuart TEC vegetation. Design changes have been undertaken to increase the separation between the Tuart TEC and potential infrastructure footprints to a setback of at least 17 metres. In addition, design changes have been undertaken to better utilise the topography of the site to further avoid and minimise the risk of impacts to the Tuart TEC vegetation. The site consists of a moderately sloped west facing vegetated dune, with a defined north-south running ridge and a steeper east facing slope dropping into a dune swale. The Tuart TEC vegetation is restricted to the east facing slope and the more sheltered dune swale. The infrastructure footprint has been designed to cover only the west facing hill face.

Through this design, the risk of water borne erosion, sediments, weed seeds or soil pathogens entering the Tuart TEC vegetation is greatly decreased.

- Impacts to the Tuart TEC vegetation will be avoided or minimised through a number of means including:
    - Preventing clearing of Tuart TEC vegetation through site demarcation on relevant drawings provided to the construction contractor, clear communication of the extent of clearing areas and clear marking on site before commencement of works
    - Utilising design and the topography of the site to separate clearing areas from Tuart TEC vegetation. By ensuring all works are restricted to the west side of the ridge, surface water flows will be directed away from the Tuart TEC vegetation
    - Avoidance of impacts to Tuart tree rootzone through designing setback from canopy and undertaking excavations at a distance from trees
    - Local infiltration of storm water on site via vegetated swales or seep drains to maintain water balance dynamics of dune and rear dune swale associated with Tuart vegetation
    - Prevention of introduction and/or spread of dieback or other soil pathogens in the Tuart TEC through avoidance of clearing or construction in areas up gradient from Tuart TEC vegetation. Construction and operation hygiene controls will be implemented to reduce risk of introduction of soil pathogens
    - Avoiding fire impacting the Tuart TEC adjacent to the Plant construction through implementation of construction fire risk controls.
    - Revegetation through natural regeneration or replanting of cleared areas not required for permanent infrastructure e.g. batter slopes from cut and fill and buried pipelines
- Preventing and if required treating the introduction and/or spread of weeds including Declared Plants and Weeds of National Significance (WoNS) in the NVCP application area. No Declared or WoNS species were recorded as occurring in the NVCP application area at the time of survey.
- A Construction Environmental Management Plan will be prepared to address issues such as erosion, and ASS management, designed to manage/ minimise, amongst other aspects, land degradation.

Following an initial assessment, DWER advised the applicant that, given the potential impacts from the proposed clearing to the Tuart TEC patch and western ringtail possum habitat, additional evidence of avoidance and minimisation efforts was required. In response to this, the applicant explained that 0.97 hectares out of the total application area would only be temporarily cleared and following construction would be revegetated or allowed to return to native vegetation, and that much of the Tuart TEC (and associated buffer vegetation) and western ringtail possum habitat would only be temporarily cleared (refer to Sections 3.2.1 and 3.2.2 for further information) (GHD, 2022). The applicant committed to rehabilitation of all temporarily cleared areas as a condition of the permit. Based on the above, the Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

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

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

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

Assessment

Noting the habitat requirements of the recorded species and surveyed vegetation type, the impacts of the clearing on the following conservation significant fauna species required further consideration:

- *Pseudocheirus occidentalis* (Western Ringtail Possum) (Threatened);
- *Setonix branchyurus* (quokka) (Threatened);
- *Calyptorhynchus baudinii* (Baudin's cockatoo) (Threatened);

- *Calyptorhynchus latirostris* (Carnaby's cockatoo) (Threatened);
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (Threatened);
- *Idiosoma sigillatum* (Swan Coastal plain shield-backed trapdoor spider) (Priority 3);
- *Ctenotus ora* (Coastal Plains skink) (Priority 3);
- *Notamacropus Irma* (western brush wallaby) (Priority 4);
- *Isoodon fusciventer* (quenda, southwestern brown bandicoot) (Priority 4)
- *Phascogale tapoatafe wambenger* (South-western brush tailed phascogale, wambenger) (Conservation Dependent); and
- *Falco peregrinus (*Peregrine falcon) (Other Specially Protected).

The western ringtail possum (WRP) spends most of its time in trees, particularly in the canopy of *Agonis flexuosa* (peppermint tree) woodlands and eucalypt forests. WRP feed on leaves and will forage for food at night as they are nocturnal, they build nests called 'dreys' from foliage and use tree hollows (DPaW, 2014). Although fauna surveys did not record any WRP, or core habitat for WRP, within the application area, the 0.95 hectares of Peppermint on scrubland on dunes habitat present within the application area may provide secondary habitat for WRP (Biota Environmental Services, 2021). It is considered possible that WRP may use this vegetation as transitory, for dispersing or used on occasional basis. It is also noted that of this 0.95 hectares, only 0.38 hectares will be permanently cleared, with the remainder either going to be rehabilitated (as conditioned on the permit) or not cleared. Given the above, the impact of the proposed clearing to WRP habitat is unlikely to be significant. The applicant has committed to inspecting trees for WRP prior to clearing and relocating any individuals found to mitigate impacts to WRP individuals. Conditions on the permit requiring clearing to take place in a directional manner will minimise impacts to any WRP individuals present.

Quokkas may utilise coastal shrubland as habitat (Hayward, 2005), and as such the application may provide suitable habitat for quokkas. However, noting that the application area is outside current defined quokka sub-populations (Department of Environment and Conservation, 2013), the relatively small extent of the proposed clearing in the context of the surrounding vegetation, and the applicant's commitments to rehabilitate areas of temporary clearing the proposed clearing is unlikely to have significant impacts on quokka habitat. Conditions on the permit requiring clearing to take place in a directional manner will minimise impacts to any quokka individuals present.

While a fauna survey recorded a brush-tailed phascogale 1.4 kilometres east of the application area, it was recorded in habitat classed as Tuart Peppermint woodland, a habitat type not recorded within the application area. Brush-tailed phascogales tend in inhabit dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover. Noting the absence of large or hollow-bearing *Eucalyptus* trees within the application area, it is considered unlikely that brush-tailed phascogales would inhabit vegetation within the application area. Conditions on the permit requiring clearing to take place in a directional manner will minimise impacts to any brush tailed phascogale individuals present.

The application area is also within the known distribution of Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo (collectively referred to as black cockatoos). While habitat requirements for the three species of black cockatoos are different, the requirements in general can be categorised as breeding habitat, foraging habitat and night roosting habitat. Suitable breeding habitat for black cockatoos includes trees (typically *Corymbia calophylla* (marri) or certain *Eucalyptus* species) which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (Commonwealth of Australia, 2012). A fauna survey did not identify any black cockatoo breeding trees within the application area (Biota Environmental Services, 2021) and given the vegetation type present within the application area, the application area is also unlikely to provide breeding habitat in the future. Noting that typical food resources (predominantly certain *Eucalyptus*, proteaceous and *Allocasuarina* species (Commonwealth of Australia, 2012)) and roosting habitat (predominantly large *Eucalyptus* trees (Commonwealth of Australia, 2012)) are not present within the application area (GHD, 2021), the application area is also considered unlikely to provide foraging or roosting habitat for black cockatoo species.

The application area may also provide habitat for the Coastal Plains skink, quenda, Swan Coastal Plain shield-backed trapdoor spider, quenda, western brush wallaby and Peregrine falcon (Biota Environmental Services, 2021). However, given the relatively small amount of clearing in the context of the surrounding vegetation and the relatively large ranges of these species, as well as the applicant's commitment to rehabilitate areas of temporary clearing, the proposed clearing is unlikely to have a significant impact upon these species. Conditions on the permit requiring clearing to take place in a directional manner will also minimise impacts to individuals of the above species if present.

Conclusion

Based on the above assessment, the proposed clearing will result in in the loss of 0.95 hectares of secondary habitat for western ringtail possums, of which 0.38 hectares is a permanent loss, and 2.42 hectares of vegetation, of which

1.45 hectares is a permanent loss, that may provide habitat for quokka, Coastal Plains skink, quenda, Swan Coastal Plain shield-backed trapdoor spider, quenda, western brush wallaby and Peregrine falcon.

For the reasons set out above, it is considered that the impacts of the proposed clearing on western ringtail possums and the remnant vegetation can be managed by taking steps to minimise the risk of the introduction and spread of weeds and dieback, allow fauna to move on into adjacent vegetation, manage western ringtail possums and rehabilitate areas of temporary clearing to ensure habitat and fragmentation of vegetation remnants are mitigated.

Conditions

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

- Western ringtail possum (WRP) management conditions to mitigate impacts to WRP individuals;
- Directional clearing to minimise impacts to fauna species;
- Weed and dieback control conditions to minimise impacts to the remnant vegetation; and
- Rehabilitation of areas of temporary clearing to reinstate fauna habitat.

3.2.2. Ecological communities - Clearing Principles (a)

Assessment

A flora survey (GHD, 2021) identified patches of vegetation immediately east of the application area that are consistent with the Quindalup *Eucalyptus gomphocephala* and / or *Agonis flexuosa* woodlands (community type 30b) Priority 3 ecological community and the Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain state listed Priority 3 ecological community and federally listed threatened ecological community (Tuart PEC/TEC) (GHD, 2021). The Tuart TEC Approved Conservation Advice defines a patch of the Tuart TEC as extending 30 metres beyond the outer canopy of the established tuart trees (Department of the Environment and Energy, 2019). Taking this into account, the clearing footprint intersects a total of 0.54 hectares of the federally listed Tuart TEC, and therefore also the state listed PEC (DBCA, 2021). However, 0.18 hectares of this has already been cleared, leaving only 0.36 hectares of existing Tuart TEC/PEC vegetation, which is in Very Good to Excellent condition, within the clearing footprint (GHD, 2021).

It is noted that no tuart trees are inside the clearing footprint and that areas of the tuart TEC patch within the clearing footprint are upslope from the actual tuart trees (Aqwest, 2021). It is also noted that of the tuart TEC/PEC vegetation within the clearing footprint, only 0.08 hectares will remain cleared after the works, with the remainder to either be cleared and rehabilitated, or not planned to be cleared. This will be enforced through a condition on the permit.

The Tuart TEC Approved Conservation Advice also recommends that a vegetated buffer of at least 30 metres beyond the TEC should be retained (Department of the Environment and Energy, 2019). As such, the application area contains approximately 0.69 hectares of vegetation (beyond the Tuart TEC patch boundary) that should be retained as a buffer according to the Approved Conservation Advice. Of this, 0.15 hectares has already been cleared, leaving only 0.54 hectares of vegetation acting as a Tuart TEC/PEC buffer, which is in Very Good to Excellent condition, within the clearing footprint (GHD, 2021). It is also noted that of this, only 0.18 hectares will remain cleared after the works, with the remainder to either be cleared and rehabilitated, or not planned to be cleared. This will be enforced through a condition on the permit.

While it is anticipated that the rehabilitated areas of Tuart TEC/PEC and its buffer vegetation are likely to be of lower quality than the vegetation cleared, the applicant has committed to a condition on the permit to undertake weed control activities on an ‘as needed’ basis to reduce weed cover within the cleared areas to no greater than the weed cover within the surrounding five metres of uncleared land. This, as well as standard weed and dieback control conditions on the permit, will ensure impacts from weeds and dieback to the remaining areas of Tuart TEC patch are minimised.

The rehabilitation and weed control measures conditioned on the permit will also ensure that impacts of the clearing to the adjacent Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands (community type 30b) Priority 3 ecological community are not significant.

Conclusion

The preliminary assessment has identified that the proposed clearing will remove 0.36 hectares of vegetation (of which 0.08 will remain cleared after the works) of a patch of Tuart PEC/TEC in Very Good to Excellent condition, and an additional 0.54 hectares of native vegetation (of which 0.18 hectares will remain cleared after the works) in predominantly Very Good to Excellent condition that should preferably retained as a buffer for this species.

Conditions

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

- Rehabilitation of areas of temporary clearing to reinstate the Tuart TEC/PEC and associated buffer vegetation; and
- Weed and dieback control conditions to minimise impacts to the Tuart TEC/PEC.

3.2.3. Ecological linkage - Clearing Principle (e)

Assessment

The application area is within a patch of vegetation associated with a South West Regional Ecological Linkage line. Patches within these linkages are the highest level of conservation significance for maintaining the environmental function of local and regional linkages (Molloy et al., 2009). Although the proposed clearing area represents a small portion of the tract of vegetation associated with this linkage and the proposed clearing will not sever this linkage, the clearing has the potential to impact upon adjacent vegetation within the linkage through the introduction and spread of weeds. Conditions requiring the applicant to rehabilitate temporarily cleared areas within the clearing footprint and undertake weed and dieback management will ensure that impacts to this linkage are unlikely to be significant.

Conclusion

The preliminary assessment has identified that the proposed clearing will remove vegetation associated with a South West Regional Ecological Linkage line, however management measures conditioned on the permit will ensure that impacts to this linkage are unlikely to be significant.

Conditions

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

- Rehabilitation of areas of temporary clearing to reinstate fauna habitat; and
- Weed and dieback control conditions.

3.2.4. Land degradation - Clearing Principle (h)

Assessment

Soils within the majority of the application area are moderately susceptible to wind erosion, water erosion and phosphorus export. Noting that, following construction, the application area will consist of either hardstand surfaces associated with the water resource recovery facility or native vegetation (considering the applicant has committed to rehabilitating all temporarily cleared areas), wind erosion, water erosion and phosphorus export impacts are unlikely to be significant. A condition requiring the applicant to commence construction activities within three months of undertaking clearing will minimise risks of wind erosion,

Conclusion

The preliminary assessment has identified that the proposed clearing is unlikely to result in significant wind erosion, water erosion and phosphorus export in the long term, and that wind erosion management conditions will further decrease the risk of wind erosion during clearing.

Conditions

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

- Wind erosion management conditions.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Works approval issued under Part V Division 3 of the EP Act.

A works approval (W6637/2022/1) under Part V Division 3 of the EP Act was granted to the applicant in April 2025, allowing the applicant to treat and discharge sewage subject to conditions.

The construction of the water resource recovery facility was referred to the former Australian Department of Agriculture, Water and the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC ref 2021/8986). On 3 August 2021, the proposed action was deemed not to be a controlled action.

The Shire of Capel advised DWER that local government approvals are not required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme (2022). The Shire registered a numbered of comments to the proposed clearing, namely

- Clearing is proposed within 150m from the coast where there may be a risk of future erosion. A Coastal Hazard Risk Management and Adaption Plan (CHRMAP) is in the early stages of being prepared for the Shire of Capel. The CHRMAP is proposed to be finalised by mid to late 2022 that may provide further guidance on the potential impact and risk of clearing.
- If the application is approved, the Shire of Capel requests that seed from vegetation that is cleared be collected and used to grow native plants for rehabilitation projects.

A portion of the application area falls within the Bunbury Water Reserve Priority 3 Public Drinking Water Source Area gazetted under the *Country Areas Water Supply Act 1947*. DWER advised that they have no concerns regarding this proposal, but noted that best management practices for preventing and remediating spills or leaks from vehicles and machinery are recommended (DWER, 2021). DWER noted that the site is outside any wellhead protection zones and there is some level of natural protection for the water source as the site is down-gradient from the nearest Water Corporation bore, which abstracts water from a semi-confined aquifer at considerable depth.

The application area is within an area classed as Possible contaminated – investigation required under the *Contaminated Sites Act 2003.* Contamination identified at this site is present at the locations of two former emergency infiltration ponds located to the south-west of the current Wastewater Treatment Plant (south of the existing balance ponds) (DWER 2021). A contamination assessment carried out in 2017 found elevated concentrations of zinc and copper in surface soils in the base of the former ponds. Groundwater beneath the site is impacted with elevated nickel, ammonia and perfluoroalkyl and polyfluoroalkyl substances (PFAS). The application area does not intersect with any of the known areas of contamination at the site and therefore, DWER has no objection to the proposed clearing and advises that, should the clearing be approved, no specific management will be required in relation to contamination.

No Aboriginal Sites of Significance have been mapped within the local 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.

End

Appendix A. Additional information provided by applicant

The applicant provided the following additional information during the assessment of this application

Summary of comments	Consideration of comment
Applicant provided additional evidence of avoidance and minimisation efforts (Aqwest, 2022 and GHD, 2022) in response to a request from DWER	Considered in Section 3.1

Appendix B. Public submissions

Summary of comments	Consideration of comment
The submitter (Submission, 2021) strongly objects to the clearing permit application on the grounds that the odour buffer area for the Bunbury/Dalyellup Waste Water Treatment Plant (WWTP), as specified in the Greater Bunbury Regional Scheme (GBRS), cannot be regarded as appropriate, since it contravened the State Industrial Buffer Policy when it was established. The proposed vegetation removal will further affect odour buffer requirements. The submitter is of the view that any native clearing permit must be referred to the Environmental Protection Authority (EPA) as a 'significant proposal' under the Environmental Protection Act, and the permit be denied until an appropriate odour modelling study that justifies the current WWTP odour buffer is conducted and approved by the EPA.	Odour impacts were be considered in the assessment of the granted works approval (discussed in Section 3.3).

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The application area is part of a 490 hectare tract of native vegetation in the intensive land use zone of Western Australia. This tract of vegetation contains some cleared areas, including tracks, and surrounds the Bunbury Wastewater treatment plant. The clearing footprint is surrounded by native vegetation to the northwest, north and east, a constructed pond to the west, and a band of native vegetation and then a wastewater treatment plant to the south. Aerial imagery indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 33 per cent of pre-European native vegetation cover.
Ecological linkage	There is a South West Regional Ecological Linkage mapped within 100 metres of the application area. Patches within these linkages are the highest level of conservation significance for maintaining the environmental function of local and regional linkages (Molloy et al., 2009).
Conservation areas	The application area does not occur within a conservation area. The nearest conservation area is an unmanaged reserve within 2.3 kilometres of the application area and a total of 69 conservation areas within the local area (10-kilometres).
Vegetation description	Vegetation survey (GHD, 2021) indicates the vegetation within the application area consists of: • 2.17 hectares - *Agonis flexuosa* (Peppermint) low open woodland over *Spyridium glubulosum, Alyxia buxifolia, Acacia cochlearis* tall shrubland;

Characteristic	Details
	• 0.67 hectares – Roads and tracks, cleared road verge (sometimes with planted trees), pasture and parkland The full survey descriptions and maps are available in Appendix F. This is consistent with the mapped vegetation type: • Quindalup Complex, which is described as Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata* (Rottnest Teatree) - *Callitris preissii* (Rottnest Island Pine), the closed scrub of *Acacia rostellifera* (Summer-scented Wattle) and the low closed *Agonis flexuosa* (Peppermint) forest of Geographe Bay. (Heddle et al, 1980) The mapped vegetation type retains approximately 60.49 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	The vegetation survey (GHD, 2021) indicates the vegetation within the application area is in predominantly Very Good condition with areas in Excellent, Good, Degraded and Completely Degraded condition (Keighery, 1994) condition, described as: • Excellent (0.39 hectares) - Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species. • Very Good (1.73 hectares) - 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 (0.04 hectares) - 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 (0.01 hectares) - 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 (0.67 hectares) - The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs. The full Keighery (1994) condition rating scale is provided in Appendix E. The full survey descriptions and mapping are available in Appendix F.
Climate	Rainfall - 800 millimetres Evapotranspiration - 800 millimetres
Topography	Elevation within the application area ranges from 10 metres AHD in the western corner to 45 metres AHD along the eastern boundary of the main portion of the clearing footprint.
Soil description	The soil is mapped as 211Qu system, with three phases mapped within the application area: • Majority of application area:

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>

Quindalup South Qp2 Phase (211Qu__Qp2), described as long walled discrete parabolic dunes with moderate to steep slopes and uniform calcareous sands showing variable depths of surface darkening; and

Northeastern corner of application area:

Quindalup South Qb Phase (211Qu__Qb), described as actively eroding, poorly vegetated, blowout with rim and bowl (parabolic) morphology, calcerous sands;

Western portion of application area:

Quindalup South Sewerage farm Phase (211QuX_SEWERAGE), described as sewerage farm (DPIRD, 2019).

</td></tr>
<tr><td>Land degradation risk</td><td>
Land Qualities summary - % 211Qu_Qb (column 1 most limiting, 4 least)
<table>
<tr><th>o</th><th>C</th><th>C1</th><th>C2</th><th>C3</th><th>C4</th></tr>
<tr><td>1</td><td>pH</td><td></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>0-10 acidity</td><td>very strongly acid: 0 %</td><td>strongly acid: 0 %</td><td></td><td></td></tr>
<tr><td>1</td><td>0-10 alkalinity</td><td>strongly alkaline: 0 %</td><td>alkaline: 100 %</td><td></td><td></td></tr>
<tr><td>1</td><td>50-80 acidity</td><td>very strongly acid: 0 %</td><td>strongly acid: 0 %</td><td></td><td></td></tr>
<tr><td>1</td><td>50-80 alkalinity</td><td>strongly alkaline: 0 %</td><td>alkaline: 100 %</td><td></td><td></td></tr>
<tr><td>1</td><td>acidification risk</td><td>presently acid: 0 %</td><td>high: 0 %</td><td>moderate: 0 %</td><td>low: 100 %</td></tr>
<tr><td>2</td><td>SALINITY</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>salinity risk</td><td>presently saline: 0 %</td><td>high: 0 %</td><td>moderate: 0 %</td><td>nil or partial: 100 %</td></tr>
<tr><td>2</td><td>surface salinity</td><td>extreme: 0 %</td><td>high: 0 %</td><td>moderate: 0 %</td><td>slight to nil: 100 %</td></tr>
<tr><td>3</td><td>SOME PLANT LIMITS</td><td></td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>rooting depth</td><td>very shallow: 0 %</td><td>shallow: 0 %</td><td>moderately shallow: 0 %</td><td>v deep to moderate: 100 %</td></tr>
<tr><td>3</td><td>sub surface compact</td><td>high: 0 %</td><td>moderate: 100 %</td><td>low: 0 %</td><td></td></tr>
<tr><td>3</td><td>water repel</td><td>high: 100 %</td><td>moderate: 0 %</td><td>low: 0 %</td><td>nil: 0 %</td></tr>
<tr><td>3</td><td>water storage</td><td>extremely low: 100 %</td><td>very low: 0 %</td><td>low: 0 %</td><td>high to moderate: 0 %</td></tr>
<tr><td>4</td><td>EROSION</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>flood risk</td><td>high: 0 %</td><td>moderate: 0 %</td><td>low: 0 %</td><td>low: 100 %</td></tr>
<tr><td>4</td><td>instability</td><td>high: 95 %</td><td>moderate: 0 %</td><td>low: 0 %</td><td>nil to very low: 5 %</td></tr>
<tr><td>4</td><td>water erosion</td><td>extreme; 0 %</td><td>very high: 100 %</td><td>high: 0 %</td><td>nil to moderate: 0 %</td></tr>
<tr><td>4</td><td>wind erosion</td><td>extreme; 95 %</td><td>very high: 0 %</td><td>high: 0 %</td><td>nil to moderate: 5 %</td></tr>
<tr><td>5</td><td>WATER & DRAINAGE</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>site drainage</td><td>very poor: 0 %</td><td>poor: 0 %</td><td>moderate: 0 %</td><td>high: 100 %</td></tr>
<tr><td>5</td><td>waterlogging</td><td>very high: 0 %</td><td>high: 0 %</td><td>moderate: 0 %</td><td>nil to low: 100 %</td></tr>
<tr><td>6</td><td>OTHER QUALITIES</td><td></td><td></td><td></td><td></td></tr>
<tr><td>6</td><td>excavation ease</td><td>very low: 5 %</td><td>low: 0 %</td><td>moderate: 95 %</td><td>high: 0 %</td></tr>
<tr><td>6</td><td>microbial purification</td><td>very low: 100 %</td><td>low: 0 %</td><td>moderate: 0 %</td><td>high: 0 %</td></tr>
<tr><td>6</td><td>phosphorus loss</td><td>extreme: 0 %</td><td>very high: 100 %</td><td>high: 0 %</td><td>nil to moderate: 0 %</td></tr>
</table>
</td></tr>
</table>

Characteristic	Details

Land Qualities summary - 211Qu_Qp2 Map Unit (column 1 most limiting, 4 least)

o	C	C1	C2	C3	C4
1	pH				
1	0-10 acidity	very strongly acid: 0 %	strongly acid: 0 %		
1	0-10 alkalinity	strongly alkaline: 0 %	alkaline: 85 %		
1	50-80 acidity	very strongly acid: 0 %	strongly acid: 0 %		
1	50-80 alkalinity	strongly alkaline: 0 %	alkaline: 100 %		
1	acidification risk	presently acid: 0 %	high: 0 %	moderate: 0 %	low: 100 %
2	SALINITY				
2	salinity risk	presently saline: 0 %	high: 0 %	moderate: 0 %	nil or partial: 100 %
2	surface salinity	extreme: 0 %	high: 0 %	moderate: 0 %	slight to nil: 100 %
3	SOME PLANT LIMITS				
3	rooting depth	very shallow: 0 %	shallow: 5 %	moderately shallow: 10 %	v deep to moderate: 85 %
3	sub surface compact	high: 0 %	moderate: 100 %	low: 0 %	
3	water repel	high: 85 %	moderate: 15 %	low: 0 %	nil: 0 %
3	water storage	extremely low: 90 %	very low: 10 %	low: 0 %	high to moderate: 0 %
4	EROSION				
4	flood risk	high: 0 %	moderate: 0 %	low: 0 %	low: 100 %
4	instability	high: 5 %	moderate: 0 %	low: 5 %	nil to very low: 90 %
4	water erosion	extreme; 5 %	very high: 30 %	high: 15 %	nil to moderate: 50 %
4	wind erosion	extreme; 10 %	very high: 5 %	high: 25 %	nil to moderate: 60 %
5	WATER & DRAINAGE				
5	site drainage	very poor: 0 %	poor: 0 %	moderate: 0 %	high: 100 %
5	waterlogging	very high: 0 %	high: 0 %	moderate: 0 %	nil to low: 100 %
6	OTHER QUALITIES				
6	excavation ease	very low: 35 %	low: 0 %	moderate: 25 %	high: 40 %
6	microbial purification	very low: 85 %	low: 15 %	moderate: 0 %	high: 0 %
6	phosphorus loss	extreme: 5 %	very high: 30 %	high: 15 %	nil to moderate: 50 %

Land Qualities summary - 211QuX_SEWARAGE Map Unit (column 1 most limiting, 4 least)

o	C	C1	C2	C3	C4
1	pH				
1	0-10 acidity	very strongly acid: 0 %	strongly acid: 0 %		
1	0-10 alkalinity	strongly alkaline: 0 %	alkaline: 0 %		
1	50-80 acidity	very strongly acid: 0 %	strongly acid: 0 %		
1	50-80 alkalinity	strongly alkaline: 0 %	alkaline: 0 %		

Characteristic	Details					
	1	acidification risk	presently acid: 0 %	high: 0 %	moderate: 0 %	low: 100 %
	2	SALINITY				
	2	salinity risk	presently saline: 0 %	high: 0 %	moderate: 0 %	nil or partial: 100 %
	2	surface salinity	extreme: 0 %	high: 0 %	moderate: 0 %	slight to nil: 100 %
	3	SOME PLANT LIMITS				
	3	rooting depth	very shallow: 0 %	shallow: 0 %	moderately shallow: 0 %	v deep to moderate: 100 %
	3	sub surface compact	high: 0 %	moderate: 0 %	low: 100 %	
	3	water repel	high: 0 %	moderate: 0 %	low: 0 %	nil: 100 %
	3	water storage	extremely low: 0 %	very low: 0 %	low: 0 %	high to moderate: 100 %
	4	EROSION				
	4	flood risk	high: 0 %	moderate: 0 %	low: 0 %	low: 100 %
	4	instability	high: 0 %	moderate: 0 %	low: 0 %	nil to very low: 100 %
	4	water erosion	extreme; 0 %	very high: 0 %	high: 0 %	nil to moderate: 100 %
	4	wind erosion	extreme; 0 %	very high: 0 %	high: 0 %	nil to moderate: 100 %
	5	WATER & DRAINAGE				
	5	site drainage	very poor: 0 %	poor: 0 %	moderate: 0 %	high: 100 %
	5	waterlogging	very high: 0 %	high: 0 %	moderate: 0 %	nil to low: 100 %
	6	OTHER QUALITIES				
	6	excavation ease	very low: 0 %	low: 0 %	moderate: 0 %	high: 100 %
	6	microbial purification	very low: 0 %	low: 0 %	moderate: 0 %	high: 100 %
	6	phosphorus loss	extreme: 0 %	very high: 0 %	high: 0 %	nil to moderate: 100 %
Waterbodies	The desktop assessment and aerial imagery indicated that the application area is not within a mapped wetland. Three minor, perennial lakes are mapped within 380 metres of the area proposed to be cleared. A wastewater treatment pond is present immediately west of the application area and the Indian Ocean is 180 metres west of the application area.					
Hydrogeography	The application area is mapped within the Bunbury groundwater area, proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The application area is within the Bunbury Water Reserve Public Drinking Water Source area. Groundwater salinity: 500-1000 milligrams per litre TDS Hydrogeology: Surficial Sediments - Shallow Aquifers					
Flora	There are records of 5 species of threatened and 23 species of priority flora species in the local area, of which the nearest record is of the Priority 4 species *Caladenia speciosa,* recorded approximately 2.1 kilometres northeast from the application area. Four of the species recorded in the local area are found on the same soil system as that in the application area; *Acacia flagelliformis, Acacia semitrullata, Caladenia speciosa* and *Schoenus benthamii.*					

Characteristic	Details
	A flora and vegetation survey did not identify any conservation significant flora within the application area (GHD, 2021).
Ecological communities	There are records of 8 threatened ecological communities (TECs) and 3 priority ecological communities (PECs) within the local area (10-kilometre radius). Of these the most common is the Banksia Dominated Woodlands of the Swan Coastal Plain (BC Act listed Priority 3 PEC and EPBC Act listed TEC with 642 occurrences) and Tuart woodlands and Forests of the Swan Coastal Plain (BC Act listed 3 PEC and EPBC listed TEC with 70 occurrences), both occurring within 210 metres of the application area. A flora and vegetation survey identified that vegetation units *Eucalyptus gomphocephala* (tuart) woodland and *Eucalyptus gomphocephala* (tuart) (*Eucalyptus marginata* (jarrah)) open woodland, recorded immediately east of the application area, were consistent with both the Tuart woodlands and forests of the Swan Coastal Plain PEC/TEC and the Quindalup *Eucalyptus gomphocephala* and / or *Agonis flexuosa* woodlands BC Act Priority 3 PEC (GHD, 2021).
Fauna	There are records of 24 threatened, 10 priority, 2 conservation dependent, 18 migratory and one other specially important fauna species within the local area (10 kilometres). Of these, forty-three are associated with marine, coastal, wetland or watercourse habitats which are not present within the application area. The most frequently recorded conservation significant fauna species within the local area is the Critically Endangered *Pseudocheirus occidentalis* (Western Ringtail Possum, WRP) with 2,060 records in the local area, the closest of which has been recorded within 500 metres of the application area. A fauna survey (Biota Environmental Services, 2021) found two main habitat types present within the application area (refer to Figure F-4, Appendix F): • Peppermint on scrubland on dunes 0.95 hectares; and • Coastal low open heath 1.26 hectares. The fauna survey (Biota Environmental Services, 2021) did not record any WRPs within the application area, however, WRPs were recorded in the wider survey area predominantly in Tuart/Peppermint woodland and Marri/Eucalyptus woodland, with both habitats considered “core” habitat, but also in Peppermint over scrubland in dunes (where adjacent to Tuart/Peppermint woodland). The closest WRP individual was recorded approximately 100 metres east of the application area. No trees suitable for breeding for black cockatoo species were found within the application area, although trees with potentially suitable hollows for breeding were recorded within the wider survey area (Biota Environmental Services, 2021). Foraging of marri nuts and banksia cones from black cockatoos was recorded within the wider survey area. One *Phascogale tapoatafa wambenger* (brush-tailed phascogale) was recorded within the wider survey area, approximately 1.4 km east of the application area in habitat classed as Tuart Peppermint woodland (Biota Environmental Services, 2021).

C.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex					
Heddle vegetation complex 55**	54,573.87	33,011.64	60.49	5,994.64	10.98
Local area					
10km radius (without ocean)	16,798.27	5,530.935	32.93	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

C.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), and biological survey information (GHD, 2021), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of records in local area	Are surveys adequate to identify? [Y, N, N/A]
Acacia flagelliformis	P4	N	N	Y	3.5	10	Y
Acacia semitrullata	P4	N	N	Y	4.1	8	Y
Caladenia speciosa	P4	N	N	Y	2.1	20	Y
Schoenus benthamii	P3	N	N	Y	4.6	5	Y

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

C.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G), and biological survey information (Biota Environmental Services, 2021), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area	Are surveys adequate to identify? [Y, N, N/A]
Calyptorhynchus baudinii (Baudin's cockatoo)	EN	N	2.4	18*	Y
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	N	1.7	70*	Y
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	N	1.9	12	Y
Ctenotus ora (Coastal Plains skink)	P3	Y	8.9	2	N
Falco peregrinus (Peregrine falcon)	OS	Y	4.2	2	N
Falsistrellus mackenziei (western false pipistrelle, western falsistrelle)	P4	N	7.8	1	N
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	P3	Y	1.6	12	N

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area	Are surveys adequate to identify? [Y, N, N/A]
Isoodon fusciventer (Quenda, southwestern brown bandicoot)	P4	Y	1.3	40	N
Notamacropus Irma (western brush wallaby)	P4	Y	0.98	19	N
Phascogale tapoatafa wambenger (South-western brush-tailed phascogale, wambenger)	CD	Y	0.84	73	N
Pseudocheirus occidentalis (Western ringtail possum, ngwayir)	CR	Y	0.49	2060	Y
Psophodes nigrogularis nigrogularis (western whipbird (western heath))	EN	N (outside current known distribution)	5.7	3	N
Setonix brachyurus (quokka)	VU	Y	3.8	17	N

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

* A further 14 records of *Calyptorhynchus sp.* 'white-tailed black cockatoo' (White-tailed black cockatoo) are present within the local area, which may comprise either *Calyptorhynchus baudinii* or *Calyptorhynchus latirostris.*

C.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix G.1), and biological survey information (GHD, 2021), impacts to the following conservation ecological communities required further consideration.

Community name	Conservation status	Suitable vegetation type? [Y/N]	Distance of closest record to application area (m)	Number of known records in local area	Are surveys adequate to identify? [Y, N, N/A]
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	P3	N	208	642	Y
Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson et al. (1994))	CR	N	9787	3	Y
Corymbia calophylla woodlands on heavy soils of the southern Swan Coastal Plain (floristic community type 1b as originally described in Gibson et al. (1994))	VU	N	9690	1	Y
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. (1994))	VU	N	4677	2	Y
Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994))	VU	N	4279	2	Y
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994))	VU	N	3114	4	Y
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (floristic community type 19 as originally described in in Gibson et al. (1994))	CR	N	291	2	Y
Shrublands on calcareous silts of the Swan Coastal Plain (floristic community type 18 as originally described in in Gibson et al. (1994))	VU	N	2684	1	Y
Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994))	EN	N	4357	1	Y
Subtropical and Temperate Coastal Saltmarsh	P3	N	9038	4	Y
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain	P3	Y	193	70	Y
Quindalup Eucalyptus gomphocephala and / or Agonis flexuosa woodlands ('floristic community type 30b')	P3	N	[not mapped]	[not mapped]	Y

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

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: Vegetation within the application area is not likely to provide habitat for threatened or priority flora, but may contain habitat for conservation significant fauna species. The application area intersects a patch of the Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain BC Act listed Priority 3 ecological community and EPBC Act listed Threatened ecological community.	May be at variance	Yes *Refer to Sections 3.2.1 and 3.2.2 above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: Vegetation within the application area provides suitable habitat for *Pseudocheirus occidentalis* (western ringtail possum, ngwayir) and may contain habitat suitable for other conservation significant fauna.	At variance	Yes *Refer to Section 3.2.1 above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The application area is unlikely to contain, or contain habitat for, threatened flora species.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The application area intersects a patch of the Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain BC Act listed Priority 3 ecological community and EPBC Act listed Threatened ecological community, as well as vegetation acting as a buffer to this patch.	At variance	Yes *Refer to Section 3.2.2 above.*
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 objective and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion which retains approximately 38.6 per cent of its pre-European vegetation extent (Government of Western Australia, 2019). The mapped Swan Coastal Plain vegetation complex Quindalup complex retains 60.49 per cent of its pre-	Not likely to be at variance	Yes *Refer to Section 3.2.3 above*

Assessment against the clearing principles	Variance level	Is further consideration required?
European extent within the Swan Coastal Plain. The local area retains approximately 33 per cent vegetation cover. The extent of the vegetation is therefore consistent with national objectives and targets for biodiversity conservation. The application area is within a tract of vegetation that is part of a South West Regional Ecological Linkage, however management measures conditioned on the permit will ensure that impacts to this linkage are unlikely to be significant.		
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to nearby conservation areas, the proposed clearing is unlikely to impacts 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: The application area is not growing in association to any mapped watercourse or wetland. The vegetation is not representative of riparian vegetation and is associated with coastal dune vegetation.	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 mapped soils are moderately susceptible to phosphorus export, wind erosion and water erosion. Noting the end land use within the application area will either be hardstand or vegetation and a condition for wind management required on the permit, the proposed clearing is unlikely to have an appreciable impact on land degradation.	Not likely to be at variance	Yes *Refer to Section 3.2.3 above.*
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Given the distance to the nearest surface waterbodies, the proposed clearing is unlikely to impact surface water quality. Although a portion of the application area falls within the Bunbury Water Reserve Priority 3 Public Drinking Water Source Area gazetted under the *Country Areas Water Supply Act 1947*, advice provided by DWER indicates impacts from the proposed clearing to this PDWSA are unlikely.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the distance to the nearest surface water bodies and low risk of waterlogging in soils mapped within the application area, the proposed clearing is unlikely to contribute to waterlogging.		

Appendix E. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types. Considering its location, the Keighery (1994) scale below was used to measure the condition of the vegetation proposed to be cleared.

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

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

Appendix F. Biological survey information excerpts

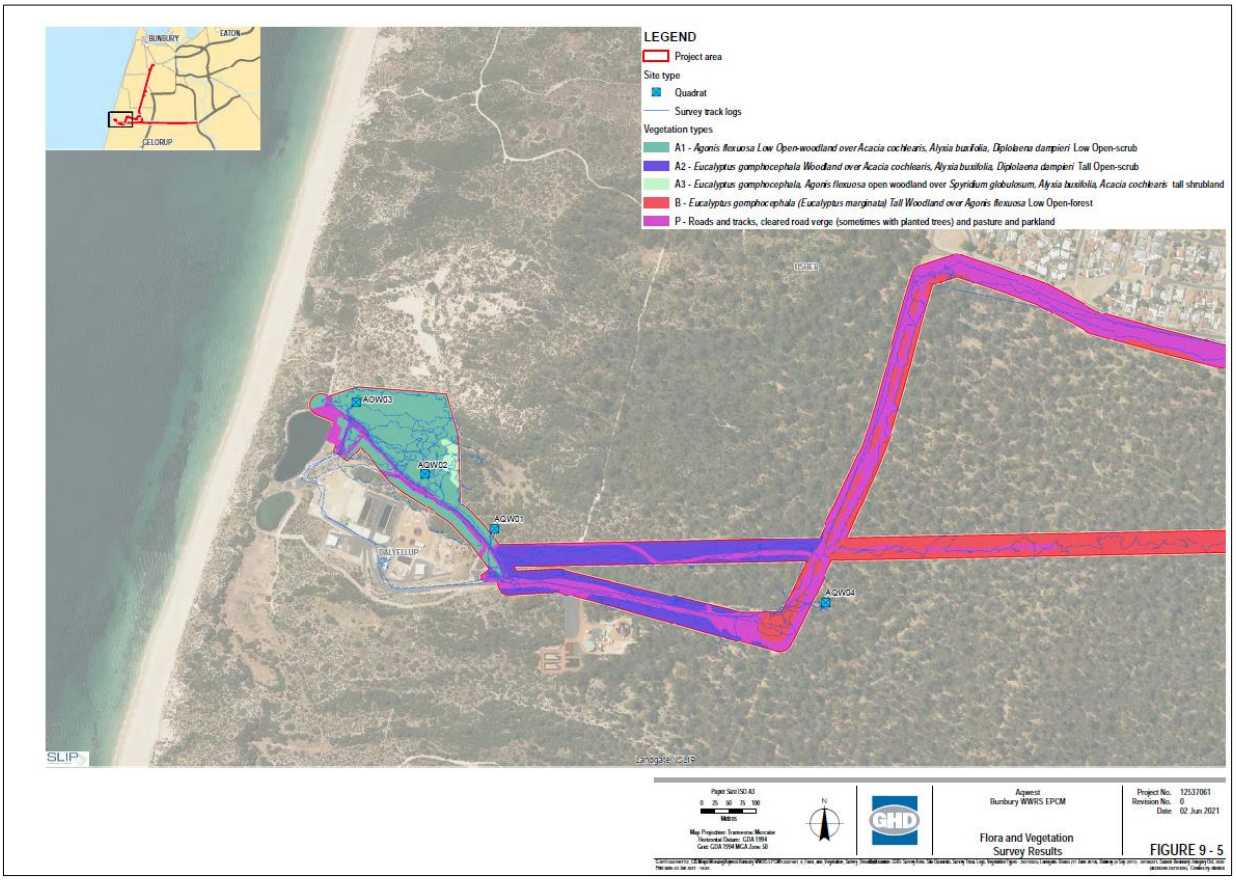

Figure F.1: Vegetation types within application area (GHD, 2021)

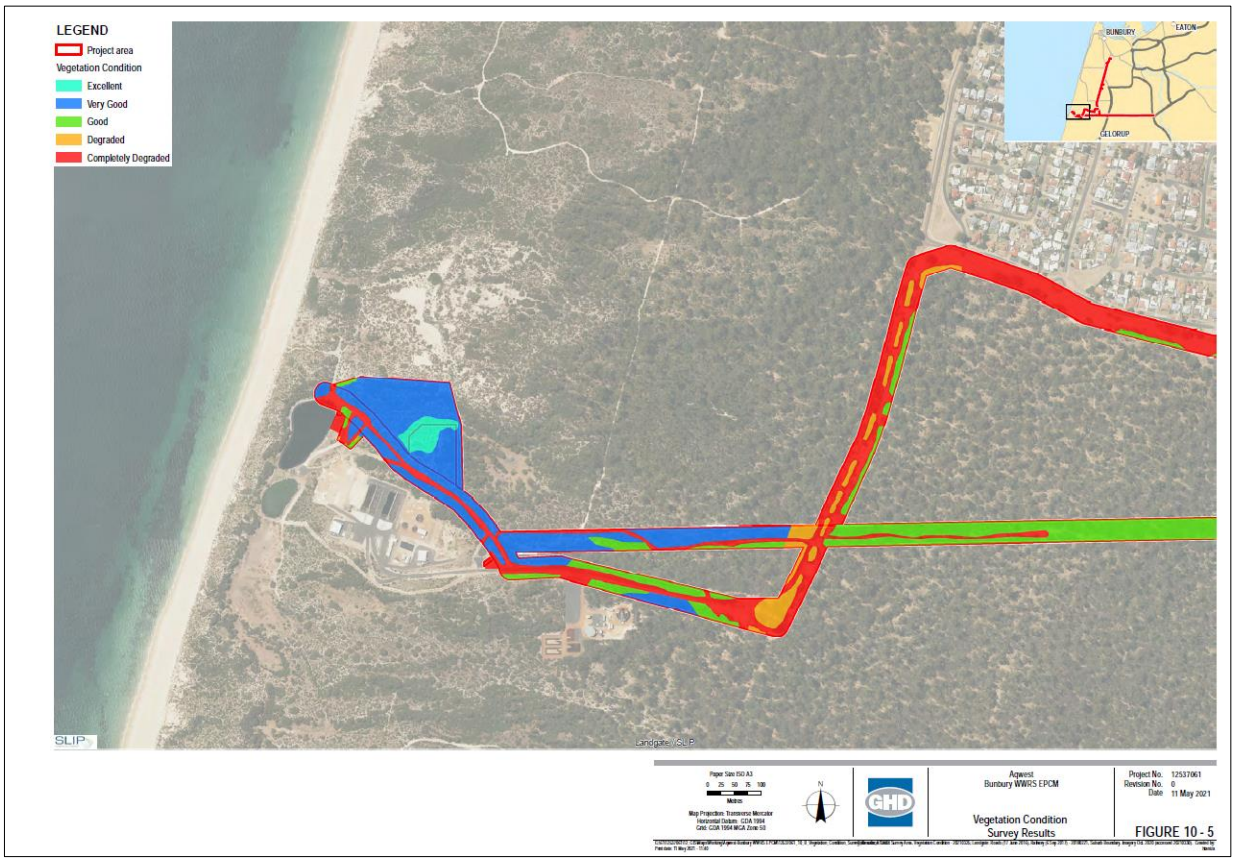

Figure F.2: Vegetation condition within application area (GHD, 2021)

Table 8 Vegetation units recorded in the survey area

Vegetation unit description	Photograph	Sample sites (quadrats and releves), condition and extent within survey area
Primary vegetation unit A: Occuring on the Quindalup Dune system. Vegetation sub-units: A1, A2, A3 FCT: Affinity to SCP29a, SCP30b and SCP25 (Southern Tuart woodland) Strength of FCT affinity: SCP29a, SCP30b, High, SCP25, Moderate/High A mixture of *Agonis flexuosa* and *Eucalyptus gomphocephala* woodlands over *Acacia cochlearis, Alyxia buxifolia* and *Diplolaena dampieri* shrublands. Sub-units A2 and A3 are a variant of A1 where the calcareous soil has been leached to a greater extent and *Eucalyptus gomphocephala* is more prevalent. At these sub-units margins they merge into unit B.		Quadrats AQW01, AQW02, AQW03. 46 releves Very Good-Good condition 6.92 ha total 10.82% of survey area
Sub-unit A1: *Agonis flexuosa* low open woodland over *Acacia cochlearis, Alyxia buxifolia, Diplolaena dampieri, Leucopogon parviflorus, Olearia axillaris, Spyridium globulosum* mid-height open shrubland over *Phyllanthus calycinus, Rhagodia baccata* low open shrubland over *Acanthocarpus preissii, Calandrinia brevipetala, Conostylis aculeata* subsp. *preissii*, **Trachyandra divaricata* open forbland, *Austrostipa flavescens*, **Lagurus ovatus* open grassland and *Lepidosperma calcicola* open sedgeland on calcareous bleached sand.		3.57 ha 5.58% of survey area

Figure F.3: Vegetation description of vegetation unit A1 mapped in the application area (GHD, 2021)

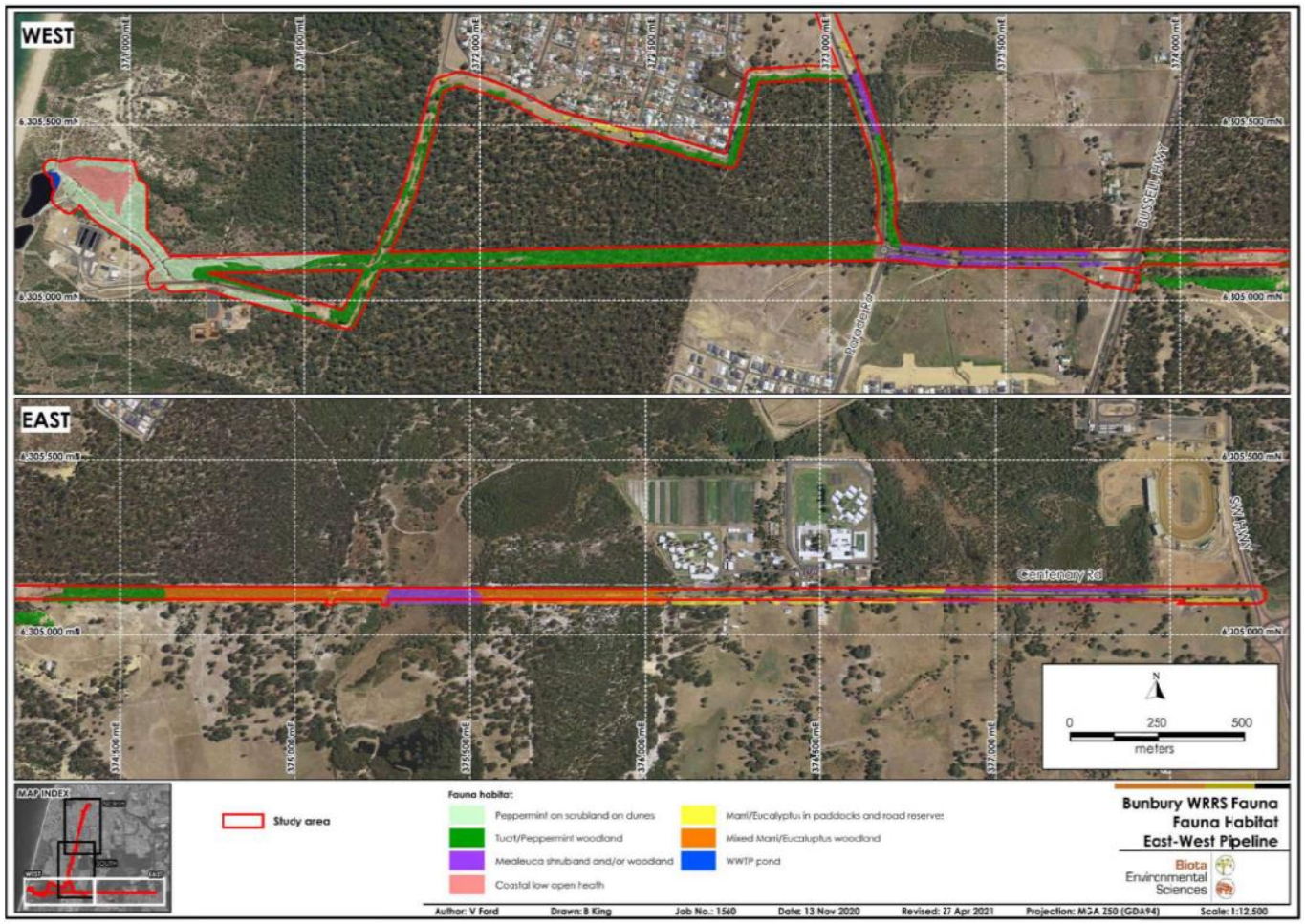

Figure F.4: Fauna habitat types present within the application area (Biota Environmental Services, 2021).

Appendix G. Sources of information

G.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)
- 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
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

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

G.2. References

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