GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9531/1

File Number: DWERVT9256

Duration of Permit: From 15 June 2022 to 15 June 2029

PERMIT HOLDER

Naszko Investments Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 101 on Deposited Plan 69781, Kaloorup

AUTHORISED ACTIVITY

The permit holder must not clear more than 39 native trees within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorized

The permit holder must not clear any *native vegetation* after 15 June 2024.

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

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

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

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

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

3. Weed and dieback management

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

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

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

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

4. 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 4(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 4(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat*

(d) Where fauna is identified under condition 4(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 1994 (GDA94), 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 GDA94, 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.

5. Land management control

The Permit Holder must minimise active sand and gravel extraction to no more than two hectares in size at any given time.

6. *Revegetation*

The permit holder shall take the following actions for the purpose of *revegetation;*

(a) commence revegetating the areas cross-hatched red on Figure 1 in the first winter after the authorised clearing, by way of:

(i) deliberately planting 100 tube stocks of *Agonis flexuosa*;

(ii) ensuring only *local provenance* propagating materials are used to revegetate;

(b) water planted vegetation for the first two years post planting as required;

(d) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;

(e) undertake weed control activities on an 'as needs' basis;

(f) undertake remedial actions for area revegetated where monitoring indicates that revegetation has not been successful, including:

(i) revegetate the area by deliberately planting *Agonis flexuosa* and ensuring only *local provenance* propagating materials are used;

(ii) undertake further weed control activities;

(iii) undertake further watering activities; and

(iv) annual monitoring of revegetated site, until it is determined that 100 *Agonis flexuosa* will continue to survive without ongoing management.

(g) When monitoring under condition 6(f)(iv) indicates that the 100 *Agonis flexuosa* will continue to survive, the permit holder must provide a report to the *CEO.*

7. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94),

No.	Relevant matter	Specifications
		expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the number of trees cleared; (e) the area and dates of active sand and gravel extraction; (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; (g) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3; and (h) actions taken to manage and mitigate impacts to western ringtail possums in accordance with condition 4.
2.	In relation to *revegetation* pursuant to condition 6	(a) the boundaries of the area *revegetated* (recorded digitally as a shapefile); (b) the number of *Agonis flexuosa* stocks planted and survive; (c) the date(s) on which the planting was undertaken; (d) the *revegetation* activities undertaken; (e) the date(s) where additional or replacement planting was undertaken; and (f) any other remedial actions required to be undertaken.

8. Reporting

The permit holder must provide to the *CEO* the records required under condition 7 of this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
black cockatoo habitat trees	means trees that have a diameter, measured at 130 centimetres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for *Eucalyptus salmonophloia* or *Eucalyptus wandoo*) that contain hollows suitable for breeding by black cockatoo species.
black cockatoo species	means one or more of the following species: (a) *Calyptorhynchus lateriosis* (Carnaby's cockatoo); (b) *Calyptorhynchus baudinii* (Baudin's cockatoo); and/or (c) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo).
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.
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.
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.
EP Act	*Environmental Protection Act 1986* (WA)
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.
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.

Term	Definition
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.
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

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

22 May 2022

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (

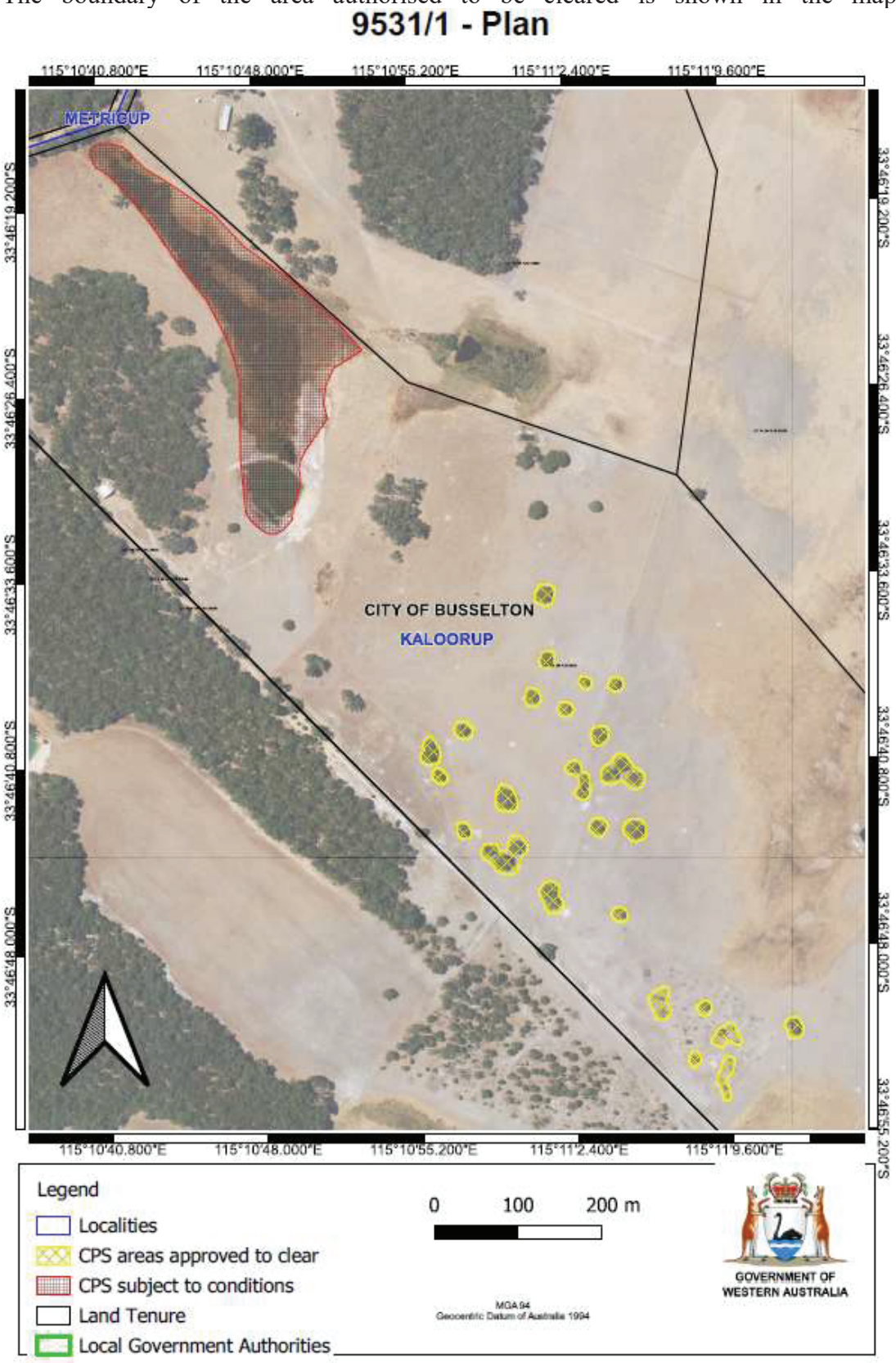

Figure 1).

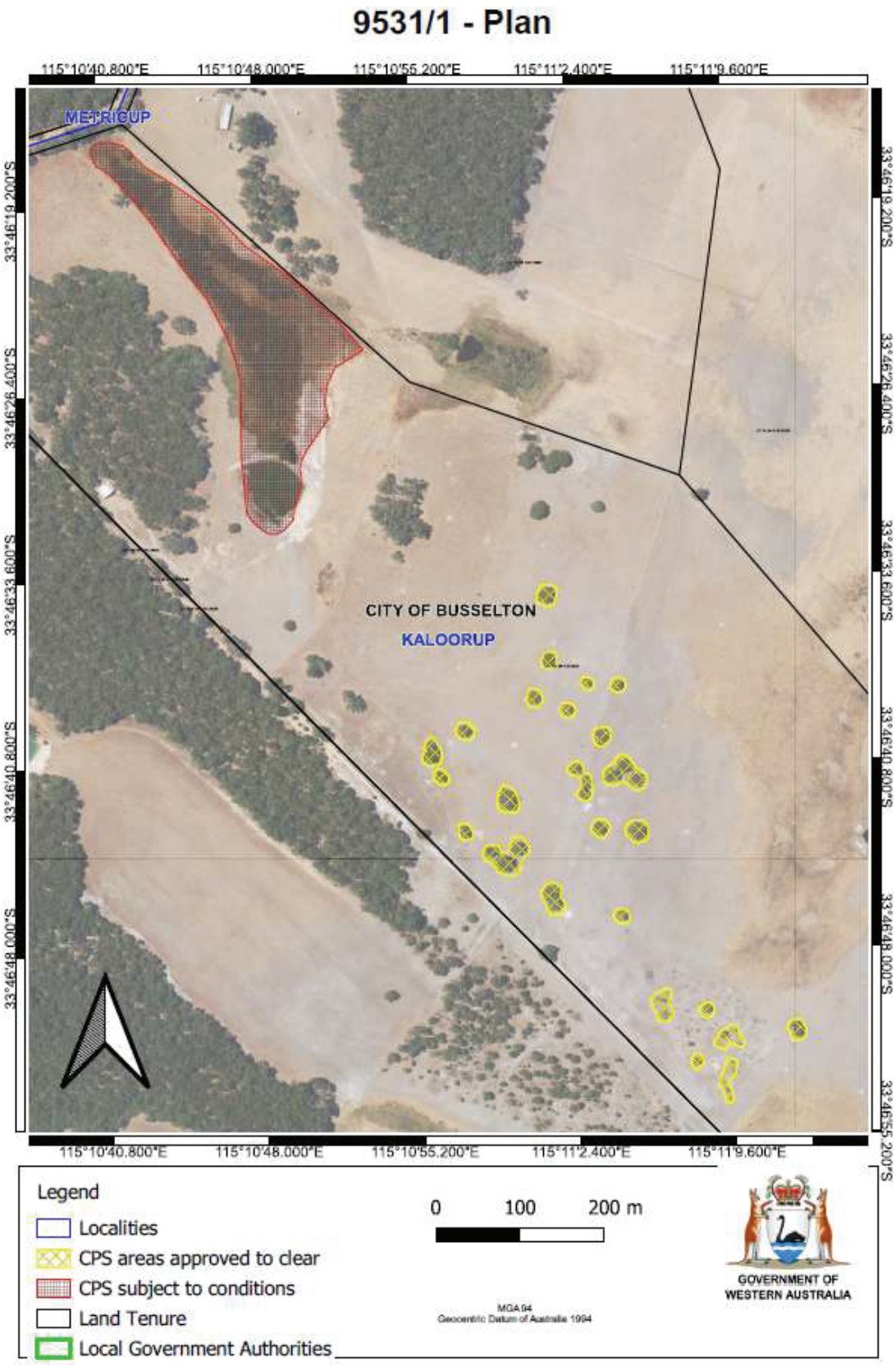

Figure 1: Map of the boundary of the area within which clearing may occur and where conditions apply

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 9531/1
Permit type:	Area permit
Applicant name:	Naszko Investment Pty Ltd
Application received:	20 December 2021
Application area:	39 Peppermint *(Agonis flexuosa)* trees
Purpose of clearing:	Sand mining
Method of clearing:	Mechanical
Property:	Lot 101 on Deposited Plan 69781
Location (LGA area/s):	Kaloorup
Localities (suburb/s):	City of Busselton

1.2. Description of clearing activities

The application is to clear 39 isolated Peppermint trees (*Agonis flexuosa*) contained within the property (see Figure 1, Section 1.5). The proposed clearing is required to extract sand and gravel from a 20.94 hectares (ha) area within the Lot.

The land and surrounds have been historically cleared for agricultural use. The local area (10 km radius) retains approximately 26 per cent native vegetation.

1.3. Decision on application

Decision:	Granted
Decision date:	22 May 2022
Decision area:	39 trees 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 for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), information provided by the applicant (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). In particular, the Delegated Officer's consideration includes the following:

- The local area retains approximately 25.5 per cent native vegetation cover, which is below the National objectives and targets for biodiversity and conservation. The Delegated Officer acknowledged the applicant's commitment to mitigate this impact by revegetating a nearby patch of vegetation by planting 100 peppermint

trees. The proposed revegetation program is suitable to mitigate the loss of the 39 isolated trees in the extensively cleared area.

- The application area is within the distribution area of *Pseudocheirus occidentalis* (Western ringtail possum, WRP) (CR). Although the isolated peppermint trees within the application area do not comprise ideal habitat for WRP, the application area is adjacent and surrounded by vegetation identified as suitable habitat for WRP. The application area is also mapped as a part of a Southwestern Ecological Linkage. Removal of the trees may result in the loss of transitional habitat for fauna movement through the landscape. The proposed revegetation of a nearby patch of vegetation within the linkage could mitigate and minimise this impact. Potential impact on any WRP individual present can be mitigated by exercising fauna management measures.
- Clearing and the subsequent sand and gravel mining may exacerbate the risks of land degradation due to wind erosion. Appropriate land management measures proposed by the applicant could minimise and mitigate this impact.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that the proposed clearing is unlikely have long-term adverse impacts on WRP and / or to lead to appreciable land degradation. The impacts to the environmental values can be minimised and managed to unlikely lead to an unacceptable risk to environmental values. The applicant has suitably demonstrated avoidance and minimisation measures, the proposed revegetation could mitigate the potential impacts to the extent of remnant vegetation in the local area and WRP habitat.

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

- Avoid, minimise to reduce the impacts and extent of clearing
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- Planting of 100 *Agonis flexuosa* trees within Lot 101
- Pre-clearing inspection for WRP present
- Limiting clearing and active excavation to two hectares of area at a time.

1.5. Site map

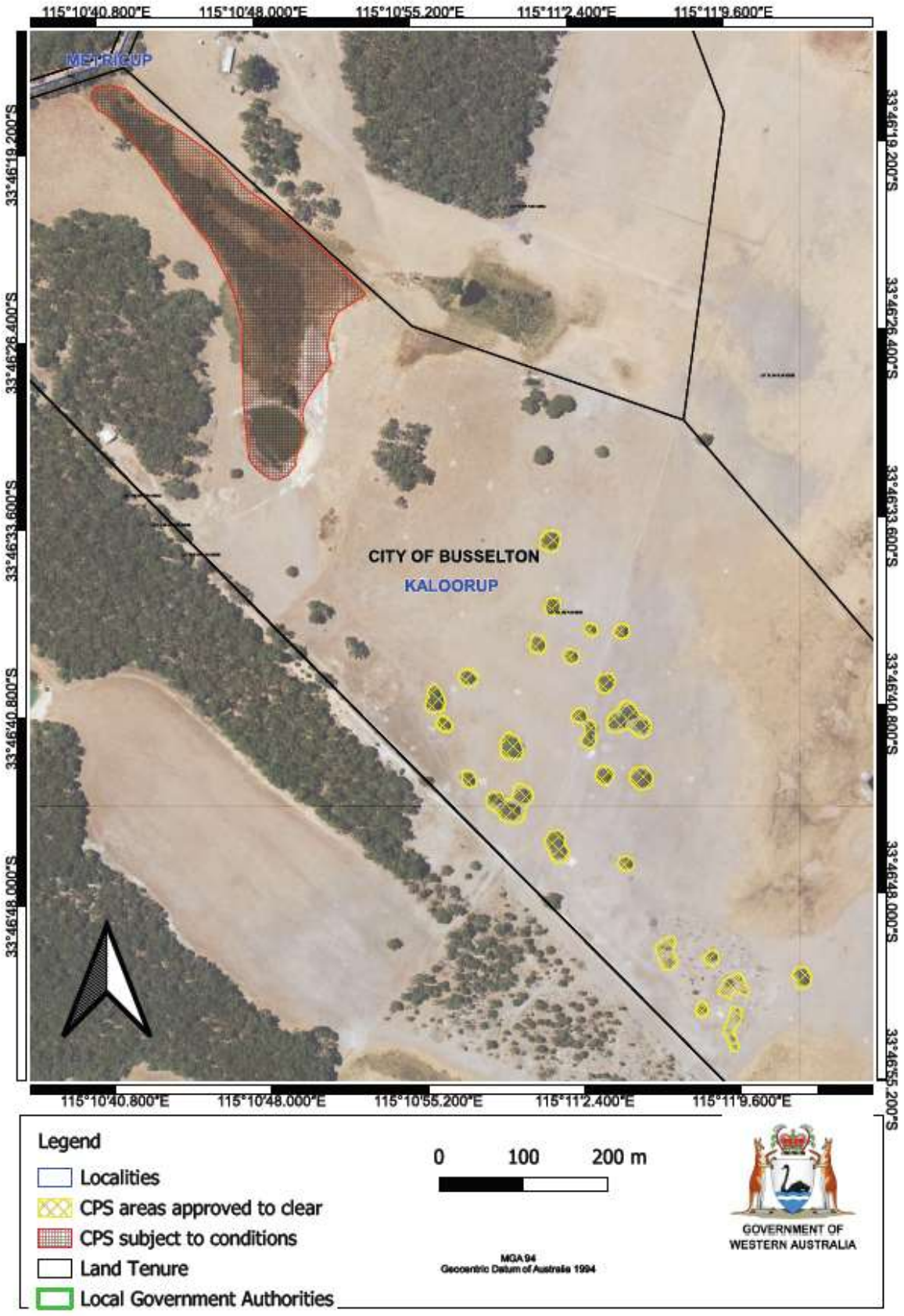

Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. The area crosshatched red indicates the area subject to conditions, which comprises of revegetation plan.

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 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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has an environmental management plan in place to avoid, minimise and mitigate potential impacts of clearing and subsequently sand mining operations on the environment (Accendo, 2021). The management plan includes vegetation clearing management, weeds and pathogen management, dust and water management, and rehabilitation management plans

The applicant recognised the potential impacts of clearing to the native vegetation extent in an extensively cleared area; WRP habitat and ecological linkages in the local context. To address the potential impacts, the applicant proposed a mitigation strategy which includes the revegetation of an area located approximately 200 m northwest of the application area (see Figure 1). The revegetation of the site mapped as a resource enhancement geomorphical wetland involves the planting of 100 peppermint (*Agonis flexuosa*) trees. The revegetation work is committed to commence during the first winter months following the approved clearing (Accendo, 2021). The revegetation work is expected not only to replace the removed peppermint trees but also to improve the ecological and habitat values of the remnant vegetation around the wetland.

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

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) 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 may present a risk to significant remnant vegetation, adjacent Banksia Woodlands, WRP, and / or 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 – Significant remnant vegetation – Principle (e)

Assessment:

The extent of native vegetation cover in the local area is below the National objectives and targets for biodiversity and conservation (minimum 30 per cent). Although the vegetation to be cleared is in Completely Degraded condition (Keighery, 1984) and comprises of isolated peppermint trees (*Agonis flexuosa*) over pasture grass, the removal of these trees will contribute to the cumulative loss of native vegetation in the local context. The trees are also mapped as comprising a part of a Southwestern Regional Ecological Linkage which runs through the application area. Given the impacts, mitigating the loss of native vegetation through revegetation activities is required.

Acknowledging the potential impacts of clearing on the above-mentioned values, the applicant proposed to revegetate a patch of remnant native vegetation within the Lot located approximately 400 m northwest of the proposed clearing. The site is mapped as a resource enhancement geomorphic wetland and potentially a medium quality WRP habitat. The revegetation involves the planting of 100 peppermint (*Agonis flexuosa*) trees on the site (See Figure 1) commencing in the first winter after the authorised clearing. The proposed revegetation will not only replace the lost of trees from clearing, but also may improve the ecological and habitat values of the remnant vegetation surrounding the wetland and the local area.

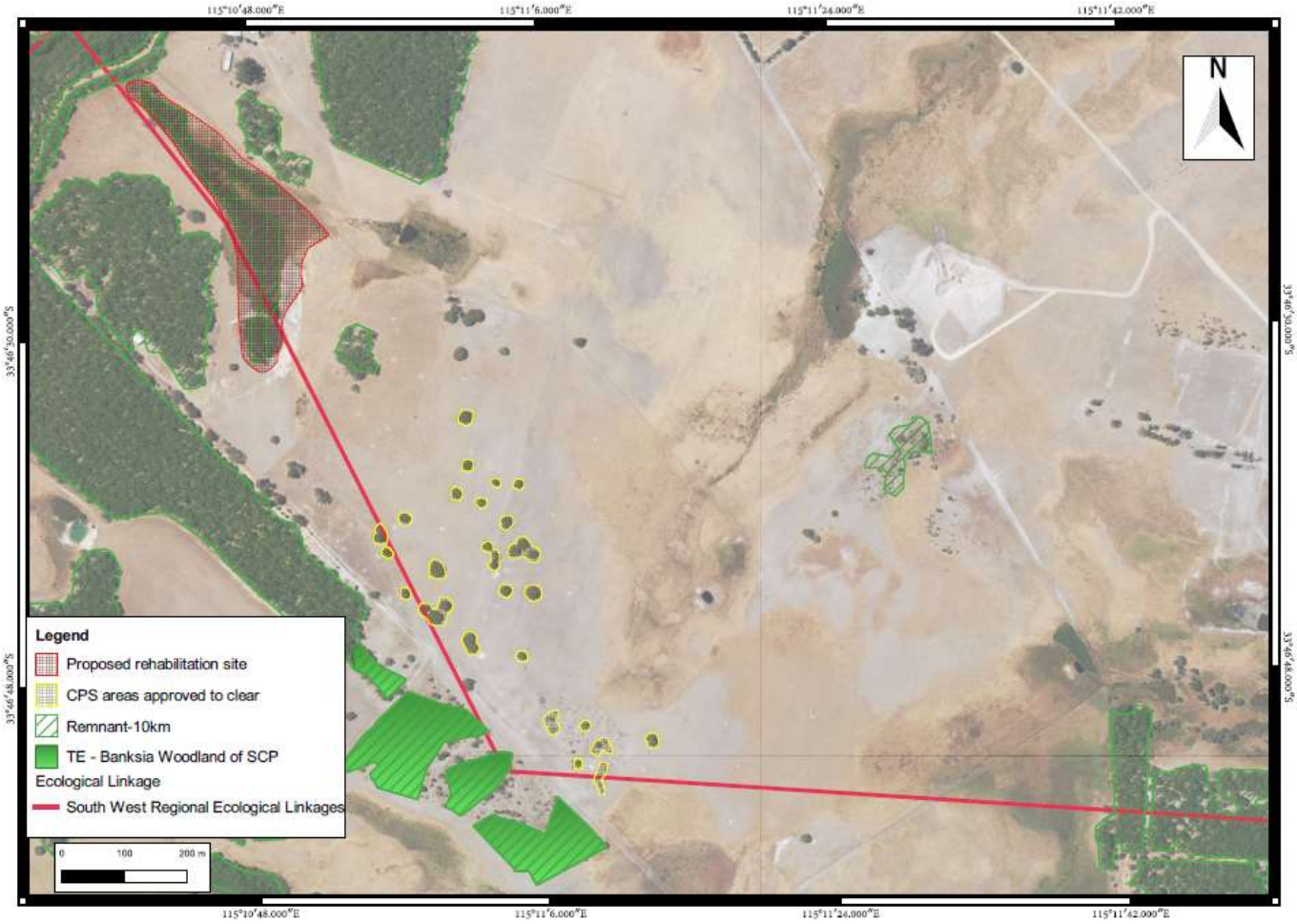

Figure 2. The proposed clearing area is situated within an extensively cleared area and a mapped Southwestern Regional Ecological Linkage.

The patches of remnant vegetation adjacent to the application area are mapped as having important ecological values. The remnant vegetation has been identified as suitable habitat for WRP and / or mapped as the Banksia Dominated Woodlands of the Swan Coastal Plain, which is listed a federal Threatened Ecological Community (TEC) and a state listed Priority Ecological Community (PEC). Clearing may indirectly impact on the condition of adjacent remnant vegetation by facilitating the spread of weeds and dieback. This impact can be minimised by applying stringent weed and dieback management measures.

Conclusion:

Given the above assessment and mitigation measures proposed by the applicant, the Delegated Officer considered that the impact of the proposed clearing on the ecological values of remnant vegetation in the local context will not result in a significant residual impact. The impact of clearing due to the introduction and spread of weeds and dieback can be managed by placing management conditions to the permit.

Conditions:

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

- Planting of 100 *Agonis flexuosa* trees approximately 400 m northwest of the proposed clearing in the first winter following authorised clearing.
- Weed and dieback management measures.

3.2.2. Biological values – Fauna – Principle (b)

Assessment:

Twenty-three conservation significant fauna species have been recorded within the local area. Many of the records are of migratory birds and fauna associated with the marine environment. Of the 23 records, the three Black cockatoo species (*Calyptorhynchus banksia naso, C. baudinii, and C. latirostris*), Quenda (*Isoodon fusciventer)*, Brush-tailed phascogale (*Phascogale tapoatafa wambenger*) and WRP were further assessed for their proximity and high frequency of records and distribution within the local context.

Numerous records of the Endangered Baudin's cockatoo (*Calyptorhynchus latirostris*) and Carnaby's cockatoo (*Calyptorhynchus latirostris*) and the Vulnerable Forest red-tailed Black cockatoo (*Calyptohynchus banksii naso),* together referred to as the Black cockatoos, are known from the area. Black cockatoos' habitat can be considered in terms of breeding, roosting and foraging habitat. Roost sites tend to be located in the largest trees within a particular area and in close proximity to both water and food supplies. The trees proposed to be cleared are non-hollow bearing peppermint trees that would be unlikely to provide roosting or breeding habitat to Black cockatoos. While foraging Black cockatoos may utilise the trees as transitional habitat, given the availability of nearby vegetation in better condition, the trees proposed to be cleared are unlikely to constitute significant foraging habitat for Black cockatoo species. The proposed clearing is unlikely to impact on the conservation and maintenance of Black cockatoo in the local context.

The Priority 4 Quenda require a dense understorey for cover (van Dyck and Strahan, 2008), including exotic species. The application area is void of tall understory vegetation and sparsely vegetated with non-native weeds. Quenda is unlikely to occur within the application area given Quenda's preference for dense vegetation (Watson, 2018).

Brush-tailed phascogale inhabits dry sclerophyll forest and open woodlands with hollow bearing trees. The type and condition of the vegetation proposed to be cleared do not exhibit this characteristic and is unlikely to comprise habitat for the Brush-tailed phascogale.

The vegetation surrounding the application area is mapped as preferable habitat for WRPs, although most of them are classified as moderately suitable. As many as 68 records of the critically endangered WRP are known from the local area. The nearest record is from approximately 1.26 km south of the application area. Although the lack of canopy connectivity within the application area is not preferred by WRP (Shedley et al., 2014), given the proximity to suitable habitats and records, it is not unlikely for WRP to occur or utilise the peppermint trees for foraging. In addition, the application area is a part of a mapped Southwestern Regional ecological linkage. The 39 isolated trees may provide transitional habitat for WRP. Removal of the 39 isolated trees, therefore, may impact on this environmental value. The proposed revegetation of a nearby patch of vegetation may mitigate this impact. Noting that the proposed revegetation site is currently classified as medium quality WRP habitat, the proposed planting of 100 trees could improve its habitat value for WRP. In the absence of a fauna survey, a pre-clearing inspection for the presence of WRP individuals or habitat could avoid and minimise potential impact on this fauna species.

Conclusion:

Based on the above assessment, the application area is unlikely to contain significant habitat for Black cockatoos, Brushed-tailed Phascogale and Quenda. The removal of 39 peppermint trees is unlikely to significantly impact on the existence and maintenance of these conservation significant fauna habitat within the local context. The clearing, however, may impact on WRP habitat. The proposed revegetation of a remnant vegetation nearby is considered adequate to mitigate the potential impact on WRP habitat. Impacts on any WRP individuals, if present, can be avoided and mitigated through fauna management measures.

Conditions:
To address the above impacts, the following are required as conditions to the clearing permit:

- Pre-clearing inspection of the trees to ensure the absence of WRP.
- Planting of 100 *Agonis flexuosa* trees approximately 400 m northwest of the proposed clearing in the first winter following authorised clearing.

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

Assessment
The soils of the application area are mapped as having medium to extreme wind erosion risk, and low to medium water erosion risk. Clearing and the subsequent sand mining can exacerbate the risks and may lead to land degradation. Dust resulting from the clearing and mining works could also present risks to the nearby remnant vegetation.

To address the potential impacts, the applicant has developed a Dust and Water Management Plan which is a part of the conditions of the Development Approval approved by the City of Busselton (City of Busselton, 2019). The management plan includes limiting clearing and mining to a maximum 2 hectares at a time, the progressive rehabilitation and dust suppression measures to minimise and mitigate the risks of wind erosion and dust. Noting the porosity and permeability of the sandy soils in the application area, the risk of erosion due to surface water runoff is considered low in most of the application area. Nevertheless, as a part of the mining operation design, the applicant is committed to the retention of all stormwaters within the excavated pits at any time and the use of retention and infiltration basins during excavation works to further minimise the risks of water erosion.

The application area is surrounded by geomorphic wetlands classified as resource enhancement wetlands (Figure 3). Being surrounded by wetlands, the soils in the area may be prone to subsurface acidification. Noting that the excavation for sand and gravel will not be more than 3 metres deep, the risk of subsurface acidification is considered low.

Whilst the proposed clearing is unlikely to directly impact on the environmental values of the mapped wetlands, the subsequent mining operations may impact on the hydrogeological integrity of the wetlands. The potential impacts have been addressed by the applicant in the Management Plan as a part of the Industrial Licensing processes. The applicant is committed to limiting excavation to 0.5 to 2 metres above the highest winter water table (Accendo, 2021). The applicant's commitment to revegetate a patch of native vegetation around a wetland nearby will further mitigate any potential impact to this environmental value.

Conclusion
Based on the above assessment and the applicant's environmental management plans, the Delegated Officer considered the proposed clearing to unlikely result in appreciable land and water degradation.

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

- Staged clearing to minimise the risks of wind erosion and dust.
- Limiting active excavation of sand and gravel to two hectares at a time.

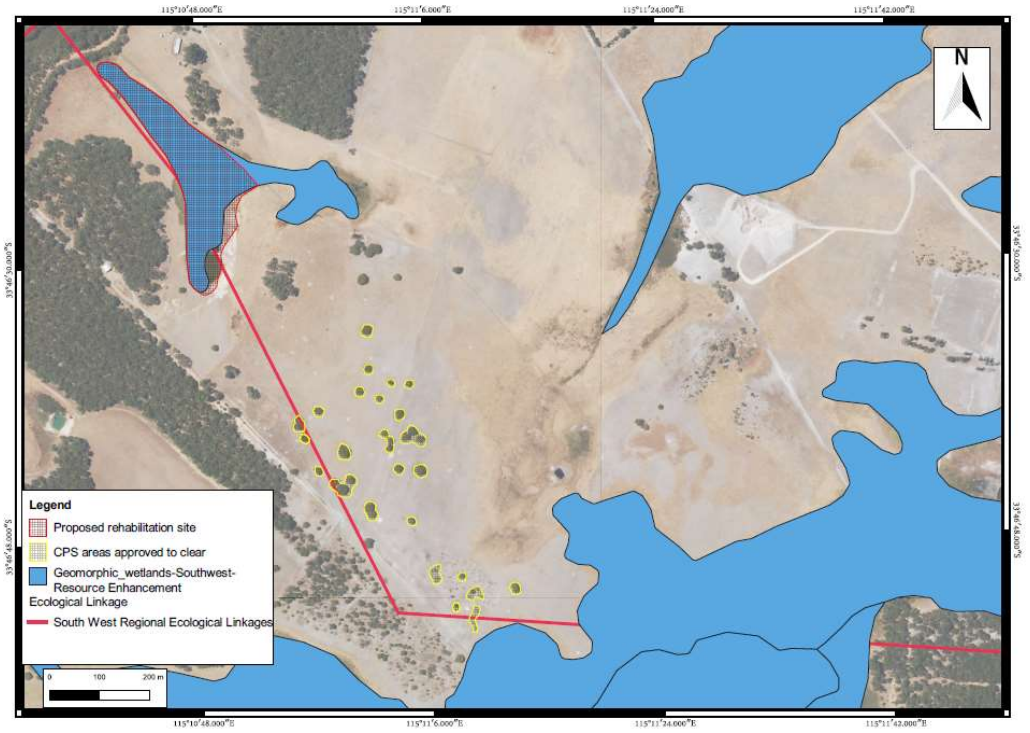

Figure 3. The application area is surrounded by geomorphic wetlands of Southwest region

3.3. Relevant planning instruments and other matters

Lot 101 is zoned “Agriculture” and lies within Policy Area 3 – “Extractive Industry Less Constrained” in City of Busselton, “Rural Land Use and Development” Policy, 2010.

The proposed sand mining for which the clearing permit is applied for has acquired an Extractive Industry Licence / Development Approval DA18/0674 from the City of Busselton. The Development Approval incudes the approval of a Dust Management Plan, Dieback Management Plan and Surface Water Management Plan proposed by the applicant. The City in its approval also stipulated that no excavation could occur closer than 300 mm to the maximum winter perched water table.

The applicant is in the process of acquiring a Works Approval under Part V Division 3 of the EP Act.

No Aboriginal Sites of Significance has been identified within a five kilometre radius. 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. Site characteristics

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

A.1. Site characteristics

Characteristic	Details
Local context	The Peppermint (*Agonis flexuosa*) trees proposed to be cleared are located on a property that has been previously cleared. The 39 trees are the only native vegetation remaining on the section of the Lot. Adjacent patches of native vegetation are mapped as the Banksia Woodlands PEC/TEC as well as areas deemed suitable for WRP. Although situated over an area in Completely Degraded (Keighery, 1994) condition, the 39 mature trees may function as transitional habitat for fauna moving to the next patches of remnant vegetation. The local area (10 km radius from the application area) retains approximately 25.5% of the original native vegetation extent.
Ecological linkage	The application area is mapped within a Southwest Regional Ecological Linkage (61).
Conservation areas	The closest conservation area is located 2.2 km southeast of the application area.
Vegetation description	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of isolated Peppermint (*Agonis flexuosa*) trees over introduced grass (weeds). Representative photos are available in Appendix D. This is inconsistent with the mapped vegetation complexes mapped of the area: • Vegetation Association 310 – Yelverton (Y): woodland of Jarrah (*Eucalyptus marginata*), Marri (*Corymbia calophylla*), Peppermint (*Agonis flexuosa*) and Sheoaks (*Allocasuarina fraseriana*) on low undulating uplands in the humid zone. • Vegetation Association 314 - Yelverton (Yd): woodland of Sheoaks (*Allocasuarina fraseriana*), Jarrah (*Eucalyptus marginata*), Western woody pear (*Xylomelum occidentale*) and Candlestick banksia (*Banksia attenuata*) on sandy slopes in the humid zone. The mapped vegetation complexes retain approximately 56 and 36 per cent of the original extents (Government of Western Australia, 2019).
Vegetation condition	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in Completely Degraded condition (Keighery, 1994**).** The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.
Climate and landform	The application area lies on flat lands with an elevation between 70 to 74 metres AHD. The climate of the area is characterised by average temperatures ranging between 16 to 17 degrees C and an annual rainfall of 958 mm. Evaporations in the area exceeds rainfall except for during the wetter months.
Soil description	The soils within the application area are mapped as: • Yelverton very gentle slopes Phase: Undulating terrain. Duplex sandy gravels, semi-wet soils, yellow deep sands and sandy earths and loamy gravels. • Yelverton flats Phase: Raised flats. Duplex sandy gravels, semi-wet soils, yellow deep sands and sandy earths and loamy gravels. • Yelverton deep sandy flats Phase: Level to gently undulating raised shelf, lying 10-40 m above the Swan Coastal Plain. The soils are mainly sands

Characteristic	Details
Land degradation risk	The sandy soil of the heavily cleared area is prone to wind erosion. It is low to moderately prone to water erosion. Being surrounded by geomorphic wetlands, the soils may be prone to subsurface acidification.
Waterbodies	The desktop assessment and aerial imagery indicated that no water bodies transect the application area.
Hydrogeography	The application area sits within the Southwest Groundwater Areas Allocation Plan 200000 and lies in the Dunsborough – Vasse Subarea for Superficial and Leederville Formation. The proposed clearing area is adjacent to a Multiple Use Geomorphic Wetlands of the Southwest Region.
Flora	Thirty conservation significant flora have been recorded from within 10 km radius of the application area. None of these records occur over the application area. Noting the condition of the vegetation and lack of native understorey, the species are not likely to occur within the application area.
Ecological communities	Patches of vegetation mapped as the Banksia Woodlands PEC/TEC are located approximately 300 metres from the application area. These patches are measuring approximately one hectare each.
Fauna	The local area has been mapped as suitable for WRP. The remnant patches of native vegetation surrounding the application area are classified as Class C and D for WRP (Shedley and Williams, 2014).

A.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*					
Southwest Forrest	4,350,580	2,819,347	65		50
Vegetation complex					
Yelverton – Uplands (Yd) - 310	9007	3222	36	1,697	19
Yelverton – Y - 314	2439	1359	56		
Local area					
10km radius	32,981	8,411.5	25.5	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

Species name	Conservation status	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia flagelliformis	4			5.88	1	N/A
Acacia inops	3	N	N	7.47	3	N/A

Species name	Conservation status	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia semitrullata	4	N	N	7.94	2	N/A
Andersonia ferricola	1	N	N	2.93	3	N/A
Banksia nivea subsp. *uliginosa*	T	N	N	2.67	9	N/A
Banksia squarrosa subsp. *argillacea*	T	N	N	2.75	8	N/A
Caladenia busselliana	T	N	N	8.20	1	N/A
Caladenia excelsa	T	N	N	9.90	1	N/A
Caladenia procera	T	N	N	8.37	5	N/A
Calothamnus lateralis var. *crassus*	3	N	N	2.58	3	N/A
Calothamnus quadrifidus subsp. *teretifolius*	4	N	N	2.39	6	N/A
Chamelaucium sp. S coastal plain (R.D.Royce 4872)	T	N	N	3.01	2	N/A
Chordifex gracilior	3	N	N	2.79	1	N/A
Cyathochaeta teretifolia	3	N	N	8.02	2	N/A
Daviesia elongata	T	N	N	4.71	8	N/A
Drakaea micrantha	T	N	N	2.13	2	N/A
Grevillea brachystylis subsp. *brachystylis*	3	N	N	5.41	3	N/A
Grevillea brachystylis subsp. *grandis*	T	N	N	2.80	8	N/A
Grevillea brachystylis subsp. Yelverton (A. Webb AW09122)	2	N	N	9.68	1	N/A
Hakea oldfieldii	3	N	N	2.97	3	N/A
Isopogon formosus subsp. *dasylepis*	3	N	N	2.78	1	N/A
Johnsonia inconspicua	3	N	N	4.69	7	N/A
Lambertia rariflora subsp. *rariflora*	4	N	N	7.45	3	N/A
Lasiopetalum laxiflorum	3	N	N	5.60	1	N/A
Lepyrodia heleocharoides	3	N	N	7.52	3	N/A
Loxocarya magna	3	N	N	3.51	2	N/A
Pultenaea pinifolia	3	N	N	8.29	1	N/A
Synaphea petiolaris subsp. *simplex*	3	N	N	5.41	2	N/A
Thysanotus glaucus	4	N	N	7.21	1	N/A
Verticordia plumosa var. *ananeotes*	T	N	N	6.24	1	N/A

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Bettongia penicillata ogilbyi (woylie, brush-tailed bettong)	CR	N	N	3.11	2	N/A
Calidris acuminata (Sharp-tailed sandpiper)	MI	N	N	6.94	1	N/A
Calidris ruficollis (Red-necked stint)	MI	N	N	9.57	1	N/A
*Calyptorhynchus banksii naso (*forest red-tailed black cockatoo)	VU	N	N	0.99	16	N/A
Calyptorhynchus baudinii (Baudin's cockatoo)	EN	N	N	1.18	14	N/A
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	N	N	3.24	8	N/A
Calyptorhynchus sp. 'white-tailed black cockatoo'(White-tailed black cockatoo)	EN	N	N	1.38	39	N/A
Dasyurus geoffroii (chuditch, western quoll)	VU	N	N	7.59	3	N/A
Diomedea exulans (Wandering albatross)	VU	N	N	9.57	1	N/A
Engaewa pseudoreducta (Margaret River burrowing crayfish)	CR	N	N	2.74	10	N/A
Engaewa reducta (Dunsborough burrowing crayfish)	EN	N	N	1.49	47	N/A
Falco peregrinus (Peregrine falcon)	OS	Y	Y	0.99	2	N/A
Hydromys chrysogaster (water-rat, rakali)	P4	N	N	2.96	6	N/A
Hydroprogne caspia (Caspian Tern)	MI			9.57	1	N/A
*Isoodon fusciventer (*quenda, southwestern brown bandicoot)	P4	N	N	1.22	18	N/A
*Macronectes halli (*Northern giant petrel)	MI			9.57	1	N/A
Notamacropus irma(western brush wallaby)	P4	N	N	8.31	1	N/A
Phascogale tapoatafa wambenger (South-western brush-tailed phascogale, wambenger)	CD	N	N	1.87	36	N/A
Pseudocheirus occidentalis (Western ringtail possum, ngwayir)	CR	Y	Y	1.26	64	N/A
Sterna hirundo (Common tern)	MI	N	N	9.57	1	N/A
Thalassarche chlororhynchos (Atlantic yellow-nosed albatross)	VU	N	N	9.57	1	N/A
Thalasseus bergii (Crested tern)	MI	N	N	9.57	5	N/A
Thinornis rubricollis (Hooded plover, hooded dotterel)	P4	N	N	9.57	2	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Westralunio carteri (Carter's freshwater mussel)	VU	N	N	1.04	4	N/A
T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority						

A.5. Ecological community analysis table

Community 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)	Total area (ha)	Are surveys adequate to identify? [Y, N, N/A]
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	Priority 3	N	N	Y	0.05	912	N/A
Central Whicher Scarp Jarrah woodland	Priority 1	N	N	N	8.09	22	N/A
Corymbia calophylla woodlands on heavy soils of the southern Swan Coastal Plain (floristic community type 1b as originally described in Gibson et al. (1994))	Vulnerable	N	N	N	2.60	42	N/A
Shrublands of near permanent wetlands in creek lines of the Whicher Scarp (Whicher Scarp community G2)	Priority 1	N	N	N	1.19	41	N/A
Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (floristic community type 10b as originally described in Gibson et al. (1994))	Critically Endangered	N	N	N	2.62	83	N/A
Swan Coastal Plain Paluslope Wetlands	Priority 1	N	N	N	2.53	42	N/A
West Whicher Scarp *Banksia attenuata* woodland (Swan Coastal Plain centred woodlands of grey/white sands community B2)	Priority 1	N	N	N	1.55	207	N/A
Whicher Scarp Jarrah woodland of deep coloured sands	Priority 1	N	N	N	4.68	4	N/A
T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority							

A.6. Land degradation risk table

Risk categories	***Land Unit 1***
Wind erosion	M1: 10-30% of the map unit has a high to extreme hazard
Water erosion	L2: 3-10% of the map unit has a very high to extreme hazard
Salinity	L2: 3-10% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	M2: 30-50% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L2: 3-10% of the map unit has a moderate to very high to risk
Phosphorus export risk	L2: 3-10% of the map unit has a high to extreme hazard

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 area proposed to be cleared does not contain significant flora, fauna, habitats, or unique assemblages of plants. The completely degraded vegetation condition with the lack of native understorey does not comprise a high level of biodiversity.	Not likely to be at variance	No
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared is mapped within an area suitable for WRP. Although degraded, the vegetation comprises of peppermint trees, the preferred habitat for WRP. There have been a large number of records of WRP in the local area.	May be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: Given its Completely Degraded conditions (Keighery, 1994), the area proposed to be cleared is unlikely to support 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: The area proposed to be cleared does not contain species that indicate a threatened ecological community. The proposed clearing area, however, is adjacent to patches of vegetation mapped as the Banksia Dominated Woodland of the Swan Costal Plain (TEC listed as Endangered under the EPBC Act).	Not likely to be at variance	Yes Refer to Section 3.2.1, 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 extent of remnant vegetation in the local area is approximately 25.5 per cent . The vegetation proposed to be cleared is a part of a mapped South West Regional Ecological Linkage.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of conservation areas.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
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 adjacent to a mapped geomorphic wetland of the Swan Coastal Plain. Given the nature and extent of clearing, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality of the mapped wetland. The native vegetation proposed to be cleared is not considered to be growing in an environment associated with a wetland.	Not likely to be at variance	Yes Refer to Section 3.2.3, above
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are susceptible to wind erosion and subsurface acidification. Further clearing of the already disturbed area may increase the risk of land degradation due to wind erosion.	May be at variance	*Yes* *Refer to Section 3.2.3, above.*
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: The proposed clearing will not intercept any surface or groundwater resources. It is therefore unlikely to impact surface or ground water quality.	Not likely to be at variance	Yes Refer to Section 3.2.3, above
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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

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. Photographs of the vegetation and management plan

Figure 4. Representative photographs of the application area. Vegetation proposed to be cleared comprises of isolated mature peppermint (*Agonis flexuosa*) trees over pasture grass (Accendo, 2021).

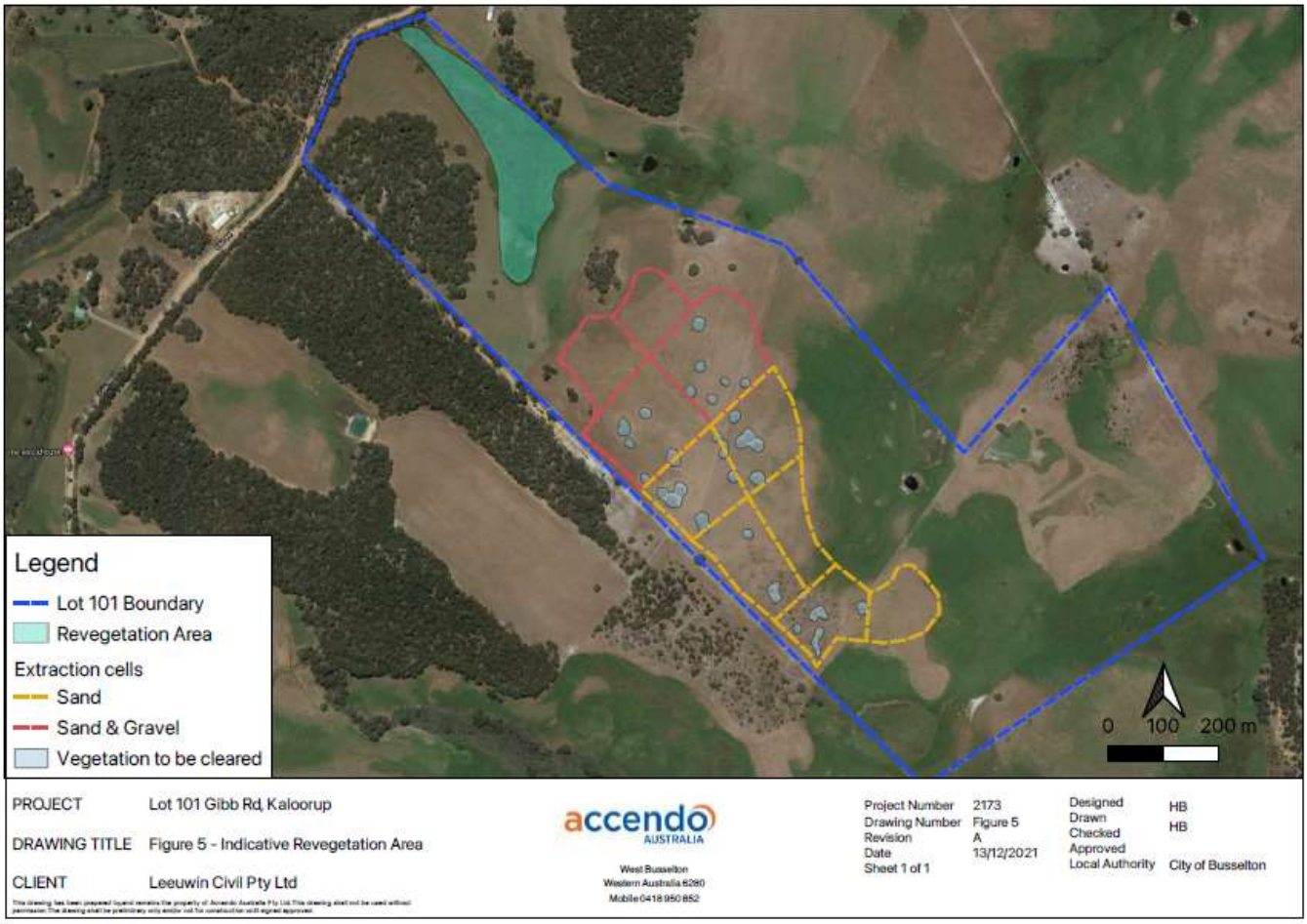

Figure 5. Clearing area, mining stages and revegetation plan (Accendo, 2021). Mining activities will be carried out in stages, each measuring a maximum of 2 hectares at any given time. Revegetation of a site nearby is proposed to mitigate potential impacts of clearing.

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)
- 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)

E.2. References

Accendo Australia (2021). *Clearing Permit Application CPS 9531/1 and Supporting Documentation. Lot 101 Gibb Road, Kaloorup*. December 2021. Received by email on 20 December 20221. DWER Ref DWERDT541212)

Accendo Australia (2022). *Clearing Permit Application CPS 9531/1: revised application area and EIL/Development Approval.* Email received 14 January 2022 (DWER Ref. DWERDT551528)

City of Busselton (2020). *Notice of determination on application for development approval. DA18/0674.* Provided to DWER by email by the applicant on 29 April 2022.

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development.* Government of Western Australia. URL: https://maps.agric.wa.gov.au/nrm-info/ (accessed March 2022).

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

Government of Western Australia (2019) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, https://catalogue.data.wa.gov.au/dataset/dbca

Government of Western Australia. (2019) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity, Conservation and Attractions. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia.* Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*, Western Australian Local Government Association and Department of Environment and Conservation, Perth.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.

Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

Shedley E and K Williams (2014). *An assessment of habitat for western ringtail possum (Pseudocheirus occidentalis) on the southern Coastal Plain. Unpublished report for the Department of Parks and Wildlife*. Bunbyury, Western Australia. Downloaded August 2021 from https://www.dpaw.wa.gov.au/images/shedley_and_williams_2014_an_assessment_of_habitat_for_western_ringtail_possum_on_the_southern_swan_coastal_plain_-_binningup_to_dunsborough._department_of_parks_and_wildlife.pdf

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and output*s Resource Management Technical Report No. 280. Department of Agriculture.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

Watson, Nicholas (2018). *Habitat preferences and the effect of habitat reduction on the quenda (Isoodon fusciventer) in an urban development.* School of Veterinary and Life Sciences, Murdoch University, Western Australia.

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed in March 2022)