



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9391/1
File Number: DWERVT8453
Duration of Permit: From 5 November 2021 to 5 November 2023

PERMIT HOLDER

City of Albany

LAND ON WHICH CLEARING IS TO BE DONE

Lot 7391 on Deposited Plan 182730 (Crown Reserve 35754), Little Grove

AUTHORISED ACTIVITY

The permit holder must not clear more than 0.001 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. 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.

2. 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.

3. 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"> (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), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 1; and (f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 2.

4. Reporting

The permit holder must provide to the *CEO* the records required under condition 3 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.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
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.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS


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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

13 October 2021

SCHEDULE 1

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



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



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9391/1
Permit type:	Area permit
Applicant name:	City of Albany
Application received:	16 August 2021
Application area:	0.001 hectares of native vegetation
Purpose of clearing:	Extension of existing bird hide
Method of clearing:	Mechanical Removal
Property:	Lot 7391 on Deposited Plan 182730 (Crown Reserve 35754)
Location (LGA area/s):	City of Albany
Localities (suburb/s):	Little Grove

1.2. Description of clearing activities

The application is for the proposed clearing of 0.001 hectares of native vegetation within Lot 7391 on Deposited Plan 182730 (Crown Reserve 35754), Little Grove, for the purpose of extending an existing bird hide over Coastal saltmarsh. Deliberate clearing will only be done for the digging of 12 holes for post (500mm deep and 250mm round) (City of Albany, 2021; see Figure 1, Section 1.5).

1.3. Decision on application

Decision:	Granted
Decision date:	13 October 2021
Decision area:	0.001 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 14 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 F.1), 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). The Delegated Officer also took into consideration the purpose of the clearing is to create a platform around an existing bird hide which would prevent the placement of tripods on the ground and would also block an existing trail which would prevent people from walking onto the salt flats and disturbing shore birds. Further it is expected the vegetation will continue to grow under the structure as is the case with the current hide (City of Albany, 2021).

The assessment identified that the proposed clearing will result in:

- the loss of 0.001 hectares of native vegetation partially mapped as the Subtropical and Temperate Coastal Saltmarsh ecological community; and
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have any long-term adverse impacts on environmental values and that weed and dieback management practices will mitigate any potential impacts to adjacent vegetation.

The applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1) and the Delegated Officer decided to grant a clearing permit subject to conditions to take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

1.5. Site map



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

2 Legislative context

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

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

- the precautionary principle
- the principle of intergenerational equity
- the 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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Deliberate clearing will only be done for the digging of 12 holes for posts (500mm deep and 250mm round). The dirt removed from each hole will be placed on a tarp and returned around the poles and packed, thus preventing covering of vegetation by soil. In addition, workers will also be instructed to avoid trampling vegetation. It is expected the vegetation will continue to grow under the structure as is the case with the current hide (City of Albany, 2021, see Appendix D). The Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the proposed clearing on environmental values and given the minimal extent of the proposed clearing, was satisfied there was limited scope to further reduce the extent of clearing.

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 present a risk to biological values (flora). 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 (flora) - Clearing Principles (a)

Assessment

The vegetation within the application area partially occurs within a mapped occurrence of the Subtropical and Temperate Coastal Saltmarsh ecological community. This community is listed as a Priority Ecological Community (PEC) (Priority 3), by the Department of Biodiversity, Conservation and Attractions (DBCA) and as a vulnerable Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The application area is also 19 metres from the *Banksia littoralis* woodland / *Melaleuca incana* Shrubland PEC (Priority 1), however, the site characteristics of the vegetation within the application are not consistent with the vegetation description for this PEC.

The vegetation within the application area is situated on the edge of a larger remnant, on a small peninsula within the Princess Royal Harbour. Information provided with the application indicates the vegetation within the application area comprises coastal saltmarsh in good to degraded (Keighery, 1994) condition, with a footpath covering approximately 50% of the application area. Noting the vegetation condition and purpose of the application, the loss of 0.001 hectares of vegetation proposed to be cleared is not likely to significantly impact or cause a decline in the ecological functioning of the Subtropical and Temperate Coastal Saltmarsh PEC in the local area.

The vegetation within the application area is not likely to comprise significant habitat for conservation significant flora or fauna and does not form part of a conservation area, or significant ecological linkage (Appendix A, Appendix C and Appendix D). However, the vegetation within the application area does form part of a larger remnant of vegetation that is also mapped as the Subtropical and Temperate Coastal Saltmarsh PEC. The adjacent remnant vegetation may be susceptible to the introduction and spread of environmental weeds and dieback disease (*Phytophthora species*). *Phytophthora* dieback is known to be a threat to vegetation in the Albany region (Sandiford and Barrett,

2010). The implementation of dieback and weed management strategies during the clearing will mitigate impacts to adjacent vegetation.

Conclusion

Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions in relation to this environmental value. It is considered that the impacts of the proposed clearing to ecological communities and remnant vegetation can be managed through the implementation of weed and dieback hygiene management conditions 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:

- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation.

3.3. Relevant planning instruments and other matters

This application was found to be valid in accordance with sections 51E(1) and (2) of the EP Act and was advertised for public comment on 2 September 2021 for 14 days. No public submissions were received.

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

A.1. 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 this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

Characteristic	Details
Local context	<p>The area proposed to be cleared is 0.001 hectares which is part of a larger remnant of native vegetation in the intensive land use zone of Western Australia. It is located adjacent to a bird hide on the banks of a small peninsula in the Princess Royal Harbour and close to Shell Bay. It is at the edge of the riparian vegetation located some 30 metres from the tideline. The area is surrounded by Coastal saltmarsh.</p> <p>A residential area is located 100 metres south of the application area and public footpaths lead from the residential area and the eastern shoreline to the bird hide. Due to the small size and location of the proposed clearing area, it is not contributing significantly to the overall ecological value of the area and would not constitute an important linkage.</p> <p>Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 41.6 per cent of the original native vegetation cover.</p>
Ecological linkage	The proposed clearing area is within the South Coast Macro Corridor, Strategic Zone A but does not sever the ecological linkage of the corridor.
Conservation areas	The proposed clearing is within a Crown land reserve managed by the City of Albany and approximately 1.7 kilometres from the Tordinup National Park managed by DBCA as a conservation reserve.
Vegetation description	<p>Photographs and information supplied by the applicant indicate the vegetation within the proposed clearing area consists of Coastal Saltmarsh. Representative photos and an extract of the Albany Regional Vegetation Survey (E.M. Sandiford & S. Barrett 2010) supplied by the City of Albany is available in Appendix D.</p> <p>The site is located within the 'Warren' region of the Interim Biogeographic Regionalisation for Australia (IBRA). The mapped vegetation type is Beard Torndirrup (22), which is described as Low woodland or open low woodland with other acacia, banksia, peppermint, cypress pine, casuarina, York gum <i>Acacia spp.</i>, <i>Banksia spp.</i>, <i>Agonis flexuosa</i>, <i>Callitris spp.</i>, <i>Allocasuarina spp.</i>, <i>Eucalyptus loxophleba</i>. (Shepherd et al, 2001). The mapped vegetation type retains approximately 85.27 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in Good to Degraded (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> • Good Condition: 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 Condition: 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. <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	The application area occurs on flat topography at sea level and has a mean annual maximum temperature of 22.9°C and a mean annual minimum temperature of 8.2°C. The mean annual rainfall is 925.2 millimetres.

Characteristic	Details
Soil description and Land degradation risk	<p>The soil is mapped within the Meerup podzols on interdune plains Phase (242MeMRf), described as Podzols on interdune plains; banksia-bulich-yate woodland (DPIRD, 2021). The Meerup podzols on interdune plains Phase (242MeMRf) is mapped at a low risk of water erosion, salinity, flood, waterlogging and surface compaction, but is mapped at a medium risk of phosphorus export and high risk of wind erosion, subsurface acidification and water repellence (Schoknecht et al., 2004).</p>
Waterbodies and Hydrogeography	<p>The desktop assessment and aerial imagery indicated that the application area is located 30 metres from the tideline on the banks of the Princess Royal Harbour and close to Shell Bay.</p> <p>The application area is mapped within the Albany groundwater area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (the RIWI Act) but does not transect any water resources proclaimed under either the <i>Metropolitan Water Supply Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> (CAWS Act).</p> <p>Groundwater salinity within the application area is mapped at 500 to 1000 milligrams per litre total dissolved solids.</p>
Flora	<p>The desktop assessment identified that a total of 83 conservation significant flora species have been recorded within the local area, comprising six Priority 1 (P1) flora, 17 Priority 2 (P2) flora, 24 Priority 3 (P3) flora, 24 Priority 4 (P4) flora, and 12 threatened flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of <i>Thomasia solanacea</i> (P4) approximately 1.1 kilometres from the application area.</p> <p>Given the vegetation type and condition, as well as the small extent of the application, it is unlikely that any priority or threatened flora previously recorded in the local area would be present in the clearing area.</p>
Ecological communities	<p>The vegetation within the application area partially occurs within a mapped occurrence of the Subtropical and Temperate Coastal Saltmarsh ecological community. This community is listed as a Priority 3 (P3) flora, by the Department of Biodiversity, Conservation and Attractions (DBCA) and as a vulnerable Threatened Ecological Community (TEC) under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). The application area is also 19 metres from the <i>Banksia littoralis</i> woodland / <i>Melaleuca incana</i> Shrubland PEC (Priority 1), however, the site characteristics of the vegetation within the application are not consistent with the vegetation description for this PEC.</p>
Fauna	<p>The desktop assessment identified that a total of 49 threatened or priority fauna species, all of which are birds have been recorded within the local area, including 3 critically endangered species, 9 endangered fauna species, 6 vulnerable species, 5 priority fauna species, 26 migratory fauna species, and 1 other specially protected fauna species (DBCA, 2007-).</p> <p>Given the boundary of the local area overlaps a large marine waterbody, a few of the recorded species are exclusively associated with forested and woodland habitats that do not occur within the application area. None of the existing fauna records occur within the application area.</p>

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<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>Noting the vegetation condition, surrounding land use and the small extent of clearing proposed, the vegetation within the application area does not likely comprise significant habitat for conservation significant flora or fauna. The application area is mapped as the Subtropical and Temperate Coastal Saltmarsh ecological community.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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>Noting the small extent of clearing proposed for the digging of 12 post holes, the degraded vegetation condition along the footpath (comprising half of the application area), the presence of similar vegetation adjacent to the application, and photographs provided with the application that indicate the recovery of vegetation under the existing platform, the vegetation within the application area is not likely to comprise significant habitat for fauna. Further, due to the inherent mobile nature of birds and the nature of the application, it is expected that any birds frequenting the area would move away during construction but return once the disturbance has ceased.</p>	Not likely to be at variance	No
<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>Given the small extent of clearing, vegetation condition and photographs provided with the application which indicate the recovery of vegetation under the existing platform, the vegetation within the application area is not likely to represent critical habitat or compromise the conservation status of threatened flora. The area proposed to be cleared is unlikely to contain significant habitat for any flora species listed under the BC Act.</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 intersect any mapped threatened ecological communities listed under the BC Act within the local area.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<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 native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The mapped vegetation type retains approximately 85.27 per cent of the original extent. The Environmental Protection Authority (EPA) recognises the City of Albany to be a constrained area, within which a minimum 10 per cent</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>representation threshold for ecological communities is recommended (EPA, 2003). Therefore, the extent of the mapped vegetation type remaining exceeds the EPA (2003) targets for a constrained area.</p>		
<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 distance to the nearest conservation area and the small extent of the application area, the proposed clearing is not likely to have an impact on the environmental values of adjacent conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<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>Noting the extent and method of the clearing proposed, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not likely to be 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 at low risk of water erosion, salinity, flood, waterlogging and surface compaction, but are mapped at a medium risk of phosphorus export and high risk of wind erosion, subsurface acidification and water repellence. Noting the small clearing extent for 12 holes proposed within a larger remnant, the proposed clearing is not likely to have an appreciable impact on land degradation.</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>The application area is 30 metres from the tideline on the banks of the Princess Royal Harbour and mapped within the Albany groundwater area. However, due to the small extent of 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>Given the small amount of clearing and the purpose of the application, the proposed clearing is unlikely to contribute to or exacerbate any instance of flooding.</p>	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.

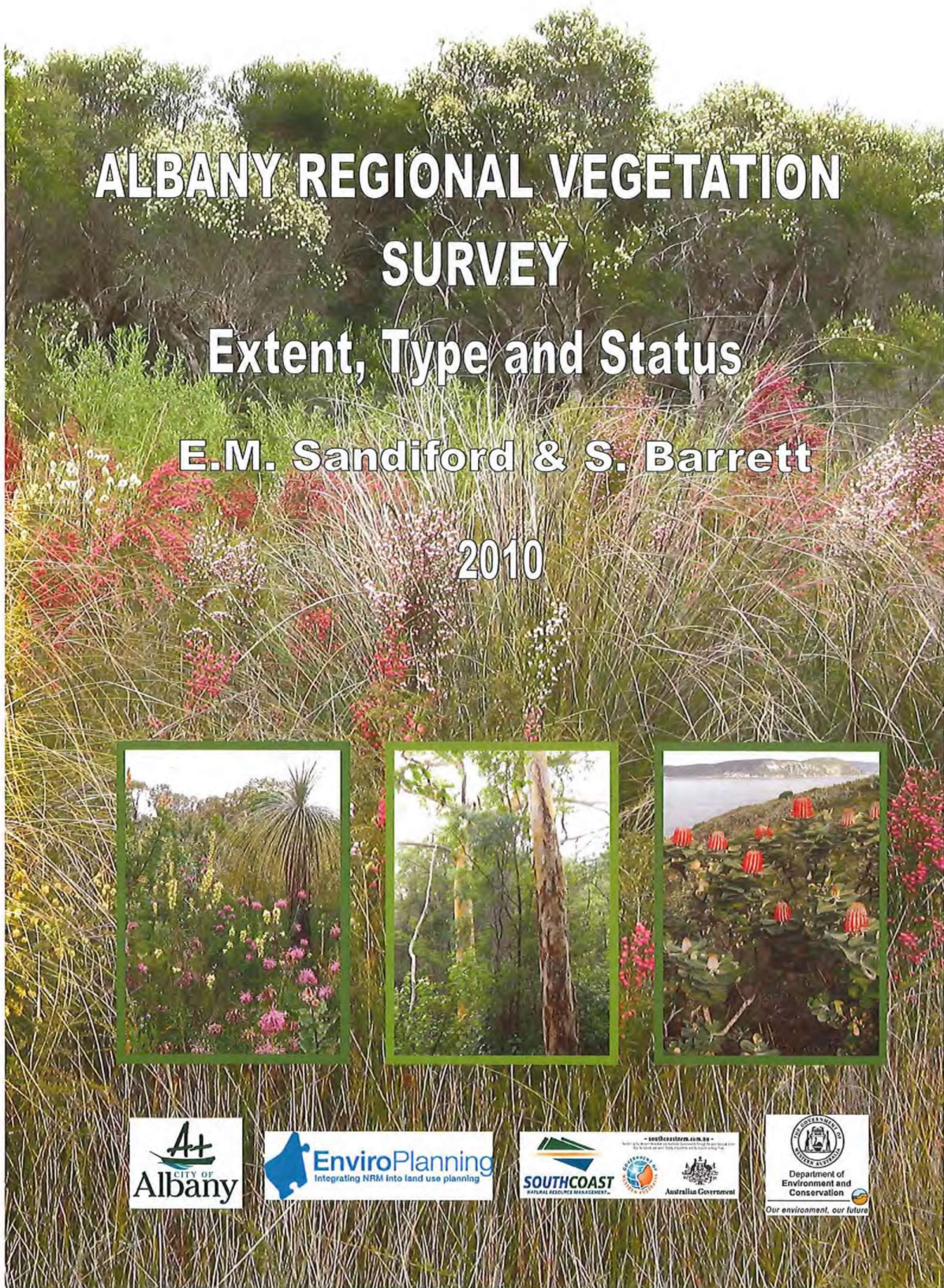
Appendix D. Photographs of the vegetation



Existing Rushy Point Bird Hide.



White pegs indicate approx. platform area – 12 holes to be dug for posts. No other clearing. Please note the vegetation that is still growing underneath the existing structure.



Cover Photos

Front cover-
Background, *Gahnia trifida* Sedgeland/Wet Shrubland and *Melaleuca raphiophylla* Woodland/Low Forest
Complex, Millbrook Nature Reserve

Insets *Hakea* spp Shrubland/Woodland Complex, Angove Water Reserve.
Karri Forest, Limeburners Creek
Melaleuca striata/Banksia spp Coastal Heath, Gull Rock National Park

Back cover
Insets Limestone Heath, Wind Farm
Eucalyptus goniantha Mallee, Bettys Beach/Two Peoples Bay
Evandra aristata Sedgeland, Bornholm.

67 Coastal Saltmarsh

No. of relevés 4 Mean spp. richness 5.3 Area 79 ha % of Rem. Veg. 0.2 % in IUCN Reserve 1-IV 0

Description

This unit is an inter-tidal community restricted to shallow low energy estuarine shores between the low and high tide marks. It contains a variety of salt tolerant succulent herbs, occurring in a mosaic of distinctive herblands that are often dominated by one species (recognized as sub-units). The zonation of these sub-units is determined by the extent and duration of inundation, soil substrate and salinity. Their distribution varies over time with changes in sedimentation, drainage and shorelines (Zedler *et al.* 1995).

This unit is usually bordered by *Juncus kraussii* Sedgeland (66) on the landward side and is found around Oyster Harbour, Princess Royal Harbour and the mouths of the Kalgan and King rivers.

Sub-units:

67a *Sarcocornia quinqueflora* Herbland

This sub-unit is dominated by *S. quinqueflora*. Other species present include *Samolus repens* and *Triglochin striata*. It occurs at the lowest level of all the sub-units.

67b *Wilsonia backhousei/W. humilis* Herbland

This sub-unit is present in very small patches and may include *Samolus repens*, *Juncus kraussii*, *Sarcocornia quinqueflora*, *Triglochin striata* and *Hemichroa pentandra*.

67c *Maireana oppositifolia/Suaeda australis* Low Open Shrubland

This sub-unit is restricted to sandy deposits/berms fronting flats or at the edges of estuaries and is the least inundated of all the sub-units.

67d *Tecticornia halocnemoides* Open Herbland

This sub-unit has been recorded in very small patches around Oyster Harbour and King River (Pen, unpublished).

67e *Tecticornia lepidosperma* Low Open Shrubland This sub-unit has been recorded in very small patches around Oyster Harbour and King River (Pen, unpublished).

67f **Saltpans** These areas within salt marshes are recognized as part of the saltmarsh mosaic and may be vegetated over time.

Comments

This unit is vulnerable to degradation caused by vehicle and foot traffic. Vegetation removal and soil compaction has occurred in some areas on the western side of Oyster Harbour as a result of such traffic. Some degradation has also occurred on the eastern side of Oyster Harbour, possibly a result of grazing. Elsewhere this unit is generally in excellent condition with little evidence of weed invasion. **Juncus acutus*, a major weed in south eastern Australian saltmarshes, was not observed within this unit during this survey.

The distribution of these sub-units varies over time with changes in sedimentation and hydrology and this was evident in the differences between previous mapping (Pen 1992; Pen unpublished) and some areas surveyed during this project. In areas where this unit was not surveyed on foot, Pen's mapping has been used.

Coastal Saltmarsh is important feeding and roosting habitat for migratory water birds protected under Federal legislation and international treaties and is an important habitat and nursery for many marine organisms. The saltmarshes around Oyster Harbour are part of the Oyster Harbour Wetland of National Significance (Department of Environment, Water, Heritage and the Arts (2010).

This unit has been recorded in the Swan, Peel and Leschenault estuaries in southern WA and is similar in species composition to coastal saltmarsh recorded across southern Australia (Pen *et al.* 2000). It is recognized nationally, along with *Juncus kraussii* Sedgeland (66), as a Coastal Saltmarsh community of high ecological value and under threat (Adam 2002). This community is protected in NSW under that states Threatened Species Conservation Act 1994. Australia wide, major threats to this unit include landfill and drainage for urban, industrial and agricultural developments with inundation from predicted sea level rise a potential future threat (Adam 2009; Laegdsgaard *et al.* 2009).

Key identifying Features

- Dominance of succulent salt tolerant herbs/shrubs
- Restricted to edge of tidal flats and estuarine margins.

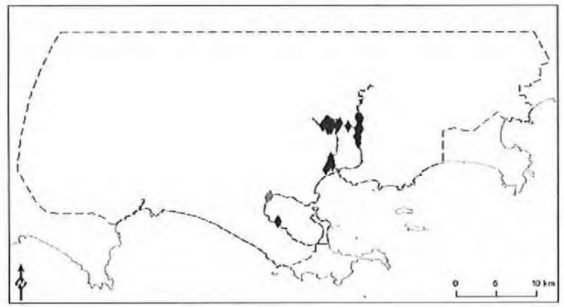
Conservation species None recorded

Floristic Summary

Lifeform	%cover	Species
Sedges/rushes		<i>Juncus kraussii</i>
Herbs	Nil-M	<i>Sarcocornia quinqueflora</i> , <i>Wilsonia backhousei</i> , <i>Wilsonia humilis</i> , <i>Maireana oppositifolia</i> , <i>Suaeda australis</i> , <i>Triglochin striata</i> , <i>Samolus repens</i> , <i>Hemichroa pentandra</i> , <i>Triglochin mucronulata</i> , <i>Tecticornia lepidosperma</i> , <i>Tecticornia halocnemoides</i> , <i>Atriplex hypoleuca</i>
Grasses		<i>Sporobolus virginicus</i>



Unit 67 Coastal Saltmarsh



Appendix F. Sources of information

F.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

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)

F.2. References

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