



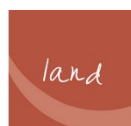
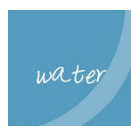
# Dempster Head Management Plan 2018

Prepared by  
South Coast Natural Resource Management Inc.

On behalf of  
Shire of Esperance



***Solutions for a healthy and productive environment***



## Document Control

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- Julie Waters – Environmental Officer – Shire of Esperance
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- Alex Leonard – Southern Ports Authority, Port of Esperance
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## Executive Summary

The Shire of Esperance engaged South Coast Natural Resource Management Inc. (SCNRM) to update the existing Dempster Head Management Plan and complete a flora and dieback survey within the boundary of the management plan area (the “Site”).

The original Dempster Head Management Plan was developed in 2003 by the Shire of Esperance on behalf of the Local Environmental Action Forum (now Local Environmental Awareness Forum) and was adopted by the Shire in May 2003.

The Shire of Esperance is seeking to update the 2003 Dempster Head Management Plan in order to manage new social and environmental issues. The new management plan will be put in place to guide the Shire in the long term management of the area and provide direction in protecting the values of the Site.

The vision for Dempster Head is:

*“Dempster Head will be a well-managed area supporting environmental and cultural values in a manner that provides for sustainable recreational use”.*

The aims of the Dempster Head Management Plan align with the Esperance Coastal Management Plan (2014):

- Management, protection and enhancement of the Dempster Head environment in a sustainable manner so that it can be enjoyed by future generations
- Equitable, safe and sustainable recreational uses
- Increasing community awareness of environmental and cultural values of the Dempster Head area to encourage a sense of ownership
- Encouraging successful relationships between the community and the Shire to continue in the future to allow for better management of Dempster Head
- Planning for future coastal industry, urban growth and tourism

The actions recommended within this management plan have been based on the above aims for Dempster Head.

The Shire of Esperance is responsible for prioritisation and implementation of recommendations within this plan. However in some instances the Shire may be able to partner with another stakeholder with a vested interest in the Site.

Ongoing monitoring will be required to ensure the continued success of any actions implemented in this management plan.

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# 1. Introduction

## 1.1. Project Background

The Shire of Esperance engaged South Coast Natural Resource Management Inc. (South Coast NRM) to review and update the existing Dempster Head Management Plan and complete a flora and dieback survey within the boundary of the management plan area (the “Site”). The original Dempster Head Management Plan was developed in 2003 by Catherine Field, Environmental Officer Shire of Esperance on behalf of the Local Environmental Action Forum (now Local Environmental Awareness Forum) following successful procurement of Coastcare/ Coastwest funding. The management plan was adopted by the Shire of Esperance in May 2003.

The Shire of Esperance is seeking to update the 2003 Dempster Head Management Plan in order to manage new social and environmental issues. The new management plan will be put in place to guide the Shire in the long term management of the area and provide directions in protecting the values of the Site.

## 1.2. Vision and Aims

The vision for Dempster Head is for how the Site will look once the objectives and subsequent actions have been achieved. The vision statement has been developed based on community consultation undertaken, the original statement in the 2003 Management Plan and in keeping with the Shire of Esperance Community Plan 2017 – 2027:

*“Dempster Head will be a well-managed area supporting environmental and cultural values in a manner that provides for sustainable recreational use”.*

The aims of the Dempster Head Management Plan have been updated to reflect those adopted by Council in the Shire of Esperance Coastal Management Plan (Land Insights 2014):

- Management, protection and enhancement of the Dempster Head environment in a sustainable manner so that it can be enjoyed by future generations
- Equitable, safe and sustainable recreational uses
- Increasing community awareness of environmental and cultural values of the Dempster Head area to encourage a sense of ownership
- Encouraging successful relationships between the community and the Shire to continue in the future to allow for better management of Dempster Head
- Planning for future coastal industry, urban growth and tourism



### 1.3. Scope

The scope of this document included:

- Review and update the Dempster Headland Management Plan (Field 2003)
- Identify issues which may cause detrimental environmental, economic and social problems
- Undertake formal consultation with stakeholders identified in the previous management plan
- Flora survey mapping vegetation communities, rare priority flora and threatened ecological communities
- Dieback assessment (undertaken by a registered interpreter) which identifies the current disease locations and susceptible vegetation communities
- Land capability assessment from which the status and impact of current activities can be assessed to determine if they are sustainable in the long term
- Review and map the current trail network (formal and informal) and provide recommendations for formalisation and closure
- Develop an operational plan including recommendations and indicative costs for all proposed actions

### 1.4. Relevant Legislation, Policies and Guidelines

The following legislation, policies and guidelines are considered relevant to this management plan:

- *Aboriginal Heritage Act 1972*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cmth)*
- *Local Government Act 1995*
- *Planning and Development Act 2005*
- Statement of Planning Policy No. 2.6: State Coastal Planning Policy
- Sea Level Change in Western Australia, Application to Coastal Planning 2010
- Coastal Hazard Risk Management and Adaptation Planning Guidelines 2014
- Western Australian Mountain Bike Management Guidelines 2015 (draft)

### 1.5. Other Reports Related to this Management Plan

Other reports related to this management plan include the following Shire of Esperance documents:

- Asset Management Strategy 2015
- Coastal Management Plan 2014
- Coastal Management Plan, A Plan to Guide Coastal and Marine Management within the Esperance Region 2002
- Council Policy Ext 015: Recreational Activities on Council Foreshore
- Dempster Headland Management Plan 2003
- Esperance Coastal Hazard Adaptation Strategy 2016
- General Asset Management Plan 2015
- Strategic Community Plan: 2017-2027
- Surf Life Saving WA Shire of Esperance Coastal Risk Assessment

## 1.6. Location and Land Tenure

Esperance is located approximately 725 km from Western Australia’s capital city, Perth, on the south east coast. The Site is located approximately 1 km from the town centre, in the suburb of West Beach, Esperance.

Dempster Head is a granite headland of which the majority is made up of Reserve 41141. The Site is approximately 71.75 ha in size and the boundary of the Site considered in this management plan is presented in Figure 1.

The Site is comprised of 16 parcels of land, however excludes a portion of Lot 501 Doust Street which extends along West Beach as this area is included in the Shire of Esperance Coastal Management Plan (Land Insights 2014).

Lot 668 Doust Street has been excluded from the Site as this is a telecommunications tower managed by Telstra Corporation Ltd. Land parcel identification, purpose and management information for each are outlined in Table 1 and Figure 2 (Landgate 2017).



### Legend

- Management Plan Boundary
- Local Cadastre

Hopetoun\_to\_Esperance\_Coastline\_May\_2016\_Mosaic.ecw

Figure 1 Site location



**Legend**

- Land\_Parcel\_Boundaries
- Local Cadastre

**Hopetoun\_to\_Esperance\_Coastline\_May\_2016\_Mosaic.ecw**

Figure 2 Land parcel boundaries

Table 1 Dempster Head land types and management

Reserve No	Lot Type	Lot and Survey	Name	Purpose or Use	Proprietor	Management Responsibility
Reserve 31112	Reserve	P174636 651	Lot 651 Doust Street	Recreation & Parkland	–	Shire of Esperance
Reserve 41141	Crown	P029411 1022	Lot 1022 Doust Street	Recreation & Parkland	State of WA	Shire of Esperance
	Reserve	P057791 500	Lot 500 Doust Street	Recreation & Parkland	–	Shire of Esperance
	Freehold	P057791 501 (part)	Lot 501 Doust Street	Recreation & Parkland	State of WA	Shire of Esperance
	Crown	P175102 677	Lot 677 Twilight Beach Road	Recreation & Parkland	State of WA	Shire of Esperance
	Reserve	P208842 10	Lot 10 Twilight Beach Road	Recreation & Parkland	–	Shire of Esperance
	Crown	P240300 7	Lot 7 Twilight Beach Road	Recreation & Parkland	State of WA	Shire of Esperance
	Reserve	P240300 662	Lot 662 Twilight Beach Road	Recreation & Parkland	–	Shire of Esperance
–	Freehold	P005905 51	–	Old Railway Dam	State of WA	State of WA
–	Freehold	P005905 52	–	Old Railway Dam	State of WA	State of WA
–	Freehold	P005905 53	Lot 53 Fallon Court	Old Railway Dam	State of WA	State of WA
–	Freehold	P005905 54	–	Old Railway Dam	State of WA	State of WA
–	Freehold	P002788 638	Lot 638 Moran Place	Old Railway Dam	Water Corporation	Water Corporation
–	Freehold	P002788 639	Lot 639 Moran Place	Old Railway Dam	Water Corporation	Water Corporation
–	Freehold	P002788 640	Lot 640 Moran Place	Old Railway Dam	Water Corporation	Water Corporation
Reserve 49695	Reserve	P060151 555	–	–	–	–



to inundation, may also be impacted by climate change due to effect on air temperature, wind, climate, rainfall and runoff (Bicknell 2010).

Guidelines for developing and implementing effective coastal hazard risk management and adaptation planning (CHRMAP) have been produced to support the implementation of SPP2.6, specifically targeting inundation and erosion exacerbated by impacts of climate change and sea level rise (WAPC & DPLH 2014). The guidance includes:

- *Consider coastal hazards and to evaluate their likelihood and the consequence for specific assets*
- *Identify realistic and effective management and adaptation responses to those risks*
- *Prioritise the management and adaptation responses.*

The projected global sea level rise by 2100 is approximately 0.2 to 0.8 m (Bicknell 2010). Therefore CHRMAP is required to ensure the Shire of Esperance is prepared for potential impacts associated with climate change as per the Esperance Coastal Management Plan 2014.

Shire of Esperance has undertaken a Coastal Hazard Risk Identification and Coastal Hazard Risk Analysis and Evaluation and developed the Esperance Coastal Hazard Adaptation Strategy (CHAS) for the Esperance Bay, the 10.5 km stretch of coast comprising the: Town Centre and Foreshore; Castletown; Flinders; Bandy Creek and Surrounds; and Wylie Head (BMT JFA Consultants 2016).

The CHAS was developed in accordance with the CHRMAP guidelines and the SPP2.6, as they apply at local government level, to assist strategic decision making in the creation of value and protection of value(s) in the coastal zone with an appreciation of the potential risk and stakeholders and community preferences.

As a result, the CHAS aims at reducing vulnerability to coastal hazards in the developed and planned to be developed coastal zone of Esperance, and build the long-term adaptive capacity of the Esperance community to manage coastal hazard risk.

### 1.9. Limitations

Limitations of the field survey and update of this management include, but may not be limited to:

- The Flora and Vegetation Survey was undertaken in November 2017, late in the Spring period, and may not be representative of all species present within the Site due to time of year and only being sampled in one season. However for the purpose of this report vegetation structure assessed is considered to be representative and sufficient to provide information regarding vegetation types. Note this also may apply to interpretable areas for *Phytophthora* Dieback expression.
- The 2017 Flora and Vegetation Survey was undertaken using a general transect survey method on existing tracks and open areas as vantage points to assess vegetation and therefore did not transect intact vegetation. This was due to the thick nature of the vegetation and measures to reduce risk of spread of *Phytophthora* Dieback to intact vegetation.
- A modified method of standard field interpretation was used for the *Phytophthora* Dieback Assessment as the vegetation was too dense and site too steep to use standard strip line techniques. The method adopted is considered suitable for the purpose of informing this management plan.



- It should be noted that cost estimates provided in this management plan are indicative only and may be subject to change depending on location, ease of access, cost of labour, transportation of materials etc. The cost estimates have been provided to give some assistance for the Shire of Esperance budget and funding applications. Quantities and costs should be reassessed prior to construction/ funding applications to confirm accuracy.
- South Coast NRM Inc. accepts no responsibility for damage, loss or injury caused by the use of information in this document.
- South Coast NRM Inc. does not warrant the accuracy or correctness of information supplied by third parties.

## 2. Community Consultation

The Shire of Esperance is committed to inclusive and comprehensive engagement with its community in recognition of its obligations under the *Local Government Act 1995* as they pertain to participation, consultation and engagement.

Community consultation has been undertaken in 2003 and 2017/ 2018 to actively engage with stakeholders and community groups, inform, listen to and acknowledge concerns and values regarding the Dempster Head area.

### 2.1. Summary of 2003 Community Consultation

For the purpose of developing the 2003 Dempster Headland Management Plan public consultation was undertaken to obtain broad community opinion on issues and future management of the Dempster Head reserves. Consultation included:

- Survey
- Community consultation workshop
- Public comment on the draft management plan

The results of the survey and workshop were used to inform the vision and management recommendations within the plan. The outcomes of the community consultation included:

- 224 surveys received (5.6% response rate)
- Determining visitation rates
- Main reasons people visit the area were to go bushwalking, sightseeing, socialising and exercising in that order
- Top four issues were preservation of the environment, rubbish, walk trails and pedestrian access
- Additional facilities suggested were rubbish bins, walk trails, interpretive signage, seating, directional signage and toilets; in that order
- The majority of respondents were not in favour of developments proposed within the reserve
- The vision for the management plan was developed at the community consultation workshop
- Walk trails were suggested to be developed with minimal impact to the environment and rehabilitation of eroded trails required
- Vehicle access should be limited to the top of Dempster Head with no vehicles beyond the locked gate at the telecommunications tower with no vehicle access to Lovers Cove
- Control of feral animals such as rabbits and cats required
- Representatives of the Bay of Isles Aboriginal Corporation and the Goldfields Land and Sea Council expressed their support for the management plan and continued involvement in the management and development of the area

The draft management plan was released for 30 days public comment and also distributed to a number of government agencies and local community groups requesting written comment. No submissions were received during the public comment period.



## 2.2. Community Consultation undertaken in 2017

The 2003 community consultation identified specific stakeholders with an interest in the Site. These stakeholders were targeted for community consultation during the process of updating the Dempster Head Management Plan in 2017/ 2018. Consultation was undertaken directly with the following stakeholders:

- Shire of Esperance
- DBCA Parks and Wildlife Service
- Southern Ports Authority, Port of Esperance
- Water Corporation
- Telstra Corporation Ltd
- Esperance Tjaltjraak Native Title Aboriginal Corporation
- Rotary Club of Esperance
- Rotary Club of Esperance Bay
- Local Environmental Awareness Association
- Esperance Mountain Bike Association
- Esperance Bird Observers Group
- Esperance Wildflowers Association
- South Coast NRM Esperance
- Community members

Consultation involved direct engagement with stakeholders to capture community values via the following methods of communication:

- Letter from Shire of Esperance
- Newspaper article – Esperance Express 29 September 2017
- Face to face meetings with targeted stakeholders in October 2017
- Telephone calls
- Emails
- Poster at the South Coast NRM stall at the Esperance and Districts Agricultural Show 20<sup>th</sup> and 21<sup>st</sup> October 2017
- Public comment period (21 days) advertised on the Shire of Esperance website and in the local newspaper

The outcomes and values identified for the Site during the targeted stakeholder consultation have been included in Sections 4 and 5 of this management plan.

### 3. Natural Environment

#### 3.1. Climate

Esperance has a Mediterranean climate with cool wet winters and mild to hot, dry summers. The highest mean maximum temperature reaches 27.8 °C in January and lowest mean maximum temperature reaches 16.4 °C in July. The highest mean minimum temperature is 15.5 °C in February and lowest mean minimum temperature reaches 7.5 °C in July (BoM 2017).

In the summer months the dominant wind direction is easterly to south easterly due to high pressure systems occurring at this time of year. During winter the dominant wind direction occur from the north through to westerly (BoM 2017).

#### 3.2. Geology and Landforms

Desktop assessment of Soil Landscape Mapping (DPIRD 2018) indicates that the Site intersects two broad soil types within the Tooregullup 1 and Ney 4 Subsystems (Figure 4).

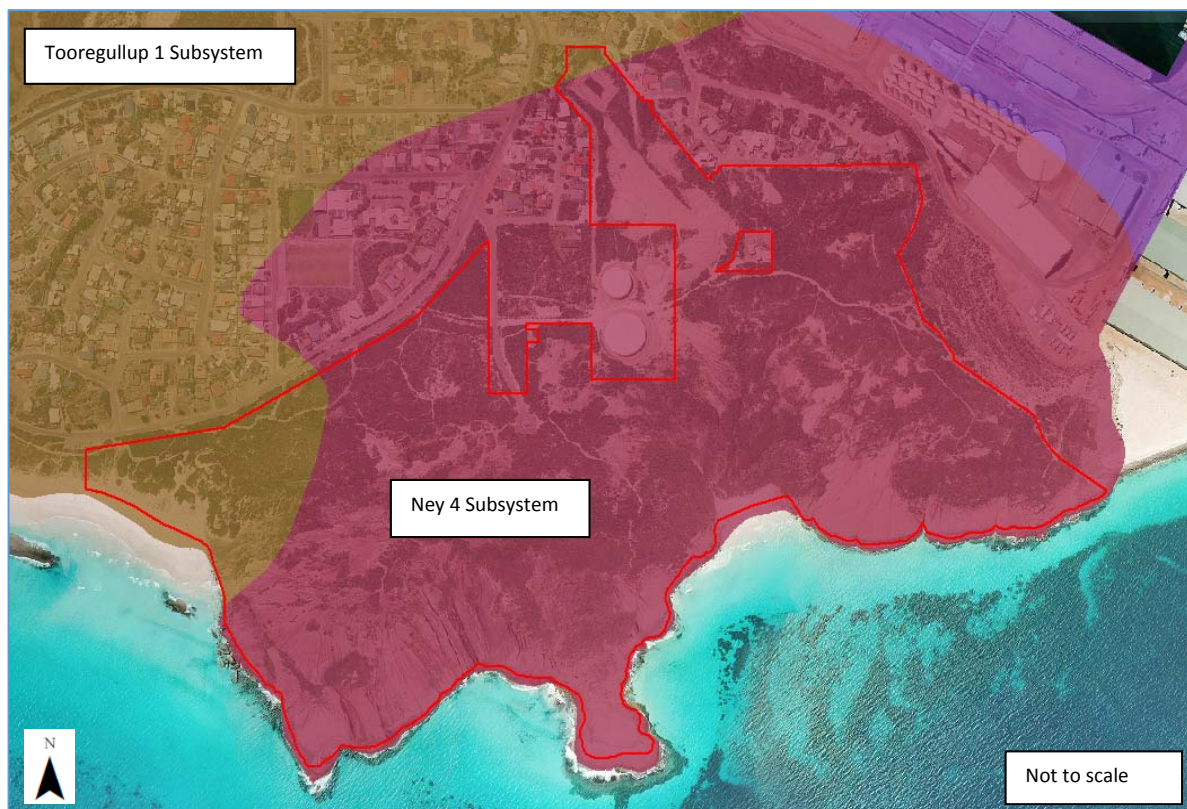


Figure 4 Soil-Landscape Subsystems within the Site

Descriptions of each Map Unit (DPIRD 2018) are outlined in Table 2.

Table 2 Soil-Landscape Subsystems within the Site

Code	Name	Summary Description
245Ne_4	Ney 4 Subsystem	Moderately inclined to steep slopes and sandsheets on headlands. Colluvium of sediments & granite and gneiss. Bare rock with areas of pale deep sand and grey deep sandy duplex soils. Some isolated clumps of heath.
245To_1	Toolregullup 5 Subsystem	Calcareous uniform sands on parabolic dunes.

On the western side of Dempster Head there is quite a large area of erosion where vegetation has been damaged or completely removed. Without the plants roots present the thin topsoil over granite has been easily eroded by surface water runoff (Figure 5 and Figure 6).



Figure 5 Topsoil over granite with some vegetation on western side of Dempster Head (view south)



Figure 6 Bare topsoil over granite on the western side of Dempster Head (view south)

### 3.3. Topography

The highest elevation within the Site is approximately 88.5 m AHD located at the Rotary Lookout carpark, with steep slopes falling away from the peak of Dempster Head to the lowest point (0 m AHD) at the water's edge to the east, west and south.

### 3.4. Hydrology

The Site is located in the Coastal Catchment in the Esperance Coast Basin, in the South West Division (DWER 2017).

The Site is also within the Esperance Groundwater Area which is Proclaimed under the *Rights in Water Irrigation Act 1914* (DWER 2017).

### 3.5. Flora and Vegetation

A Flora and Vegetation Survey was undertaken in November 2017 by Ecologist Tilo Massenbauer (South Coast NRM) as per Environmental Protection Authority guidelines (EPA 2016). For completeness, the survey included the Site and surrounding areas of vegetation outside the management plan boundary which has been referred to as the Survey Area (Appendix A).

This survey aimed to gather the following information about the 84 ha Survey Area:

- Verify the findings of the desktop assessment
- Identify flora species and map vegetation types
- Target known Priority flora species and Threatened Ecological Communities (TECs)
- Opportunistic mapping of woody weed species
- Assess and map vegetation condition

#### 3.5.1. Vegetation Associations

Desktop assessment of the Site indicates it lies within the Fanny Cove Vegetation Association in the Recherche subregion of the Esperance Plains IBRA Region. The pre-European vegetation structure of Fanny Cove 42 is described as “*scrub, open scrub or sparse scrub*” with “*Wattle, teatree and other species Acacia spp. Melaleuca spp.*”

The Fanny Cove Vegetation Association occupies a narrow strip of young Quaternary sand, silts and clays between the sea and old land surface of the Esperance Vegetation System 5 – 10 km inland. Within the Fanny Cove Vegetation System two different vegetation associations occur with these being coastal dune scrub and scrub heath (Field 2003).

The state wide pre-European extent of the Fanny Cove Vegetation Association (42) is 310,084.50 ha, with a current extent of 297,963.21 ha or 96.09% remaining. Within the Shire of Esperance there is 94.87% of the pre-European extent remaining and the proportion of this extent within Parks and Wildlife Services managed land is 68.22% (GoWA 2016).

The Survey Area comprised approx. 57 ha of vegetation which was mapped as 22 vegetation types (Figure 7). The remaining 27 ha of the Survey Area was primarily bare granite areas, authorised tracks and human infrastructure, and heavily disturbed cleared areas. The vegetation types identified within the Site have been grouped into 12 broad vegetation types based on their dominant species and vegetation structure (Appendix A):

- *Banksia* mixed shrubland
- *Callitris* mixed shrubland
- *Calytrix Darwinia Bossiaea* dense mixed shrubland
- *Eucalyptus* shrubland
- *Eucalyptus platypus Melaleuca lanceolata* woodland
- *Hakea drupacea* dense mixed shrubland
- *Melaleuca* Shrubland
- *Taxandria* mixed shrubland
- Coastal Dune Rehabilitation
- Coastal Fore Dune
- Cleared Track
- Grass weeds

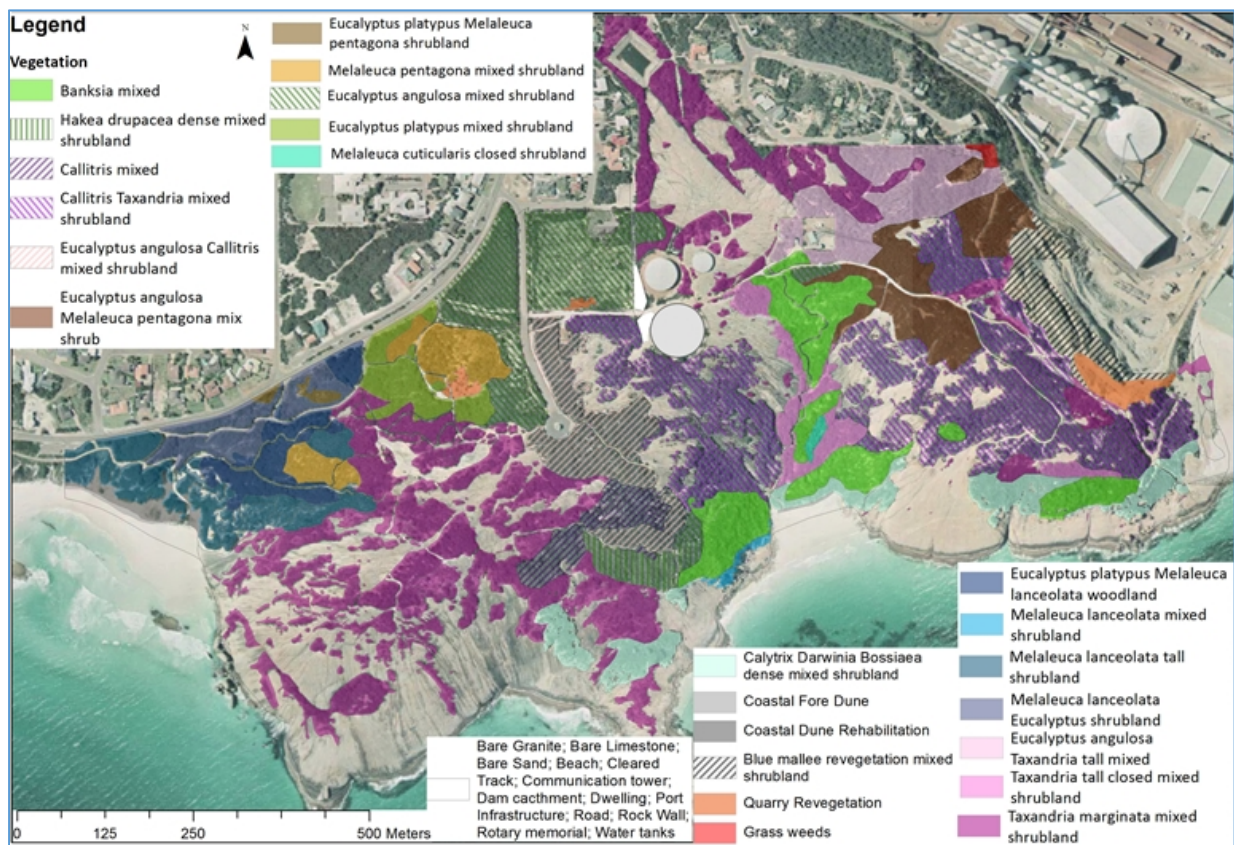


Figure 7 Dempster Head study area and vegetation types

The dominant vegetation types within the Site included: *Taxandria marginata* mixed shrubland; *Callitris Taxandria* mixed shrubland, *Eucalyptus angulosa* mixed shrubland; and *Banksia* mixed shrubland (Appendix A).

The 2017 Flora and Vegetation Survey identified the following key points:

- *The Banksia mixed shrublands vegetation are representative of Esperance sandplain vegetation and it is unusual to have such vegetation so close to the coast*
- *This vegetation type may be at its most western coastal point as it is normally found further inland or down to the coast in the Cape Legrand and Cape Arid National Parks*
- *For such a small area, the vegetation community mosaics and species richness is considered diverse and an important representation of coastal granite, coastal limestone, coastal sand dune, sandplain and wetland community concentrated into the survey area*
- *There are rich wildflower values associated with the shrublands, heaths including orchids and species flowering all year round at different periods*
- *The Site also forms part of the South Coast Coastal Macro corridor and is linked with adjacent coastal vegetation through the Esperance Coastal Groundwater Reserves and Tourist drive*
- *The floristic biodiversity values and native fauna habitat potential provide an excellent education, awareness and economic eco-tourism opportunity for the Shire of Esperance. With careful management the site could provide a “Kings Park” type asset to the community*

### 3.5.2. Vegetation Condition

Vegetation condition of the area was mapped and assessed generically using the Native Vegetation Condition Assessment and Monitoring Manual for WA based on the adapted Keighery's (1994) condition scale (Casson *et al.* 2009).

Based on the applied condition assessment method approximately 50% (28.13 ha) of vegetation within the Survey Area is Pristine and a third (18.87 ha) is in Excellent condition (Figure 8 and Appendix A).

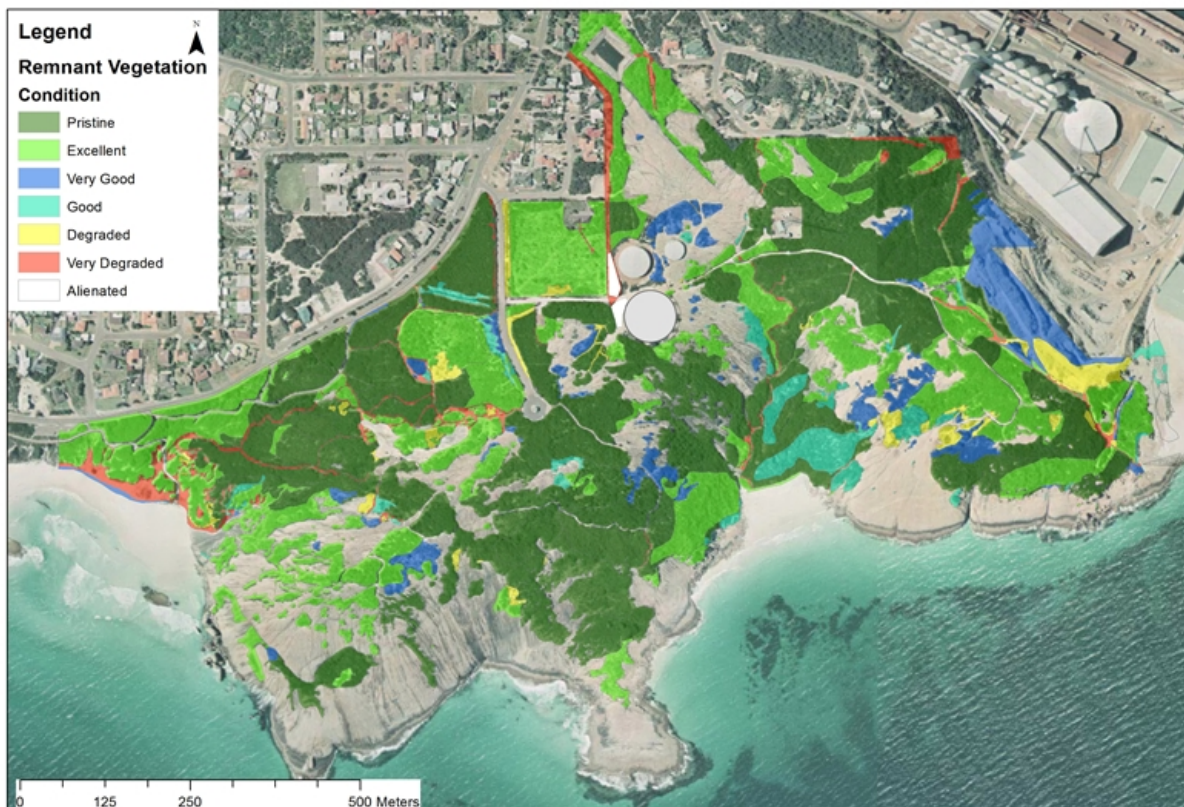


Figure 8 Vegetation condition map

### 3.5.3. Flora

The combined results of the flora surveys undertaken in 2003 and 2017 are listed in Appendix B. This resulted in observation of a total of 171 flora species from 46 families, of which the dominant families included:

- Myrtaceae – 24 species
- Fabaceae – 18 species
- Proteaceae – 16 species
- Cyperaceae – 14 species

The vegetation community condition, mosaics and species richness are considered diverse and an important representation of coastal granite, coastal limestone, coastal sand dune, sand plain and wetland community concentrated in the Site.

There are also rich wildflower values associated with the shrublands, heaths including orchids and species flowering all year round at different periods. Due to the timing of the field survey in late spring it is considered that there would be many herb and orchid species that may flower at other times of year.

### 3.5.4. Flora of Conservation Significance

During the 2003 Flora Survey the then Priority 1 species *Dryandra longifolia subsp. calcicola* was identified at two locations within the Dempster Head area. Since this time this species has been renamed as *Banksia prolata subsp. calcicola* and is now a Priority 4 species.

The Priority 3 listed *Persoonia scabra* was also identified during the 2017 Flora and Vegetation Survey, whilst yet to be confirmed, the location of both species has been mapped in Figure 9.

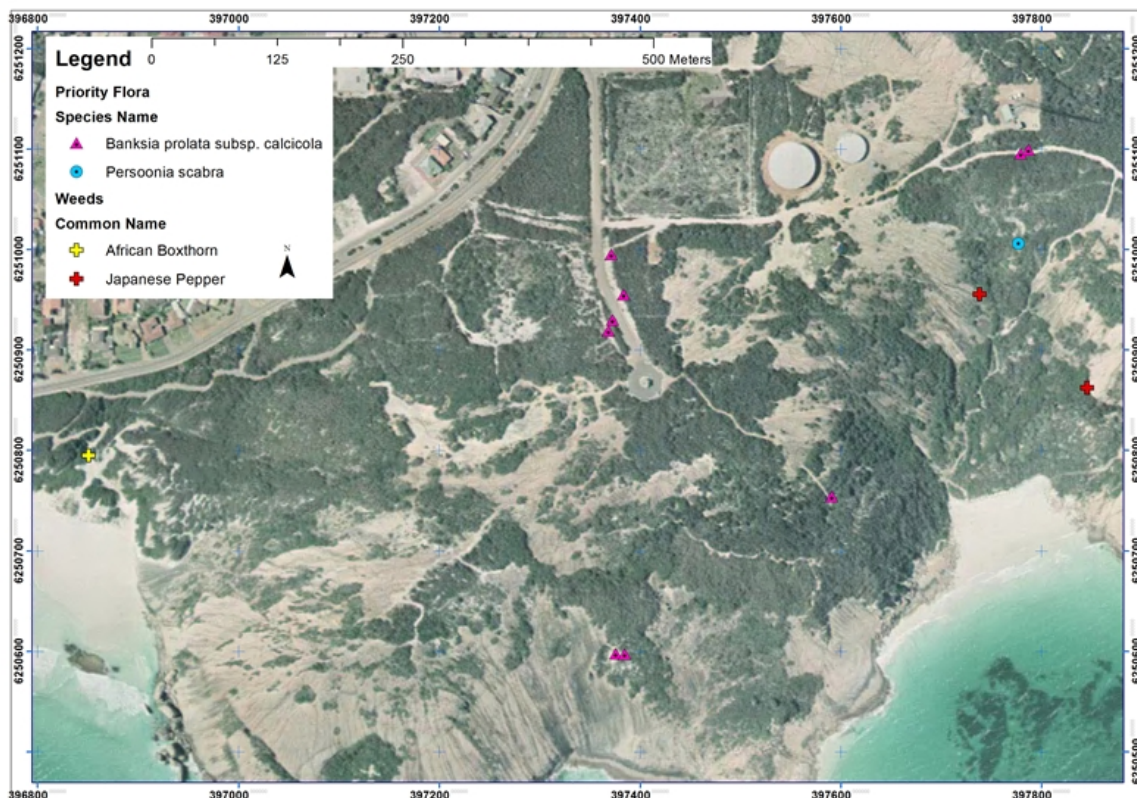


Figure 9 Priority flora and weed species

### 3.6. Threatened and Priority Ecological Communities

Desktop assessment and the Flora and Vegetation Survey of the Site indicates that the federally listed Threatened Ecological Community (TEC) Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia (Proteaceae Dominated Kwongkan Shrubland) is likely to occur in the area (DEE 2017).

This TEC, as listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), has a status of Endangered effective as of 1 February 2014.

Under Section 18 of the EPBC Act with regard to Endangered Communities:

“A person must not take an action that:

(a) has or will have a significant impact on a listed threatened ecological community included in the endangered category;

or

(b) is likely to have a significant impact on a listed threatened ecological community included in the endangered category.”

Individuals and body corporates may be subject to penalty if an offence occurs.

Kwongkan is the name of a type of heathland found on coastal plains confined to the south east botanical province of WA (DotE 2014). The key diagnostic characteristics and condition thresholds are summarised as the following:

- *Occurs with the Southeast Floristic Province*

AND

- *Characterised by Proteaceae species having 30% or greater cover of Proteaceae species across all layers where these shrubs occur (crowns measured as if they are opaque)*

OR

- *Two or more diagnostic Proteaceae species are present that are likely to form a significant vegetative component when regenerated. The use of diagnostic species is for situations in which the cover of Proteaceae species is reduced due to recent disturbance (e.g. fire)*

During the 2017 Flora and Vegetation Survey it was identified that the *Banksia* mixed shrublands and pockets of *Hakea drupacea* vegetation types (approximately 4.45 ha) may be considered to be the Proteaceae Dominated Kwongkan Shrubland. The condition of these vegetation types ranges from Pristine to Very Degraded, of which approximately 3.41 ha is in Pristine/ Excellent condition and only 0.004 ha (40 m<sup>2</sup>) in Very Degraded condition.

A targeted quadrant based survey and further detailed assessment against the EPBC criteria and mapping would be required to confirm the presence of this TEC.

### 3.7. Fauna

The Esperance Bird Observers Group have recorded results for bird surveys undertaken within the Dempster Head area on six occasions between 1997 and 2016. During these surveys 34 species from 21 families were observed, with the highest number of species in the Laridae (gulls and terns) and Meliphagidae (Western spinebill, wattle bird and honey eater) families (Appendix C).

In particular the following species were observed:

- *Thalasseus bergii* (Crested Tern) listed under Commonwealth International Agreement
- *Falco peregrinus* (Peregrine Falcon) specially protected fauna under the *Wildlife Conservation Act 1950*
- *Cereopsis novaehollandiae grisea* (Cape Barren Goose) listed as Vulnerable under the EPBC Act and *Wildlife Conservation Act 1950*

Desktop assessment identified likely presence of *Dasyurus geoffroii* Chuditch (Western Quoll) (DEE 2017) and *Christinus marmoratus* (Marbled Gecko) (ALA 2018) within the Site.



The 2017 Flora and Vegetation Survey identified that the “dense, long unburnt, excellent/pristine condition, diverse vegetation mosaics, high proportion of flowering plants all year round provide excellent habitat potential for fauna”. There may be suitable habitat for native birds, reptiles and mammals such as Quenda (Southern brown bandicoot), Western Honey Possum, Western Pygmy possum, and Native Bush rats. No other formal fauna survey has been undertaken within the Dempster Head area for the purpose for updating this management plan.

### 3.8. Feral Animals

Feral rabbits (*Orytolagus cuniculus*) were reported in the 2003 report and live rabbits have also been observed during site visits in October and November 2017. Evidence of disused fox (*Vulpes vulpes*) burrows were also observed.

The Esperance Port have indicated that there are feral cats (*Felis catus*) on the Port side of Dempster Head which predate on feral pigeons (*Columba livia domestica*) and rats (*Rattus rattus*) at the Port. Feral cats and foxes are likely to predate on native animals and rabbits present a risk to any future revegetation works that may be undertaken within the Site.

### 3.9. Weeds

During the 2003 Flora Survey eight weed species were identified within the Dempster Head and Esperance Port areas. An additional three native species (*Melaleuca huegelii*, *M. nesophila* and *Acacia truncata*) were identified that are not found in the Esperance region (Mischker and Turley 2003).

Of particular note was the identification of *Asparagus asparagoides* (Bridal Creeper) which is a Weed of National Significance (WoNS). This species is an invasive vine or creeper that produces dense foliage that smothers and displaces native vegetation. Successful management of asparagus weeds requires long-term commitment to control new seedlings once the original plants are killed and removed (AWC 2012).

*Lycium ferocissimum* (African Boxthorn) and *Schinus terebinthifolius* (Japanese Pepper) were identified during the 2017 Flora and Vegetation Survey. Bridal Creeper was not observed during this survey however may be due to the time of year the survey was undertaken.

African Boxthorn was identified in the western end of the Site adjacent to First Beach (Appendix A). This species is also a WoNS and is native to South Africa. The African Boxthorn displaces native vegetation and creates impenetrable barriers due to its large thorns which can also injure wildlife (AWC 2012).

Japanese Pepper or Brazilian Pepper is a tree that suckers prolifically and is native to South America (DPIRD 2017). This weed species was observed in two locations on the eastern side of the Site (Appendix A).

It is noted that environmental weed infestations at the Site are relatively small and manageable through best management techniques. Treating and managing weed infestations should be considered in relation to the pristine and excellent vegetation condition rating to a high percentage of the reserve.

### 3.10. Plant Pathogens

The two main plant pathogens of concern in the Esperance area are *Phytophthora* species and *Armillaria luteobubalina*.

#### 3.10.1. Phytophthora Dieback

*Phytophthora cinnamomi* is a water mould which spends its entire life cycle in soil and plant tissue, attacking the roots of plants and subsequently causing them to rot. It is thought to have been introduced to WA at the time of European settlement and is spread by soil disturbance, movement of diseased plant material/ mulches and surface/ sub-surface water flows in areas with greater than 400 mm annual rainfall (DWG 2015).

Over 40 per cent of native species in WA are susceptible to *P. cinnamomi*, many of which are endemic to the south west of WA. Some susceptible groups of species include *Adenanthos*, *Banksia*, *Grevillea*, *Hakea* and *Xanthorrhoea* however other unsusceptible plants may also act a host (Groves *et al.* 2009)

An assessment of *Phytophthora* Dieback disease caused by the pathogen *P. cinnamomi* within the Site was undertaken in November 2017 by registered dieback interpreter Peter Batt (DBCA Parks and Wildlife Service) and assisted by Tilo Massenbauer (South Coast NRM) who completed the Flora and Vegetation Survey of the Site (Appendix D).

This assessment was undertaken to map the occurrence of *P. cinnamomi* within the Site and presence or absence of the pathogen was determined through observation and soil and tissue sampling of recently-dead plant species. The findings of the assessment indicate that:

- The majority of the Site (67.5 ha) comprises vegetation which is resistant to *P. cinnamomi* and therefore classified as Uninterpretable. However this is not to say that *P. cinnamomi* is or is not present in these areas, but that there are too few susceptible understorey species to accurately interpret the presence of *Phytophthora* Dieback disease
- Two obvious infested small areas are present within the south east of the Site
- Two small areas of uninfested vegetation in the eastern portion of the site (1.73 ha and 0.13 ha) dominated by *Banksia speciosa* and other *Banksia* and *Hakea* species
- The areas of uninfested vegetation are considered unprotectable as they are less than 4 ha in size, however due to the rarity of uninfested coastal *B. speciosa* within the town of Esperance are considered valuable and worthy of protection from further infestation

The Protectable Areas Map presented in Appendix D also illustrates where soil and tissue samples were taken.

This assessment recommends the implementation of effective *Phytophthora* management strategies to protect uninfested vegetation from future infestation, in consultation with DBCA Parks and Wildlife, Esperance District and Project Dieback, South Coast NRM.

Whilst uninfested areas of vegetation within the Site are generally considered too small to be protectable a management approach to manage recreational activities in the reserve, restrict access via track rationalisation, formal establishment of track networks and closure and rehabilitation of inappropriate tracks may help minimise risk of spread of dieback already within the Site.

### 3.10.2. Armillaria

*Armillaria luteobubalina* (Honey Fungus) is endemic a yellow-brown parasitic toadstool widely distributed in Southern Australia. This fungus is naturally occurring in native forests and infects the roots of weakened, by some other factor, shrub and tree species ultimately killing them due to root rot (DEC 2013). This is commonly referred to as *Armillaria* root disease (ARD). It occurs on a variety of *Eucalyptus*, *Acacia*, *Agonis*, *Banksia*, *Bossiaea*, *Grevillea*, *Hakea*, *Trymalium* and *Xanthorrhoea* species (Field 2003).

Whilst this is a natural process there is a risk of spreading *Armillaria* when maintaining vegetation on trails within the Site i.e. slashing and pruning branches, via movement of infected mulch or plant material. Vegetation may become more susceptible when stressed by drought, erosion, fire, plant disease, senescence (age) and predation by feral animals such as rabbits. It is recommended, in general, to minimise clearing across the Site and minimise damage to surrounding vegetation during trail maintenance procedures.

At the time of the 2017 *Phytophthora* Dieback assessment there were no fruiting bodies from *Armillaria luteobubalina* observed and very little signs of death caused by this native pathogen (Appendix D).

### 3.11. Fire

Findings from the 2017 flora survey and *Phytophthora* Dieback assessment indicate that the very thick mature vegetation structure within the Site has very few fire induced deaths. Therefore the vegetation is considered to be long unburnt and may be greater than 40 years since a fire impacted the area.

## 4. Cultural Values

### 4.1. Aboriginal Heritage

The *Aboriginal Heritage Act 1972* (AHA Act) protects Aboriginal Sites (places and objects) used by, or traditional to, the original inhabitants of Australia. Under the AHA Act it is an “*offence for anyone to excavate, damage, destroy, conceal or in any way alter an Aboriginal site or object without the relevant Minister’s permission*” (DPLH 2018).

A desktop search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System did not identify any Aboriginal Registered Sites or Other Heritage Places within the Site (Appendix E).

Four Heritage Surveys were identified in the desktop search, three of which were conducted for development of the Kambalda – Esperance Gas Pipeline. The other survey was a PhD thesis undertaken in 1993, titled “*Recherche a L’Esperance: A Prehistory of the Esperance Region of South-Western Australia*” (Appendix E).

One Aboriginal Heritage Registered Site lies to the north of the Site within the Esperance Port managed land. This is Registered Aboriginal Site 2881 – Tommy Windich’s Grave, Esperance, and is also listed on the Shire of Esperance Municipal Heritage Inventory (DPLH 2017).

Tommy Windich was born around 1840 into the Njagi-Njagi tribe near Mount Stirling and was a valued member of exploration parties in the 1860’s and 70’s including those lead by Sir John Forrest along the Great Australian Bight from Esperance to Adelaide. After this he returned to Esperance as a Police Assistant (Field 2003).

In February 1876 Tommy Windich died of pneumonia in Esperance and was buried in a gravesite with headstone erected by the Forrest brothers, John and Alexander, at the foot of Dempster Head which once lay on the shoreline (Figure 10). Since this time the Esperance Port has expanded with a significant area of reclaimed land and the original headstone is now housed at the Esperance Museum (Past Horizons 2016).



Figure 10 Likely original position of Tommy Windich's grave in 1950s (Past Horizons 2016)

Overtime there has been conjecture as to whether the gravesite had been resited. In 2016 the actual location was identified and the Esperance Port, in consultation with Traditional Owners and the Department of Planning, Lands and Heritage (DPLH), established a new memorial for his burial site (Past Horizons 2016). The Tommy Windich Cultural Precinct was officially opened on 20 February 2017.

Historical records also show that Mr Andrew Dempster reported *“in 1882 an epidemic of measles carried off many of the natives, many of whom were buried near Tommy Windich”*, however at this time the location and extent of these unmarked gravesites have not been recorded (Field 2003).

Initial consultation with the Esperance Tjaltjraak Native Title Aboriginal Corporation and Circle of Elders indicates that Dempster Head continues to be an area of significance to local Aboriginal families as it has a long history of use and further engagement with the Esperance Tjaltjraak Native Title Aboriginal Corporation in the implementation of management plan recommendations and possible future Aboriginal Heritage Survey/s would assist in identifying specific cultural values within the Site.

#### 4.2. European Heritage

Dempster Head is named after the Dempster family who were one of the pioneering families of the Esperance region. Permanent European settlement began in Esperance with the arrival of the Dempster brothers, Charles Edward and Andrew, from Northam in 1863 (Monument Australian 2017).

The Dempster family leased 304,000 acres (123,026 ha) of land at Esperance and stocked it with horses, sheep and cattle. Andrew Dempster acquired a cutter to ship goods, wool and livestock to the surrounding islands, Adelaide and Fremantle. The Dempster brothers were also known for their exploration and bushcraft abilities, opening up an overland stock route to Perth (Birman 1972).

The Railway Water Supply Dam and Catchment (Place Number 05061), located in the northern part of the Site, is listed on the Shire of Esperance Municipal Inventory as a place of local significance (DPLH 2017). The Dam and Catchment are comprised of land parcels P002788 (Lots 638, 639 and 640) and P005905 (Lots 51, 52, 53 and 54) (Figure 2).

This water supply was used to service steam trains at the Esperance Salmon Gums Railway until the late 1950's when diesel locomotives replaced the steam trains. Dam construction commenced in 1921 and was completed in 1922 (Figure 11). The Dam catchment is bare granite rock which has been contoured by constructing a rock and cement boundary to channel surface water runoff to the Dam downslope (DPLH 2017).



*Figure 11 Old Railway Dam on Dempster Head when in use (Field 2003)*

A limestone quarry, previously located within Lot 677 (Reserve 41141) on the western side of Doust Street, supplied limestone for road works possibly in the late 1950's and 1960's (Field 2003). This area has gradually revegetated over time however some signs of quarrying activity can be seen in both historical and current aerial photographs (Appendix F).

In 1965 the Rotary Club of Esperance, with the assistance of the Shire of Esperance, established a track to the top of Dempster Head and constructed the original Rotary Lookout (Figure 12). The carpark was sealed in 1972 in the shape of a rotary wheel (Figure 13) when observed from the Lookout (Field 2003).



*Figure 12 Members of the Esperance Rotary Club Tend to the original 1965 Lookout (Field 2003)*



*Figure 13 View of Dust Street, the original Rotary Lookout and carpark (circa 1965) (Field 2003)*

In 1989 the Rotary Lookout was replaced by the current structure and was recently refurbished in late 2017 (Figure 14).

A wishing well has also been installed in the carpark by the Rotary Club of Esperance in honour of a local chemist, the late Len Barker (Field 2003)



*Figure 14 Current Rotary Lookout following refurbishment in 2017 (view south)*

## 5. Existing Facilities and Infrastructure

### 5.1. Vehicle Access and Carparks

The main vehicle access to the Site is via Doust Street, with the Rotary Lookout carpark at the top of Doust Street (Figure 1). The Rotary Lookout carpark design has not been changed since the 2003 management plan which recommended an upgrade of the layout.

The existing carpark layout does not adequately demarcate parking spaces creating confusion when vehicles are parked at different angles. Carparks could also be provided along the eastern side of Doust Street as there is a dual use footpath located on the western side of the street.

Adjacent to the west of the Site is a carpark at First Beach, West Beach which has wooden steps providing access to First Beach and West Beach (Figure 15). Access to Dempster Head is then via informal access up the granite headland to the Dempster Head Reserve via First Beach.

Emergency vehicle access currently exists from Twilight Beach Road down to First Beach and West Beach (Figure 16). This access is bituminised at Twilight Beach Road and then is a stabilised sand track down to the beach. This access track and surrounding area is subject to periodic erosion following rainfall events.

The roads, carparks and wooden structures within the Site are maintained by the Shire of Esperance.



*Figure 15 Wooden steps at West Beach carpark (view southeast)*



*Figure 16 Emergency vehicle access to First Beach from Twilight Beach Road (view north)*

Emergency access is also partially available to Lovers Cove from the intersection of McCarthy and Doust Streets, continuing between the Water Corporation water tanks and then follows the track to the south of the telecommunications tower down to the granite (Figure 17).

There has previously been access by four-wheel drive vehicles to Lovers Cove however a steel gateway has been installed to limit access to the public (Figure 18).





*Figure 17 View north east along track to the telecommunications tower*



*Figure 18 Steel gateway installed on the Lovers Cove track*

Access by four wheel drive vehicles and scooters is not permitted within the Site other than on the bitumen roads and carparks. However four wheel drive vehicles and scooters continue to drive between the Water Corporation tanks and park and camp on the granite overlooking the Esperance town site. It is recommended that a steel gateway is installed at the end of McCarthy Street to restrict access into the reserve and onto the granite area. Road and mountain bikes are also not currently permitted within the Site other than on the dual use footpath on Twilight Beach Road and Doust Street. The use of the Site for cross country and downhill/ enduro mountain biking is currently being reviewed by the Shire of Esperance.

Scooters and mountain bikes have also been observed to be continuing to use formal and informal tracks within the Site. Specific areas of concern following site visits and during surveys include mountain bike, four wheel drive vehicles and scooter access to the west and east of Rotary Lookout and the main entry points to the Site.

## 5.2. Walk Trails, Lookouts and Seating

In addition to the Rotary Lookout (Section 4.2), the Rotary Club of Esperance maintain a formal walk trail loop which has two differing length trails (0.75 km and 1.3 km). Trail heads are located on both the western and eastern sides of the Rotary Lookout carpark. The Rotary Walk Trail was first established in 1964 by the Rotary Club of Esperance and refurbished in 2002 by the Rotary Club of Esperance with funding from the Shire of Esperance and the Lotteries Commission of WA.

There is a wooden shelter with table and bench seating which can be used to view the surrounding islands (Figure 20). The trail has wooden steps on steep slopes and raised boardwalks over wet slippery granite (Figure 21 and Figure 22 respectively).

Seating is located at various points within the Site that take advantage of the views of the ocean and surrounding islands.

The Rotary Walk Trail is an excellent example of a formalised walk trail which helps to minimise impact on the surrounding environment. However there are some patches of vegetation which have been impacted by erosion and informal trails within this section of the Site.

Ongoing maintenance of the wooden shelter and steps is undertaken by the Rotary Club of Esperance and the Shire of Esperance as per their asset management program.



Figure 19 Rotary Walk Trail information



Figure 20 Wooden shelter with table and bench seating (view south)

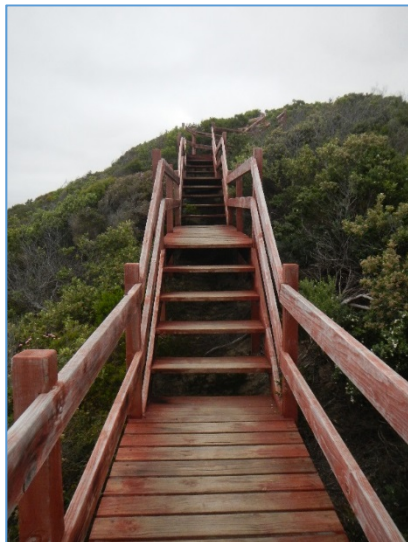


Figure 21 Wooden steps on the Rotary Walk Trail (view northwest)



Figure 22 Raised wooden boardwalk over wet and slippery granite (view west)

A partially formalised track leads to Lovers Cove from the intersection of McCarthy and Doust Streets, between the Water Corporation water tanks and then follows the track to the south of the telecommunications tower down to the granite (Section 5.1). There is some erosion on this track (Figure 23).

A hand rail has been installed to assist people to access the beach on the steep granite. There is some minor erosion on the formalised access track however the small track at the bottom of the granite has significant erosion and is now a washed out gully (Figure 24). Erosion control measures are required to prevent further degradation of vegetation. Steps from the granite to the beach would also assist with access and help mitigate erosion.



*Figure 23 Track leading to Lovers Cove with some erosion (view south)*



*Figure 24 Hand rail on steep granite to Lovers Cove (view west)*

In 2002 the Esperance Port constructed the Port lookout which was refurbished by the Shire approximately five years ago due to vandalism causing fire. The Shire of Esperance continue to maintain the Port Lookout as per the applicable Shire of Esperance Asset Management Plan.

The eastern boundary of the Site is fenced (between Reserve 41141 and the Port managed Reserve 28207) due to a steep slope which was formed by quarrying rock for the Port in this area. The fence also helps to prevent access by kangaroos and foxes to the Port land.

With the exception of the Rotary Walk Trail, Lovers Cove trail and the bitumen dual use path on Twilight Beach Road the remainder of the trails within the Site are informal trails which have been created over time by trampling vegetation.

The unconsolidated nature of the informal trails has meant that there aren't any trail markers to direct people to stay on the path. As a result there has been damage to vegetation and subsequent erosion of soils creating washed out gullies in some places.

Consolidation of the informal trail network has been discussed further in Section 6 Recreational Values.

### 5.3. Signage, Trail Markers and Bins

A small entry statement sign is located at the intersection of Twilight Beach Road and Dust Street indicating the Rotary Lookout (Figure 25). However this sign does not provide any information regarding the rest of the Site such as access to Lovers Cove and the Rotary Walk Trail.



Figure 25 Entry statement signage at bottom of Dust Street

At the top of Dust Street in the Rotary Lookout carpark there are a number of signs on both the eastern and western sides of the carpark indicating the Rotary Walk Trail and various activities prohibited within the Site (Figure 26 and Figure 27).



Figure 26 Signage on eastern side of the Rotary Lookout carpark



Figure 27 Signage on western side of the Rotary Lookout carpark

There are two existing warning signs regarding coastal dangers within the Site, both regarding West Beach. There is one located on Dempster Head on the Rotary Walk Trail (Figure 28) and one at West Beach near the carpark (Figure 29).

There is a need for additional safety signage (similar to the sign at West Beach) at the Rotary Walk Trail and Lovers Cove trail heads warning of coastal dangers, slippery rocks and steep slopes on the walks as per the Surf Life Saving WA report.



Figure 28 Safety signage on the Rotary Walk Trail (view west)



Figure 29 Safety signage at West Beach

Signage regarding Dempster Head including formal walk trails and the recreational activities available in the area could be installed on the edge of the Rotary Lookout carpark. Interpretive signage about the Aboriginal heritage values of the Site, flora and fauna could be placed on the walk trails and at lookout points in consultation with the Esperance Nyungar Traditional Owners.

The current trail markers within the Site are inconsistent with white arrows on the Rotary Walk Trail (Figure 30) and white footprints on the Lovers Cove trail to the beach (Figure 31). All formal trails should have consistent names and marking to make it clearer for visitors to stay on the trails and help minimise trampling and damage to vegetation.



Figure 30 White arrow trail marker on the Rotary Walk Trail



Figure 31 White footprint trail marker on the Lovers Cove trail

Alternative trail markers could be similar to the iconic Bibbulmun Track (**Error! Reference source not found.**), Cape to Cape Track and Munda Biddi Trail (**Error! Reference source not found.**) markers or based on local nature based walk trails in Cape Le Grand National Park. A suitable image relevant to the Site and Esperance area could be determined in consultation with the Esperance Nyungar



Traditional Owners.



Figure 33 Munda Biddi Trail marker

Figure 32 Bibbulmun Track trail markers

One 240 L bin located at Rotary Lookout carpark and one 240 L bin at West Beach carpark. Dog waste bags are provided by the Shire of Esperance at the West Beach carpark as this beach is a designated dog exercise area.

No dog waste bags are currently located at the Rotary Walk Trail head however during the community consultation this was raised as an issue as dog waste and used bags have been left on walk trails within the Site.

#### 5.4. Angel Rings

Recfishwest with the support of Local Governments and DBCA Parks and Wildlife Service install Angel Rings at high risk rock fishing locations across WA. An Angel Ring is a life buoy which is designed to be used to keep someone, who has washed off rocks, afloat until help arrives (Recfishwest 2017). Two Angel Rings have been installed in the Dempster Head area, one at the eastern end of Lovers Cove and the other to the west, on rocks between Lovers Cove and First Beach (Appendix G).

#### 5.5. Public Toilets

There are no public toilets located within the site. The nearest public toilets are located at West Beach, Johns Street to the west of the Site and the Esperance foreshore at Port Authority Park. It is considered that installation of public toilets at the Rotary Lookout carpark would not be feasible due to the ground conditions (granite) and lack of utilities such as water and power at this location.

Directions and distance to the nearest public toilets should be placed on the entry statement signage at the Twilight Beach Road and Doust Street intersection.

## 6. Recreational Values

The main recreational activities undertaken at the Site include, but may not be limited to; bushwalking, general sightseeing, fishing, swimming, cross country and downhill/ enduro mountain bike riding, abseiling, running and personal training by individuals and groups.

At this point in time there is a lack of data available regarding the number of visitors (car, 4WD, scooters, walkers, mountain bike riders etc.) using the Dempster Head area. It would be valuable to obtain baseline numbers of recreational users frequenting Site and follow up data to see if there is a change in use over time and subsequent impact on the area.

### 6.1. Bushwalking and General Sightseeing

The predominant use of the Site is bushwalking and sightseeing by both local residents and visitors to Esperance. People are able to view the surrounding islands of the Recherche Archipelago, Esperance town site and Esperance Port from the Rotary Lookout, Port Lookout, Rotary Walk Trail, Lovers Cove trail and a number of informal trails.

Wildflowers are present at various times throughout the year however are dominant in spring, providing an excellent opportunity to view native species close to the Esperance town site.

Dog walking, on lead only, is permitted within the Site. Community consultation identified the need for more dog waste bags to be available at the Rotary Walk Trail head.

A consistent response from all community groups consulted with, identified the need for consolidation of the informal trail network across the Site to reduce erosion, manage dieback risk and impact/damage to vegetation. In some places creation of informal trails has caused degradation of vegetation causing erosion of the thin layer of topsoil over granite. This soil is easily eroded by surface water runoff shedding off granite.

Consultation with people who regularly walk in the Dempster Head area also identified the need for a formalised trail connecting the dual use path on Twilight Beach Road to the Rotary Lookout Carpark and the general Dempster Head area and trail network.

A potential option would be to formalise the existing trail which lies on the western side of the old quarry (Lot 677 Twilight Beach Road). This trail is comprised of relatively stable rocky material (Figure 34) however would require installation of several wooden steps at the junction with the dual use path and some other steep parts of the trail (Figure 35). Erosion control measures would also be required to prevent the trail being washed out and forming a gully as has happened on other trails within the Site



Figure 34 Potential formal trail between dual use path and Rotary Lookout carpark



Figure 35 Formalise trail entrance where it meets the dual use path with wooden steps

## 6.2. Fishing and Swimming

Lovers Cove is a secluded beach which is used for swimming (Figure 36). The beach is approximately 300 m long and access to the beach is partially formalised however there is a steep rock climb at the base. The surrounding rocks including Flat Rock, located to the west of Lovers Cove, are often used for fishing (Figure 37).

Due to the steep terrain and danger of being swept off the rocks by waves, two Angel Rings have been installed in this area. One is located at the eastern end of Lovers Cove and the other to the west, on rocks between Lovers Cove and First Beach (Appendix G). Fishing also occurs off rocks closer to the Esperance Port boundary.



Figure 36 Lovers Cove - swimming beach (view west)



Figure 37 Flat Rock to the west of Lovers Cove



### 6.3. Cross Country and Downhill/ Enduro Mountain Biking

All forms of mountain biking (both cross country and downhill/ enduro) are currently prohibited by the Shire of Esperance within the Dempster Head area due to environmental impact and safety issues. Unauthorised downhill/ enduro mountain biking infrastructures have been previously removed by the Shire of Esperance and it is an offence to clear vegetation to install infrastructure on this reserve without appropriate approvals from the Shire of Esperance.

Based on consultation with the Esperance Mountain Bike Association (EMBA) it is estimated there are approximately 10-15 regular members in the local area. In recent years there has been an increased frequency of use of the Dempster Head area for mountain bike riding including both cross country and downhill/ enduro. Cross country mountain bike riding can be undertaken on walk trails however downhill/ enduro mountain bike riding is more specialised and undertaken on steep areas within the Site.

Advice from the EMBA indicates that there are only limited opportunities within the Site for dual use trails in areas where bikers are riding slowly uphill and there is potential for conflicts between riders and walkers where speed of the bike is a factor. At such points, separate single use trails would be required to avoid conflicts between riders and walkers.

Unauthorised structures used for downhill/ enduro mountain bike riding have mostly been removed however some structures still remain or have been rebuilt since removal by Council (Figure 38 and Figure 39). Downhill/ enduro mountain biking tracks that have been previously constructed do not have alternative routes for varying skill levels as per the requirement of the draft Western Australian Mountain Bike Management Guidelines (WAMBMG) (DPAW 2015).



*Figure 38 Unauthorised structure present on western side of Dempster Head*



*Figure 39 Unauthorised sand jumps to west of Rotary Lookout carpark*

In some parts of the Site, damage to vegetation caused by unauthorised downhill/ enduro mountain bike trail construction (Figure 40) has increased surface water runoff and channelled it towards the western end of the site where there is severe erosion exposing rock and tree roots. Further use of these areas for downhill/ enduro mountain biking in their current state will cause further degradation of vegetation and will further increase the erosion risk (Figure 41).



Figure 40 Vegetation damaged by unauthorised trail construction on western side of Dempster Head



Figure 41 Severe erosion on trail leading to the emergency vehicle access track near First Beach

“The Piggery” is a dedicated mountain bike trail network located 10 km out of the Esperance town site. It is open to the public, Blue and Green rated and was built by volunteers from the EMBA. “The Piggery” has confirmed presence of dieback (DIDMS 2017) and by using bikes at both sites there would be a risk of spreading dieback at Dempster Head.

The draft WAMBMG (DPAW 2015) indicate that the Dempster Head site would not meet the criteria for a site of local, regional or international significance for a mountain bike facility for a small community and/ or tourism resource. The guidelines indicate that a mountain bike facility of local significance has a minimum area of >250 ha and trail length of up to 20 km. Other recreational users (i.e. walkers, running etc.) would limit the provision of technically difficult trails. A facility of local significance would be required to have a mixture of trail classifications with inclusion of green and blue classified trails as a minimum (DPAW 2015).

Shared use trails must be designed to provide safe intersections, passing opportunities and clear sightlines. Such a trail would be difficult to provide within the Site whilst preventing damage to native vegetation. The draft WAMBMG (DPAW 2015) promote environmentally sustainable design and construction of trails including the following:

- *Trail development must be planned, designed and constructed with the highest environmental standards.*
- *Trails should be appropriate to the landscape, sense of place, and add value to the area.*
- *Trails should not destabilise soils or slopes.*
- *Vegetation should not be cleared or damaged beyond the bounds of the required trail footprint.*
- *Trails should be used to manage recreation on wildlife and habitats in a positive way.*
- *Trails should be designed and constructed in way that minimises the potential spread of dieback and weeds.*
- *Trail user sustainability is about designing and constructing trails for the intended target market and the appropriate demand.*
- *Trail development should not devalue landscapes or places and should positively impact individuals and communities.*
- *Trail development should not negatively impact the cultural heritage of any community or group.*

Table 3 outlines a broad land capability assessment for cross country and downhill/ enduro mountain biking within the Site.

Table 3 Land capability assessment

Aspect	Cross Country	Downhill/ Enduro
Shared use path with walkers.	Possibly able to control speed when passing walkers. However there are only limited opportunities within the Site for dual use trails in areas where bikers are riding slowly uphill and there is potential for conflicts between riders and walkers where speed of the bike is a factor. At such points, separate single use trails would be required to avoid conflicts between riders and walkers.	High speed of the rider would not be able to share the trail with walkers. Trail jumps and obstacles often too steep for most walkers.
Shire of Esperance liability risk.	High risk of injury to both riders and walkers and subsequent liability for the Shire of Esperance.	
Slope and soil erosion risk.	Steep nature and gradient of required trails and risk of soil erosion is very high as the Site, in some steep areas, would not meet the guidelines for slope and surface water runoff. Risk of soil erosion if surface water not appropriately controlled.	
Vegetation.	High percentage of the reserve pristine to excellent vegetation condition. Additional clearing of native vegetation would be required to create alternative routes for differing skill levels.	
Dieback risk.	Dieback risk during trail construction and use. Risk of spreading dieback from "The Piggery" and other mountain bike riding sites.	
Rainfall events.	During and following rainfall events the granite can become very slippery (black slick rock) and trails can't be used by all skill level riders all year round.	
Compatibility with the Site.	Cross country bike riding may be compatible on shared use trails with walkers if there is already sufficient width of trail (to avoid further clearing) and appropriate signage.	Downhill/ enduro mountain bike riding is unlikely to be compatible with walkers on shared use trails. Due to flora of conservation significance at the Site an environmental impact assessment and referral may also be required for any clearing to accommodate a trail for all skill levels (i.e. alternative routes for each skill level around obstacles). A full Aboriginal Heritage Survey maybe required for any ground disturbing activities during trail construction and proposed use.

Based on the land capability assessment and current site and use based on draft WAMBGM guidelines (DPAW 2015) cross country bike riding may be compatible on dual use trails with walkers if there is sufficient width of trail and appropriate signage. However downhill/ enduro mountain bike riding is unlikely to be compatible with walkers on dual use trails within other areas of the Dempster Head site.

If the Shire of Esperance decides to permit cross country mountain bike riding within the Site:

- Cross country mountain bike riding would be permitted on the formal track network as a shared use trail and single use where required
- Trails would need to be assessed by a specialist trail planner to assess the design and construction against the draft WAMBMG (DPAW 2015) specifically looking at required width, signage, stabilisation and stormwater control
- Due to flora of conservation significance at the Site an environmental impact assessment and referral may also be required for any clearing to accommodate additional single use trails where required to avoid conflict between riders and walkers
- A full Aboriginal Heritage Survey maybe required for any ground disturbing activities during trail construction and proposed use

If the Shire of Esperance decides to permit downhill/ enduro mountain bike riding within the Site:

- Downhill/ enduro mountain bike riding would need to be permitted by developing a formal downhill/ enduro mountain bike trail – single use only
- Trails would need to be designed and assessed by a specialist trail planner to assess the design and construction against the draft WAMBMG (DPAW 2015)
- Due to flora of conservation significance at the Site an environmental impact assessment and referral may also be required for any clearing to accommodate a trail for all skill levels (i.e. alternative routes for each skill level around obstacles)
- A full Aboriginal Heritage Survey maybe required for any ground disturbing activities during trail construction and proposed use

#### 6.4. Abseiling

Abseiling has been carried out in the Dempster Head area, particularly at Caravan Rock, and is considered a high risk activity.

As per the Shire of Esperance Council Policy Ext 015: Recreational Activities on Council Foreshore individuals wishing to carry out recreational and other activities on public land for which Council is responsible will be required to:

- *Take out a permit and pay the prescribed fee*
- *Provide evidence of Public Liability insurance to the value of \$20 million indemnifying the Shire for all activities*
- *Ensure there is no interference to the natural environment or public amenity as a consequence of the activities*

Any “Commercial Enterprise” where goods or services are being provided for a fee will also have to abide by the following:

- *Ensure there is no negative impact on the existing users as a consequence of the activities*

#### 6.5. Running and Exercise Groups

Community members indicated that there are exercise groups (personal trainers/ boot camps) and running groups that use the Dempster Head area for such activities. These groups are required to adhere to the requirements of Shire of Esperance Council Policy Ext 015: Recreational Activities on Council Foreshore as per Section 6.4.

## 7. Management Actions and Implementation Plan

Based on the findings of the desktop assessment, Vegetation and Flora Survey, Dieback Assessment and community consultation, Table 4 outlines management recommendations, actions and estimated costings which have been developed in association with each of the aims of this management plan (Section 1.2.2).

The management recommendations and actions have been numbered within Table 4 for the purpose of cross referencing only and have not been prioritised at this stage. The actions outlined in Table 4 have been presented in the Implementation Plan (Appendix H).

It should be noted that cost estimates provided in Table 4 are indicative only and may be subject to change depending on location, ease of access, cost of labour, transportation of materials etc. The cost estimates have been provided based on the following information to give some assistance for the Shire of Esperance budget and funding applications, quantities and costs should be reassessed prior to construction/ funding applications to confirm accuracy:

- Timber steps \$600/ lineal metre (dependent on design i.e. gradient, number of landings etc.)
- Timber boardwalk \$354/m<sup>2</sup>
- Brushing \$1000/day for 50 m2 cut and lay
- Plants and planting \$2,700/ ha of rehabilitation
- Weed control – hand pulling \$750/ha
- Post and rail fence closure or post and wire – \$200/ closure
- Steel gateway vehicle access closure – \$1,000/closure
- Small trail head sign \$500 each
- Large information sign \$2,000 each
- Picnic table and/ or bench seats \$1000 each
- Trail markers 1 marker/20 m length – approximately 150 across the Site

The following signs are examples of the types of trail head and information signs that could be used in the Dempster Head area (**Error! Reference source not found.** and **Error! Reference source not found.**). It is recommended that signs and structures used within the Site are constructed as per the Coastal Management Specification Manual (SCMG 2010).



Figure 42 Example of a small trail head sign



Figure 43 Example of a larger trail information sign

Table 4 Management Issues, Recommendations and Actions

Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
<b>1. Management, protection and enhancement of the Dempster Head environment in a sustainable manner so that it can be enjoyed by future generations</b>					
1.1 Biodiversity values	1.1.1 Establish revegetation and conservation areas within the Site to protect potential Proteaceae Dominated Kwongkan Shrubland TEC, areas uninfested by Phytophthora Dieback, Priority flora species and erosion risk area	1.1.1.1 Revegetation and brushing of closed trails (5 to 10 m into trail at each end) and disturbed areas as per the Implementation Plan, based on the vegetation types and species diversity identified at these locations in the Flora and Vegetation Survey mapping 1.1.1.2 Revegetate during winter months with good rainfall using locally sourced seedlings 1.1.1.3 Rabbit control in areas of revegetation to protect seedlings and new growth (where possible use tree guards) 1.1.1.4 Erosion control on trails to be closed particularly at the washed out gully on the western side of the Site 1.1.1.5 Biannual hand weeding in autumn and spring to removed WoNS and declared weed species 1.1.1.6 Biannual monitoring of revegetation and weed control to ensure success criteria are met: >80% of the species planted represented; <10% weed cover and no declared weeds species or WoNS present 1.1.1.7 Replacement planting to meet success criteria as required 1.1.1.8 Install signs ("Area under repair") where revegetation and trail closure occurs to discourage trampling of vegetation	Shire of Esperance	Subject to funding  Monitoring and weed control biannual	Revegetate (1.0 ha) \$2,000  Brushing (250 m <sup>2</sup> ) \$5,000  Rabbit control (tree guards) (1.0 ha) \$4,000  Erosion control (approx. 500m <sup>2</sup> ) \$10,000  Monitoring \$3,000/year  Signs \$1,000  Weed control (2 ha) \$3,000/year
	1.1.2 Monitor recreation activities in conservation areas and ensure compliance with Recommendation 1.1.1	1.1.2.1 Shire staff (Ranger and Reserves Officers) to monitor disturbance in Conservation Areas and throughout the Site 1.1.2.2 Inspect trails on a biannual basis, post revegetation and/ or brushing, for erosion and damage 1.1.2.3 Block access, reinstate vegetation, brushing and erosion control on closed trails as required	Shire of Esperance	Biannual	In kind
1.2 Proteaceae Dominated Kwongkan Shrubland TEC	1.2.1 Formally identify areas of TEC within the Site	1.2.1.1 Undertake targeted quadrant or grid based field survey (or similar) within potential TEC vegetation types 1.2.1.2 Undertake further detailed assessment against the EPBC criteria based on the field survey and map areas of TEC within the Site 1.2.1.3 Report to Department of Environment and Energy (Commonwealth) and DBCA Parks and Wildlife (State)	Shire of Esperance	12 months' time	\$5,000
1.3 Feral animals	1.3.1 Control feral cats within the Port site	1.3.1.1 Develop an integrated feral animal control program designed and implemented in conjunction with the Esperance Port 1.3.1.2 Time feral cat control when the Port control pigeons to reduce risk of cats seeking alternative food sources within the Site	Shire of Esperance Esperance Port	Timing in conjunction with Esperance Port pigeon control	In kind
	1.3.2 Control feral cats and pigeons in Esperance town site	1.3.2.1 Control feral cats and pigeons in the Esperance town site to reduce overall numbers entering Port and Dempster Head area	Shire of Esperance	Timing in conjunction with Esperance Port pigeon control	In kind
	1.3.3 Monitor feral animal complaints	1.3.3.1 Monitor complaints received by the Shire regarding sightings of feral animals within the Dempster Head area and implement control measures as required	Shire of Esperance	As required	In kind

Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
1.4 Weeds	1.4.1 Removal and ongoing control of weeds undertaken in conjunction with the Esperance Weeds Action Group (EWAG)	1.4.1.1 Biannual weeding in autumn and spring to remove WoNS and declared weed species (Bridal creeper, African Boxthorn and Japanese Pepper) as per best practice methods recommended by DPIRD (Agriculture and Food) 1.4.1.2 Hand removal to ensure minimal damage to surrounding native vegetation during weed removal and control process 1.4.1.3 Further targeted weed survey to determine extent of weeds such as Bridal creeper 1.4.1.4 Apply Bridal creeper rust fungus (biocontrol agent) as required 1.4.1.5 Monitor weed removal success and repeat control measures as required – success criteria no WoNS and <10% environmental weeds within the Site	Shire of Esperance	Biannual during autumn and spring	Cost included in 1.1.1
	1.4.2 Update Esperance Weed Management Plan	1.4.2.1 Include the Dempster Head area in the updated Esperance Weed Management Plan and prioritise removal and ongoing control of WoNS within the Site 1.4.2.2 Review mapping of weeds within the Site once removal and control measures undertaken	Shire of Esperance	2018 / 2019 financial year	In kind
1.5 Plant pathogens	1.5.1 Monitor <i>Phytophthora</i> Dieback	1.5.1.1 Assessment area boundaries should be revalidated if the map is more than 1 year old (24 November 2018) 1.5.1.2 All full re-interpretation will be required after 3 years (24 November 2020) if there is continuing or new disturbance activities within the assessment area 1.5.1.3 Include information regarding <i>Phytophthora</i> Dieback risk and spread on trail head and information signage	Shire of Esperance	Three years' time	\$4,000
	1.5.2 Manage uninfested <i>Phytophthora</i> Dieback areas	1.5.2.1 The uninfested areas, due to their rarity in the local area are worthy of consideration for protection, even though below the normally accepted size (4 ha) to remain protectable in the foreseeable future 1.5.2.2 Develop effective management strategies, in consultation with DBCA Parks and Wildlife Service, Esperance District and Project Dieback, South Coast NRM in Esperance 1.5.2.3 Manage uninfested areas as per Managing <i>Phytophthora</i> Dieback in Bushland (DWG 2015) guidelines 1.5.2.4 Whilst uninfested areas of vegetation within the Site are generally considered too small to be protectable a management approach to restrict access via track rationalisation, formal establishment of track networks and closure and rehabilitation of inappropriate tracks may help minimise risk of spread of dieback already within the Site.	Shire of Esperance	12 months' time	\$4,000
1.6 Fire	1.6.1 Prohibit lighting of fires of Dempster Head at all times to ensure the protection of the Site, infrastructure and surrounding residential areas	1.6.1.1 Include no camping and no fires signs on trail head and information signage 1.6.1.2 Monitor fire incidences in the local area	Shire of Esperance	At all times	In kind
	1.6.2 Maintain firebreaks as part of the Shire of Esperance strategic fire break program	1.6.2.1 Maintain a strategic firebreak between the Site and residential properties to the north	Shire of Esperance	Annual	In kind
<b>2 Equitable, safe and sustainable recreational uses</b>					
2.1 Visitor impact	2.1.1 Determine current visitor numbers and types using the Site	2.1.1.1 Undertake a visitor count at different times of day, week, weekends, year (holiday periods) to determine visitor numbers and how they use the Dempster Head area such as cars, 4WD, scooters, walkers, mountain bike riders etc. 2.1.1.2 Implement a community usage survey 2.1.1.3 Follow up data to see if there is a change in use over time and subsequent impact on the area	Shire of Esperance	12 months' time	In kind from Shire

Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
2.2 Formal Trails	2.2.1 Formalise trail network	2.2.1.1 Formalise a trail that connects the dual use path on Twilight Beach Road to the Rotary Lookout carpark as per the Implementation Plan – install wooden steps from the sealed dual use path and as required on the trail to make it easy for walkers and reduce erosion risk 2.2.1.2 Defined walk trails with names and consistent trail marking and consolidate number of walk trails to include the following formal trails: <ul style="list-style-type: none"> <li>Rotary Walk Trail</li> <li>Lovers Cove Trail</li> <li>Old Quarry Trail</li> <li>Dual use path on Twilight Beach Road</li> </ul> 2.2.1.3 Consolidate trail network by closing informal trails – brush and place obstacles at each end of the trails i.e. boulders, post and rail or post and strand fence 2.2.1.4 Minimise erosion risk - Erosion control measures for small trail at eastern end of Lovers Cove by building a wooden stairway from granite onto eastern end of Lovers Cove to minimise erosion of this trail by pedestrians and surface water flow 2.2.1.5 Close, brush, revegetate and use erosion control matting where required for the eroded gully at western end of Site	Shire of Esperance Rotary Club of Esperance	Subject to funding	Block trails \$5,000 Stairs \$40,000 Reveg, weed and erosion control cost included in 1.1.1
2.3 Emergency access	2.3.1 Maintain emergency vehicle access to Lovers Cove and First Beach	2.3.1.1 Maintain trafficable emergency vehicle access as per applicable Shire of Esperance Asset Management Plan 2.3.1.2 Monitor access tracks for erosion and reinstate as required	Shire of Esperance	At all times	In kind
2.4 Car parking	2.4.1 Investigate future car and bus parking requirements for the parking area and on Doust Street	2.4.1.1 Investigate future improvement options to the parking area 2.4.1.2 If changes to the parking area are deemed necessary by the Shire, develop detailed design and seek funding for preferred option	Shire of Esperance	Subject to funding	In kind
2.5 Lookouts	2.5.1 Maintain the Rotary Lookout, Rotary Walk Trail and wishing well	2.5.1.1 Inspect structures on an annual or as required basis to ensure they are in good working order and safe for public use 2.5.1.2 Maintain the Rotary Lookout, Rotary Walk Trail and wishing well to the satisfaction of the Shire of Esperance	Rotary Club of Esperance	Annual or as required	In kind
	2.5.2 Maintain the Port Lookout	2.5.2.1 Inspect the Port Lookout on an annual or as required basis to ensure they are in good working order and safe for public use 2.5.2.2 Maintain the Port Lookout as per applicable Shire of Esperance Asset Management Plan	Shire of Esperance	Annual or as required	In kind
2.6 Facilities	2.6.1 Provide picnic table and/ or seating at the Rotary Lookout carpark at the end of Doust Street	2.6.1.1 Install a picnic table and/ or seating at the Rotary Lookout carpark as per Coastal Management Specification Manual (SCMG 2010) 2.6.1.2 Include facilities on the Shire of Esperance GIS asset register 2.6.1.3 Maintain as per applicable Shire of Esperance Asset Management Plan in good working order	Shire of Esperance	Subject to funding	\$1,000
2.7 Angel rings	2.7.1 Two existing angel rings to be maintained within the Site	2.7.1.1 Maintain angel rings as per applicable Shire of Esperance Asset Management Plan in good working order	Shire of Esperance	Annual or as required	In kind
2.8 Rubbish	2.8.1 Maintain existing rubbish bins and collection at the Rotary Lookout carpark	2.8.1.1 Continue existing regular waste collection 2.8.1.2 Support the local residents who collect rubbish within the Site – see Action 4.1.1	Shire of Esperance	Weekly	In kind
	2.8.2 Provide dog waste collection bags at the Rotary Lookout carpark	2.8.2.1 Dog waste collection bags (plastic free and compostable) to be provided at the Rotary Lookout carpark – trail heads	Shire of Esperance	Weekly	In kind



Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
2.9 Signage	2.9.1 Upgrade the sign at the intersection of Twilight Road and Doust Street welcoming visitors to Dempster Head as per Implementation Plan	2.9.1.1 Install large entry statement and information sign at the intersection of Twilight Road and Doust Street providing information regarding attractions, facilities and walk trails at Dempster Head 2.9.1.2 Provide directions and distance to the nearest public toilets on the entry statement signage at the Twilight Beach Road and Doust Street intersection	Shire of Esperance	Subject to funding	\$2,000
	2.9.2 Install safety signage at Rotary Walk Trail and Lovers Cove trail heads about slippery black rocks and steepness of the walk as per Implementation Plan	2.9.2.1 Install as per recommendations from the Surf Life Saving WA report 2.9.2.2 Include all signs on the Shire of Esperance GIS asset register 2.9.2.3 Maintain as per applicable Shire of Esperance Asset Management Plan	Shire of Esperance	Subject to funding	Included in 2.9.3
	2.9.3 Install trail head signage in the carpark showing the available recreational activities on Dempster Head e.g. route of the walk trails as per Implementation Plan	2.9.3.1 Design uniform signage for the area - Signs to be consistent with the Coastal Management Specification Manual (SCMG 2010) 2.9.3.2 Signage regarding Dempster Head, including formal walk trails and the recreational activities available in the area, could be installed on the edge of the Rotary Lookout carpark. Interpretive signage about the Aboriginal heritage values of the Site, flora and fauna could be placed on the walk trails and at lookout points in consultation with Esperance Traditional Owners 2.9.3.3 Install two small trail head signs, one each on the western and eastern sides of the Rotary Lookout carpark at beginning of trail heads (Rotary Walk Trail and Old Quarry Trail) 2.9.3.4 Install one small trail head sign at the gate on the Lovers Cove walk trail 2.9.3.5 Install one large information sign with a picnic table and/ or benches at Rotary Lookout carpark	Shire of Esperance	Subject to funding	\$5,000
	2.9.4 Design and install consistent trail markers on formalised trails	2.9.4.1 Design and install consistent trail markers on all formal trails within the Site 2.9.4.2 Trail marker design may be similar to the iconic Bibbulmun Track, Munda Biddi Trail, trail markers or local walk trails in the Cape Le Grand National Park, in consultation with Esperance Traditional Owners, to determine a suitable image relevant to the Dempster Head and wider Esperance area	Shire of Esperance	Subject to funding	Approx. 150 trail markers (supply and install) \$2,500
2.10 Dog walking	2.10.1 Dogs are permitted within the Site on a lead	2.10.1.1 Monitor complaints regarding dogs off lead and Ranger to follow up, inspect and issue fines as required	Shire of Esperance	As required	In kind
2.11 Mountain biking	2.11.1.1 Based on the land capability assessment cross country bike riding may be compatible on dual use trails with walkers if there is sufficient width of trail and appropriate signage, however single use trails may also be required where there are speed conflicts with riders and walkers	2.11.1.2 If the Shire of Esperance decides to permit cross country mountain bike riding within the Site on the formal trail network as a shared used trail <ul style="list-style-type: none"> <li>It would require funding for a specialist trail designer/ planner to assess the trails to determine suitability with regard to the draft WAMBMG (DPaW 2015)</li> <li>Trails would need to be assessed by a specialist trail planner to assess the design and construction against the draft WAMBMG (DPaW 2015) specifically looking at required width, signage, stabilisation and stormwater control</li> <li>A full Aboriginal Heritage Survey maybe required for any ground disturbing activities during trail construction and proposed use Include signage regarding <i>Phytophthora</i> Dieback risk and spread by mountain bikes on trail head and information signage</li> <li>Signage for shared use trail</li> <li>Due to flora of conservation significance at the Site an environmental impact assessment and referral may also be required for any clearing to accommodate additional single use trails where required to avoid conflict between riders and walkers</li> </ul>	Shire of Esperance Esperance Mountain Bike Association	As required	Trail planner \$TBC at time of tender Aboriginal Heritage Survey \$20,000 Signage cost included in
	2.11.1.3 Based on the land capability assessment downhill/ enduro mountain bike riding is unlikely to be compatible with walkers on dual use trails with other areas of the Dempster Head site	2.11.1.4 If the Shire of Esperance decides to permit downhill/ enduro mountain bike riding within the Site by developing a formal downhill/ enduro mountain bike trail (single use only) <ul style="list-style-type: none"> <li>It would require funding for a specialist trail designer/ planner to design and if considered suitable, construct in accordance with the draft WAMBMG (DPaW 2015)</li> <li>Due to flora of conservation significance at the Site an environmental impact assessment</li> </ul>	Shire of Esperance Esperance Mountain Bike Association	As required	Trail planner \$TBC at time of tender Aboriginal Heritage Survey

Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
		<p>and referral may also be required for any clearing to accommodate a trail for all skill levels (i.e. alternative routes for each skill level around obstacles)</p> <ul style="list-style-type: none"> <li>• A full Aboriginal Heritage Survey for any ground disturbing activities</li> <li>• Include signage regarding <i>Phytophthora</i> Dieback risk and spread by mountain bikes on trail head and information signage</li> <li>• Signage for downhill/ enduro use only</li> <li>• Shire of Esperance to monitor trails for damage to vegetation, erosion and illegal structures</li> </ul>			\$20,000
2.12 Personal training and abseiling	2.12.1 Personal training and abseiling require a permit to operate within the Site	2.12.1.1 Operators must obtain a permit from the Shire of Esperance to undertake abseiling, personal trainers and other exercise groups on Dempster Head and hold adequate public liability insurance for the activity	Private operators	As required	At cost of private operators
2.13 Anti-social activities	2.13.1 Installation of future infrastructure within the Site as vandal proof as possible	2.13.1.1 Install future infrastructure and facilities so that it cannot be easily removed and stolen or damaged	Shire of Esperance	As required	Included in Aim 2 recommendations as above
	2.13.2 Monitor damage and antisocial activities occurring within the Site and report to appropriate authorities as required	2.13.2.1 Rangers to monitor onsite damage, illegal camping, littering and incoming complaints to the Shire of Esperance regarding damage and antisocial behaviour occurring with the Site 2.13.2.2 Report to appropriate authorities as required 2.13.2.3 Reinstate damaged facilities and Shire assets as required	Shire of Esperance	As required	In kind
	2.13.3 Restrict access into the reserve and onto the granite area via the end of McCarthy Street	2.13.4 Install a steel gateway is at the end of McCarthy Street to restrict access into the reserve and onto the granite area.	Shire of Esperance	Subject to funding	\$1,000
<b>3 Increasing community awareness of environmental and cultural values of the Dempster Head area to encourage a sense of ownership</b>					
3.1 Aboriginal heritage	3.1.1 Undertake an Aboriginal Heritage Survey to comprehensively survey and record cultural values of the Dempster Head area	3.1.1.1 As this is a significant area and a comprehensive cultural heritage survey needs to be carried out. A 2-day archaeological survey needs to be completed before another 2 days on country to complete an ethnographical survey. An archaeological and ethnographical survey will be required to be completed before any workshops. The aims of the survey include; <ul style="list-style-type: none"> <li>• Perform the archaeological studies sufficient to appropriately identify any new or previously identified sites that may be located within the proposed area of potential affect.</li> <li>• Determine physical extent, context (cultural and geographic), and condition of the cultural resources.</li> <li>• Ensure the Traditional Owners have all the information that is required to make an informed set of decisions and recommendations about the proposed works.</li> <li>• Identify cultural values within the area of potential effect as part of a site identification survey model</li> <li>• Assess whether Sections 5 or 6 of the <i>Aboriginal Heritage Act 1972</i> applies to any places</li> <li>• Identify potential impacts to cultural values</li> <li>• Identify solutions to mitigate potential impacts</li> </ul>	Shire of Esperance Esperance Tjaltjraak Native Title Aboriginal Corporation Esperance Traditional Owners	Subject to funding	\$20,000
	3.1.2 Undertake an Aboriginal Heritage Workshop to discuss cultural values of the Dempster Head area and potential interpretive information	3.1.2.1 Once the cultural values of the Dempster Head area have been comprehensively surveyed and recorded in an Aboriginal Heritage Survey, Esperance Aboriginal Elders would undertake a workshop to discuss interpretive cultural information regarding the area	Shire of Esperance Esperance Tjaltjraak Native Title Aboriginal Corporation Esperance Traditional Owners	Subject to funding	\$10,000

Issue	Recommendation	Management Action	Implementation Responsibility	Timeframe	Estimated Cost
	3.1.3 Incorporate interpretive signage regarding Aboriginal cultural values of the Dempster Head area on walk trails and at trail heads	3.1.3.1 Based on the findings of the Aboriginal heritage survey and workshop install interpretive signage along the Rotary Walk Trail and future trails providing information about the flora, fauna, islands and history of the area	Shire of Esperance	Subject to funding	\$10,000
3.2 European heritage	3.2.1 Maintain existing European Heritage structures within the Dempster Head area	3.2.1.1 Assess structures on an annual basis to ensure they are in good working order and safe for public use 3.2.1.2 Ensure all structures are included in the Shire of Esperance GIS asset register 3.2.1.3 Maintain structures as per applicable Shire of Esperance Asset Management Plan and in consultation with the Rotary Club of Esperance	Shire of Esperance Rotary Club of Esperance	Annual	In kind
<b>4 Encouraging successful relationships between the community and the Shire to continue in the future to allow for better management of Dempster Head</b>					
4.1 Friends of Dempster Head	4.1.1 Hold regular community planting, weeding and rubbish collection sessions with the community	4.1.1.1 Seek funding and provide incentives (such as Bay of Isles Leisure Centre aquatic and gym passes, coffee vouchers and sausage sizzles) for the local community to participate in regular “busy bees” to collect rubbish, weeding, revegetation etc. 4.1.1.2 South Coast NRM Regional Landcare Facilitators’ Community Small Grant Program provides funding for up to \$500 (ex GST) for such activities	Shire of Esperance	Biannual	\$500 funding \$500 in kind
4.2 Consultation with community	4.2.1 Consult with relevant community stakeholders regarding specific issues within the Site	4.2.1.1 As required consult with relevant community stakeholders regarding specific issues such as maintenance and recreation activities within the Site	Shire of Esperance	As required	In kind
<b>5 Planning for future coastal industry, urban growth and tourism</b>					
5.1 Formal trails	5.1.1 Update Esperance Trails Master Plan to include the trails within the Dempster Head Management Plan area	5.1.1.1 The existing Trails Master Plan does not include Dempster Head trails however this plan is due to be updated and in future will include all types of trails such as walk trails etc. Include Dempster Head trail network in the update of the Esperance Trails Master Plan 5.1.1.2 Aboriginal heritage – consultation regarding heritage values that could be used to form a heritage trail incorporating Dempster Head and surrounding coastal features	Shire of Esperance	Subject to funding	Included in overall funding application
5.2 Review Dempster Head Management Plan	5.2.1 Review and update the Dempster Head Management Plan to accommodate changes in urban growth, recreation and tourism	5.2.1.1 Seek funding to review and update the implementation schedule (Table 4 and Implementation Plan) in 5 years’ time to determined which actions are complete and those still outstanding 5.2.1.2 Seek funding to review and update the Dempster Head Management Plan in 10 years’ time to accommodate changes in urban growth, recreation and tourism	Shire of Esperance	Subject to funding	\$10,000
5.3 Esperance Weed Management Plan	5.3.1 Update Esperance Weed Management Plan to include the Dempster Head Management Plan area	5.3.1.1 Include the Dempster Head area in the updated Esperance Weed Management Plan and prioritise removal and ongoing control of WoNS within the Site	Shire of Esperance	2018 / 2019 financial year	In kind
5.4 Assets	5.4.1 Maintain up to date asset management plan and GIS register	5.4.1.1 Ensure all structures, signs and facilities etc. are included in the Shire of Esperance GIS asset register 5.4.1.2 Maintain as per applicable Shire of Esperance Asset Management Plan	Shire of Esperance	Annual	In kind
5.5 Climate change	5.5.1 Plan for coastal processes and climate change	5.5.1.1 As per the Esperance Coastal Management Plan (Land Insights 2014): <ul style="list-style-type: none"> <li>Implement and review an Asset Management Plan focussing on existing infrastructure and recreational facilities in Shire managed reserves and consider how they can be protected from coastal process such as storm events</li> <li>Give due regard to SPP 2.6 to ensure that the location of coastal facilities and development takes into account coastal processes and that appropriate coastal setbacks are implemented and maintained.</li> <li>Conduct regular monitoring of the beach and the dune systems of priority high risk sites.</li> <li>Conduct regular monitoring of infrastructure and recreational facilities along the beach.</li> </ul>	Shire of Esperance	Annual	In kind

## 8. Implementation, Monitoring and Review

### 8.1. Responsibility, Prioritisation and Funding for Implementation

The Shire of Esperance is responsible for implementation of recommendations within this plan. However in some instances the Shire may be able to partner with another stakeholder with a vested interest in the Site i.e. Esperance Port and Rotary Club of Esperance.

It is the responsibility of the Shire of Esperance to prioritise the recommendations and actions outlined in Section 7. Prioritisation of the management recommendations will assist with determining how funding for implementation will be sought.

The Shire may choose to seek funding from external sources. Such funding applications may be supported by the actions, outcomes, costings and timeframes outlined in this management plan.

### 8.2. Monitoring

Ongoing monitoring will be required to ensure the continued success of any actions implemented in this management plan. This includes monitoring of activities such as access control, revegetation, erosion control, weed and feral animal control to determine if further works are required or if successful outcomes have been met.

Monitoring of damage and maintenance requirements of assets within the Site on an annual or as required basis to ensure they are safe for public use or when assets need to be replaced. Regular monitoring will enable the Shire to attend to any issues within the Site immediately as they arise.

The Shire of Esperance shall update the Shire's asset database on the activities undertaken with the Site.

### 8.3. Review

Review the Dempster Head Management Plan on a 5 year basis.

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## Appendices



## Appendix A Flora and Vegetation Survey





## Appendix B Flora Species List 2003 and 2017

Table 5 List of Flora Identified on Dempster Headland and Esperance Port Authority Land (2003) and Dempster Head (2017)

Family	Species Name	Common Name	Status	'03	'17
Cupressaceae	<i>Callitris preissii</i>	Rottneest Island Pine		X	X
Aizoaceae	<i>Carpobrotus ?pulcher</i> Toelken ms		P2	X	
	<i>Carpobrotus virescens</i>	Coastal Pigface		X	X
	<i>Tetragonia implexicoma</i>	Bower spinach			X
Anacardiaceae	* <i>Schinus terebinthifolia</i>	Japanese Pepper			X
Anarthriaceae	<i>Lyginia barbata</i>			X	
Apiaceae	<i>Platysace compressa</i>	Tapeworm Plant		X	X
Asparagaceae	* <i>Asparagus asparagoides</i>	Bridal Creeper		X	
	<i>Lomandra micrantha</i> subsp. <i>teretifolia</i>			X	
	<i>Lomandra rigida</i>	Stiff Mat Rush		X	X
	<i>Thysanotus dichotomus</i>	Branching Fringe Lily		X	X
	<i>Thysanotus nudicaulis</i>	Bridal Creeper		X	X
Asphodelaceae	* <i>Asphodelus fistulosus</i>	Onion Weed		X	
Asteraceae	<i>Asteridea nivea</i>			X	
	* <i>Hypochaeris radicata</i>	Flat Weed		X	
	<i>Myriocephalus appendiculatus</i> ?	White-tip Myriocephalus		X	
	<i>Senecio glossanthus</i>	Slender Groundsel		X	
	<i>Olearia axillaris</i>	Coastal Daisybush		X	X
	<i>Senecio pinnatifolius</i> var. <i>maritimus</i>	Coastal Groundsel		X	X
Celastraceae	<i>Stackhousia monogyna</i>			X	
Chenopodiaceae	<i>Atriplex isatidea</i>	Coast saltbush			X
	<i>Salsola australis</i>			X	
	<i>Rhagodia baccata</i>	Berry saltbush			X
	<i>Rhagodia</i> sp.			X	
Cyperaceae	<i>Ghania</i> sp			X	
	<i>Ficinia nodosa</i>	Knotted Club Rush		X	X
	<i>Isolepis marginata</i>	Coarse Club-rush		X	
	<i>Lepidosperma angustatum</i>			X	
	<i>Lepidosperma drummondii</i>			X	X
	<i>Lepidosperma gladiatum</i>	Coast Sword-sedge		X	X
	<i>Lepidosperma squamatum</i>			X	X
	<i>Mesomelaena graciliceps</i> ??			X	
	<i>Schoenus grandiflorus</i>	Large Flowered Bogrush		X	X

Family	Species Name	Common Name	Status	'03	'17
	<i>Schoenus lanatus</i>	Woolly Bog-rush		X	X
	<i>Schoenus sp</i>			X	
	<i>Schoenus sublaxus</i>			X	X
	<i>Tetraria capillaris</i>	Hair Sedge		X	
	<i>Tricostularia compressa</i>			X	
Dilleniaceae	<i>Hibbertia racemosa</i>	Stalked Guinea Flower		X	X
	<i>Hibbertia subvaginata</i>			X	
Ericaceae	<i>Leucopogon carinatus ?</i>			X	
	<i>Leucopogon cuneifolius</i>			X	
	<i>Leucopogon obovatus</i>			X	X
	<i>Leucopogon parviflorus</i>	Coast Beard-heath		X	X
	<i>Leucopogon sp</i>			X	
	<i>Leucopogon sp (smooth leaf)</i>			X	
	<i>Leucopogon sp (sharp leaf)</i>			X	
	<i>Leucopogon sp (narrow leaf)</i>			X	
	<i>Lysinema ciliatum</i>	Curry Flower		X	X
Euphorbiaceae	<i>Adriana quadripartite</i>	Bitter Bush		X	X
	* <i>Euphorbia paralias</i>	Sea spurge			X
	* <i>Euphorbia terracina</i>	Geraldton carnation weed			X
Fabaceae	<i>Acacia browniana</i>			X	
	<i>Acacia cochlearis</i>	Rigid Wattle		X	X
	<i>Acacia cyclops</i>	Coastal Wattle		X	X
	<i>Acacia lasiocarpa</i>	Panjang		X	
	<i>Acacia myrtifolia</i>			X	
	<i>Acacia nigricans</i>			X	X
	<i>Acacia saligna</i>	Orange Wattle		X	X
	<i>Acacia subcaerulea</i>			X	X
	* <i>Acacia truncata (not Esperance species)</i>			X	
	<i>Bossiaea dentata</i>			X	X
	<i>Eutaxia myrtifolia</i>			X	X
	<i>Gastrolobium bilobum</i>	Heart Leaf Poison		X	
	<i>Gompholobium tomentosum</i>	Hairy Yellow Pea		X	X
	<i>Jacksonia spinosa</i>			X	X
	<i>Kennedia prostrata</i>	Scarlet Runner		X	X
	<i>Pultenaea heterochila</i>			X	X
	<i>Pultenaea verruculosa</i>			X	

Family	Species Name	Common Name	Status	'03	'17
	<i>Templetonia retusa</i>	Cockies Tongues		X	X
Gentianaceae	* <i>Centaurium erythraea</i>	Common Centaury		X	
Geraniaceae	<i>Pelargonium capitatum</i>	Rose Pelargonium		X	X
Goodeniaceae	<i>Dampiera fasciculata</i>	Bundled-leaf Dampiera		X	
	<i>Dampiera loranthifolia</i>			X	
	<i>Goodenia decursiva</i> ?			X	
	<i>Goodenia scapigera</i>	White Goodenia		X	X
	<i>Lechenaultia tubiflora</i>	Heath Leschenaultia			X
	<i>Scaevola crassifolia</i>	Thick-leaved Fan-flower		X	X
	<i>Velleia trinervis</i>			X	X
Hemerocallidaceae	<i>Agrostocrinum scabrum</i>	Blue Grass Lily		X	X
	<i>Dianella brevicaulis</i>			X	
	<i>Stypandra glauca</i>	Blind grass			X
Iridaceae	<i>Patersonia occidentalis</i>	Purple Flag		X	X
Lamiaceae	<i>Westringia dampieri</i>			X	X
Lauraceae	<i>Cassytha micrantha</i>			X	X
	<i>Cassytha racemosa</i>	Dodder Laurel		X	X
Loganiaceae	<i>Logania fasciculata</i>			X	X
Loranthaceae	<i>Nuytsia floribunda</i>	Christmas Tree		X	X
Malvaceae	<i>Guichenotia ledifolia</i>			X	
	<i>Lasiopetalum discolor</i>			X	
Myrtaceae	<i>Taxandria linearifolia</i>			X	
	<i>Taxandria marginata</i>			X	X
	<i>Beaufortia micrantha</i>			X	X
	<i>Beaufortia schaueri</i>	Pink Beaufortia		X	
	<i>Calothamnus quadrifidus</i>	One-sided Bottlebrush		X	X
	<i>Calytrix acutifolia</i>			X	X
	<i>Chamelaucium ciliatum</i> ?			X	
	<i>Darwinia diosmoides</i>			X	X
	<i>Darwinia vestita</i>	Pom-pom Darwinia		X	
	<i>Eucalyptus angulosa</i>	Ridge-fruited Mallee		X	X
	<i>Eucalyptus ligulata</i>	Lucky Bay Mallee		X	
	<i>Eucalyptus platypus</i>	Moort		X	X
	<i>Eucalyptus pleurocarpa</i>				X
	<i>Melaleuca brevifolia</i>				X
<i>Melaleuca cuticularis</i>	Saltwater paperbark			X	

Family	Species Name	Common Name	Status	'03	'17
	<i>*Melaleuca huegelii</i> (not Esperance species)	Chenille Honeymyrtle		X	X
	<i>Melaleuca lanceolata</i>	Rottnest Teatree		X	X
	<i>*Melaleuca nesophila</i> (not Esperance species)	Mindiyed		X	X
	<i>Melaleuca pentagona</i> var. <i>latifolia</i>			X	
	<i>Melaleuca pentagona</i> var. <i>pentagona</i>				X
	<i>Melaleuca systema</i>			X	
	<i>Melaleuca thymoides</i>			X	X
	<i>Thryptomene saxicola</i>	Rock Thryptomene		X	X
	<i>Verticordia minutiflora</i>			X	X
Onagraceae	<i>Epilobium billardioreanum</i>	Glabrous Willow Herb		X	
Orchidaceae	<i>Caladenia vulgata</i>			X	
	<i>Caladenia</i> sp			X	
Phyllanthaceae	<i>Phyllanthus calycinus</i>	False Boronia		X	
	<i>Phyllanthus scaber</i>			X	X
Pittosporaceae	<i>Billardiera coriacea</i>			X	X
	<i>Billardiera heterophylla</i>	Australian Bluebell		X	
Poaceae	<i>Rytidosperma setaceum</i>			X	
	<i>Austrostipa acrociliata</i>			X	
	<i>Austrostipa</i> sp			X	
	<i>*Avena fatua</i>	Wild Oat		X	
	<i>Hemarthria uncinata</i>	Matgrass		X	
	<i>*Hordeum leporinum</i>	Barley Grass		X	
	<i>*Lagurus ovatus</i>	Hare's Tail Grass		X	
	<i>Poa</i> sp			X	
Polygalaceae	<i>Comesperma virgatum</i>	Milkwort		X	
	<i>Comesperma volubilis</i>				X
Polygonaceae	<i>Muehlenbeckia adpressa</i>	Climbing Lignum		X	X
Primulaceae	<i>*Lysimachia arvensis</i>	Pimpernel		X	X
Proteaceae	<i>Adenanthos cuneatus</i>	Coastal Jugflower		X	X
	<i>Banksia media</i>	Southern Plains Banksia		X	X
	<i>Banksia speciosa</i>	Showy Banksia		X	X
	<i>Banksia obovata</i>	Wedge-leaved Dryandra		X	X
	<i>Banksia occidentalis</i>	Red Swamp Banksia			X
	<i>Banksia prolata</i> subsp. <i>calcicola</i>		P4	X	X

Family	Species Name	Common Name	Status	'03	'17
	<i>Hakea adnata</i>			X	
	<i>Hakea clavata</i>	Coastal Hakea		X	X
	<i>Hakea corymbosa</i>	Cauliflower Hakea		X	X
	<i>Hakea drupacea</i>			X	X
	<i>Hakea nitida</i>	Frog Hakea		X	X
	<i>Hakea obliqua</i>	Needles and Corks		X	X
	<i>Hakea trifurcata</i>	Two-leaf Hakea		X	X
	<i>Isopogon trilobus</i>	Barrel Coneflower		X	X
	<i>Persoonia scabra</i>		P3		X
	<i>Petrophile teretifolia</i>			X	X
Ranunculaceae	<i>Clematis linearifolia</i>			X	
	<i>Clematis pubescens</i>	Common Clematis		X	X
Restionaceae	<i>Desmocladus fasciculatus</i>			X	
	<i>Desmocladus flexuosus</i>			X	X
	<i>Lepyrodia sp</i>			X	
Rhamnaceae	<i>Pomaderris myrtilloides</i>			X	
	<i>Spyridium globulosum</i>	Basket Bush		X	X
Rubiaceae	<i>Opercularia hispidula</i>	Hispid Stinkweed		X	
	<i>Opercularia vaginata</i>	Dog Weed		X	
Rutaceae	<i>Boronia crassifolia</i>			X	
	<i>Boronia ramosa</i>			X	X
	<i>Netaolepis phebalioides</i>				X
Santalaceae	<i>Exocarpos sparteus</i>	Broom Ballart		X	
Sapindaceae	<i>Dodonaea ceratocarpa</i>			X	X
Scrophulariaceae	<i>Myoporum insulare</i>	Blueberry Tree		X	
Solanaceae	<i>Anthocercis littorea</i>	Yellow Tailflower			X
	* <i>Lycium ferocissimum</i>	African Boxthorn			X
Stylidiaceae	<i>Stylidium pilosum</i>	Silky Triggerplant		X	X
Thymelaeaceae	<i>Pimelea cracens</i>			X	
	<i>Pimelea drummondii</i>			X	X
	<i>Pimelea ferruginea</i>			X	X



## Appendix C Esperance Bird Watching Group Observations

Table 6 Esperance Bird Watching Group Observations at Dempster Head (1997 to 2016)

Family	Species Name	Common Name	Year Observed	Status
Acanthizidae	<i>Acanthiza apicalis</i>	Inland Thornbill	2010	
	<i>Sericornis frontalis</i>	White-browed Scrubwren	1997, 2001, 2006, 2010, 2016	
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite	2001	
Anatidae	<i>Cereopsis novaehollandiae grisea</i>	Cape Barren Goose	2006	Vulnerable (Cmth & State)
	<i>Tadorna tadornoides</i>	Australian Shelduck	2016	
Artamidae	<i>Cracticus torquatus</i>	Grey Butcher Bird	2010	
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	2006	
Columbidae	* <i>Columba livia</i>	Rock Dove, feral pigeon	2010	
	* <i>Spilopelia senegalensis</i>	Laughing Dove	1997, 2010, 2016	
	<i>Ocyphaps lophotes</i>	Crested Pigeon	2010, 2016	
Corvidae	<i>Corvus coronoides</i>	Australian Raven	2016	
Cuculidae	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	2006	
Falconidae	<i>Falco cenchroides</i>	Nankeen Kestrel	2010	
	<i>Falco peregrinus</i>	Peregrine Falcon	2006	OS (State)
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	1997, 2001, 2006, 2010, 2016	
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow	2001, 2006	
Laridae	<i>Chroicocephalus novaehollandiae</i>	Silver Gull	1997, 2001, 2006, 2016	
	<i>Hydroprogne caspia</i>	Caspian Tern	2001	
	<i>Larus pacificus</i>	Pacific Gull	1997, 2001, 2006, 2010, 2016	
	<i>Thalasseus bergii</i>	Crested Tern	2016	IA (Cmth)
Maluridae	<i>Stipiturus malchurus</i>	Southern Emu-wren	1997, 2006	
Meliphagidae	<i>Acanthorhynchus superciliosus</i>	Western Spinebill	2001, 2016	
	<i>Anthochaera lunulata</i>	Western Wattlebird	1997, 2001, 2006, 2016	
	<i>Gavicalis virescens</i>	Singing Honeyeater	2006, 2010	
	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	1997, 2001, 2006, 2010, 2016	
Pachycephalidae	<i>Pachycephala pectoralis</i>	Golden Whistler	2006	



Family	Species Name	Common Name	Year Observed	Status
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote	2006	
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great Cormorant	2001	
	<i>Phalacrocorax fuscescens</i>	Black-faced Cormorant	2006	
	<i>Phalacrocorax varius</i>	Pied Cormorant	2010	
Psittacidae	<i>Neophema petrophila</i>	Rock Parrot	2010	
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail	2010	
Sulidae	<i>Morus serrator</i>	Australasian Gannet	2006	
Zosteropidae	<i>Zosterops lateralis</i>	Silvereeye	1997, 2001, 2006, 2010, 2016	
		Large raptor unidentified	2016	

- Vulnerable (Commonwealth EPBC Act):
  - *A native species is eligible to be included in the vulnerable category at a particular time if, at that time:*
    - (a) *it is not critically endangered or endangered; and*
    - (b) *it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.*
- Vulnerable (WA State):
  - *Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the Wildlife Conservation Act 1950, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.*
- OS – Other specially protected fauna (WA State):
  - *Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the Wildlife Conservation Act 1950, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.*

Observation dates:

- 12/10/1997
- 11/11/2001
- 11/06/2006
- 14/11/2010
- 23/11/2010
- 11/09/2016



## Appendix D *Phytophthora* Dieback Assessment



## Appendix E Heritage Searches



## Appendix F Historical Aerial Photographs



## Appendix G Shire of Esperance Assets



## Appendix H Implementation Plan Conservation Areas