



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

### PERMIT DETAILS

Area Permit Number: CPS 11351/1  
File Number: DWERVT20509  
Duration of Permit: From 14 March 2026 to 14 March 2033

### PERMIT HOLDER

City of Joondalup

### LAND ON WHICH CLEARING IS TO BE DONE

Lot 15445 on Deposited Plan 40340, Hillarys

### AUTHORISED ACTIVITY

The permit holder must not clear more than 0.004 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

### CONDITIONS

#### 1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 14 March 2028.

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

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

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

#### 3. Weed 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*:

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

- (b) ensure that no known *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. **Directional clearing**

The permit holder must:

- (a) conduct *clearing* authorised under this permit in one direction towards adjacent *native vegetation*; and
- (b) allow a reasonable time for fauna present with the area being cleared to move into adjacent *native vegetation* ahead of the *clearing* activity.

#### 5. **Revegetation and rehabilitation - Mitigation**

The permit holder must:

- (a) As soon as is practicable, and no later than 12 months following *clearing* authorised under this permit, commence works to *revegetate* and *rehabilitate* the areas cross-hatched red in Figure 2 of schedule 1 by:
  - (i) deliberately *planting native vegetation*, including but not limited to a combination of the following; *Olearia axillaris*, *Scaevola crassifolia*, *Myoporum insulare*, *Rhagodia baccata*, *Spinifex hirsutus*, and *Spinifex longifolius* that will result in the completion criteria detailed in Table 1 of Schedule 1 of this permit;
  - (ii) ensuring only *local provenance* propagating material is used;
  - (iii) ensuring *planting* is undertaken at the *optimal time*;
  - (iv) undertake *weed* control activities to achieve and maintain the minimum completion criteria specified in Table 1 of Schedule 1;
  - (v) watering of *plantings* for at least three years post *planting*;
  - (vi) establish at least one 5 x 5 metre quadrat monitoring sites within *rehabilitated* area; and
  - (vii) undertake monitoring of the area *revegetated* and *rehabilitated* by an *environmental specialist* until the completion criteria listed in Table 1 of Schedule 1 have been met.
- (b) The permit holder must undertake *remedial actions* for areas *revegetated* and *rehabilitated*, where monitoring indicates that the *revegetation* and *rehabilitation* has not met the completion criteria specified in Table 1 of Schedule 1, including:
  - (i) deliberately *planting native vegetation* that will result in the minimum completion criteria detailed in Table 1 of Schedule 1 and ensuring only *local provenance* propagating material are used;
  - (ii) additional *weed* control activities as required; and
  - (iii) monitoring of the *revegetated* and *rehabilitated* area by an *environmental specialist*, until the completion criteria are met.

## 6. 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.	<ul style="list-style-type: none"> <li>(a) the species composition, structure, and density of the cleared area;</li> <li>(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings;</li> <li>(c) the date that the area was cleared;</li> <li>(d) the size of the area cleared (in hectares);</li> <li>(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2;</li> <li>(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 3; and</li> <li>(g) actions taken in accordance with condition 4.</li> </ul>
2.	In relation to <i>revegetation</i> and <i>rehabilitation</i> pursuant to condition 5	<ul style="list-style-type: none"> <li>(a) the date(s) on which the <i>planting</i> was undertaken;</li> <li>(b) the boundaries of the <i>planted</i> area, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20202), expressing the geographical coordinates in Eastings and Northings or decimal degrees;</li> <li>(c) a description of the <i>planting</i> activities undertaken, including actions taken to implement watering and <i>weed</i> control;</li> <li>(d) a copy of the <i>environmental specialist's</i> monitoring report and determination; and</li> <li>(e) a description of any remedial actions undertaken.</li> </ul>

## 7. Reporting

The permit holder must provide to the *CEO* the records required under condition 6 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 <i>Environmental Protection Act 1986</i> .
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.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (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	<i>Environmental Protection Act 1986</i> (WA)
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 Interim Biogeographic Regionalisation for Australia (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 July for undertaking planting.
planted/ing	means the re-establishment of vegetation by creating soil conditions and planting seedlings of the desired species.
rehabilitate/ion	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
remedial action/s	Means for the purpose of this permit, any activity that is required to ensure successful re-establishment and survival of planted trees.

Term	Definition
revegetate/ion	means actively managing an area containing native vegetation in order to improve the ecological function of the area.
weeds	means any plant – <ul style="list-style-type: none"> <li data-bbox="570 338 1360 411">(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</li> <li data-bbox="570 415 1360 531">(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</li> <li data-bbox="570 535 1097 569">(c) not indigenous to the area concerned.</li> </ul>

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**END OF CONDITIONS**



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 Jessica Burton

MANAGER

NATIVE VEGETATION REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

19 February 2026

# 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 (cross hatched yellow)**



**Figure 2: Map of the boundary of the area within which *revegetation* and *rehabilitation* pursuant to condition 5 must occur (cross-hatched red)**

**Table 1: The table below outlines the *revegetation* completion criteria that must be met under condition 5.**

Measure	Completion Targets	Completion Criteria	Monitoring
Native species diversity	Minimum 6 native species.	A minimum of 6 native species persisting across the revegetation area including the following: <i>Olearia axillaris</i> , <i>Scaevola crassifolia</i> , <i>Myoporum insulare</i> , <i>Rhagodia baccata</i> , <i>Spinifex hirsutus</i> , and <i>Spinifex longifolius</i> .	Native diversity will be counted annually for the first 3 years, and if the completion criteria are not met then annual monitoring is required until the completion criteria is met.
Weed density	Weed cover at the site is 10% or less	Weed cover is to be 10% or less across the revegetation area	Weed cover percentage will be assessed annually for 3 years or until completion criteria has been met.
Native species density	Survival rate of 1 native plants/m <sup>2</sup> .	A survival rate of 1 plant/m <sup>2</sup> is to be achieved after 3 years.	The number of surviving plants will be counted annually for a minimum of 3 years or until the completion criteria is met.
Watering	Watering tube stock over summer months.	Watering to be conducted over the summer months each year for 3 years, or until competition criteria are met.	Watering of tube stock to be conducted each year for 3 years or until competition criteria are met.



# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 11351/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	City of Joondalup
<b>Application received:</b>	19 November 2025
<b>Application area:</b>	0.004 hectares of native vegetation
<b>Purpose of clearing:</b>	Maintenance of the retaining wall
<b>Method of clearing:</b>	Mechanical Removal
<b>Property:</b>	Lot 15445 on Plan 40340
<b>Location (LGA area/s):</b>	City of Joondalup
<b>Localities (suburb/s):</b>	Hillarys

### 1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5). The removal of this vegetation is required to provide access to conduct remediation works for a deteriorating limestone retaining wall, currently posing a public safety hazard.

### 1.3. Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	19 February 2026
<b>Decision area:</b>	0.004 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 H.1), the findings of a vegetation survey (Eco logical Australia, 2023), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the limestone retaining wall is currently deteriorating and poses a safety hazard in an area which received a high amount of pedestrian foot traffic.

The assessment identified that the proposed clearing will result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;

- the loss of approximately 0.004 hectares of Floristic Community Type (FCT) 29a Coastal shrublands on shallow sands, a Priority Ecological Community (PEC) occurring in degraded to good (Keighery, 1994) condition;
- the loss of 0.004 hectares of native vegetation growing within the conservation area, Bush Forever site 325; and
- potential impacts to fauna individuals if they are present in the application area at the time of 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 proposed clearing is unlikely to lead to an unacceptable risk to environmental values and impacts are suitably minimised and managed. The applicant has suitably demonstrated avoidance and minimisation measures.

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

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- revegetate a minimum of 0.009 hectares of native vegetation within Bush Forever site 325, in alignment with the Bush Forever requirements set out in SPP 2.8.

## 1.5. Site map



**Figure 1. Map of the application area**

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

# CPS 11351/1

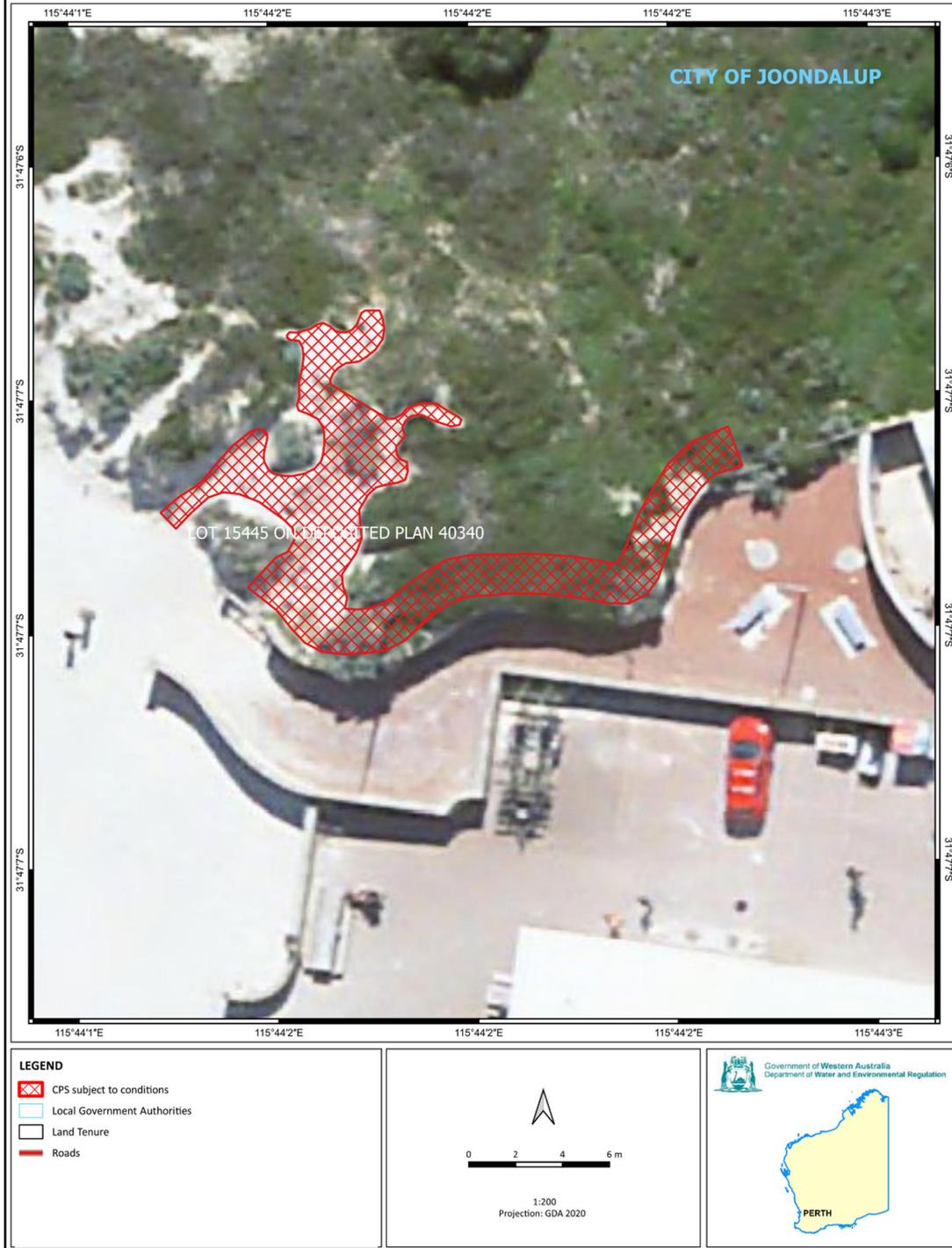


Figure 2. Map of area required to be revegetated in accordance to permit conditions

## 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)
- *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)

### 3 Detailed assessment of application

#### 3.1. Avoidance and mitigation measures

The applicant provided the following information on avoidance, mitigation and management measures considered for the project:

- Long-lasting repairs could not be conducted without clearing native vegetation (for example by accessing the wall from the outside of the vegetated area),
- Native vegetation will be pruned instead of cleared where possible,
- The access point chosen (from the western side) was deemed to require the least amount of clearing of native vegetation,
- Once the repair works have been completed, erosion controls such as coir matting and sand trap fencing will be installed around the remaining vegetation,
- The applicant has stated that the scope of works includes the implementation of a permanent solution for the deteriorating sections of the limestone walls, reducing the need for future clearing in this location and
- The applicant increased their revegetation area from 0.008ha to 0.009ha intending to plant *Olearia axillaris*, *Scaevola crassifolia*, *Myoporum insulare*, *Rhagodia baccata*, *Spinifex hirsutus* and *Spinifex longifolius*.

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

#### 3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix D) identified that the impacts of the proposed clearing present a risk to biological values (priority ecological community) and conservation areas. 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 (Priority Ecological Community) - Clearing Principles (a)

###### Assessment

Although available mapping and spatial data did not indicate that conservation ecological communities were located within the application area or immediate surrounds, surveys undertaken surrounding the application area (Eco Logical Australia, 2023) identified the presence of a priority ecological community. The community identified was FCT29a Coastal shrublands on shallow sands, southern Swan Coastal Plain (Priority 3). This community consists of mostly heaths on shallow sands over limestone close to the coast and includes *Spyridium globulosum*, *Rhagodia baccata* and *Olearia axillaris*.

The removal of 0.004ha of native vegetation within this PEC, which represents a small, linear and already degraded area located alongside an existing pathway, is unlikely to significantly reduce the occurrence of the abovementioned PEC, nor result in a significant residual impact. In addition, the clearing is unlikely to sever or additionally impact on

the functionality of the PEC, due to the existing impacts of path edge effects already in place. This PEC has numerous similarly sized and larger patches occurring within the local area (10km radius from the application area), and regionally, including within other conservation areas.

The applicant has proposed revegetation of 0.009ha, to be conducted at the site following the remediation works on the limestone wall. The revegetation works will include planting of local provenance species representative of the FCT29a Coastal shrublands on shallow sands priority ecological community, including *Olearia axillaris*, *Scaevola crassifolia*, *Myoporum insulare*, *Rhagodia baccata*, *Spinifex hirsutus*, and *Spinifex longifolius*. As parts of the application area are currently in degraded condition (Keighery, 1994) this will ensure there will be an environmental gain.

#### Conditions

To address the above impacts, the applicant will be required to take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

### **3.2.2. Biological values (fauna) - Clearing Principles (b)**

#### Assessment

According to available databases, 53 conservation significant fauna species were identified within the local area, including 10 priority fauna species, 24 threatened fauna species, and 19 species otherwise protected.

In forming a view on the likelihood of these species occurring within the application area, the preferred habitat types and typical home ranges of these species and their recorded proximity to the application area were considered, along with the type and condition of the vegetation within the application area. Available data sources indicate the following species located within the local area, have habitat preferences likely to be represented within the application area, and therefore, may occur within the area proposed to be cleared:

- *Isoodon fusciventer* (quenda, south-western brown bandicoot)
- *Synemon gratiosa* (graceful sunmoth)

#### ***Isoodon fusciventer* (quenda, south-western brown bandicoot) – Priority 4**

Quenda tend to inhabit forest, woodland and heathland, usually with dense understorey vegetation, sometimes wetland fringes. They forage for plant material, fungi and insects by digging in leaf litter and soil (DBCA, 2017). According to available databases, the nearest record is approximately 0.016km from the application area with 173 recorded in the local area. Quenda were not opportunistically observed within the survey area during the 2023 flora and vegetation assessment (Eco Logical Australia, 2023).

Quenda may traverse through the application area while moving through the landscape. Given the nature of the clearing, being a narrow linear portion of vegetation along a highly public utilised pathway, the application area is unlikely to provide significant habitat for quenda.

#### ***Synemon gratiosa* (graceful sunmoth) – Priority 4**

The graceful sunmoth is most common in sedge lands, heathlands, woodlands and occasionally within open parts of forest where their 'foodplants' (Various grasses, sedges and mat-rushes) are located. Within Quindalup dunes associated with coastal heath, where the application area is located, the graceful sunmoth's feeding is restricted to their preferred host plants, namely *Lomandra maritima* in these locations (DEC, 2011). According to available databases, the nearest record is approximately 1.7km from the application area with 98 recorded in the local area. *Lomandra maritima* was not recorded within either the OaScOS or ShTdOG vegetation community and the graceful sunmoth was not opportunistically observed within the survey area during the 2023 flora and vegetation assessment (Eco Logical Australia, 2023).

Based on information provided by the applicant, the preferred host species, *Lomandra maritima*, is not found within the clearing area. As a result, the clearing area may provide an area for the graceful sunmoth to traverse between other areas of vegetation, however, is unlikely to provide significant habitat.

#### Conclusion

Whilst the application area does not comprise significant habitat for fauna, there is the potential for individuals to be present at the time of clearing. Slow, directional clearing to allow the movement of fauna that may be present at the time of clearing into adjacent vegetation will mitigate any impacts to fauna.

### Conditions

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

- Slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity.

### **3.2.3. Significant Remnant Vegetation - Clearing Principle (e)**

#### Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region to be a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008).

According to available databases, the application area is mapped as the Swan Coast Plain - Aeolian Deposits Quindalup Complex 55 which is described as coastal dunes 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. This is consistent with vegetation surveys undertaken by Eco Logical Australia in 2023 along the Mullaloo Foreshore, which found that the area closest to the application area consisted of two vegetation types (Eco Logical Australia, 2023):

- OaScOS – *Olearia axillaris* and *Scaevolia crassifolia* open shrubland and
- ShTDOG – *Spinifex hirsutus* and *Thinopyrum distichum* open grassland

Within the local area, the mapped vegetation complex retains approximately 16.14 per cent of its pre-European native vegetation cover and is considered to be extensively cleared. However, noting the application area is located within a constrained area, and the minimal area of clearing required, it is not considered to be a significant remnant within an extensively cleared landscape.

In addition, the application area is located within three formal ecological linkages, including Perth Regional Ecological linkage, Gngangara Ecological Linkage and Perth Biodiversity Project. However, given that the clearing area is small, linear and located along an existing pathway, it is not likely to sever or significantly impact the ecological linkages.

#### Conclusion

Noting the extent and purpose of the proposed clearing, its location on the edge of a broader remnant and within a constrained area, and the City's proposed revegetation plan within the conservation area (Bush Forever site 325) (resulting in no net loss of vegetation once established), it is considered that the impact of the proposed clearing is unlikely to sever connectivity within the surrounding bushland and does not constitute a significant residual impact.

### Conditions

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

- Avoid and minimise native vegetation clearing
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- Revegetation of a minimum of 0.009 hectares of native vegetation within Bush Forever Site 325.

### **3.2.4. Conservation areas (Bush Forever) - Clearing Principle (h)**

#### Assessment

The entirety of the clearing area is located within Bush Forever Site 325: Coastal Strip from Burns Beach to Hillarys. The clearing area consists of a small and linear section of vegetation, located along an existing stretch of pathway. Taking into consideration the extent of the limited proposed clearing, and the degraded to good condition of the vegetation proposed to be cleared, it is considered that the proposed clearing is unlikely to sever connectivity within the bushland corridor or significantly impact the conservation area values. However, the proposed clearing is likely to have a significant residual impact on the Bush Forever Site, through the direct loss of 0.004 hectares of native vegetation.

Under State Planning Policy 2.8 (SPP 2.8) :

'Proposals or decision making' in respect of Bush Forever areas should:

- (i) support a general presumption against the clearing of regionally significant bushland or other degrading activities, except where a proposal or decision –
  - a. is consistent with the overall purpose and intent of an existing Crown reserve or can be reasonably justified with regard to wider environmental, social, economic or recreational needs, and all reasonable alternatives have been considered in order to avoid or minimise any direct loss of regionally significant bushland, and reasonable offset strategies are secured to offset any loss of regionally significant bushland, where appropriate and practical (clause 5.1.2.1(i)(e))

SPP 2.8 also sets out that unavoidable adverse impacts on regionally significant bushland within a Bush Forever area should be offset at a ratio of at least 2:1 in hectares (SPP 2.8 - Appendix 4).

Advice on impacts to Bush Forever was sought from Department of Planning, Lands and Heritage (DPLH) who acknowledged that the limestone wall has deteriorated and begun to crack, presenting a safety risk that requires remedial action. DPLH advised that to ensure the integrity of Bush Forever area 325 is not compromised, and in accordance with SPP 2.8 5.1.1 (ii) and 5.1.2.1 (e):

- other than the native vegetation proposed to be cleared in the footprint of CPS 11351/1, no other disturbance or clearing of any other native vegetation within Bush Forever area 325 is to occur;
- No construction materials, vegetation, earth spoil, drainage or other debris to be disposed of within Bush Forever area 325; and
- Revegetation of the site with local native species at a ratio of 2:1, as proposed by the applicant, is supported.

The applicant has proposed revegetation of 0.009ha, which meets the 2:1 ratio minimum, to be conducted at the site following the remediation works on the limestone wall. The revegetation works will include planting of local provenance species representative of the FCT29a Coastal shrublands on shallow sands priority ecological community, including *Olearia axillaris*, *Scaevola crassifolia*, *Myoporum insulare*, *Rhagodia baccata*, *Spinifex hirsutus*, and *Spinifex longifolius*. As parts of the application area are currently in degraded condition (Keighery, 1994) this will ensure there will be an environmental gain.

There is potential that the proposed clearing activities could result in the introduction or spread of weeds into adjacent vegetation, which could impact on its habitat quality.

### Conclusion

It is considered that potential impacts to Bush Forever area 325 can be managed by undertaking steps to minimise the risk of the introduction and spread of weeds and revegetating and rehabilitating with native vegetation post clearing.

### Conditions

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

- Avoid and minimise native vegetation clearing.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- Revegetation of a minimum of 0.009 hectares of native vegetation within Bush Forever Site 325.

### **3.3. Relevant planning instruments and other matters**

The application area is reserved as Regional Open Space and has a current purpose of recreation, telecommunications and purposes incidental thereto. The application area functions as a high traffic access area to the Mullaloo Foreshore.

The applicant advised that the limestone wall has deteriorated and begun to crack, presenting a safety risk that requires remedial action. The applicant has provided photographic evidence of the wall crack widening throughout the permit application process, highlighting the need for urgent repairs. The scope of works includes a permanent solution for the defective limestone wall and the planned revegetation works, coir matting and sand trap fencing for the nearby dune area will reduce sand movements in the area.

There are no Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972 (WA)* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

**End**

### Appendix A. Additional information provided by applicant

The following additional information was provided by the applicant during the assessment.

Summary of comments	Consideration of comment
<p>The applicant provided additional information to address the necessity of the clearing in response to the matters raised in the public submission.</p> <p>The applicant provided a 2022, Mullaloo Foreshore Reserve Flora Survey and Vegetation Condition Assessment with related spatial data.</p> <p>The applicant provided details of revegetation to mitigate impacts of the proposed clearing to Bush Forever Site 325</p>	<p>This information has been considered in section 3.1 of the decision report and Appendix B.</p> <p>This information has been considered and is available in Figure 3 and Figure 4 of appendix F</p> <p>This information has been considered in sections 3.1 and 3.2.4 of the decision report</p>
<p>The applicant provided additional photographs of the deterioration of the limestone wall, highlighting the urgent need for repairs</p>	<p>This information is available in Figure 6 of Appendix F</p>

### Appendix B. Details of public submissions

The application was advertised for a period of 21 days, and one public submission was received. The comments are summarised in the table below.

Summary of comments	Consideration of comment
<p>The submission raised concerns regarding:</p> <ul style="list-style-type: none"> <li>The listed scope of works appears speculative and may change without community consultation.</li> <li>The supporting information does not explain how The City plans to address the ongoing sand accumulation which has caused the damage to the limestone wall.</li> <li>The range of species chosen for revegetation does not include spinifex species. Therefore, reducing the effectiveness of the revegetation.</li> <li>The Mullaloo Foreshore Reserve Management Plan has not been updated to reflect the recent floristic mapping conducted in 2022.</li> </ul>	<p>In response to the public submission, the applicant advised that:</p> <ul style="list-style-type: none"> <li>The scope of works is to implement a permanent solution for the defective limestone wall, which is currently a safety hazard. The clearing application represents the area required to allow machinery to access the area behind the wall for the shoring and/or excavation necessary to carry out the repairs. In addition, The City has noted that they are not required to undertake community consultation as part of routine maintenance and repairs.</li> <li>The purpose of the clearing application is to be able to undertake works to address a safety hazard. The City is intending to implement a permanent solution for the ongoing damage to the limestone wall. The planned revegetation works for the nearby dune area will reduce sand movements and in addition, the works will include erosion controls such as coir matting and sand trap fencing.</li> <li>The City will include <i>Spinifex hirsutus</i> and <i>Spinifex longifolius</i> into the species selected for the revegetation works</li> <li>The Mullaloo Foreshore Reserve Management Plan was informed by a previous survey prior to</li> </ul>

Summary of comments	Consideration of comment
	<p>the Management plan being endorsed by Council in December 2017. The results of the recent floristic mapping were used to inform an update to the internal Implementation Plan for the Mullaloo Foreshore Reserve Management Plan.</p> <p>This information has been considered in section 3.1 of the decision report.</p>

## Appendix C. Site characteristics

### C.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is on the edge of an isolated fragment of native vegetation in the intensive land use zone of Western Australia. It adjacent to both Tom Simpson Park which is used as a recreational space and surrounding urban development. The proposed clearing area is a small, isolated remnant.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 16.14 per cent of the original native vegetation cover.</p>
Ecological linkage	The area proposed to be cleared intersects three formal ecological linkages including Perth Regional Ecological Linkage, Gnangara Ecological Linkage and Perth Biodiversity Project.
Conservation areas	The application is located entirely within Bush Forever Site 325
Vegetation description	<p>Photographs supplied by the applicant and Vegetation survey (Eco Logical Australia, 2023). indicate the vegetation within the proposed clearing area reflects the Swan Coastal Plain – Quindalup Complex – 55. Representative photos, survey descriptions and maps are available in Appendix F.</p> <p>This is consistent with the mapped vegetation type which also indicates Swan Coastal Plain – Quindalup Complex – 55. This 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 <i>Melaleuca lanceolata</i> (Rottnest Teatree) – <i>Callitris preissii</i> (Rottnest island Pine), the closed scrub of <i>acacia rostellifera</i> (Summer-scented Wattle) and the low closed <i>Agonis flexuosa</i> (Peppermint) forest of Geographe Bay</p> <p>With respect to vegetation communities, the application area comprises largely of</p> <ul style="list-style-type: none"> <li>• OaScOS – <i>Olearia axillaris</i> and <i>Scaevolia crassifolia</i> open shrubland and</li> <li>• ShTdOG – <i>Spinifex hirsutus</i> and <i>Thinopyrum distichum</i> open grassland (Eco Logical Australia, 2023).</li> </ul> <p>Aerial imagery indicates the local area (10 kilometre radius) retains approximately 16.14 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs and information supplied by the applicant indicate the vegetation within the proposed clearing area is in Good and Degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Degraded: Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive</li> </ul>

Characteristic	Details
	management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing. The full Keighery (1994) condition rating scale is provided in Appendix E. Representative photos, survey descriptions and mapping are available in Appendix F.
Soil description	The soil is mapped as Quindalup South System (211Qu) which is described as Coastal dunes, of the Swan Coastal Plain, with calcareous deep sands and yellow sands. Coastal scrub.
Land degradation risk	Quindalup South System is highly susceptible to wind and water erosion and phosphorus export (DPIRD 2019),
Waterbodies	The desktop assessment and aerial imagery indicated no watercourses or waterbodies transect the area proposed to be cleared. The closest waterbody is man made, perennial and located 800m away.
Hydrogeography	The application area is mapped within the Perth Groundwater Area, proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (the RIWI Act). Groundwater salinity within the application area is mapped at 500 to 1000 milligrams per litre total dissolved solids
Flora	The desktop assessment identified 17 Priority species and 3 threatened flora species recorded within the local area. None of these species occurred in same soil type or habitat as the application area. Photos of the application area indicate limited diversity.
Ecological communities	According to surveys provided by the applicant (Eco Logical Australia, 2023), the application area is representative of FCT29a Coastal shrublands on shallow sands, a Priority 3 Ecological Community.
Fauna	During the desktop assessment, 53 conservation significant fauna species were identified within the local area, including 10 priority fauna species, 24 threatened fauna species, and 19 species otherwise protected.  The closest recorded species was <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot) (P4) recorded 0.016km away with a total of 173 records in the local area.

## C.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
<b>IBRA bioregion*</b>					
Swan Coastal Plain	1,500,622.48	576,562.37	38.42	231,916.26	15.45
<b>Vegetation complex</b>					
Quindalup Complex (55)	54,573.88	31,015.90	56.83	6712.04	12.30
<b>Local area</b>					
10km radius	15,574.05	2,513.75	16.14	-	-

\*Government of Western Australia (2019a)

## Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The application area contains vegetation in good to degraded condition and represents the ‘FCT29a Coastal Shrublands on shallow sands’ (Priority 3) priority ecological community (PEC).</p>	At variance	Yes Refer to Section 3.2.1, above.
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is not likely to contain significant habitat for conservation significant fauna given its location on the edge of a public area, degraded to good condition and small extent.</p>	Not likely to be at variance	Yes Refer to Section 3.2.2, above.
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act as it does not contain suitable habitat for threatened flora species recorded within the local area. Photos of the application area indicate limited diversity.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that indicate a threatened ecological community.</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia as it occurs within a constrained area.</p>	Not likely to be at variance	Yes Refer to Section 3.2.3, above.
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the clearing area is located within a Bush Forever site, the proposed clearing is likely to impact on the environmental values of the conservation areas through direct clearing and edge effects.</p>	At variance	Yes Refer to Section 3.2.4, above.
<b>Environmental value: land and water resources</b>		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to wind erosion. Noting the small extent of the proposed clearing the proposed clearing is not likely to have an appreciable impact on land degradation. The applicant advised that once clearing is completed, erosion controls such as coir matting and sand trap fencing will be installed around the remaining vegetation to reduce the risk of soil erosion. In addition, areas temporarily cleared and degraded areas adjacent to the application area, will be revegetated with native species to reduce the exposure of sandy soils to erosion.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses, wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>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.</p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	Not likely to be at variance	No

## Appendix E. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

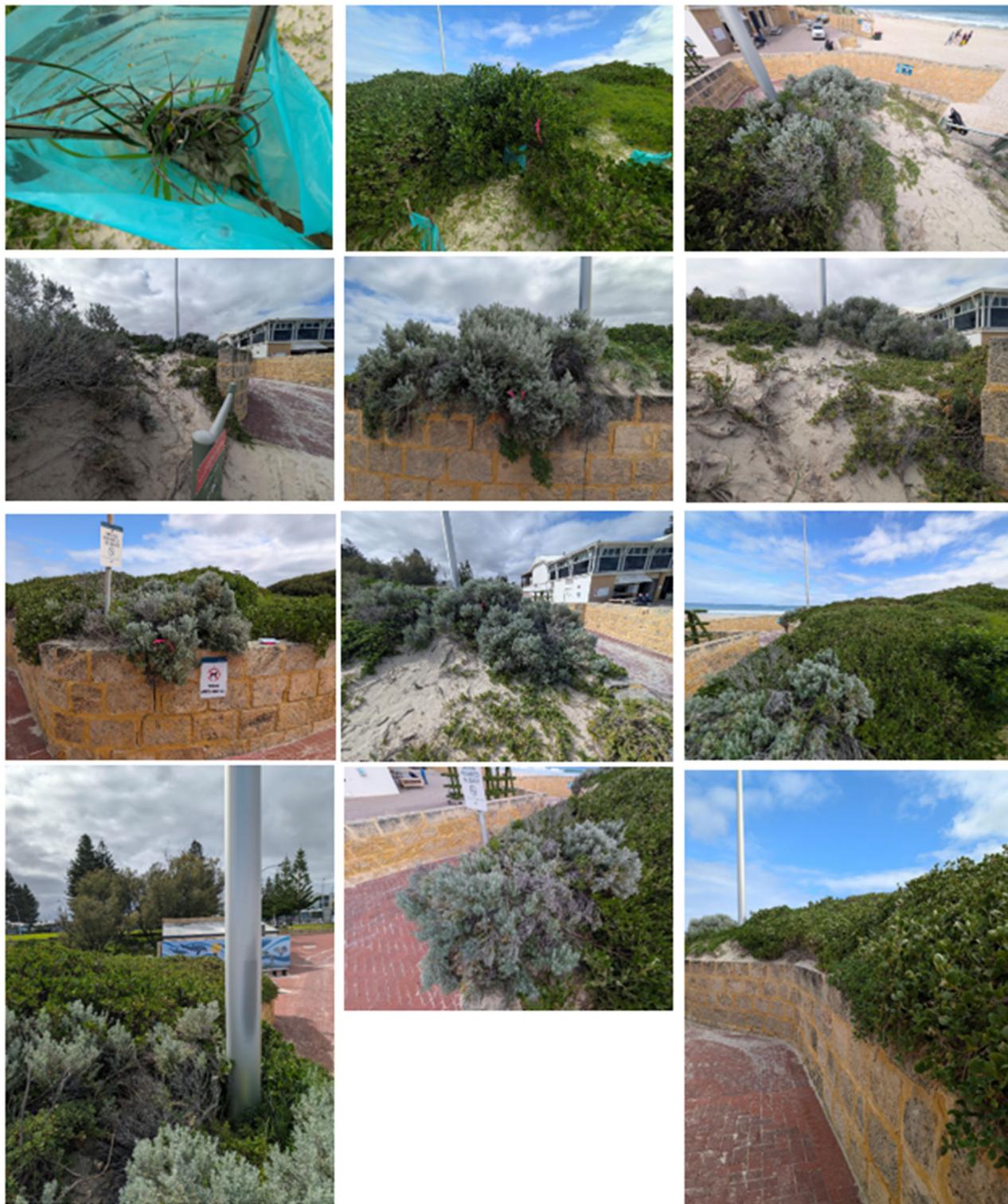
Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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

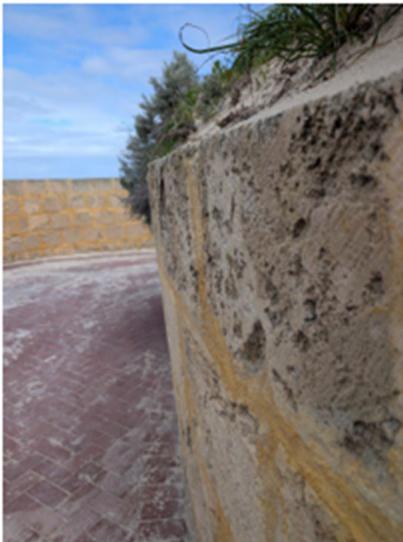
Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.

Condition	Description
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. Photographs of the vegetation and biological survey information excerpts**



**Figure 3. Photographs indicating the vegetation within the proposed clearing area**



**Figure 4. Damage to the limestone blocks, as of August 2025, indicating the necessity of the clearing**

Image	Vegetation community	Vegetation description	Quadrats	Extent within the survey area (ha)	Proportion of the survey area (%)
	OaScOS: Olearia axillaris and Scaevola crassifolia Open Shrubland	<i>Olearia axillaris</i> and <i>Scaevola crassifolia</i> open shrubland over a grassy herb understorey; * <i>Lagurus ovatus</i> , <i>Ficinia nodosa</i> and weedy herb; * <i>Trachyandra divericata</i> . This vegetation type occurs on the secondary dunes in between the other two vegetation types along the entire length of the site.	Q2, Q6, Q9	6.85	39.9
	ShTdOG: <i>Spinifex hirsutus</i> and * <i>Thinopyrum distichum</i> Open Grassland	Open <i>Spinifex hirsutus</i> and * <i>Thinopyrum distichum</i> grassland with sparse patches of <i>Olearia axillaris</i> . This vegetation type occurs along the foredunes on the western edge of the site.	Q3, Q4, Q7	1.82	10.6

Figure 5. Vegetation communities recorded adjacent to the application area (Eco Logical Australia, 2023)



Figure 4: Vegetation communities recorded within the survey area



Figure 6. Location of vegetation communities recorded within the survey area (Eco Logical Australia, 2023)



**Figure 7. Additional photographs of ongoing deterioration of the limestone wall, as of January 2026.**

## **Appendix H. Sources of information**

### **H.1. GIS databases**

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://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

## H.2. References

City of Joondalup (2025a) *Clearing permit application CPS 11351/1*, received 19 November 2025 (DWER Ref: DWERDT1233108).

City of Joondalup (2025b), *Supporting information for clearing permit application CPS 11351/1*, received 19 November 2025 (DWER Ref: DWERDT1242829).

Department of Planning, Lands and Heritage (2025) *Bush Forever advice for clearing permit application CPS 11351/1*, received 16 December 2025. DPLH, Western Australia (DWER Ref: DWERDT1249088).

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](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 23 December 2026).

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](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF).

Eco logical Australia (2023) *Mullaloo Foreshore Reserve Flora Survey and Vegetation Condition Assessment*, Prepared for City of Joondalup, received 4 February 2026 (DWER Ref: DWERDT1270649)

Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: [http://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey\\_Dec13.pdf](http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.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>
- Hedde, 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.
- 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.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs* Resource Management Technical Report No. 280. Department of Agriculture.
- 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.
- Submission (2026) *Public submission in relation to clearing permit application CPS 11351/1*, received 12 January 2026 (DWER Ref: DWERDT1258310).
- Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 20 January 2026)