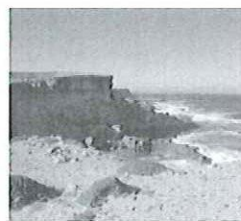


The Department of
Environment and Conservation

Dirk Hartog Island National Park Ecological Restoration Project

Visual Impact Assessment

March 2013



Stakeholders

Department of Environment and Conservation

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In August 2012 a field study was undertaken to assess the potential visual impacts of works associated with the Dirk Hartog Island Ecological Restoration Project. These works form part of the cat eradication program and include a proposed track network, sand pads and a fence across the island.

A Visual Impact Issues Paper was prepared documenting observations and initial assessment of visual impacts and made initial recommendations for continued project planning. These recommendations were considered and incorporated through the project planning phase in November 2012.

This document provides a visual impact assessment of works.

Version Control

Document Control Blurb if needed

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01.03.2013	V1	John Asher, Sue Hancock, Chris Stewart	
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Introduction

Project Site

Dirk Hartog Island National Park sits within the Shark Bay World Heritage Area to the west of Denham, north of Edel Land Peninsula and 800 km north of Perth at the western most part of Western Australia. The island has a prominent place in Australian maritime history as it was visited by several notable European explorers. The arrival of Dirk Hartog in 1616 marked the first European landing on Australia's west coast, and he was later followed by other Dutch explorers including Vlamingh in 1697 and Englishman, William Dampier in 1699. Several Frenchmen followed the Dutch including St Alouarn in 1772 and Baudin in 1801¹.

Pearling and guano extraction occurred on the island was followed by pastoral activities, primarily grazing by sheep and goats, from the 1850's up until becoming a national park in 2009. A reference to the islands pastoral history is the presence of localised open areas of exotic grasses such as Buffel Grass, a common weed species on the island. Areas of pasture are typically located adjacent to access routes and around water sources. Windmills, wells, corrugated iron and stone water tanks, wooden fences, old tracks and races also remain on the island.

The island is nearly 63,000 ha in area with vegetation cover dominated by low heath of varying densities ranging from prostrate forms over low lying terrain to dense green clusters in inland sheltered areas. The vegetation pattern over the island is continuing to evolve and change with the reduction of introduced animal grazing on the island.

The island is an important nesting site for the Loggerhead Turtle and the Green Turtle and is home to an endemic sub species of White-winged Fairy Wren. Quoin Bluff on the eastern side of the island is the location of an important nesting site for the Pied Cormorant.

Dirk Hartog Island is a destination for recreational activities such as four wheel driving, fishing, camping, sightseeing, wildlife watching, sea kayaking, boat cruises and exploring heritage sites. DEC currently manages camping in fishing huts and remote bush settings with limited to no facilities. The number of vehicles on the island is also restricted to ten at any given time, retaining the remote experiences available on the island.

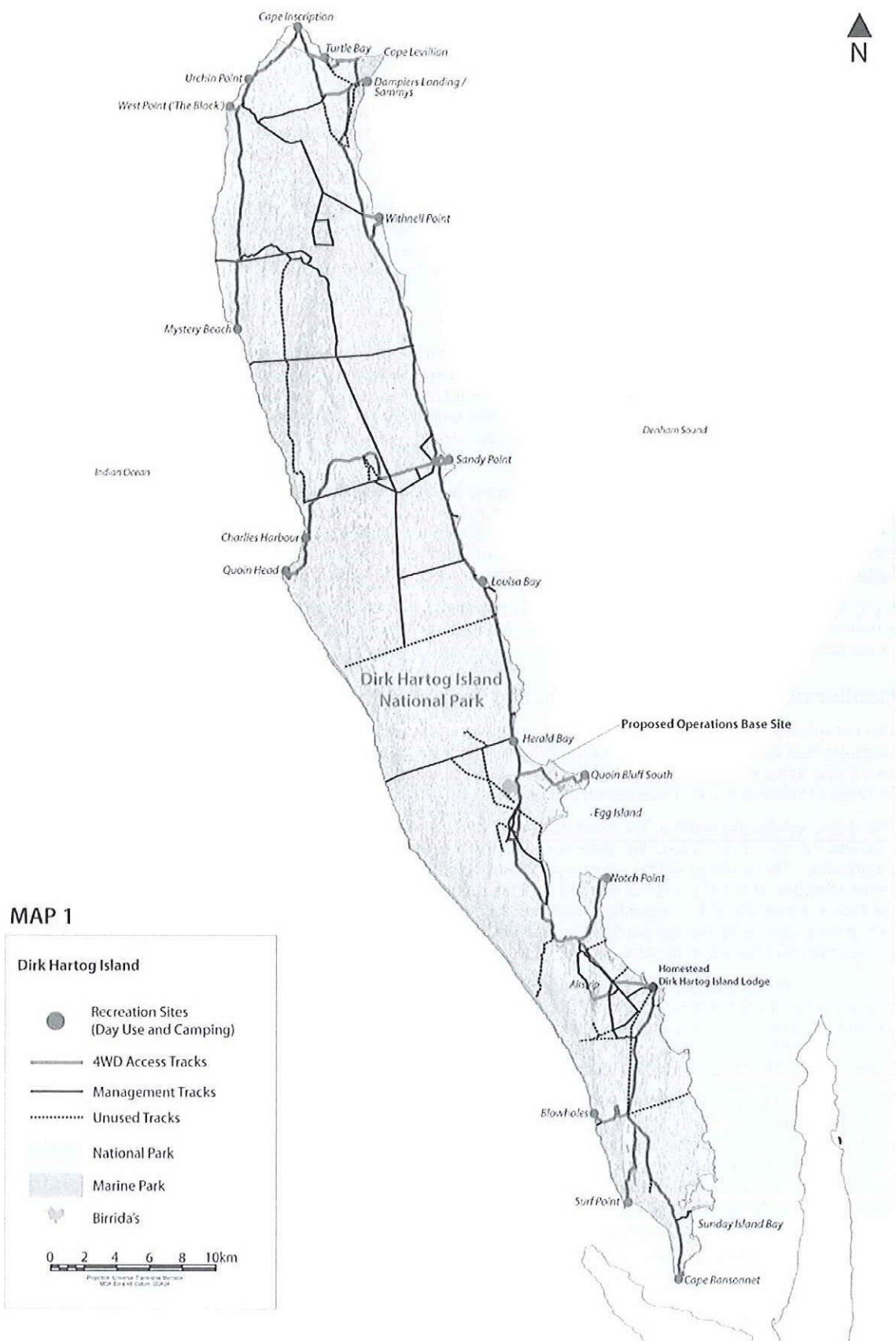
A private tourism business since 1993, operating as Dirk Hartog Island Lodge (Homestead) also attracts visitors to the island, offering homestead accommodation and a range of experiences, services and activities. Visitors access the island by private boat, chartered flight (there is one operational airstrip on the island) or barge (from Steep Point on Edel Land Peninsula to Cape Ransonnet). Access around the island is only possible by four wheel drive vehicle.

Access tracks throughout the island are predominantly orientated north to south and provide access to the northern and southern ends of the island. Tracks navigate through difficult terrain which is susceptible to erosion and are often dissected by shifting dunes. Many tracks follow original fence lines and have been created to access recreation and fishing sites and or infrastructure such as the lodge and airstrip.

Over the next two to three years visitor use is expected to remain low key however proposed tourism developments on freehold blocks at Sunday Island Bay and a leasehold lot at Turtle Bay are expected to increase visitor numbers.

The primary management focus for the National Park in the short term is the implementation of the Dirk Hartog Island National Park Ecological Restoration Project, and the improvement of visitor facilities and services to address visitor risk and environmental impact issues and cater for a predicted increase in visitor numbers. Preliminary investigations are also underway for the development of an operations base on the island at Herald Bay.

¹ <http://www.sharkbay.org.au/dirkhartogisland.aspx>



Project Background

The Dirk Hartog Island National Park Ecological Restoration Project is a seven year project aimed at re-establishing healthy vegetation and ecosystem processes on the island to enable the reintroduction of a number of native animals². All feral cats will be eradicated from the island and a monitoring process will then confirm eradication prior to the reintroduction of native animals.

Proposed infrastructure required on the island as part of the project includes a cat barrier fence, approximately 13 kilometres in length and a cat monitoring sand pad and access track network installed on an approximate 2 kilometre grid. At the conclusion of the seven year project the cat barrier fence will be considered for removal and the access track network will be rationalised and some tracks will be closed.

Cat Barrier Fence

The proposed cat barrier fence will cross the island from Herald Bay west to the Zuytdorp coastal cliffs. The fence will divide the island into two sections, allowing a concentration of control efforts in each section of the island. The fence will be retained only as long as considered necessary. The fence will be constructed of 1.8m rabbit netting with an overhang at the top and three electric wires. At ground level, a shallow trench would anchor the fence. A gate would be provided to allow passage of vehicles north-south along the existing main track.

It is recognised that there are three weak points in the fence, namely the gate and the two ends. A double gate arrangement can be designed to prevent movement across the barrier fence at this point. The bay side (eastern) end of the fence will start at a sheer cliff, the bottom of which is under water at low tide; similarly, a steep cliff has been located on the ocean side where the fence will terminate. Making use of these two features in the construction of the fence should prevent cat movement across the barrier.

From the bay side (eastern) cliff the fence is planned to cross the main north south track and follow a proposed monitoring track in a south west direction to an existing fence and then cross the island utilising that existing fence alignment.

Monitoring Sand Pads and Connecting Tracks

The cat monitoring tracks are proposed to be established to connect sand pads located on an approximate 2 kilometre grid across the full length of the island. The track network linking the sand pads will utilise existing tracks and fence lines where possible. The tracks will be established using a rubber tracked skid steer loader (Positrack) fitted with a front mounted mulcher.

The tracks will be the width of the Positrack (less than 2 metres in width) and the vegetation mulched as the machine moves forward along the proposed alignment, leaving the mulched vegetation laid on the track as it progresses. The mulcher will be set at a minimum height above the ground at approximately 50 to 75 mm to ensure that the soil surface is not disturbed. This method will effectively mow the vegetation with the aim of keeping the majority of the vegetation alive and the root mat undisturbed. This will minimise erosion potential and enable access by the cat eradication staff using All Terrain Vehicles or four wheel motorbikes (ATV's) to access the sand pads and monitor cat activity as required.

Following continuous usage of the tracks by the cat eradication staff the ATV's will form a pair of wheel tracks where the sand will become exposed. The sand pads will be established across the island and cleared of all vegetation to provide a 1m² area of clean sand. Natural openings in the vegetation will be used in preference to clearing vegetation. These pads will be checked on a daily basis for cat tracks during the monitoring program and raked after each inspection.

It is anticipated that approximately 150 kilometres of ATV track will be created across the island at a width of less than 2 metres. This will require a total of 30 hectares of vegetation to be mulched equating to approximately 0.048% of the islands total area (62,928 ha). Less than 150 by 1m² sand pads will be cleared to mineral earth equating to a total of 0.015 hectares. There is a total of 184 kilometres of secondary tracks on the island of which 103 kilometres will be used to access some of the sand pads and 62 kilometres will need to be maintained to provide ATV access³.

² DEC (November 2011) Dirk Hartog Island National Park Ecological Restoration Project Summary

³ DEC Dirk Hartog Island National Park Ecological Restoration Project Environmental Impact Assessment

Assessment Process

Key Policies and Reference Documents

There are a number of documents which guide the development of infrastructure and the assessment of visual impacts within the Shark Bay World Heritage Area and in Dirk Hartog Island National Park. Key documents, relevant objectives and actions are summarised below.

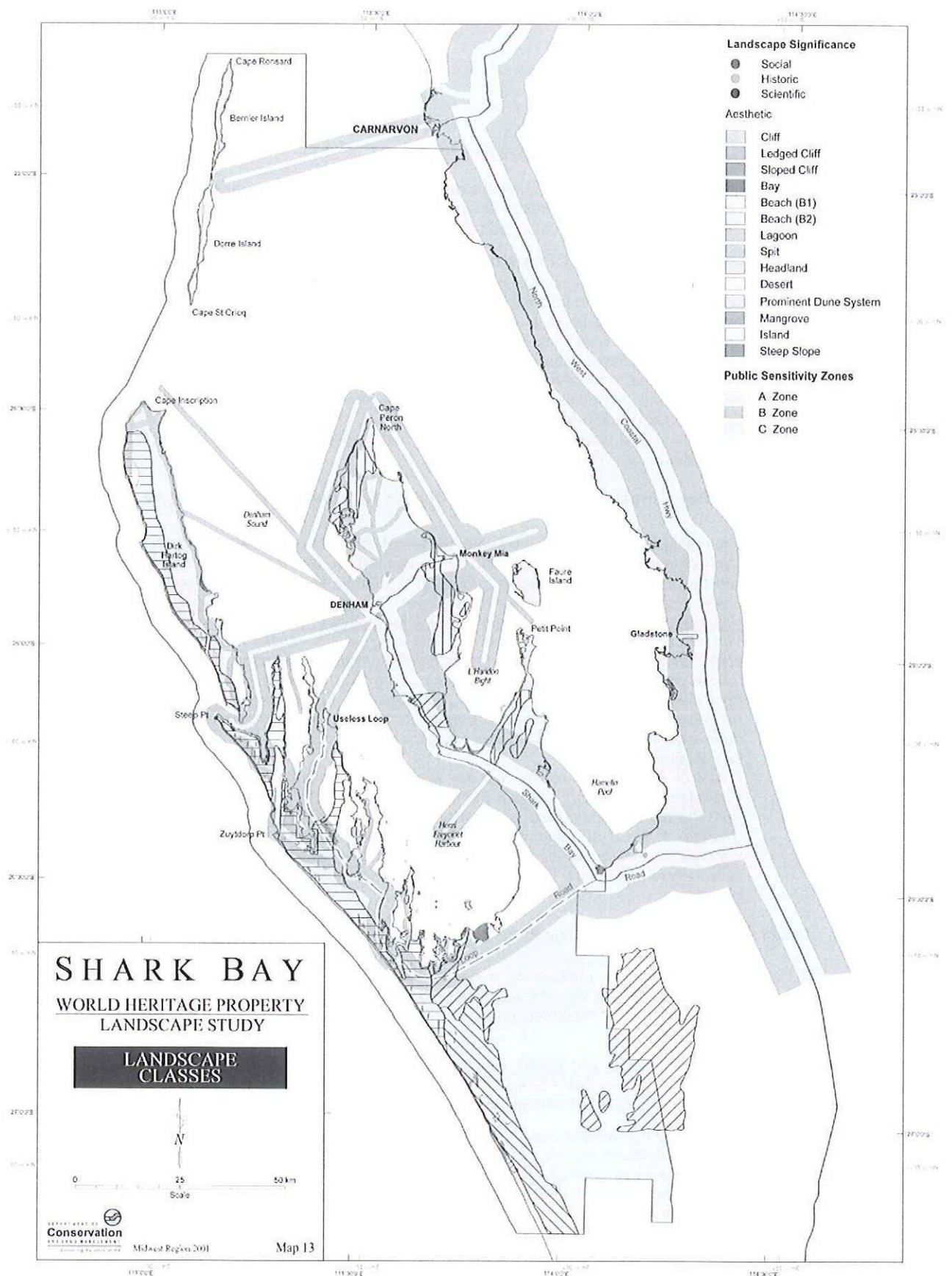
- **DEC, Shark Bay World Heritage Property Strategic Plan, 2008-2020**
 - Consider impact on visual resource values of the World Heritage property and ensure human induced disturbance to the integrity of World Heritage values are minimised.
 - Avoid or minimise potentially degrading activities and threats to the integrity of landforms such as the Zuytdorp Cliffs and dune formations. Features identified as having significant visual resource value include the Zuytdorp Cliffs, wide sweeping beaches, rocky platforms, headlands and peninsulas, shallow bays, low rolling hills, flat clay pans and birridas.
 - Activities and proposals that are assessed as having the potential to adversely impact on formations and landforms are controlled.
 - Human imposed changes to the seascape and landscape should not detract from the natural visual character of the property.
- **DEC, Shark Bay Terrestrial Reserves and Proposed Reserve Additions Management Plan No.75 2012**
 - The management plan notes the potential visual impact of proposed infrastructure. *"Although the removal of introduced predators and herbivores will use existing tracks as much as possible, the construction of narrow monitoring tracks in the dense vegetated areas at 2 kilometre intervals and in a grid pattern and suitable for use by ATVs, may be required. This will have a detrimental visual impact for the duration of the feral animal control and monitoring period."⁴*
 - *The relatively unspoilt nature of the planning area's landforms and low-lying vegetation contributes to a visual landscape that is highly sensitive to changes. For example, minor tracks, telecommunication towers, fishing shacks and gravel pits may be highly visible when viewed from high points, the air or the sea. It is important to take advantage of all opportunities to minimise the visual impact of development, for example by positioning sites in low-lying areas or dune swales. It is also important to ensure that visual impacts are considered from both land and sea perspectives.*
 - *Areas of high scenic quality are the areas requiring greatest emphasis in terms of visual landscape management and are the most sensitive to alterations. Any changes should borrow from the natural established landscape character and be unnoticeable to the casual observer. Changes to areas of moderate scenic quality should borrow significantly from natural elements but may be apparent to the observer. Areas of low scenic quality are of least visual concern and sensitivity to alterations. Changes should consider natural elements but may be dominant to the observer.*
- **CALM, Shark Bay World Heritage Property Landscape Study, Resource Document (February 2001)**

In 2001 a Landscape Study was undertaken to identify the aesthetic values in the Shark Bay World Heritage Property. The Landscape Study establishes objectives and guidelines for the management of landscape values and makes a number of recommendations in relation to the study results, their implementation and further work required.

Four landscape character units and twenty sub units were identified in the Shark Bay study area (SBWHA Landscape Study 2001). Within Dirk Hartog Island there are four sub units, the Edel Shrublands sub unit, Parabolic dunes sub unit, Desert sub unit and the Sea Cliff sub unit.

Over the island the study has assess that there are two visual landscape management zones, Zone B located within 3 kilometres of significant access routes and Zone C covering the remainder of the island. The main access through the island has been given a sensitivity level of 3 with two boat access routes coming to the island were given a sensitivity level of 1. Refer to **Map 2** on page 18. Refer to Appendix 1 for Management objectives for these character units.

⁴ Pg 46, DEC Shark Bay Terrestrial Reserves and Proposed Reserve Additions Management Plan No.75 2012



MAP 2 Landscape Classes, CALM, Shark Bay World Heritage
Property Landscape Study, Resource Document (February 2001)

* Key to shaded areas?

Other documents regarding visual landscape management and planning include:

- **Policy 34 – Visual Resource Management of Lands and Waters Managed by CALM (CALM 1989)**
- **State Coastal Planning Strategy (SPP2.6) – 2003, Western Australian Planning Commission**
- **Visual Landscape Planning in Western Australia – Department of Planning**
- **EPA Guidance Statement No.49, Guidance for the Assessment of Environmental Factors – Assessment of Development Proposals in Shark Bay World Heritage Property**

Methodology

This assessment is based on a systematic method of visual landscape management adopted and developed by DEC. The method, beginning with visual landscape inventory and assessment identifies and analyses visual characteristics of landscape and the degree of significance and sensitivity placed on that landscape by those who view it.

Zones of priority for landscape values and resultant visual management objectives are then established, against which proposed works can be assessed.

The main components of the methodology are:

- Inventory of landscape elements – identification and description of the visual character of the project area's landscape.
- Classification of landscape character – description and classification of visual character into categories of relative scenic quality.
- Assessment of significance – identification of values of landscape character that are most important to the experience and enjoyment of people (preference based).
- Assessment of access and viewer positions – a measure of how people experience a landscape.
- Establishment of management priority zones – an amalgamation of biophysical and social components of visual landscape into zones of relative concern for landscape values.
- Determination of management objectives – visual management objectives are stated in terms of acceptable degrees of change to the established character of the landscape for each management zone category.
- Preparation of management guidelines and recommendations.

Visual Landscape Inventory and Character

Dirk Hartog Island sits within the Edel Landscape Character Sub Type⁵ which extends over Edel Land Peninsula, Dirk Hartog Island and through to Bernier Island and Dorre Island to the north, north-east.

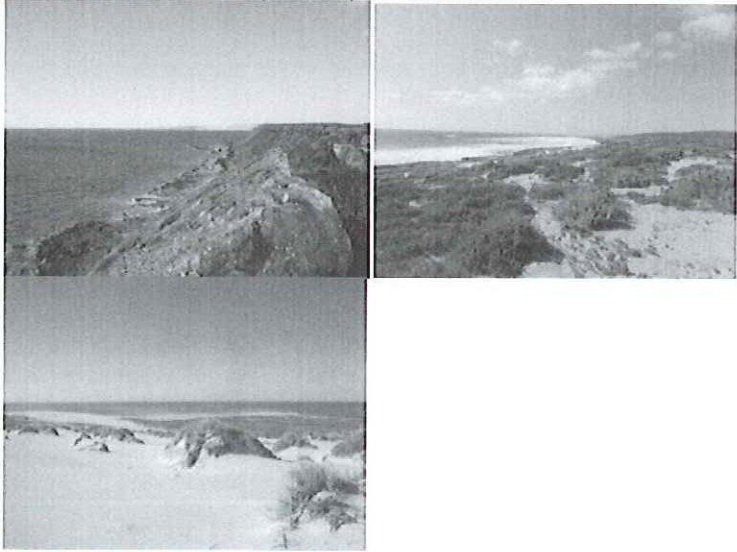
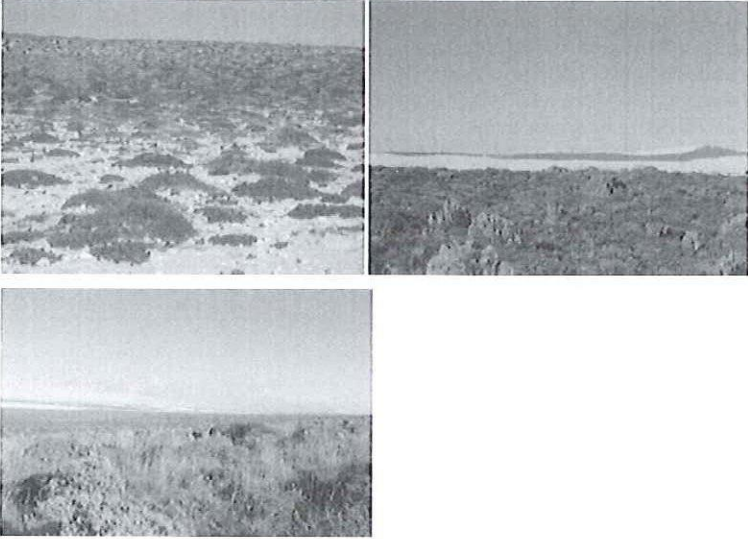
The island's landscape is characterised by gently inclined to near level terrain, a series of dominant dune systems generally orientated in the north-south direction, saline depressions and gypsum filled pans known as birridas which are highlighted by the presence of red-brown salt tolerant samphires. The steeply angled Zuytdorp Cliffs dominate the western coastal edge of the island and undulating terrain falls gently down to the ocean with views of bays and rocky outcrops on the eastern side of the island.

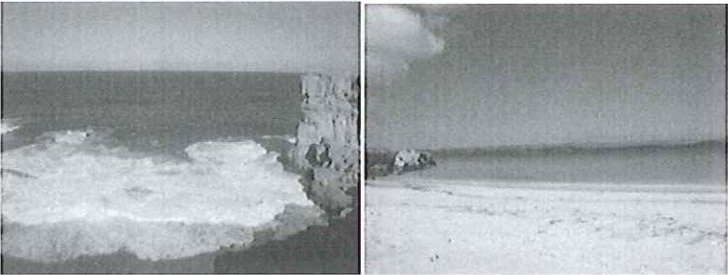
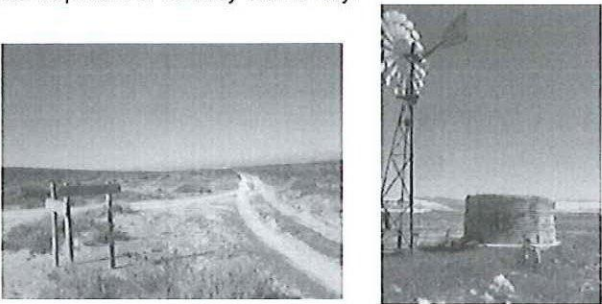
The landscape character of Dirk Hartog Island is continuing to evolve and change following the change from pastoral landscape management regime to a conservation landscape management regime and the reduction in grazing animal numbers on the island. It is now evident that vegetation is slowly re-colonising cleared and eroded areas and old fence lines are gradually retreating from view as the vegetation encroaches on them. This new and evolving landscape character needs to be taken into consideration when accessing the visual impacts of future infrastructure proposals.

A summary of elements within the Edel Landscape Character sub type which are observed on Dirk Hartog Island are listed below⁶.

⁵ CALM (1994) Reading the Remote, Landscape Characters of Western Australia




⁶ CALM (1994) Reading the Remote, Landscape Characters of Western Australia

Landform	<ul style="list-style-type: none"> • Form: gently inclined, near level terrain; domed dunes; abrupt Zuytdorp Cliffs; sheer to steeply angled slopes of cliffs; steeply sloping frontal dunes; broad intertidal flats; flat floored birridas. • Line: semi-parallel dune ridges and peninsulas oriented north-south; elongated blowouts; crescent dunes; parallel ripples of sand. • Colour: horizontally striated cliffs; bright, pale sand; burnt terracotta shaded sands; pale yellow-pink sand; pale yellow sandy soils. • Texture: rugged Zuytdorp Cliffs; rocky slopes; smooth beaches; sandy beaches; rippled indentations in intertidal flats. • Scale: enclosing amphitheatre of dunes surrounding birridas; wide expanses of pale, bright sand of tidal flats; broad. Long open views over landscape sometimes interrupted at mid to background by low domed dunes. 
Vegetation	<ul style="list-style-type: none"> • Form: low heath; domed Umbrella Bush; low, dense mat plants; spinifex hummocks; isolated islands of vegetation on mobile dunes; low, rounded bushes. • Line: long root fingerlings on blowouts; dead twigs and sinuous branches scattered over ground. • Colour: red-brown Samphires; brown strands of seagrass; dark, pale olive vegetation; contrasting shades of introduced grasses and heath; pale green Spinifex hummocks. • Texture: grey twigs and dead branches, tufted grasses; scrubby Saltbush; scattered patches of vegetation scattered over birridas • Scale: Views only limited by landform; vegetation in many areas appears prostrate over the gently inclined landform. 

Water Form	<ul style="list-style-type: none"> • Form: East - shallow waters of Shark Bay; broad, tidal flats; tranquil waters; rounded birridas. West - strong ocean swells, steep cliff faces and occasional blowholes. • Line: elongated birridas; long shallow fingers of water; border of white foam at base of cliffs. • Colour: blue waters; clear, turquoise waters of the Bay; turquoise fingers of water; limpid waters; shimmering blue waters; dark shades denoting seagrass. • Texture: calm; punishing swells of the Indian Ocean; glassy surface of the Bay. <div data-bbox="491 436 1222 710">  </div>
Landuse	<ul style="list-style-type: none"> • Form: Broad open areas of introduced grasses; corrugated iron tanks; flat evaporate pans; building remnants. • Line: upright windmills; geometric windmills; horizontal line of corrugated iron tanks; linear tracks radiating from wells; linear rows of wooden posts; geometric fence lines; drunkenly subsiding fence lines; fence-line effect; tracks snaking over dunes; erect lighthouses. • Colour: grey wooden fence posts, contrasting vegetation colour from introduced species. • Texture: wooden fences; steel windmills; corrugated iron tanks; stone water tanks; stone buildings of lighthouse keeper's residences, homestead buildings, recent development at Sunday Island Bay. <div data-bbox="486 1021 1090 1323">  </div>

Visual Quality Classification

The visual quality of the Dirk Hartog Island area has been assessed against the descriptive criteria or frames of reference of each landscape character type as outlined in "Reading the Remote". The landscape elements which are given a high scenic quality classification within the Edel Sub Type and are exhibited on Dirk Hartog Island are listed below⁷: The proposed works are to be sited throughout areas of high scenic quality.

Landform	<ul style="list-style-type: none"> • Steep cliffs and dissected slopes e.g. Zuytdorp Cliffs. • Diverse coastline edges with platforms, beaches and headlands e.g. Steep Point. • Primary dunes which display areas of active weathering e.g. Blowout on Dirk Hartog Island. • Islands, sandbars and tidal flats e.g. Egg Island. • Ridges and dune formations of distinctive height configuration or combinations which provide obvious contrast to landform patterns common in surrounding area e.g. Herald Heights. 	 <p><i>Zuytdorp Cliffs - Dirk Hartog Island</i></p>
Vegetation	<ul style="list-style-type: none"> • Distinctive areas of native vegetation which create unusual forms, lines, colours or textures in comparison to the surrounding landscape e.g. Samphire in salt pans. • Wind shaped or dwarfed vegetation e.g. cliff top heath. • Striking displays of seasonal colour e.g. blooming Wattles. • Strongly defined patterns of vegetation due to botanical zone transition e.g. tree heath and arid species. 	 <p><i>Cliff Top Heath – Dirk Hartog Island</i></p>
Water form	<ul style="list-style-type: none"> • All salt pans or birridas, filled or dry. • Unusual shoreline motion due to rocks, islands or platforms e.g. Mushroom Rock. • Areas exhibiting a mosaic of shades due to shallow sandbars, intertidal flats or seagrass banks. 	 <p><i>Birrida- Dirk Hartog Island</i></p>

⁷ CALM (1994) Reading the Remote, Landscape Characters of Western Australia

Observer Analysis

The viewing audience of development proposals on Dirk Hartog Island is considered to be:

- o Land based visitors on the island utilising four wheel drive access tracks and existing recreation sites. Currently the number of vehicles on the island is limited through management to a maximum of 10 vehicles on the island at any one time. This may increase subject to future development on the island. Commercial tourism operations based at the Homestead also attract visitors to the island.
- o People viewing the island from the air on scenic flights (particularly scenic flights over the Zuytdorp Cliffs) or arriving and departing by plane from the airstrip on the island located to the west of the Homestead. Shark Bay Scenic Flights current routes to and over the island include flights 3, 6 and 9.
- o Water based visitors with views of the island from vessels off the coast and moored in the bays on the eastern side of the island. Given the exposed nature of the west coast, water based foreground or middle-ground views are limited to a small audience.

Current visitors to the island value the coastal and inland scenery, fishing, marine and terrestrial wildlife and the sense of remoteness offered on the island. However visitor numbers to the island are expected to increase when proposed developments at Sunday Island Bay and at Turtle Bay proceed.

The **Map 1** illustrates the main travel routes and recreation sites which need to be considered when assessing the visual impacts of the proposal. The level of use is considered low.

Viewer Sensitivity and Seen Area Mapping

Viewer sensitivity requires classification of all travel routes and use areas into Levels of Public Sensitivity (Level 1 – High, Level 2 – Moderate, Level 3 – Low, Level 4 – Very Low) based upon public perceptions of landscape and specific criteria. While visitation to Dirk Hartog Island and viewing of the island from air and sea is relatively low, its national and international significance is high given its World Heritage Status and significant maritime history.

Seen area mapping requires identification and delineation of seen areas and distance zones – Foreground (0-0.5km), Middleground (0.5 – 6.5km) and Background (6.5 –16km) from all Level 1, 2 and 3 travel routes and use areas.

Seen area mapping for the island was produced using Google Earth cross referenced against site photos. The seen areas identified are an approximation based on available topographical data from Google Earth and DEC GIS section. A series of locations at primary recreation areas and along travel routes were selected and the viewer position was fixed at ground level in Google Earth. Polygons of seen areas were then traced at locations and collated to create seen areas. These seen areas were then adjusted based on influence of ridges and swales.

The attached maps outline seen areas from the land based travel routes and recreation sites as well as ocean based seen areas, primarily from Denham Sound on the eastern side of the island. Travel routes, recreation sites and ocean based routes and anchorages are categorised as Level 3 Viewer Sensitivity given the low levels of use and primarily local recreational significance.

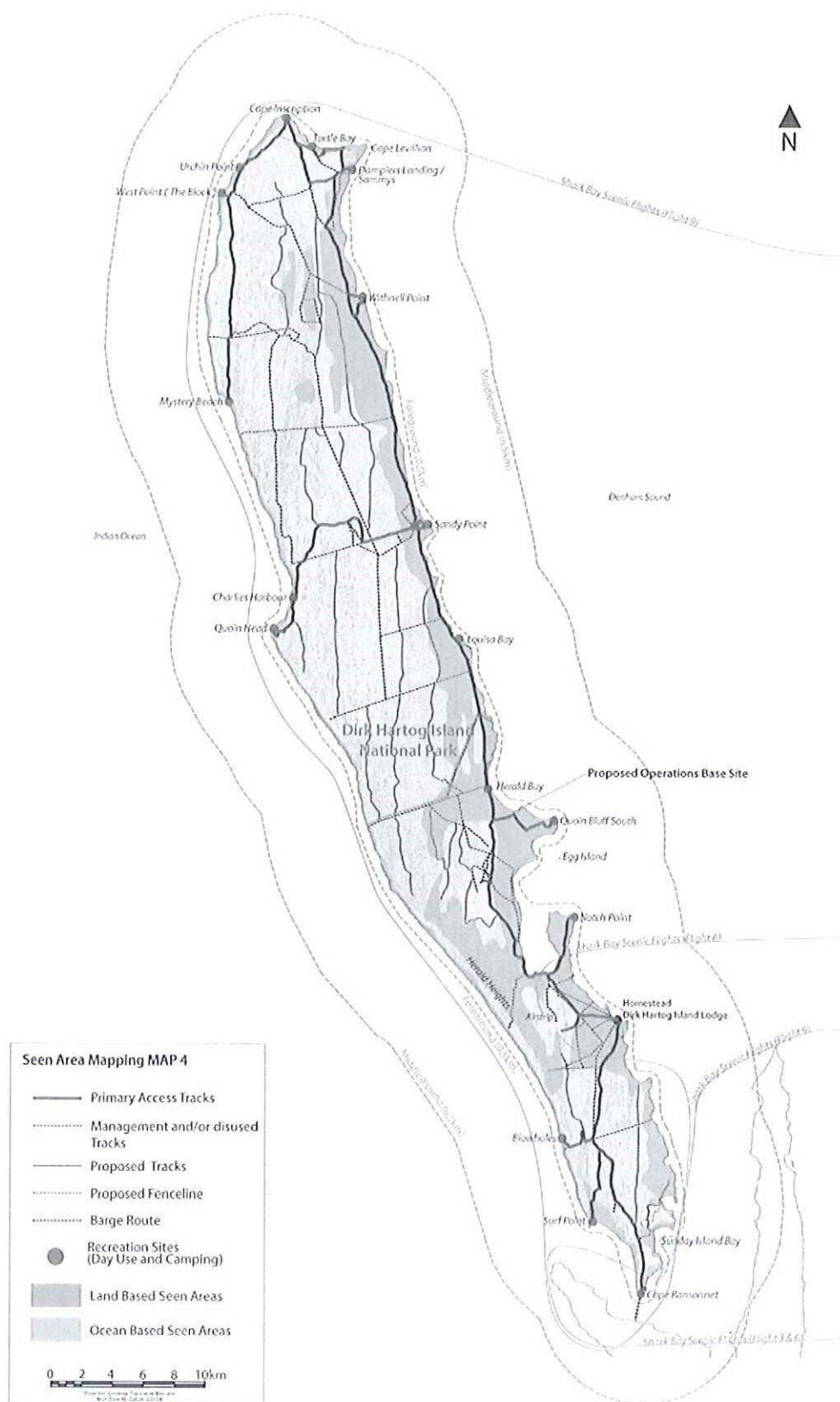
The primary travel routes include the north south track from Cape Ransonnet to Cape Inscription and spur tracks other recreation sites including Surf Point, the Homestead, Blowholes, Notch Point, Quoin Bluff South, Charlies Harbour and Quoin Head, Withnells, Turtle Bay, The Block, Urchin Point and Mystery Beach.

Given the north - south orientation of dune ridges and swale formations across the island land based seen areas west from the primary access track are defined by the nearest ridges. From Louisa Bay north, seen areas are limited to ridges within approximately two kilometres of the track (foreground and middleground). South of Louisa Bay, seen areas are more extensive over extensive low lying areas between Herald Bay and the airstrip and up to Herald Heights (foreground – background).

Quoin Bluff South and Notch Point also offer extensive seen areas looking west. South of the airstrip, the primary track moves through more moderate undulating terrain with seen areas both east and west of the track bound by the nearest ridges. The Blowholes track provides broad elevated seen areas looking north, west and south. The Charlies Harbour access track runs east – west across the island and provides seen areas into several dune swales including an extensive seen area north along one swale.

Boat traffic along the eastern coast makes use of a wide variety of embayments and anchorages. A large proportion of boat traffic originates from Denham and also moves through South Passage between the island and the mainland. The exposed nature of the west coast of the island limits boat traffic offering any foreground views.

Foreground ocean based seen areas are typically defined by the height and extent of coastal cliffs or beaches while middleground and background views expose taller ridges north of Louisa Bay and Herald Heights in the south. The west coast of the island is typified by limestone cliffs and shelves of varying heights. Ocean based seen areas on the west coast are mostly limited to this coastal edge while some taller ridges are also apparent in middleground views.



MAP 4 Seen Area Mapping – Ocean Based

Visual Landscape Management Zones and Objectives

Designation of priority zones for visual landscape results from a systematic integration of Landscape Character/Visual Quality Classes (physical elements) and Sensitivity/Distance Zones (social elements). The chart follows:

		(2) Distance Zone- Sensitivity						
		fg-1	mg-1	bg-1	fg-2	mg-2	fg-3	u
(1) Visual Quality Class	H	A	A	A	A	B	B	B
	M	A	B	B	B	B	C	C
	L	B	B	B	B	C	C	C

where 'fg' denotes foreground, 'mg' middle-ground , 'bg' background and 'u' unseen. The number following relates to the sensitivity rating (1-3).

The proposed works are seen from several 'fg-3' sites and travel routes as outlined in the Viewer Sensitivity section. The landscape character of this site is classed as high 'H' as outlined in the Visual Quality Classification section. Based on these classifications the recommended Visual Landscape Management Zone is B for the proposed works on Dirk Hartog Island (shown shaded in table above).

The Department of Environment and Conservation's Visual Landscape Management System (DEC – formerly CALM, 1989) lists objectives relating to landscape management zones. These are:

A Zone – Highest Priority - maximum retention of visual quality;

B Zone – Moderate Priority - moderate retention of visual quality; and

C Zone – Lowest Priority - partial retention / enhancement of visual quality.

Visual Landscape Management (VLM) Zone B - Objectives

VLM Priority: Moderate

VLM Objective: Moderate retention of Visual Quality

- Landscape alterations may be visually apparent
- Focus on the protection of the dominant existing visual landscape features
- The recommended alteration level would be moderately accommodating of visual change

This is consistent with the Shark Bay World Heritage Landscape Study that employed a similar process to categorise and classify visual landscape classes. The coastline of Dirk Hartog Island and along primary travel routes is classified as 'Public Sensitivity Zone B' and the interior of the island is classified 'Zone C'.

While the low levels of use have resulted in a VLM Zone B classification, the World Heritage status and national significance of the island is consistent with a Level 1 sensitivity rating. Should levels of use increase significantly, the high visual quality class combined with a Level 1 or 2 sensitivity would result in a VLM Zone A classification.

Assessment of Objectives

The proposed works that form part of the Cat Eradication Project meet the Visual Landscape Management Objectives for Zone B. The alteration to the visual landscape is moderate with only limited instances of proposed works being visually apparent. Dominant existing visual landscape features will not be impacted.

Cat Barrier Fence

The eastern extent of the proposed cat barrier fence and cleared corridor will fall within foreground and middleground seen areas from the primary north-south access track. Seen areas may be obscured intermittently due to smaller ridges and swales. The proposed fence will not be visible west beyond the central ridges of the island. The eastern end of the fence on the small limestone and shelf will be seen from the water within foreground and middleground seen areas.

Sand Track Pad and Access Track Network

New proposed tracks and sand pads are typically sited in swales across the island limiting their exposure. Proposed tracks are typically serpentine in nature following along the contour. The major concentration of new tracks proposed are in the interior of the island west of Herald and Louisa Bays. This concentration does not fall within land or ocean based seen areas. There are instances where proposed tracks will fall within both foreground and middleground seen areas from primary travel routes and these include:

- Northern end of proposed track D from the primary north-south track (foreground and middleground)
- Portions of proposed tracks D, E, F and G from the Charlies Harbour track (foreground and middleground)
- Southern end of proposed tracks O and P from primary north-south track and Sunday Island Bay track (foreground and middleground)
- Portions of proposed tracks I and J from primary north-south track (middleground)

Proposed sand track pads across the island, although frequent in number, will have limited visual impact. Sand pads may be evident in foreground seen areas dependent on localised positioning.

Principles and Design Guidelines

Guiding Principles

Visual landscape management is based on the premise that the visual quality of a landscape is a resource in its own right. This resource can be assessed and managed in much the same way as other resource values such as fauna, flora, water, timber and recreation. Guiding principles appropriate to this project can be taken from CALM Policy Statement 34:

- 4.6 locate and design roads, walk tracks, fire breaks, trails and utility corridors to minimise visual impacts on areas they traverse.⁸

In the case of this project this principle has largely been met. Through the project review stage, erosion potential and visual impact were considered and incorporated into track alignment and sand pad placement. These considerations also effected the cat barrier fence alignment, particularly at the eastern end.

Design Guidelines

These guidelines are provided to ensure Visual Landscape Management Zone B objectives are maintained through the life of the project and following its completion. These design guidelines should be read in conjunction with the Dirk Hartog Island Geomorphic Review of Dune Stability⁹.

Cat Barrier Fence

- Limit formal vehicle turnaround areas required during the construction of the fence.
- Maximise vegetation diversity in rehabilitation to minimise visual impact following fence removal
- Where possible, select darker material colours for fence infrastructure. Darker colours recede in the landscape

Sand Track Pad and Access Track Network

- Introduce kinks and bends to track entrances from primary / public access tracks (an alternative where terminating cleared track back from public access track is not feasible)
- Where proposed track network or sand pads are in proximity to or in seen areas from recreation sites or public access tracks take particular care maximising and maintaining vegetative cover on tracks and minimising sand pads from view. These locations are listed above under the Assessment of Objectives
- Maximise vegetation diversity in rehabilitation to minimise visual impact following track closure

⁸ CALM (1989) Policy Statement No. 34 Visual Resource Management on Lands and Waters Managed by CALM

⁹ Oceanica (2013) Dirk Hartog Island Geomorphic Review of Dune Stability, Track Clearance Methods, Monitoring and Rehabilitation

Summary

Dirk Hartog Island National Park offers a landscape predominately natural in character and of high visual quality. The island sits within the Shark Bay World Heritage Area and is of local and regional significance for recreation. Proposed works associated with the Dirk Hartog Island Ecological Restoration Project will have some visual impact on the island however this level of impact meets the objectives as assessed using the DEC Visual Landscape Management System.

Public access tracks, recreation sites and ocean based travel routes will on occasion afford foreground and middleground views of the proposed access track network, cat pads and cat barrier fence. This document and the Dirk Hartog Island Geomorphic Review of Dune Stability provide guidance on the construction, monitoring and rehabilitation on these proposed works. To maintain an acceptable level of visual impact and to minimise long term visual impacts resulting from these works, adherence to monitoring and rehabilitation is critical.

While the current visitation to the island is low, this is expected to increase with both freehold lots being developed at Sunday Island Bay and potential tourist ventures at Turtle Bay as well as an increase in tourist numbers generally. The magnitude of the increase is unknown. An increase in visitation will affect the visual landscape management classification. Future works on the island will require a separate assessment.

Appendix A

The following extract is from the Shark Bay World Heritage Property Landscape Study - Resource Document CALM, (February 2001) and identifies the management objectives which apply to character units on Dirk Hartog Island.

Significance – World Heritage

Opportunities	<i>These are the 'World Heritage' features, formally recognized at the highest level, and may become the most promoted. They are a key ingredient in the 'World Heritage' experience and can be the focus for information and interpretation services.</i>
Constraints	<i>There is a high level commitment to conservation of these features, which may restrict the level of community use. Some of these features are particularly sensitive to human intrusion / modification.</i>
Objectives	<ul style="list-style-type: none"> • <i>World Heritage features should be protected.</i> • <i>The visual and physical integrity of these features and their settings should be maintained or restored.</i> • <i>Development should generally be excluded.</i>

Sensitivity Zone 'B'

Opportunities	<i>These areas are moderately important to existing community use. There is potential for development without compromising the variety and quality of experiences.</i>
Constraints	<i>Development or change will need to be carefully controlled to protect the existing experience. The potential for new access may pose threats to adjacent significant features.</i>
Objectives	<p><i>In natural areas:</i></p> <ul style="list-style-type: none"> • <i>Permanent changes should be of minor, localised impact with adequate setback (min.100m) from travel routes and use areas, except recreation and safety facilities, which may have reduced setback.</i> • <i>Temporary changes may be evident from defined travel routes and use areas but every effort should be made to ensure they are not dominant. Siting and design techniques should be used to minimise impacts and landscape design principles should be employed where possible to create 'sensitive' changes.</i> <p><i>In rural areas:</i></p> <ul style="list-style-type: none"> • <i>The rural landscape character should be protected.</i> • <i>Development which is of non-rural character should be in evident from travel routes.</i> <p><i>Access and Views</i></p> <ul style="list-style-type: none"> • <i>Existing positive experiences should be maintained through the access network.</i>

Sensitivity Zone 'C' – applies to remainder of the island

Opportunities	<i>These areas are the least important to existing community use. There is a high potential for development without compromising the variety and quality of existing experiences.</i>
Constraints	<i>Development or change may lead to higher use, which will in turn require more care in planning and design.</i>
Objectives	<p><i>Natural Areas</i></p> <ul style="list-style-type: none"> • <i>Permanent changes should be of localised impact and every effort should be made to reduce their dominance.</i> • <i>Temporary changes can be dominant but should employ landscape design principles to reduce their impact.</i> <p><i>In rural areas:</i></p> <ul style="list-style-type: none"> • <i>Changes can be dominant but should be of localised impact and employ landscape design principles where possible.</i> <p><i>Access and views:</i></p> <ul style="list-style-type: none"> • <i>Temporary change can be dominant but should employ landscape design principles where possible.</i>

Parabolic dunes sub unit

Opportunities	<i>Impressive valleys and ridges with long views along the valleys and panoramic views from the ridge tops.</i>
Constraints	<i>Erodible soils, some steep slopes, low vegetation, prone to high wind forces. High visibility. Low suitability for development.</i>
Objectives	<i>As for sensitivity zone or significance</i>

Desert sub unit

Opportunities	<i>Spectacular sand forms.</i>
Constraints	<i>Unsuitable for development. Need to discourage vehicle use beyond defined access.</i>
Objectives	<i>As for sensitivity zone or significance</i>

Coastal Cliffs and Bay Cliffs Landscape Character Sub units

Opportunities	<i>Offer some of the most spectacular views of the region. Ocean, hinterland and marine wildlife views. Mix of sensory characteristics (eg. wind, wave sound).</i>
Constraints	<i>Often poor soils, susceptible to erosion, and fragile vegetation. Highly exposed to the weather. Access to cliff edge only. High visitor risk – access would need to be carefully controlled. Development and tracks will be highly visible. Low suitability for development.</i>
Objectives	<i>As for sensitivity zone or significance</i>

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Dirk Harlog Island
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Chris Valentine
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Corporate Information Section
KUNSLINGTON

SCANNED

Dear Sir

Dirk Hartog Island
Proposed Works as Part of the Dirk Hartog Island National Park Ecological
Restoration Project

Thank you for your letter of 27 November 2012 regarding the proposed works on Dirk Hartog Island. The place is currently being assessed for entry in the State Register of Heritage Places. We thank you for the opportunity to provide comments on the proposed development.

- The State Heritage Office has no objection to the goal of removing introduced animals in anticipation of reintroducing native species to the island.
- It is understood that access tracks, fencing, an accommodation area and potentially an airstrip are to be constructed to facilitate the project.
- The Department of Environment and Conservation have advised that sites of heritage interest are not to be impacted upon by the proposed works.
- The State Heritage Office has no information about the section of deteriorated post and wire fencing that is proposed to be removed.

The proposed works have been considered in the context of the identified cultural significance of the place and they raise no concerns.

The comments contained in this letter are not made under the authority of Section 11 of the *Heritage of Western Australia Act 1990* but are provided informally to assist the decision-making authority in its decision.

Should you have any queries regarding this advice, please contact Chris Valentino at chris.valentino@stateheritage.wa.gov.au or on 6552 4135.

Yours sincerely,

Callum Crofton
A/DEVELOPMENT AND INCENTIVES MANAGER

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