DIRK HARTOG ISLAND NATIONAL PARK

Interim Management Guidelines for Necessary Operations

2010

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Department of Environment and Conservation

PREFACE

All national parks, conservation parks and nature reserves in Western Australia are vested in the Conservation Commission of Western Australia (Conservation Commission), and managed by the Department of Environment and Conservation (the Department or DEC) under provisions of the *Conservation and Land Management Act 1984* (CALM Act).

Necessary operations are prepared in accordance with section 33A(1) of the CALM Act for the preservation or protection of persons, property, land, waters, flora or fauna, or for the preparation of a management plan. As such, this document proposes management of the natural environment, visitors, commercial operations, use of natural resources and cultural heritage protection.

The previous pastoral lessees have retained one freehold block and acquired three additional blocks and one leasehold area within Dirk Hartog Island National Park.

Dirk Hartog Island National Park was created on 29 October 2009 and subsequently the lands were vested with the Conservation Commission of Western Australia. On behalf of the Conservation Commission, DEC is responsible for the preparation of a management plan for the national park. DEC is also responsible for the day-to-day management of the national park in accordance with the CALM Act.

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INTERIM MANAGEMENT GUIDELINES FOR DIRK HARTOG ISLAND NATIONAL PARK

ENDORSED _____ Date

Regional Manager - Midwest Region

ENDORSED _____ Date

Director Regional Services

ENDORSED _____ Date

Director Parks and Visitor Services

ENDORSED _____ Date

Director Nature Conservation

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INTRODUCTION

1. INTRODUCTION

Dirk Hartog Island is located within Shark Bay. Shark Bay is located on the westernmost point of Australia, about 800 km north of Perth (see Map 1).

On 29 October 2009 the majority of Dirk Hartog Island (Reserve 50325, 62,920ha) was created as a national park. Dirk Hartog Island is one of several conservation reserves in the Shark Bay area including Francois Peron National Park, Bernier and Dorre Islands Nature Reserve, other islands nature reserves, Shell Beach Conservation Park and Zuytdorp Nature Reserve.

This necessary operations document will provide effective and relevant guidelines to protect the key values of the island and the preservation or protection of persons, property, land, waters, flora or fauna.

Dirk Hartog Island lies within the Shark Bay World Heritgae Property. The Property was inscribed on the World Heritage List on 13 December 1991 on the basis of its "natural heritage" values.

The implementation of these guidelines will be undertaken by the Midwest Region through the operations managed by the Shark Bay District.

2. KEY VALUES

The key values associated with Dirk Hartog Island include:

- isolation of fauna habitats on islands and peninsulas resulting in survival of threatened species;
- coastal scenery - Zuytdorp cliffs;
- endemic Dirk Hartog Island subspecies of the southern emu-wren;
- nesting populations of the green and loggerhead turtles, listed as endangered and vulnerable by IUCN;
- Dirk Hartog Island is the site of first known European landfall in Western Australia in 1616 and site of first physical evidence of European landing in Australia;
- gazettal of the Cape Inscription area of Dirk Hartog Island on the National Heritage List;
- terrestrial environments and proximity to marine environments that offer varied nature-based recreational and tourism opportunities and experiences;
- opportunities for viewing a diverse range of native marine and terrestrial flora and fauna; and
- remote and natural qualities of parts of the island.

3. MANAGEMENT DIRECTION AND PURPOSE

The CALM Act establishes the Conservation Commission of Western Australia (Conservation Commission). The lands vested in the Commission are managed by the Department. On behalf of the Conservation Commission, the Department prepares regional, specific area or several areas within a defined geographic area plans on a priority basis.

If there is for the time being no management plan for a conservation reserve such as a national park, the area is to be managed in accordance with section 33(A) of the CALM Act.

In accordance with section 56 of the CALM Act, a national park shall be designed to "…*fulfil so much of the demand for recreation by members of the public as is consistent with the proper maintenance and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of any feature of archaeological, historic or scientific interes*t".

4. LAND TENURE

Dirk Hartog Island National Park (Reserve 50325), is a class A reserve of 62,928.5 ha. It was created on 29 October 2009 for the purpose of 'national park'. The park was created as a result of the State Government's purchase of Dirk Hartog Island pastoral lease (PL No. 3114/400) in 2009. The proposed name is subject to

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endorsement by the Department's nomenclature committee and approval of the State Geographic Names Committee.

The park incorporates the 40 m strip of UCL beteeen the former pastoral lease boundary and HWM. On the eastern, northern and southern sides of the island, it adjoins the Shark Bay Marine Park at HWM. On the western side of the island adjacent to the Zuytdorp Cliffs, the park extends to LWM. In the event that the Shark Bay Marine Park is extended to include the western part of the coastline, the boundary of the terrestrial reserve will be changed from LWM to HWM and the marine park boundary established to HWM.

As part of the settlement, two existing freehold lots (Edel Location 20 (16 ha) and North Location 63 (40.47 ha) were relinquished by the pastoral lessee and incorporated into the national park. Three new freehold lots were established, two (Lot 304 [about 11.3 ha] and Lot 305 [about 4.6 ha]) at Sunday Island Bay and one (Lot 303 about 17.3 ha) adjoining the existing homestead freehold lot (Location 62 [about 42 ha]). The existing homestead lot extends to LWM. Also as part of the settlement, Lot 300 was created for a lease over an area adjacent to Cape Levillain (about 2.5 ha) for the purpose of ecotourism.

A reserve for the 'use and benefit of Aboriginal people' (Lot 351 [about 5 ha]) was created near Tumbledown Point as an outcome of Native Title negotiations associated with the creation of freehold lots on Dirk Hartog Island.

Reserve 14918 in the Cape Inscription area is an 'unclassified' reserve of 298 ha. Unlike the remainder of Dirk Hartog Island, this reserve extends to HWM and there is no 40 m strip of UCL between HWM and pastoral lease boundaries. It has been agreed between the Department, the Shire of Shark Bay and the Department of Regional Development and Lands to now include this reserve within the national park. This is consistent with the *Shark Bay Strategic Plan* (WA Planning Commission 1997).

Reserve 12715 is a 'class A' reserve of 0.48 ha and was originally gazetted on 10 June 1910 for the purpose of 'Government Requirements Protection of Inscription Posts'. It is the location of the inscription posts from Hartog's and Vlamingh's landing.

Reserve 45498 is a 'class A' reserve of 0.07 ha and was gazetted in December 2000 for the purpose of 'Navigation, Communication, Meteorology and Survey'. The reserve contains the lighthouse.

Reserve 46663 is an 'unclassified' reserve of 1.55 ha, is vested with the Shire of Shark Bay and was gazetted in November 2001 for the purpose of 'heritage precinct'. The reserve is immediately south of the lighthouse and west of the inscription posts and incorporates the lighthouse keeper's quarters.

Parts of Dirk Hartog Island contain important biological areas such as breeding areas for waterbirds and turtles. If required, these areas may be declared 'limited access areas' under section 62 of the CALM Act which allows for access only when permission is given.

Objective and Strategies

Conservation reserves are protected by providing maximum security of tenure and purpose by:

1. Extending the Shark Bay Marine Park to include waters along western coastline of the island, changing the boundary of the national park from LWM to HWM and ensuring marine park boundary is to HWM; and
2. incorporating Reserve 14918 into Dirk Hartog Island National Park.

5. TERM OF THIS NECESSARY OPERATION

These necessary operations will remain in place until the *Shark Bay Terrestrial Reserves and Proposed Reserve Additions Management Plan (DEC in prep)* is approved by the Minister for Environment.

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MANAGING THE NATURAL ENVIRONMENT

The biota of the terrestrial environment of the Dirk Hartog Island is affected by a range of ecological processes including climate, geomorphology, hydrology and soils. Dirk Hartog Island is at the meeting point of three major climatic regions. Due to its geographical position Dirk Hartog Island is influenced by the winter rainfall of the south-west and the summer rainfall of the north but its arid to semi-arid climate makes rainfall irregular.

Dirk Hartog Island is of great zoological and botanical importance, containing habitats of many species at the limits of their range. Dirk Hartog Island contains several endemic animal species that are present because of the climatic, geomorphological, hydrological and soil conditions. This is of importance not only because of their presence but also for understanding the biological evolution of the area.

Dirk Hartog Island forms the transition zone between two major botanical provinces – the South West dominated by eucalypt species and the Eremaean dominated by acacia species.

Dirk Hartog Island is also an area of major zoological importance primarily as a result of the isolation of habitats on peninsulas and islands. Some fauna species that have become extinct on the mainland have survived on these islands. The global significant loggerhead turtle rookery at Turtle Bay on DHI has not been affected by fox predation due to its island location in contrast to many turtle rookeries on the mainland which have been severely impacted by foxes.

At the regional scale, the ecology of Dirk Hartog Island is strongly influenced by its long, narrow shape and the local climate generated, particularly temperature and rainfall. The large size of the area and relative intactness of the vegetation ensure the maintenance of the integrity of ecological processes.

6. GEOLOGY, GEOMORPHOLOGY AND SOILS

The significance of the geology of the Shark Bay area contributed towards the nomination of Shark Bay as a World Heritage Property particularly the stromatolites found in Hamelin Pool. The Shark Bay area is part of the Carnarvon Basin, a geological feature along the western and north-western coastline of Western Australia. It ranges in width from 50 to 300 km and contains more than 6000 m of sedimentary rock spanning the Ordovician to Quaternary (434 to 0.01 million years ago) (Hocking *et al.* 1987). Within the Carnarvon Basin, Shark Bay lies in the Gascoyne Platform, a north-south elongated, tilted platform which contains mostly Silurian, Devonian (434 to 354 million years ago) and Cretaceous (65-1.6 million years ago) sedimentary rocks (Hocking *et al.* 1987). The appearance of the Peron, Nanga and Edel Land Peninsulas is due to the presence of anticlines (peninsulas) and intervening anticlines (gulf) that first developed during the Tertiary Period. The abrupt line of the Zuytdorp Cliffs is thought to mark one of the most prominent Pleistocene to early Holocene (1.6-0.01 million years ago) fault scarps in Australia.

The surface geology of Dirk Hartog Island comprises:

- *Peron Sandstone* – red aeolian sandstone which accumulated as a series of interlocking longitudinal and transverse dunes, primarily exposed on Peron Peninsula;
- *Tamala Limestone* – a succession of aeolian limestone dune deposits most of which probably accumulated during glacial periods of the Pleistocene when sea levels were much lower than they are today. They are found mostly on the Edel Land Peninsula;

Between the Pleistocene dune ridges are evaporite deposits that form birridas (salt flats). They consist largely of gypsum and are probably Pleistocene in age.

Geomorphology

The distinct geomorphology of Dirk Hartog Island contributed towards the Shark Bay area being nominated as a World Heritage Property including the striking Zuytdorp Cliffs and the island. The geomorphology of the island is characterised by calcareous, unconsolidated dunes deposited over the Tamala Limestone and found on Bernier, Dorre and Dirk Hartog Islands and Edel Land. Many of the coastal landforms are fragile and can be degraded by uncontrolled vehicle access, pedestrian use and grazing.

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Soils

Typically, the soils of Dirk Hartog Island are sandy. Payne *et al.* (1987) described four geomorphical districts based on soil types across the Shark Bay area, two of which occur on Dirk Hartog Island:

- *Coastal Dune* – occupies the western edge of Edel Peninsula and the islands to the north (Dirk Hartog, Dorre and Bernier). The soils are almost entirely uniformly sandy and generally calcareous;
- *Tamala Limestone* – includes areas adjacent to the Zuytdorp cliffs. The soils formed from the Tamala Limestone include brownish sands on undulating plains and sandplains; calcareous sands on the coastal dunes and sandplains; shallow lithosols on low hills and stony plains; shallow friable calcareous loams on stony plains and low rises; adjacent to limestone outcrops; and

Soil type will influence the amount of soil loss or movement, soil compaction, loss of vegetation, the potential intrusion of weeds and where developments may be situated. Coastal dunes are particularly susceptible to erosion and take considerable time to rehabilitate.

Objective and Strategies

The geology, geomorphology and soils of Dirk Hartog Island will be protected and conserved by:

1. identifying geological and geomorphological features and soil types vulnerable to environmental damage and potentially threatened by introduced animals and human activities, and protecting these areas;
2. minimising soil disturbing activities in, and public access to, coastal dune areas that are likely to increase erosion risk and cause significant impacts (e.g. on significant species and communities, heritage sites, and infrastructure);
3. implementing strategies for the control and removal of stock and introduced animals that may cause erosion; and
4. rehabilitating eroded areas, superfluous tracks and disturbed areas as necessary, as resources allow.

7. NATIVE PLANTS AND VEGETATION ASSOCIATIONS

The Shark Bay area is significant for flora, being located in the transition zone of two botanical provinces – the South West and Eremaean. As such, there are many endemic flora species and many species located at the northern and southern limits of their geographical range. The transition zone is most evident on parts of former Nanga and Tamala Stations, Carrarang stations, Dirk Hartog Island and Bernier and Dorre Islands (URS 2000).

Flora

Dirk Hartog Island has high species richness for flora with a recorded list of 266 species.

There are no listed declared rare flora on Dirk Hartog Island. Dirk Harog Island contains six Priority 2, two Priority 3 and two Priority 4 flora:

Species	Priority
Angianthus microcephalus	P2
Eremophila glabra subsp. psammophora	P2
Lepidium biplicatum	P2
Melaleuca huegelii subsp. pristicensis	P2
Olearia occidentissima	P2
Ptilotus alexandri	P2
Lepidobolus densus	P3
Stenanthemum divaricatum	P3
Lepidium puberulum	P4
Triodia bromoides	P4

Vegetation Communities

The main vegetation associations on Dirk Hartog Island are:

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- spinifex hummock grassland with on overstorey of either *A. coriacea*, *Pittosporum phylliraeoides* over *A. ligulata*, or *Diplolaena dampieri*, *Exocarpus sparteus* shrubs over *Triodia* sp. In other areas *Acanthocarpus preissii* and *Atriplex bunburyana* chenopods or shrubs over hummock grasses across the majority of the island; and
- mixed open chenopod shrubland of *Atriplex* sp., *Olearia axillaris* and *Frankenia* sp. adjacent to the western coastline and slightly inland in more protected sites, *T. plurinervata*, *Triodia* sp., *Melaleuca huegelii*, *T. baeckeacea* and *Atriplex* sp.

There are patches of bare areas of drift sand across the island. In some parts there are a few birridas. On the east coast there are small patches of mixed open heath of *Diplolaena dampieri*, *Myoporum* sp. and *Conostylis* sp. shrubs.

Objective and Strategies

The diversity and distribution of specially protected and other native plants and vegetation associations of Dirk Hartog Island will be protected and conserved by:

1. identifying native plants and vegetation associations, that may require special protection, and implementing appropriate strategies to minimise the impacts from threatening processes, such as climate change, environmental weeds, problem animals, inappropriate fire regimes and recreation development;
2. conducting additional vegetation mapping to gain a better understanding of the condition of vegetation associations;
3. conducting additional surveys and monitoring, especially for rare, priority and poorly known flora;
4. surveying for threatened species in areas proposed for disturbance (e.g. road construction and maintenance, facility development);
5. encouraging further research on species of conservation significance (particularly in relation to life history attributes and population dynamics) and the threats to them (such as susceptibility to disease, response to fire, reproduction biology, taxonomy and age to maturity), and modify management accordingly;
6. establishing appropriate long term vegetation monitoring plots to measure the recovery, condition, species composition and recruitment following pest animal removal; and
7. rehabilitating degraded areas, where disturbance is severe, with species natural to the area and natural regeneration is less likely to occur, as resources allow.

8. NATIVE ANIMALS

Dirk Hartog Island contains a high diversity of native fauna and is of considerable international, national and local zoological significance. This is due to the location of Dirk Hartog Island within the transitional zone where the temperate climate of the South West gives way to the semi-arid climate of northern areas. Hence, many species are found at the limits of their northern or southern ranges.

Dirk Hartog Island is highly significant because it has acted as a refuge for threatened species and provides an environment that encourages genetic variability within native plants and animals.

Native Fauna

The Shark Bay area shows an unusually high diversity of mammal fauna, as has been shown in a range of biological surveys of the area. Overall, 34 mammal species have been recorded in Shark Bay. The native mammal records on Dirk Hartog Island are not so diverse with four native species recorded.

The diversity of bird fauna within the Shark Bay area is moderately high, with 245 species being recorded. This is unusual as peninsulas tend to have low fauna diversities, being surrounded by sea and providing limited access for land dwelling species. This diversity is possibly attributable to the large variety of habitats and the transition zone between the arid north and the more temperate south. Dirk Hartog Island reflects this diversity of bird species.

The Shark Bay area has a very rich abundance of reptiles, supporting 120 species. Fifty-four reptiles have been recorded for Dirk Hartog Island. Occurring on Dirk Hartog Island, the loggerhead turtle is listed as endangered and the Western spiny-tailed skink as vulnerable.

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Threatened and Other Specially Protected Fauna

The mammal fauna of the Shark Bay terrestrial area is of high conservation significance, particularly on Bernier and Dorre Islands where five of the nine mammals are listed as threatened under the Wildlife Conservation Act. Although none of these five mammals occur on Dirk Hartog Island, sub-fossil remains have been found for some of these species.

Ten to fifteen percent of WA's bird fauna have declined and the Shark Bay area supports a number of threatened species. The Dirk Hartog Island rufous field-wren, Dirk Hartog black and white fairy-wren, and the southern emu-wren (Dirk Hartog Island subspecies) are all listed as 'vulnerable' under the Commonwealth EPBC Act and threatened ('rare or likely to become extinct') under the Wildlife Conservation Act. The peregrine falcon, also found on Dirk Hartog Island, is listed as specially protected under Western Australian legislation.

The island provides important habitat for the loggerhead turtle (*Caretta caretta*), which is listed as threatened ('rare or likely to become extinct') under the Wildlife Conservation Act and is endangered under the EPBC Act and the IUCN Red List. Turtle Bay on Dirk Hartog Island is one of the most important loggerhead nesting sites in the world.

The Western spiny-tailed skink (*Egernia stokesii badia*) is listed as threatened under the Wildlife Conservation Act and endangered under the EPBC Act and is one of two disjunct populations, one found on Dirk Hartog Island and the other in the north-eastern wheatbelt.

Migratory Species

The Shark Bay area contains a number of significant migratory birds. Sixty-seven birds are migratory and are protected under international agreements with Japan, China or under the Bonn Convention. Most of these are seabirds and the coastlines and islands in particular of the Shark Bay area provide important breeding areas. Many of these species occur along the foreshore of Dirk Hartog Island.

Endemic, relictual and species at the limit of their geographic range

The Dirk Hartog black and white fairy-wren, and the Southern emu-wren are locally endemic, with the Shark Bay variegated fairy-wren only found on Bernier and Dorre Islands, and the Dirk Hartog black and white fairy wren and the southern emu-wren (Dirk Hartog Island subspecies) both endemic to Dirk Hartog Island. (Johnstone, *et al.*, 2000).

A number of southern bird species have their northern limits in the Shark Bay area and some of these are found on Dirk Hartog Island.

Many south-western reptile species are found at their northern limits in the Shark Bay area including Dirk Hartog Island. There are also a number of northern species which are at the southern extent of their range in Shark Bay. The species found on Dirk Hartog Island include: the geckoes *Diplodactylus spinigerus* and *Underwoodisaurus milii*; the pygopodid lizard *Pygopus lepidopodus*; the skinks, *Ctenotus fallens*, *C. lesueuri*, *Egernia stokesii badia,* and *Tiliqua rugosa*; and the elapid snake *Vermicella fasciolata*. There are also a number of northern species which are found at the southern extent of their range in Shark Bay including *Demansia calodera* and marine turtles and sea snakes (Storr and Harold 1990).

Dirk Hartog Island Ecological Restoration

DEC is developing a plan for the long term ecological restoration of Dirk Hartog Island. The intent of this plan is to implement a wildlife conservation program focusing on both fauna and flora on the island once introduced animals (sheep, goats and cats) are removed. Dirk Hartog Island will be the largest island on which introduced animal control will be attempted and the size of the island will greatly exceed Faure Island where the successful eradication of cats has occurred.

The ecological restoration of Dirk Hartog Island will commence with the initial removal of sheep and goats. 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 may be required. This will have a detrimental visual impact for the duration of the feral animal control and monitoring period. Vegetation clearing associated with the construction of these grids will require appropriate approvals. These transects will be used to

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monitor the presence of cats after the initial baiting. Further baiting may be required to ensure cats have been removed. Only after cats have been removed will native fauna be introduced and reintroduced to the island.

The project will also involve the control of introduced plants (particularly from the southern part of the island where past pastoral activities were focussed), establishment of an education program, establishment of an operational centre, rubbish removal, fire management, soil erosion management, hygiene control and rehabilitation.

Objective and Strategies

The specially protected and other native fauna and their habitats of Dirk Hartog Island will be protected and conserved by:

1. identifying key fauna habitats and, where possible, protecting them from threatening processes;
2. controlling threatening processes that are damaging or could potentially damage native fauna in ways that do not compromise other conservation objectives;
3. continuing to conduct biological survey and monitoring to determine the vital life history attributes and population status of fauna species in Dirk Hartog Island, including invertebrate fauna, with a focus on threatened, priority, endemic and relictual species;
4. assessing proposed developments and management activities for their potential impact on fauna and fauna habitats, including surveying for the occurrence of specially protected and priority species;
5. maintaining inventories (e.g. location records) of fauna and their habitats for specially protected and priority fauna species and reporting sightings of threatened or restricted fauna, and maintaining records, especially on the DEC database;
6. researching habitat requirements of selected threatened or restricted fauna and threatened ecological communities;
7. continuing to monitor turtle populations at Turtle Bay and monitoring appropriate access management as required; and
8. preparing and implementing an ecological reconstruction plan for Dirk Hartog Island including the removal of sheep, goats and cats, construction of monitoring tracks, subsequent reintroduction of native fauna and control of threatening processes across the island.

9. ENVIRONMENTAL WEEDS

Environmental weeds displace native plants, particularly on disturbed sites, by competing with them for light, nutrients, water and space. They can also have a significant adverse impact on other conservation values by altering animal habitats, harbouring pests and diseases, and increasing fire hazard. Environmental weeds can be introduced and spread through machinery and the importation of infested materials for construction.

There are forty-two weed species recorded in the WA Herbarium for Dirk Hartog Island. There are four species rated as 'High' according to the *Environmental Weed Strategy*; Mediterranean turnip (*Brassica tournifortii*), buffel grass (*Cenchrus ciliaris*), birdwood grass (*Cenchrus setigerus*) and great brome (*Bromus diandrus*). They vary in distribution and degree of threat to the biodiversity values of the island and have the potential to impact significantly on natural vegetation and fauna habitats.

Weed species have had significant impacts on different parts of Dirk Hartog Island. Buffel grass, a tough perennial bunch grass that was actively spread by the pastoral industry, is widespread over parts of Dirk Hartog Island. Buffel grass can displace native species and can rapidly establish a monoculture. The *Acacia* shrublands have become infested with Mediterranean turnip.

Objective and Strategies

The key values of Dirk Hartog Island will be protected whilst minimising the impact of environmental weeds by:

1. regularly surveying locations considered to be susceptible to weed infestation;
2. preparing a weed control program or plan on a priority basis according to the criteria listed above;
3. controlling weeds according to the priority species and priority areas (such as visitor sites, roads/tracks, bores and old pastoral buildings), as determined in the weed control program by appropriate methods including mechanical removal, use of appropriate herbicides and by biological methods;
4. applying appropriate hygiene practices to all vehicles entering the area; and
5. restricting the importation of soil into Dirk Hartog Island to only those sources with strict soil quarantine.

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10. INTRODUCED AND OTHER PROBLEM ANIMALS

Problem animals have potential for serious impact on natural systems and values through direct effects such as predation, habitat destruction, competition for food and territory, introduction of disease, and through environmental degradation by selective grazing and accelerating erosion. Problem animals can be either native species that impact on natural or agricultural values or feral animals (introduced species that have become established as wild or naturalised populations). One of the key aims of the proposed Dirk Hartog Island Ecological Restoration project is to remove feral cats and goats from the island.

Feral Cats

The feral cat is thought to have been largely responsible for the extinction of small to medium sized ground-dwelling mammals and ground-nesting birds in some parts of the State, such as some islands and in arid areas (Burbidge and McKenzie 1989). Where rabbits occur, they contribute to a cat's diet. Since there are no rabbits on Dirk Hartog Island there is a real potential to eradicate cats which would allow some reconstruction of the pre-European native fauna. Eradication of cats and re-introduction of native mammals has proved to be very successful on Faure Island, although this island at 8000 ha is significantly smaller than Dirk Hartog Island.

Foxes have never been present on Dirk Hartog Island. The loss of several species of native mammals from Dirk Hartog Island is one of the very few examples in Australia of feral cats playing a primary role in mammal extinctions with no additional predatory contribution from foxes.

Predation by the feral cat is listed as a key threatening process under the Commonwealth's EPBC Act. Five-year threat abatement plans have been prepared to provide national coordination, with the main emphasis on local control programs to ensure recovery of endangered species.

Goats

A large population of feral goats (*Capra hircus*) is present on Dirk Hartog Island. Feral goats on Dirk Hartog Island are thought to be descended from an original herd kept at the lighthouse when the light was established. It is also possible that a goat herd was at one time kept near the homestead. On the departure of staff from the lighthouse precinct in 1917 the goats were allowed to go wild and have since established across the entire island. Goats are responsible for a variety of impacts on native flora and fauna, including competing with native fauna for food, water and shelter, and threatening the survival of native flora through their feeding habits. The impact of hooves and overgrazing destabilises soils and greatly increases erosion, particularly in coastal cliff areas. In the Shark Bay area, goats also spread weeds, destroy cover and habitat for native fauna, and have in impact on the landscape values for visitors to the World Heritage Property.

Other introduced animals

Sheep are present on the island. House mice are widespread across the Shark Bay area, including Dirk Hartog Island.

Objective and Strategies

The key values of Dirk Hartog Island will be protected whilst minimising the impact of introduced and other problem animals by:

1. preparing a priority control plan and program for each introduced animal;
2. developing a monitoring program to evaluate the effectiveness of this control program in improving biodiversity indicators such as fauna abundance;
3. establishing and maintaining a register of all feral animals on Dirk Hartog Island. The register is to include details of distribution, relevant biological information, a history of control measures and any information relating to their impact upon native mammals;
4. eradicating cats, sheep and goats to protect native fauna and allow recovery of vegetation on the island;
5. preventing further introductions of non-native animals in Dirk Hartog Island through appropriate monitoring;
6. encouraging visitors to report sightings of introduced animals especially on Dirk Hartog Island;
7. supporting research into the impacts of introduced predators and herbivores in Dirk Hartog Island; and
8. not permitting domestic animals in Dirk Hartog Island National Park, with the exception of guide dogs and dogs associated with search and rescue operations (see Section 21 – *Domestic Animals*)

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11. DISEASES

There has been no active hygiene management related to importation of people, equipment and supplies onto Dirk Hartog Island in the past. The success of the Dirk Hartog Island ecological restoration project will depend on application of hygiene protocols being implemented. The importation of building material, use of machinery, vehicles and equipment, and even food supplies will need to be improved in the future to minimise the potential for introducing plant and animal diseases.

Animal Diseases

Mammals

An ocular disease or conjunctivitis in the western barred bandicoot was first noted in captive bred animals in October 2000 (CALM 2002). These animals displayed various symptoms including corneal opacity, conjunctivitis, ocular discharge, swollen eyelids and ruptured eyeballs (CALM 2002). These symptoms, were recorded from both captive animals and wild individuals of this and other threatened mammals on Bernier and Dorre Islands.

A wart-like growth disease has also been identified in western barred bandicoots. This cutaneous papillomatosis and carcinomatosis is clinically expressed as wart-like lesions on feet, around eyes, pouch, cloaca and ears particularly, but can occur anywhere on the body (CALM 2002). The wart-like lesions proliferate and the animals become increasingly debilitated and in many cases, older lesions develop into squamous cell carcinomas, resulting in death or euthanasia of animals. The causative organism has been identified as a virus with characteristics of a papilloma/polyoma type, which may prove to be a new virus with combined features of both groups. No treatment is currently available (CALM 2002).

Recent studies on the wild western barred bandicoot populations on Bernier and Dorre islands have identified ticks from this species carrying the bacteria *Coxiella burnetii* which causes the disease Q fever in humans. This organism can be transmitted by inhalation of infected aerosols and via tick bites. It has the potential to pose a health risk to all mammal species on the islands (probably low risk).

The discovery of symptoms of these clinical diseases in both wild and captive populations of the western barred bandicoot (as well as the multi-species pathogen present in this species' ectoparasites on the islands) has caused concern in relation to the proposed translocation of this and other mammal species, and the well-being of the two surviving natural island populations of this species. The possibility that pathogens may be transported with animals and trapping equipment or transferred direct to other species, needs to be addressed in planning captive breeding, fauna trapping and translocations programs, and in future research.

Reptiles

Marine turtle fibropapillomatosis (FP) is a debilitating neoplastic disease of marine turtles of recent pandemic proportions, which is found in all major oceans and is commonly linked to heavily polluted coastal areas. Fibropapillomatosis is a severely debilitating disease and can potentially have a devastating impact on the endangered sea turtle population around the world. Although the aetiology as well as other aspects of the pathogenesis are still under study it seems clear that this disease is linked to "anthropogenic degradation of the environmental health" (Aguirre and Lutz 2004).

It is very important to carefully plan and manage turtle conservation and tagging programs. The disinfection of tagging instruments and other equipment surfaces is critical, as a potential viral agent may be spread unintentionally by researchers from one turtle to the other (Curry *et al.* 2000). Balazs *et al.* (2000) noticed that tumour growth was enhanced at the piercing site of the tags commonly used to identify the individuals and recommended using only microchips, especially in diseased animals.

Objective and Strategies

The introduction and spread of plant and animal diseases will be minimised by:

1. monitoring animal populations to determine whether they are infected with disease;
2. developing and implementing proactive disease screening programs for native fauna appropriate to the species and its conservation status, in order to establish endemic levels of disease;
3. as necessary, applying appropriate hygiene and quarantine protocols for working with mammals that are part of a research, breeding and translocation program;

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4. supporting further research into the distribution, epidemiology, species susceptibility and ecological impacts of animal disease on fauna; and
5. as necessary, adapting management in response to new knowledge and understanding of animal diseases and its impact on biodiversity

12. FIRE

Fire is an ancient process essential to the conservation of biodiversity, yet it is also a phenomenon capable of threatening biodiversity, life and community assets. As a result, fire management is integral to the Department's activities and a core management responsibility. The challenge for managers is to devise practical and affordable fire regimes that conserve biodiversity at agreed spatial scales and minimise the adverse impact of wildfires on key values.

The Department's State-wide role in fire protection is regulated by legislation (the Bush Fires Act, CALM Act and precedents established under common law). Part IV of the Bush Fires Act specifies that responsibility for controlling and extinguishing bush fires lies with local government authorities and the bush fire control officers appointed by them. Management of bush fires is also guided by the Department's Policy Statement 19 – *Fire Management*.

These guidelines present an adaptive management approach to fire where management policies and practices are continually improved by learning from the outcomes of operational programs, scientific research and monitoring. This acknowledges a level of uncertainty about what policy and practices are best and the best available knowledge is utilised to implement programs aimed at meeting specific management objectives. Monitoring, regular review, analysis of management outcomes and ongoing research are critical if fire management is to continuously improve.

Fire history

There is only limited documentation available of the fire history of Dirk Hartog Island. The arrival of pastoralism, together with the departure of Aboriginal people from their homelands, has resulted in considerable changes to the burning patterns and fire regimes of arid areas. Given its island status and influence of salt laden air, it is not envisioned that naturally occurring fire is a frequent event on the island. No wildfires have been recorded in the last 150 years.

Fire environment

Fires within the Shark Bay are strongly influenced by the climate of the area, which is characterised by hot dry summers and mild winters. High summer temperatures, low rainfall but with the occasional cyclone, high annual evaporation rates, south-east trade winds which generate strong southerly winds for most of the year and the maritime influences all contribute to the fire environment.

There is a range of vegetation types within Dirk Hartog Island and there is only a limited understanding of how fire behaves within each of these. However, the risk of ignition from lightning is low, as is the ability for the vegetation to carry and sustain a fire. Shrubland vegetation communities are common and, for fire to spread in this vegetation type, weather thresholds, particularly wind speed and relative humidity, need to be exceeded. Under sub-threshold weather conditions, fire will be unlikely to spread. In contrast, on days of extreme fire weather, fires have the potential to spread rapidly in shrubland vegetation. When fire weather conditions are very severe and particularly hot and windy (generally during the summer), there is the potential for severe fires within Dirk Hartog Island that may burn over very large areas. However, these conditions are not common and fires are mostly a rare occurrence in Shark Bay.

Fire management on Dirk Hartog Island

The objective of the Department is to manage fire on lands managed by the Department to protect and promote the conservation of biodiversity and natural values whilst also providing for protection of human life and community assets. However, due to the limited knowledge of fire ecology and fire behaviour in ecosystems in the Dirk Hartog Island, the primary objectives of fire over the life of these guidelines will be to:

- advance knowledge of fire ecology and fire behaviour through targeted research and operational experience in an adaptive management framework that includes monitoring; and
- reduce the risk of large and damaging wildfires by undertaking strategic fuel reduction and modification.

Specific fire management strategies for the Dirk Hartog Island will include:

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- identifying community assets and developing strategies to protect them;
- facilitating and supporting fire research programs, particularly those that will provide improved knowledge of vital attributes and fire sensitive species;
- mitigating wildfire threats to life, property and natural, cultural and recreation values using experimental prescribed burns;
- investigating appropriate methods of providing strategic fire protection, which may include fuel reduced buffers, edge burning, patch burning and provision of strategic fire access tracks;
- investigating the use of habitat management burns once there is an improved understanding of vital attributes and fire sensitive species;
- minimising the risk of human induced wildfire by prohibiting open/wood fires;
- facilitating early detection of fire through liaison with the local community and relevant agencies; and
- developing mutual aid assistance plans with neighbouring landholders.

Active wildfire suppression is generally not feasible in Dirk Hartog Island due to inaccessibility. However, during the life of these guidelines, community assets requiring protection from fire will be identified, and suppression activities undertaken as required. Prescribed burning activities on Dirk Hartog Island during the term of these guidelines will aim to undertake experimental research burns to collect information on fire behaviour, fire ecology, biological indicators and habitat requirements of threatened species and animals, plants and vegetation communities of conservation significance. In addition experimentation with different fire regimes to understand their impacts on flora and fauna of Dirk Hartog Island may be undertaken.

Given the very high value of the threatened fauna populations on the islands and the high sensitivity of these islands to fire, a fire response plan should be developed considering factors such as:

- strategies to reduce the risk of fires starting on the islands and reducing the extent of fire runs;
- appropriate methods for wildfire suppression;
- strategies to support, capture or protect threatened fauna in the event of a wildfire; and
- methods for rehabilitation and recovery following a wildfire.

Objectives and Strategies

People, community and conservation assets will be protected and knowledge and understanding of vital attributes of flora and fauna, fire history and fire ecology, as a basis for advancing ecologically appropriate fire management will be increased by:

1. in consultation with the local Government authority, FESA and neighbouring landholders, conducting fire planning as required;
2. developing, maintaining and implementing an emergency response plan to facilitate the suppression of wildfires that threaten human life or property, or significant natural values (such as threatened fauna populations on the islands);
3. in consultation with the Shire of Shark Bay, FESA and neighbouring landholders, initiating suppression of wildfires where significant natural values, life and community assets are threatened;
4. developing a fire research plan that will encourage and facilitate research into fire ecology, biological indicators and habitat requirements of animals, plants and vegetation communities, threatened species and species of conservation significance as a basis for advancing ecologically appropriate fire management;
5. encouraging and facilitating research into the effect of fire management strategies on the fauna and flora of Dirk Hartog Island, to ensure that adopted fire regimes do not disadvantage some species;
6. conducting experimental prescribed burns to gain knowledge of fire ecology of fire response species, threatened species and plant communities of conservation significance;
7. monitoring the impacts of fire on key values of Dirk Hartog Island, fauna habitat, vegetation complexes and ecosystems where resources are available; and
8. maintaining a strategic network of roads/tracks and breaks for fire management purposes and according to Department standards.

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MANAGING OUR CULTURAL HERITAGE

13. HERITAGE LEGISLATION AND POLICY FRAMEWORK

The *Australia ICOMOS Burra Charter 1999* (Burra Charter 1999) was adopted to provide for 'the conservation of places of cultural significance' and has a series of guidelines for managing cultural heritage.

Under the Commonwealth EPBC Act, a new national heritage system was introduced in 2004 to strengthen protection for the nation's natural, Indigenous and historic heritage, including statutory protection for places listed on the National and Commonwealth Heritage lists. Actions that are likely to have an impact on the heritage values of a National or Commonwealth heritage listed place require approval from the Australian Minister of the Environment and Heritage.

Cape Inscription has now been included on the National Heritage List which replaces its previous listing on the Register of the National Estate.

In Western Australia, the Department of Indigenous Affairs (DIA) is responsible for the administration of the Aboriginal Heritage Act. The Act provides for the protection of sites and objects used by, or traditional to, the original inhabitants of Australia and the management of Aboriginal sites in consultation with the Aboriginal community. All Aboriginal sites and objects are protected, including those sites not yet registered with the DIA. Under the Act, it is an offence for anyone to alter in any way an Aboriginal site or object without the relevant Minister's permission. Prior to any development or activity that involves disturbing the land, DIA recommends that suitably qualified consultants be engaged to conduct ethnographic and archaeological surveys of the area to ensure that no site is damaged or altered that would result in a breach of section 17 of the Act. In order to avoid a possible breach of the Act, a Notice under section 18 of the Act should be submitted to the Aboriginal Cultural Material Committee seeking the Minister for Indigenous Affairs prior written consent to use the land.

The Heritage of WA Act provides for the registration and protection of places of historic interest as 'heritage places'. The Act also requires local government authorities to maintain an inventory, referred to as the 'Municipal Inventory', of places of heritage significance in their area. Under the provisions of this Act, State Government agencies and Local Government Authorities are required to cooperate with the Heritage Council in protecting the cultural significance of places both on the State and Commonwealth lists and on the 'Current Assessment Program' list. The *Cape Inscription Lighthouse and Quarters* was listed as a permanent entry on the WA Register of Heritage Places in 2001 and encompasses all of reserve 14918 and other reserve enclaves.

The protection of heritage sites within marine areas is governed by both State and Commonwealth legislation; the Maritime Archaeology Act (State) and the Historic Shipwrecks Act (Commonwealth). Under these Acts, vessels wrecked in State or Commonwealth waters may be protected as historic shipwrecks. Which Act applies, depends on whether the wreck site is in State or Commonwealth waters. In addition, any relic, structure, camp site or other location of historic interest associated with a historic shipwreck that is found on land and associated with a Commonwealth or State historic wreck, is covered by the relevant Commonwealth or State Act. The Western Australian Museum is the statutory authority responsible for the administration of the WA Maritime Archaeology Act and the Chief Executive Officer of the WAM is the delegate for the Minister for the Commonwealth Department of the Environment, Heritage, Water and the Arts responsible for the Commonwealth Historic Shipwrecks Act. Terrestrial sites include the Saint Alouarn French annexation site and the Cape Inscription Heritage Area, and nearby are the Freycinet camp near Cape Lesueur and the shipwreck survivor camp of the *Perseverant* near Dampier Landing.

14. ABORIGINAL HERITAGE

The Shark Bay area is significant to Aboriginal people because of the long history of use and occupation and because they have a cultural obligation to understand and care for the area. Aboriginal caring for country is about the protection of significant sites and, just as importantly, the interconnected nature of the sites, people and environment.

Aboriginal Use and Occupation

Dirk Hartog Island is within the area of the Malgana people Native Title claim.

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Archaeological research has been conducted at several sites across the Shark Bay area including Useless Loop, Monkey Mia and Eagle Bluff (Bowdler 1989, 1990a, 1990b, 1995) and Zuytdorp Cliffs near the *Zuytdorp* shipwreck (Morse 1988). The Silver Dollar site near Eagle Bluff provides the oldest and most detailed evidence of human occupation of the region (Bowdler 1999). It was occupied for two periods, firstly between 30 000 and 18 000 years and secondly between 7000 and 6000 years (Bowdler 1999). Rockshelter sites at Eagle Bluff and Zuytdorp are dated at 4000 to 4600 years before present (Bowdler 1999, Morse 1988). A third occupation period from 1000 years before present has also been noted at the Monkey Mia sites (Bowdler 1995, 1999).

There has been limited formal archaeological research conducted on Dirk Hartog Island and there is limited knowledge of Aboriginal occupation of the island. There are several known midden sites on the island but the DIA database provides only one record of a midden site in the north-west corner of the island. The period of occupation by Aboriginal people on the island has yet to be determined.

The French explorer St Alouarn in 1772 recorded seeing smoke on the island as they sailed past Dirk Hartog Island. Crew found what they believed was evidence of fires and a cleared area for dancing. However, no other early European explorer recorded signs of Aboriginal people or evidence of their occupation of the island.

Objective and Strategies

The Indigenous cultural heritage and cultural resources of Dirk Hartog Island will be identified, protected, conserved and, where appropriate, presented by:

1. Protecting and maintaining indigenous cultural heritage by complying with the relevant State and Commonwealth legislation;
2. Supporting the surveying of indigenous heritage and cultural resources;
3. Liaising with and involving local Aboriginal people and relevant organisations, government agencies, organisations and community groups, to improve the protection, conservation and, where necessary restoration, of Indigenous cultural heritage; and
4. Consulting with Malgana in relation to the draft management plan and any proposed public works.

15. NON-INDIGENOUS HERITAGE

Shark Bay is well known as the site of the first European landfall in Western Australia, but the historical significance of other early expeditions from Europe is not so well recognised. Studies and collections made by explorers of the 17th, 18th and 19th centuries represent some of the earliest records of Australia's flora and fauna. Many of these specimens are kept in European museums and are of great value to scientific research. Early explorers noted the abundance of turtle and fish resources in Shark Bay but all were unable to find freshwater. Dampier, Freycinet and King all commented favourably on the prodigious quantities of fish in the area and the safe and protected harbour.

Exploration

Dirk Hartog landed on Dirk Hartog Island on 25 October 1616 leaving a pewter plate inscribed with a message nailed to a post at the site now known as Cape Inscription (Playford 1998, 2005) This plate is the oldest extant record of Europeans landing in Australia.

On 30 January 1697 Vlamingh's ships (*Geelvinck*, *Nyptangh* and *Weseltje*) anchored in South Passage between what is now known as the southern tip of Dirk Hartog Island and Steep Point and boats were dispatched over the next four days to sail around the island (Robert 1972, Playford 1998). On 2 February men in the *Geelvinck's* pinnace went ashore at the north end of the island at Cape Inscription, climbing the cliff and finding an oak post with a pewter plate lying beside it. Vlamingh replaced Hartog's plate with one of his own, inscribing the original message and adding a record of his own visit before nailing it to a new post (Robert 1972, Playford 1998). Expedition members explored parts of Shark Bay for several days and recorded that turtles can be turned over and eggs collected on a beach now known as Turtle Bay (Robert 1972, Playford 1998).

Dampier in the HMS *Roebuck* in 1699 spent several days in Shark Bay anchored off Dirk Hartog Island at what is now known as Dampier's Landing, south-east of Cape Inscription (Spencer 1981, George 1999). Dampier spent time on the Island looking for freshwater and although unsuccessful, he did manage to obtain a good supply of firewood (Spencer 1981). Dampier made many valuable observations of the plants and animals of Shark Bay and especially of Dirk Hartog Island, where he made the first collection of Australian plants at what is now known as Dampier Landing. This collection is still preserved at Oxford University.

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St Alouarn in the *Gros Ventre* in 1772 landed at Turtle Bay and took possession of the country in the name of the French king (Marchant 1982). Two bottles, one containing a parchment recording the annexation event and both sealed with silver coins and lead seals were buried at the foot of a tree (Marchant 1982). During an expedition to the area in 1998 by a party led by Phillipe Godard found a French silver coin in the lead seal of a bottle that had been left there by St Alouarn in 1772. Soon afterwards, the Western Australian Museum found, at the same site, an intact bottle, with an attached lead seal and silver coin (Edwards 1999). Further excavations of the area were undertaken by the WA Museum in 2006. The report of this survey states that no additional evidence was discovered (Green *et al.*, 2007). The report recommends that a site management plan including interpretation requirements be prepared in consultation with WAMM.

Vlamingh's plate remained untouched at Cape Inscription for 104 years before being found by a sailor from the French vessel *Naturaliste* in July 1801 (Playford 1998, Cornell 1974). Hamelin of the *Naturaliste* believed it would be sacrilege to remove the plate and therefore nailed it to a new post and fixed a lead plate recording his visit to another post at a prominent headland on the north-east side of the island (Playford 1998, Cornell 1974). The precise locality of this second post is not known and the lead plate has never been found (Playford 1998). One of Hamelin's young officers, Louis de Freycinet, was not happy with the decision to leave the Vlamingh plate on the island. In 1818 as commander of the *Uranie*, he recovered the plate on 13 September and had it delivered to the Royal Academy of Inscriptions and Elegant Literature in Paris (Playford 1998, Marchant 1982).

On 21 January 1822 King, commander of the HMS *Bathurst*, landed at Cape Inscription to discover that the Vlamingh plate had been removed but the Hamelin post remained (King 1827). To mark his visit he left his name and the name of one of his officers, John Septimus Roe, on the Hamelin post (King 1827, Playford 1998).

The original Hartog plate is located in the Rijksmuseum in Amsterdam, and in 1947 the Vlamingh plate was returned to Australia and is now on display at the WA Maritime Museum in Fremantle. The Vlamingh and Hamelin original posts were removed in 1908 and now held at the WA Maritime Museum. Representations of these original posts were installed in 1997.

On 28 March 1839 Grey landed on Dirk Hartog Island during his return voyage from the north (Grey 1841). He spent part of a day exploring the Island noting its heath-like vegetation. Grey travelled southwards along the east side of the Island before sailing with some difficulty though the passage between Steep Point and Dirk Hartog Island (Grey 1841).

On 6 March 1858 Denham in the *Herald* anchored offshore from Cape Inscription. He visited Cape Inscription and found a post with 'King 1822' to which he added '*Herald* 1858' (David 1995). Denham made a comprehensive survey of Shark Bay, spending several weeks in the area and naming many prominent features.

Several shipwrecks have been found just offshore the Island near the Cape Inscription area. The French whaler, *Perseverant*, foundered off Dirk Hartog Island in 1841 and crew from the ship spent several weeks camped on the island with five men dying of scurvy (Henderson 1980 cited in Stanbury 1986). The place where the *Perseverant* foundered and the adjacent survivors' camping area require protection and interpretation. Green *et al.* (2007) recommends that the site be declared a maritime archaeological site under the Maritime Archaeology Act and a site management plan including interpretation requirements be prepared in consultation with WAMM.

Guano loading was a hazardous task and in 1850 the *Prince Charlie* struck Cape Levillain after loading guano (Henderson 1980 cited in Stanbury 1986). In 1878 the brigantine *Macquarie* also ran aground on the Levillain shoal (WAMM file cited in Stanbury 1986). The *Beagle* in 1904 is believed to have temporarily run aground at Dampier Reef to the north of the island. A cyclone in 1921 resulted in a pearl boat being washed ashore on Dirk Hartog Island at a place called Tumbledown and two Malay sailors were drowned (Fry 1995).

Post Settlement

Dirk Hartog Island was first settled for pastoral purposes in 1860 with the first lease issued to von Bibra in 1868 (Cooper 1997). Over the years the island pastoral lease has had various lessees and by the early 1960s it was estimated to contain 20 000 sheep (Cooper 1997) but today has about 300 sheep. Several out-camps were constructed including Sammy Well at Dampier Landing near Cape Levillain.

To protect coastal shipping, construction of a lighthouse at Cape Inscription was commenced in 1908 along with quarters for two lighthouse keepers, a storehouse, oil store, a 20,000 gallon underground water tank and stable (Palassis Architects 1996, Grey & Forgione 2004). In Turtle Bay, a 232 foot long jetty was built with a two foot gauge tramway to facilitate the delivery of goods to the lighthouse and a horse operated winch to haul freight up the cliffs (Cooper 1997). In 1917 the lighthouse became automated and consequently unmanned. The Cape

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Inscription area was placed on the Australian Register of the National Estate on 6 October 1994 and on the National Heritage List in 2006. The Cape Inscription Lighthouse and Quarters was entered on the register of Heritage Places (P03261) in 2001. It is also classified by the National Trust of Australia (WA) and adopted to the Shire of Shark Bay Municipal Heritage Inventory.

Objective and Strategies

The non-Indigenous cultural heritage of Dirk Hartog Island will be identified, protected, conserved and presented by:

1. Protecting and maintaining non-indigenous cultural heritage according to State and Commonwealth legislation, and the Burra Charter;
2. Supporting the restoration of the historic buildings and infrastructure associated with the lighthouse and quarters in accordance with an approved management plan and relevant conservation plans;
3. Ensuring any proposed developments do not have a detrimental impact on the historic character of the Cape Inscription area;
4. Managing and regularly monitoring threatening process (such as fire, introduced plants and animals) and visitor activities to ensure non-indigenous cultural heritage is not adversely impacted. Addressing any adverse impacts as required;
5. Liaising with and involving local people, relevant government agencies, organisations and community groups, to improve the identification, protection, conservation and, where necessary restoration, of non-indigenous cultural heritage including those associated with European exploration and post settlement;
6. Developing site management plans for heritage sites in consultation with appropriate organisations such as WAMM; and
7. Facilitating the collection, collation and documentation of information on non-Indigenous cultural heritage and supporting the maintainance of the Municipal Inventory.

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MANAGING VISITOR USE

Ensure people visiting Dirk Hartog Island National Park gain an awareness of the area's values which, in turn, foster an appreciation and understanding of conservation and responsible visitor use.

Proposed developments for visitors are assessed using a variety of environmental, social and cultural factors. Environmental factors include geological, topographic, soil condition and type, water (surface and groundwater) quantity and quality, vegetative cover condition, other biota (such as fauna) and visual quality. Social factors relating to the condition of recreation sites can be determined through visitor surveys. Cultural factors include Indigenous and non-Indigenous heritage sites, artefacts and records.

16. RECREATION PLANNING AND OPPORTUNITIES

Following analysis to define the type and level of recreation that can be sustained on Dirk Hartog Island, a number of visitor management settings have been proposed for the Island including 'Highly Developed', 'Recreation', 'Natural-Recreation' and 'Natural' (see Map 2). The hinterland areas have a 'Natural' setting, where the conservation of significant natural and/or cultural values is a priority and there are low levels of recreation. The primary recreation sites to be developed will have a 'Natural-Recreation' setting. In these areas, the conservation of significant natural and cultural values is a priority, with low to medium level recreation. The proposed lease at Cape Levillain and the Cape Inscription lighthouse area have a 'Recreation' setting. Areas with a 'Recreation' setting have the provision for moderate intensity recreation in a mostly natural landscape. The freehold homestead and proposed adjacent lot and the proposed Sunday Island Bay freehold lots have a 'Highly Modified' setting. In these areas there will be high-level recreation, education and interpretation and group activities specifically catered for.

The vision for Dirk Hartog Island is to provide a combination of four-wheel drive and boat destinations that offer a range of nature-based recreation, tourism opportunities and experiences in a remote and natural environment that is managed for ecological restoration.

The vast areas of shrubland and extensive stretches of coastline offer opportunities for recreation activities in a remote and natural environment. The most popular activities include beach and rock fishing, camping and four-wheel driving along remote coastlines. Other activities which may become popular in the future include nature appreciation, both marine and terrestrial, heritage appreciation, water-based activities that can be undertaken from the beach such as snorkelling, diving, swimming and sea kayaking and bushwalking.

Recreation sites across Dirk Hartog Island have evolved without consideration for long term sustainability. Coastal sites are generally of a poor standard with signs of landscape degradation and loss of amenity evident. Huts suitable for overnight accommodation have been constructed at West Point (the Block), Urchin Point and Withnell Point. The lighthouse keeper's quarters at Cape Inscription are being restored by the Shire of Shark Bay in accordance with a separate management plan for Reserve 46663. Some recreation sites, notably coastal cliffs, present safety risks to visitors. Natural features of special attraction to visitors are largely coastal – beaches, cliffs, dunes and headlands.

Some people visiting the island stay overnight at the homestead with others staying in one of the three huts or camping on a beach at several sites along the east coast. Visitor numbers to Dirk Hartog Island have been estimated to be less than 500 per year (excluding visitors to the homestead). Visitor numbers are expected to remain low unless additional facilities and infrastructure are provided. Boat access is expected to increase slightly.

Development of ecotourism accommodation on the freehold lots at the homestead and Sunday Island Bay has implications for visitor management, the ecological restoration project and the natural environment of the rest of the island. However, the intent of these guidelines is to retain the character of the island as a remote destination in a largely natural, unmodified environment. The focus of recreation and tourism development across Dirk Hartog Island will be (see also Map 3).

- develop a limited number of bush camping sites with alternative types and styles of facilities;
- initially limit the number of private vehicles on the island at any time to 10 per day (including tour operator's vehicles);
- develop the 'Mystery' recreation vehicle drive circuit connecting Sandy Point, Cape Inscription and Quoin Head;

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- develop walk trails from Cape Inscription lighthouse to Turtle Bay, short walks at historical features such as Quoin Bluff South and Notch Point and other short walks to various features;
- as required, provide appropriate visitor risk management facilities and infrastructure at recreation sites, especially sites adjacent to cliffs;
- provide Department standard information, directional and management signs across the island; and
- develop interpretive nodes at Cape Ransonnet, the proposed Department's operations base near Herald Bay and at Cape Inscription.

17. ACCESS

Access roads and tracks available for public use on Dirk Hartog Island are shown in Table 1.

Table 1: Public Vehicle Access on Dirk Hartog Island[1]

Access	Management Setting	Current Standard	Proposed Standard	Comment
Dirk Hartog Track	Natural-Recreation	4WD	4WD	Unchanged
Surf Point	Natural-Recreation	4WD	4WD	Unchanged
DHI Blowholes	Natural-Recreation	4WD	4WD	Unchanged
Notch Point	Natural-Recreation	4WD	4WD	Unchanged
Quoin Bluff South	Natural-Recreation	4WD	4WD	Unchanged
Herald Bay	Natural-Recreation	4WD	4WD	Unchanged
Louisa Bay	Natural-Recreation	4WD	4WD	Unchanged
Sandy Point	Natural-Recreation	4WD	4WD	Unchanged
Withnell Point	Natural-Recreation	4WD	4WD	Unchanged
Cape Levillain	Natural-Recreation	4WD	4WD	Unchanged
Urchin Point	Natural-Recreation	4WD	4WD	Unchanged
West Point	Natural-Recreation	4WD	4WD	Unchanged
Mystery Beach	Natural-Recreation	4WD	4WD	Unchanged
Charlies Harbour / Quoin Head	Natural-Recreation	4WD	4WD	Unchanged
Proposed Mystery Beach circuit	Natural-Recreation		4WD	New proposal on mostly existing tracks

- All other tracks not listed or shown on Map 3 are not available for public use and require a permit to use.

Four Wheel Drives

Vehicle access to Dirk Hartog Island is by a single vehicle barge operated by the previous pastoral lease holders, which effectively limits the number of vehicles that visit the island. In the past, the number of private vehicles on the island has been limited to 10 at any one time. The number of private vehicles, including any tour operator and service vehicles, on the island at any one time will continue to be limited to a maximum of 10. This limit does not include Departmental management vehicles which will be kept to a minimum. The impact of the vehicles on the island will be monitored and reviewed on a regular basis and if negative environmental impacts occur then alternative arrangements such as tracking vehicles electronically or a further restriction on the number of vehicles may be considered.

Any development of the freehold lots on Dirk Hartog Island as eco-tourism accommodation will lead to increased numbers of visitors staying overnight on the island. This could result in pressure for increasing vehicle numbers on the island. However, more vehicles are likely to have a negative impact on the track conditions and potentially affect the ecological restoration project. The limit of 10 private vehicles per day on the island has been set but will be monitored to determine if the upper limit for vehicle numbers can be changed. The implementation of an island-based vehicle hire system may also be considered. Other strategies may be required to consider visitor access around the island.

The barge access is an effective means of monitoring visitors and keeping the number of vehicles low. The tracks on the island are narrow and only accessible by four-wheel drive. For safety reasons, pull-over bays may be constructed along the main north-south track to allow safe passing of vehicles. In summer the tracks become powdery, difficult to traverse and more prone to degradation. Upgrading of the tracks is also difficult due to a lack of available basic raw materials and would compromise the vision of the island as providing a visitor experience in a remote and natural environment.

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Many of the access tracks across Dirk Hartog Island previously used for pastoral purposes will be closed to the public. Access to the many coastal sites will continue to be provided (see Map 3). The 'Mystery Loop' recreational drive connecting Sandy Point, Cape Inscription and Quoin Head is proposed in the northern part of the island (see Map 3). Other scenic driving routes may be provided over time as resources are made available.

All public access tracks on the island will be sign-posted according the Departmental standards, guidelines and World Heritage Property Style Guide recommendations.

There is the potential for visitors to the island to bring animals such as cats, foxes or rats onto the island which would have a severe impact on threatened fauna populations. The current informal access arrangements to the island will be formalised as a means of continuing to limit vehicle numbers, protecting the natural values, ensuring pets are not brought onto the island, promoting a code of ethics for four-wheel drivers, and informing visitors on appropriate behaviour whilst enjoying the island. A hygiene management plan will be required in the future to prevent the introduction of pests and diseases.

Appropriately licenced all terrain vehicles (ATVs) may be used by the Department and other Government departments for management purposes on the island to further limit vehicle impacts. However, visitors will not be permitted to bring ATVs or motorbikes to the island due to safety and issues with managing off-road use. The use of any unlicenced vehicle in national parks is prohibited.

Boat Access

Boat access to Dirk Hartog Island is expected to increase over time. A significant threat to the island's natural values is from visitors bringing animals ashore, particularly introduced predators and herbivores such as cats, rabbits, foxes, rats or insects such as cockroaches. Introduced predators can have a severe impact on threatened fauna populations. Boat access may be controlled by applying a permit system as a means for ensuring pets are not introduced, preventing campsites from becoming degraded, informing visitors on appropriate behaviour, monitoring numbers and types of visitors and protecting the beach environment.

Air Access

There are two airstrips on Dirk Hartog Island and a helipad has been constructed at Cape Inscription adjacent to the lighthouse. Only one airstrip is currently in use.

The Department will have a requirement for an airstrip on Dirk Hartog Island. There are two basic airstrips on the island, one near the homestead currently in use and the other near Sunday Island Bay which has not been used for a considerable period of time. In addition, the construction of an airstrip at Cape Inscription near the lighthouse has been proposed. Under the terms of the agreement to purchase Dirk Hartog Island between the State of Western Australia and the pastoral lease holder, a non-exclusive licence to access and use an airstrip on the island is to be provided.

Airports exist at Denham and Carnarvon with regular air services connecting Carnarvon and Denham/Monkey Mia to Perth and Geraldton.

Airstrips on the island will need to to meet air safety and departmental standards. The upgrade of existing or construction of new airstrips in Dirk Hartog Island National Park will require an environmental impact assessment and careful consideration of a number of factors including:

- impacts on key values, World Heritage and national heritage values;
- visitor safety issues associated with landing and take off;
- requirements for rescue and evacuation of visitors;
- the compatibility of the airstrip with character of place and visual landscape;
- the potential level of use;
- the economic return on the investment to construct airstrip;
- maintenance requirements and responsibility;
- proximity to visitor services;
- impacts on threatened native flora and fauna;
- impacts of clearing vegetation;
- visual impact of airstrip;
- noise impacts on fauna and visitors;
- the standard of the airstrip to be constructed;
- the physical dimensions and suitability for aircraft;
- the suitability of soils for construction purposes;

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- the source of materials required for construction;
- the impact of constructing access to the proposed airstrip; and
- the impacts on cultural, both Indigenous and non-Indigenous, heritage.

Special Access

Access to Dirk Hartog Island is seasonal, difficult and costly because of the barge access and limits of vehicle numbers. Limited numbers will be retained by limiting private and tour operator vehicles initially to a maximum of 10, until benchmarks can be established to monitor any environmental degradation caused by vehicles. This will also ensure a measure of control on vehicle and visitor numbers and a means of limiting environmental damage to tracks, especially in the summer months.

Seasonal or permanent restrictions on access to some parts of the island under section 62 of the CALM Act may need to be introduced where turtle nesting and bird breeding or roosting colonies are particularly sensitive to disturbance or for cultural reasons. Public access to the beach north of Cape Levillain where turtle nesting is known to occur (including Turtle Bay) will not be permitted during nesting season from November to March. Access to the beach area south of Cape Levillain during turtle nesting will be permitted. The *Perseverant* shipwreck survivor's camp is a protected site under the Maritime Archaeology Act and access to this site will be restricted to protect that site.

The commencement of the ecological restoration project and especially the reintroduction of threatened native fauna will require access restrictions for both vehicles and boats. Therefore access to Dirk Hartog Island will be by permit. A permit system will be used to control where visitors can travel, provide valuable visitor information, allow limits to be placed on the number of vehicles, outline appropriate behaviour and provide a means for informing visitors on how they can best avoid disturbing the site whilst visiting the area. Hygiene control will need to be implemented to prevent the entry of pests and diseases.

Objective and Strategies

A range of access types on Dirk Hartog Island that do not adversely impact on the key values of the island or visitor appreciation of these values and minimises conflict with other users to be provided by:

1. developing access on Dirk Hartog Island according to Table 1, Map 3;
2. authorising access by permit to Dirk Hartog Island and other areas with safety, cultural or specific natural values needing protection such as turtle nesting and bird breeding sites;
3. initially limiting the maximum number of private vehicles on Dirk Hartog Island to 10 per day, including tour operator and service vehicles but excluding government management vehicles, in order to protect the natural values of the island and limit environmental damage to tracks;
4. monitoring the effects of the limited number of vehicles on the Dirk Hartog Island and reviewing limits as required;
5. not permitting private ATVs and motorbikes in Dirk Hartog Island National Park;
6. not permitting visitor access to the beach north and west but allowing access south of Cape Levillain when turtle nesting occurs (including Turtle Bay) between November and March;
7. designating some parts of Dirk Hartog Island for boat access only; and
8. supporting the provision of helipads and airstrip(s) on Dirk Hartog Island after assessment against appropriate criteria.

18. RECREATION USE AND ACTIVITIES

Wildlife Encounters

Wildlife tourism can have both positive and negative effects on wildlife. Positive effects occur through financial contributions (such as user fees); non-financial contributions (such as participation in management, monitoring and research activities including breeding programs and hunting of introduced animals); socio-economic incentives (such as business for tourism operators, creation of protected areas and shifting attitudes towards supporting conservation management by landholders and local people); and education (such as increased awareness and understanding of wildlife conservation and thus changes in behaviour) (Higginbottom *et al.* 2001b).

It is important to ensure that populations targeted for interaction are not adversely impacted and are provided with the appropriate legislative protection, research and management and that tourist operations are modified to

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minimise the risk of adverse impacts on the animals. Green and Higginbottom (2001) group negative effects of wildlife tourism and related human activities on wildlife into three main categories:

- disruption of activity (such as spotlighting, noisy activities, and tourists approaching animals that are foraging or caring for young) resulting in avoidance behaviour where wildlife will flee, hide, or become habituated to humans;
- direct killing or injury (such as damage from propellers, road kills, hunting or collecting); and
- habitat alteration (such as land clearing or modification including road or walk track construction) leading to significant increases or decreases in population numbers, reduced protection from predators or reduction of prey species.

Turtles are known to nest in the Turtle Bay-Cape Levillain area on Dirk Hartog Island. Monitoring the numbers and biology of turtles at Turtle Bay has occurred for several years. The impacts of visitors on nesting turtles can be difficult to manage as laying sites vary from year to year. Adverse effects can be minimised through education, restricting vehicle or boat access on beaches, appropriate lighting of vessels at night and the appropriate siting and design of facilities.

The lessees of the proposed Cape Levillain eco-camp must comply with the criteria outlined in the Agreement between the State Government of Western Australia and Hypermarket Pty. Ltd. in relation to Dirk Hartog Island. To minimise impacts on the turtles and turtle nesting sites and to generally protect the environment, the lessee must:

i) ensure that the development and any improvements are set back from the boundary of the lease, so that no artificial light emmitted from the lease is directly or indirectly visible from any turtle nesting beach or one nautical mile out to sea from any beach or site;
ii) ensure any structures on the lease are designed with a minimum use of outdoor light;
iii) ensure all outdoor lights are sensor operated and have covers to deflect light downwards, to prevent light being directed into the sky;
iv) ensure that all toilet facilities in the lease are self contained with no leaching of nutrients to the external environment; and
v) ensure all information is given to the lessee about appropriate access and activities on turtle nesting beaches to avoid impact on turtle breeding activities as required by the CEO of the department and shall observe all instructions in relation to protection of nesting turtles and rookeries.

Any eco-camp development proposals will also require site development and other appropriate plans.

Public access to the beach at Turtle Bay during turtle nesting season will not be permitted. For turtle interactions outside this area, such as south of Cape Levillain point, turtle interaction protocols previously established for the Cape Range-Ningaloo area, such as tour operator accreditation, will be required (CALM 2005c).

Objective and Strategies

Opportunities for sustainable wildlife encounters on Dirk Hartog Island that facilitate visitor enjoyment, appreciation and understanding to be provided by:

1. ensuring that any eco-camp development on leasehold land at Cape Levillain and access to turtle breeding beaches in the area comply with the criteria outlined above;
2. in other areas, requiring that any turtle interaction to abide by turtle interaction protocols previously established for the Cape Range-Ningaloo area, including tour operators accreditation; and
3. monitoring the operations of any eco-camp development on leasehold land at Cape Levillain and access to turtle-breeding beaches to ensure that turtles are not impacted.

Scenic and Recreational Driving

Driving for pleasure and sightseeing on roads and tracks is a popular recreational pursuit and, in the Shark Bay area, could be further promoted through the development of specific drives. It is important that any scenic and recreational driving within the island complies with the Conservation and Land Management Regulations to avoid damage to the environment, damage or injury to visitors and their vehicles and minimise conflict with other users. All vehicles within the national park must be registered under the *Road Traffic Act 1974,* and all drivers must possess a current driver's licence. The relevant road rules, such as not driving under the influence of alcohol or drugs and not using excessive speed, also apply.

Owners of four-wheel drives may seek 'adventure' or 'challenging' driving experiences within Dirk Hartog Island National Park. Although it may appear that sand dunes and beaches across the island are not adversely

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affected by off-road driving, the vegetation and some landforms such as birridas and inter-tidal areas are very sensitive to damage from four-wheel drive vehicles. In addition, visitors who venture off marked tracks place themselves and their vehicles at risk. The Department will consider a range of options to minimise environmental impacts and visitor risk including improving signage, realigning tracks realignment or closing tracks.

One specific recreational drive trail is proposed for Dirk Hartog Island, the Mystery Beach Circuit, a circuit track north from Sandy Point to Cape Inscription, south to Quoin Head then returning east to Sandy Point.

Objective and Strategies

Opportunities for scenic and recreational driving on Dirk Hartog Island that do not cause damage to the environment, are safe and minimise conflict with other users to be provided by:

1. developing recreational driving circuits on Dirk Hartog Island;
2. developing and promoting a code of conduct for driving on Dirk Hartog Island with consideration for issues such as tyre pressure, appropriate speeds and the size and type of vehicles; and
3. maintaining a marked track across the sand dunes on the primary north-south access route on Dirk Hartog Island and informing drivers that leaving the marked route is not permitted.

Overnight Stays

Built Accommodation

Any built accommodation to be provided on Department-managed lands will undergo a more detailed planning, site assessment, proposal evaluation and public consultation process. There are several key management issues that should be considered regarding the types of accommodation provided on Dirk Hartog Island:

- the impact of the accommodation on the natural and cultural values;
- the impact of the accommodation on the visual landscape;
- the environmental health risks associated with sewage and household disposal;
- the safety of visitors;
- compliance with building codes;
- equity for visitors to the island;
- the economic viability of the development;
- the role the accommodation plays in providing a different recreational opportunity for different types of visitors; and
- the impact of the vehicular access and parking requirements associated with the accommodation.

Three huts have been constructed on Dirk Hartog Island at Withnell Point, West Point (the Block) and Urchin Point. They are popular with fishers who visit the island offering shelter and protection from the weather, especially the strong southerly winds. They are of varying styles and standards, are unlikely to meet building codes and the level of services provided, such as toilets, are not adequate. Establishment and use of these huts has resulted in vegetation clearing and other disturbances to the native vegetation. The upgrading, replacement or removal of the existing huts on Dirk Hartog Island requires consideration in the development of a recreation master plan for the island. Similar shelters or huts of a suitable standard may be constructed at other sites on Dirk Hartog Island. Other buildings on Dirk Hartog Island may be made available for staying overnight.

As part of the Government's agreement to establish Dirk Hartog Island as a national park, three freehold titled areas have been created and are to be developed for ecotourism purposes, two at Sunday Island Bay (13 ha and 4.5 ha) and one adjoining the homestead block (17.3 ha). The existing homestead lot (40.4 ha) will remain as freehold. Under the terms of the agreement, the size of each unit at the homestead adjacent lot and Sunday Island lots can be a maximum of 90 square metres and the total number of units in each area is to be 103 and 95 respectively. The maximum size of units on the existing homestead freehold lot can be 200 square metres and a total of 212 units can be constructed. This proposal could potentially result in between 1600 and 2500 people staying overnight in these areas. In addition a small lease area at Cape Levillain (2.5 ha) is to be established and developed to provide some form of low impact, nature-based accommodation.

The impact of any increases in available built accommodation on the natural values of the island, the proposed ecological restoration project in particular, the proposed management settings and the cultural environment is difficult to determine but is potentially significant and will need to be carefully monitored and evaluated when any development proposals are prepared.

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Camping

Camping is a popular activity within Dirk Hartog Island National Park, allowing visitors to relax and develop an awareness, appreciation and understanding of the natural environment. The majority of campsites on the island have few or basic facilities and offer a similar experience.

Important issues associated with managing campsites include:

- the impact on natural values such as breeding and nesting fauna the impact on visual landscape values the impact on significant cultural heritage values;
- the difficulties associated with managing and maintaining semi remote campsites, particularly in coastal areas;
- exclusive use of campsites by visitors who have used sites for many years;
- minimising conflicts with day users;
- provision of suitable camping areas and facilities (both in terms of environmental impact, site stability and in meeting visitor needs);
- campsite expansion and an increase in the number of informal campsites;
- soil disturbance, compaction and the risk of erosion;
- loss of vegetation;
- the use of generators;
- use of huts by campers;
- waste management and the provision and maintenance of toilets in remote locations;
- risk to water quality from activities associated with camping;
- use of campfires including the environmental impact of vegetation loss, reduction in habitat integrity, the spread of disease, possible changes to nutrient balance of ecosystems and the risk of wildfires from campfire escapes; and
- change towards a more developed visitor management setting if campsite development were to occur.

Four-wheel drive accessible campsites, some with facilities, exist on Dirk Hartog Island (see Map 3).

People planning to visit Dirk Hartog Island are currently required to pre-book their visit to ensure security of one of the limited number of sites and to make arrangements to transport vehicles to the island. This booking arrangement will remain in place.

On Dirk Hartog Island there are a limited number of sites where informal camping occurs with four sites having huts. Camping at the informal sites will continue with some identified to have improved facilities. Other sites on the island may be developed as needed but visitor numbers will be kept at low levels. Camping on the beach north of Cape Levillain, including Turtle Bay, when turtle nesting occurs between November and March will not be permitted. Herald Bay will also be closed for camping.

Several parts of Dirk Hartog Island are suitable for the development of campsites for boat access only. Specific sites along the eastern coastline of Dirk Hartog Island could be developed as boat access only camping destinations which would provide a unique opportunity for people visiting the area. However, there is limited knowledge of the extent and frequency of boat access camping and surveys will need to be conducted before any specific campsites can be developed.

Table 2: Existing and Proposed Overnight Stays on Dirk Hartog Island.

Sites	Management Setting	Access	Comment
Existing sites			
South-east area (several sites)	Natural	Boat	Minor sized campsite
Notch Point	Natural-Recreation	4WD vehicle, boat	Minor sized campsite
Louisa Bay	Natural-Recreation	4WD vehicle, boat	Minor sized campsite
Withnell Point	Natural-Recreation	4WD vehicle, boat	Medium sized campsite
Urchin Point	Natural-Recreation	4WD vehicle	Medium sized campsite
West Point (the Block)	Natural-Recreation	4WD vehicle	Medium sized campsite
Quoin Head	Natural-Recreation	4WD vehicle	Minor sized campsite
Existing sites that will be closed, moved or upgraded			
Notch Point	Natural-Recreation	4WD vehicle, boat	Medium sized campsite
Herald Bay (DHI)	Natural-Recreation	4WD vehicle, boat	Closed to camping

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Sites	Management Setting	Access	Comment
Louisa Bay	Natural-Recreation	4WD vehicle, boat	Medium sized campsite
Proposed new sites			
Ransonnet area (DHI)	Natural-Recreation	4WD vehicle	Minor sized campsite

Objectives and Strategies

Opportunities for visitors to stay overnight on Dirk Hartog Island in appropriately designed built accommodation and campsites, that facilitate visitor enjoyment, appreciation and understanding of the key values whilst minimising environmental impacts to be provided by:

1. providing opportunities for a range of built accommodation that is consistent with the appropriate visitor management setting and as resources permit (see Map 3);
2. assessing the condition of the huts on Dirk Hartog Island using a range of criteria including structural integrity, safety and visual impacts, and considering upgrading, replacing, relocating or removing;
3. maintaining vehicle-based camping at existing low levels on Dirk Hartog Island; and
4. conducting surveys to determine the demand for boat-based camping on Dirk Hartog Island and developing boat-based camp sites on the basis of these.

Day-Use

A day use area is any recreation site that is designed specifically for day visits only. This includes picnic and barbecue sites, lookouts, interpretive stops, short walks and nature viewing sites. Day use areas range from primitive sites such as small clearings with no facilities to well developed sites with many facilities which are generally provided in the more developed settings.

Site selection and development is influenced by environmental considerations, the role the site plays in providing a range of opportunities for visitors to appreciate the natural and cultural values of Dirk Hartog Island, and the visitor management setting of the area. Future development of day-use facilities will be in keeping with visitor management settings and be compatible with the key values of the planning area.

The proposed development of eco-tourism accommodation with the freehold lots on Dirk Hartog Island, will increase demand for the development of day-use sites on the island over the life of this plan.

Cape Inscription will remain one of the key visitor attractions on the island requiring suitable day use facilities and services.

Existing and proposed day-use sites on Dirk Hartog Island are shown in Table 3 and Map 3.

Table 3: Existing and Proposed Day Use Sites on Dirk Hartog Island.

Site	Management Setting	Primary activities (existing and proposed)	Comment
Existing Sites			
Dampier Memorial/ Perseverant	Natural-Recreation	Interpretation	To be developed as interpretive site.
Cape Inscription	Natural-Recreation	Sightseeing, interpretation	Currently used for day-use.
Proposed Sites			
Cape Ransonnet	Natural-Recreation	Interpretation	To be developed as minor interpretive site.
Surf Point	Natural-Recreation	Sightseeing, interpretation	To be developed as minor interpretive site.
Blowholes (DHI)	Natural-Recreation	Lookout, sightseeing	To be developed as minor interpretive site.
Zuytdorp Cliff Lookout	Natural-Recreation	Lookout, sightseeing	To be developed as minor interpretive site.
Notch Point [1]	Natural-Recreation	Sightseeing, interpretation, fishing	To be developed as minor interpretive site.
Quoin Bluff South	Natural-Recreation	Sightseeing, interpretation	To be developed as medium cultural interpretive site.

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Herald Bay	Natural-Recreation	Sightseeing, interpretation	To be developed as minor cultural interpretive site.
Turtle Bay Lookout	Natural-Recreation	Lookout, sightseeing	To be developed as minor interpretive site with walks.
Cape Inscription	Natural-Recreation	Sightseeing, interpretation	To be developed as major cultural interpretive site with walks.
Charlies Harbour/ Quoin Head	Natural-Recreation	Sightseeing, fishing	To be developed as minor day use site.
Mystery Beach [1]	Natural-Recreation	Sightseeing, fishing	To be developed as minor day use site.

- Sites listed are those that will have facilities.

Objective and Strategies

Opportunities for visitors to visit sites on Dirk Hartog Island during the day in appropriately designed sites, which facilitate visitor enjoyment, appreciation and understanding of the key values whilst minimising environmental impacts to be provided by:

1. providing a range of day use opportunities consistent with the appropriate visitor management setting and as resources permit (see Table 3 and Map 3).

Bushwalking

Walk trails can enhance visitors' experiences of parks and reserves and bushwalking is an activity that is enjoyed by people of varying ages, interests and levels of physical fitness and mobility. Bushwalking can encompass everything from a short, leisurely stroll to a major trek lasting days or even weeks. A range of walk trails of varying distance and duration is required to meet the needs and enhance the experience of visitors.

The impact of bushwalking on the physical environment is generally low compared to other recreation activities, but can vary depending on soil conditions, landform, vegetation type and intensity of use. Where use levels are high, bushwalking has the potential to cause the loss of vegetation, introduce and spread weeds, cause localised soil compaction and erosion, disturb fauna and increase the risk of fire. Sensitive sites include coastal dune fields, birridas, exposed bluffs, and heathlands. Usually these problems can be effectively minimised through appropriate design and construction and visitor information.

There are a number of visitor risks associated with walking, especially long distance. These include: dehydration; exposure; becoming lost; being injured and the threat of wildfire. Walks will be adequately sign posted and visitors provided with adequate information to ensure walkers are equipped to handle the conditions they will encounter. In order to minimise visitor risks for long distance walkers, the Department will encourage walkers to register their intentions first and to organise water to be dropped off at various points along trails.

A number of opportunities to explore the island by foot will be developed, incorporating a range of experiences, landscapes and lengths of walks. Due to the climatic conditions of the area, lack of surface water and isolation, care will need to be taken in designing and locating walk trails. Pedestrian access will be developed using the following guidelines:

- locating walking tracks to enhance visitor experiences of the range of natural and cultural values of the island, provide maximum visual diversity, sustain regular use and, where appropriate, provide access to interpretation opportunities;
- designing and constructing walking tracks to consider the potential environmental impacts such as loss of vegetation, introduction and spread of weeds, localised soil compaction and erosion problems, fauna disturbance and fire risk;
- selecting alignments and grades that are safe and appropriate for visitor requirements with minimum disturbance to the natural environment and minimum requirements for maintenance;
- constructing walking tracks of a consistent class where possible;
- developing walking tracks as circuits or loops where possible and are located to complement or link up with tracks on adjoining lands, where practicable;
- ensuring walks are consistent with the Department's *Disability Access and Inclusion Plan* and, where appropriate, providing walks for disabled visitors;
- providing information to visitors on the degree of track difficulty, length, and a bushwalking code of conduct; and

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- matching the class of the track to the appropriate management setting.

A summary of the existing and proposed walks on Dirk Hartog Island and their class is provided in Table 4 and Map 3. Longer day or overnight walking may be undertaken along unmarked tracks. Visitors intending to undertake such walks must advise the District office. Other bushwalks may be developed as demand increases and after detailed planning, review of the management setting implications and public consultation.

There are visitor risk issues along the rocky cliffs on the west coast of Dirk Hartog Island. There are several opportunities for short walks on the island to feature the cultural heritage including locations such as Cape Inscription, Turtle Bay, Cape Levillain, Notch Point and Quoin Bluff South. Other short walks to view natural features may be developed over time.

Table 4: Walk Trails on Dirk Hartog Island.

Walk	Management Setting	Proposed Class (1-6)	Comment
Proposed			
Cape Inscription Heritage Walk	Natural-Recreation	2	Precinct walk
Cape Inscription to Turtle Bay	Natural-Recreation	3	To interpret explorations
Quoin Bluff South Heritage Walk	Natural-Recreation	3	Cultural interpretive walk

Objective and Strategies

Opportunities for a range of bushwalks on Dirk Hartog Island that are developed to an appropriate class, are safe, facilitate visitor enjoyment, appreciation and understanding of the key values whilst minimising environmental impacts to be provided by:

1. providing a range of bushwalking opportunities consistent with the criteria for each class of track and the appropriate visitor management setting (see Table 4).

Recreational Boating

Many parts of the Shark Bay area including Dirk Hartog Island National Park are accessible by boat. Boating generally has little impact on the physical environment of the terrestrial reserves, though boat traffic can disturb native fauna at some locations or during particular times such as seabird breeding seasons. Management of recreational boating must consider:

- the possible disturbance of important or threatened species or their habitats;
- impacts from and requirements for access and camping including erosion of beaches, soil compaction and erosion, littering, waste management, loss of vegetation and fauna disturbance;
- visitor safety;
- possible conflicts with other users including commercial fishing and tour operators; and
- information, interpretation and education required to promote safe and responsible boat use.

Shark Bay offers great potential for sea kayaking in the many sheltered bays and lagoons. Sea kayaking in the sheltered bays of Dirk Hartog Island is likely to become a popular activity. Specific campsites may need to be developed to facilitate sea kayaking. Guidelines and information for sea kayaking will be developed. The guidelines could include party size, safety, minimal impact camping, wildlife interaction and identify restricted sites because of high natural values.

Objective and Strategies

Opportunities for recreational boating adjacent to Dirk Hartog Island that facilitate visitor enjoyment, appreciation and understanding of the key values whilst minimising environmental impacts to be provided by:

1. developing sea kayak trails around the east coast of Dirk Hartog Island as required.

Water-based Activities

The Shark Bay Marine Park offers a variety of diving opportunities and marine habitats to explore. In particular, there are reefs and shallow, sheltered bays on the east coast of Dirk Hartog Island that are safe and popular for

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novice divers and snorkellers. A number of these sites are accessible from the shore. Diving and snorkelling activities can help to promote public awareness and understanding of the marine environment. Providing information and interpretation can enhance this experience and highlight safety issues such as the presence of strong currents and potentially dangerous marine animals. Some specific sites on the east coast of Dirk Hartog Island may be developed and promoted as diving and snorkelling destinations.

Objective and Strategies

Opportunities for water based activities that facilitate visitor enjoyment, appreciation and understanding of the key values of Dirk Hartog Island whilst minimising environmental impacts and conflict with other users to be provided by:

1. providing information and facilities to promote water-based activities and minimise the impact of these activities on the native fauna, environment and other users;
2. in consultation with the windsurfing, kite surfing, water-skiing and scurfing fraternity and Marine Parks and Reserves Authority, designating egress and access points to the water where these activities pose a risk to other users; and
3. reviewing license conditions with tour operators to ensure impacts on native fauna, the natural environment and other users is minimised.

19. TOURISM AND COMMERCIAL OPERATIONS

A commercial concession is a right granted, in consultation with the Conservation Commission and the Marine Parks and Reserves Authority, by way of a lease or licence for occupation or access and use (respectively) of an area of land or water managed by the Department. Commercial concessions can meet the rising demand for high quality recreation and tourism opportunities, facilities and services, promote environmental awareness and generate income to help meet the costs of managing the natural resource. Commercial concessions must be consistent with the purpose of the park, the protection of its key values and with the objectives of these guidelines.

Leases

Leases, which allow a lessee to occupy a particular area of land, are granted under section 100 of the CALM Act. A lease provides security to protect significant investments and may be up to 21 years with an option of a further lease up to 21 years. The length of a lease is usually proportional to the level of investment and the return on that investment. At present there are no tourism leases issued. There are a number of possible opportunities (such as varying types of overnight accommodation) not provided elsewhere in the Shark Bay area.

For all tourism developments, a process of assessing potential sites and development opportunities is undertaken prior to the advertisement of an Expressions of Interest. Sites on Department-managed land are assessed against a range of sustainability indicators including:

- the protection of the natural environment (e.g. maintenance of natural ecology, erosion, extent of soil loss, compaction and vegetation damage, volume of water used, amount of solid waste produced on site, amount of non-renewable energy consumed on site, vehicle use for visitor trips, light spill and noise levels);
- the built environment (e.g. site design and layout, style and character, design form and function, waste water volume, quality and disposal methods, methods of energy production, fuel and chemical storage, handling and chemical spill procedures, toilet facility standards and operation and waste storage and disposal methods);
- the social environment (e.g. level of Indigenous ownership and employment, culturally sensitive behaviour, provision of interpretive materials, safety equipment and procedures, visitor feedback, content of marketing material, expenditure from local businesses and membership of local associations); and
- the business environment (e.g. market demand study, cash flows and profit and loss forecasts, financial capacity, details of commercial activities to be conducted and relevant tourism accreditation).

Licences

Licences allow operators to access and use lands and waters managed by the Department. Activities carried out under a licence are generally itinerant and do not require substantial infrastructure. All private tour operators conducting commercial tourist activities on conservation reserves are required to obtain a licence in accordance with section 101 of the CALM Act and Part II of the CALM Regulations 2002. Licensing enables the Department to monitor and regulate access and use of lands and waters managed by it to ensure natural and other

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values are maintained. By protecting these values, tour operators will be able to continue to visit areas maintained to the satisfaction of visitors.

Conditions apply to all licences to minimise the impacts of activities, or to aid in management of the value being appreciated by the public. Managers consider the following factors before issuing licences:

- infrastructure requirements of tour operations (e.g. adequate toilet facilities, access and parking for large vehicles);
- benefits in education and appreciation of natural, recreation and cultural values;
- negative impacts on wildlife;
- potential impacts to water quality;
- waste management;
- potential soil disturbance;
- potential damage to or loss of vegetation;
- potential damage to sensitive landforms and other sensitive areas;
- visitor safety;
- competence of group leaders;
- potential conflict with other users; and
- the appropriateness of retail concessions in particular natural environments.

Guidance for the general conditions for tour operators in national parks and conservation parks is provided for in the Department's *Tour Operator Handbook – Terrestrial* (DEC 2008b).

The Department issues two types of licences, depending on the nature of the activity, the security of the resource, and the risk to the participants. 'T' Class licences are issued when the activity is open to many operators. In these circumstances, environmental and visitor management objectives can be achieved simply through appropriate licence conditions. The majority of tour operators fall into this category and examples include safari tours and guided walks. The term of the licence depends on the level of accepted tourism accreditation achieved by the operator. The Department can grant a licence for up to five years and renew it for the same period. Currently the Department issues one, three and five-year licences as follows:

- a one-year licence is issued to an operator who is not accredited with any program;
- a three-year licence is issued to an operator who is accredited with one tourism program. The operator can be accredited with a business accreditation program such as the National Tourism Accreditation Program or an ecotourism activity/product accreditation program such as the Eco Certification Program (formerly known as Nature and Ecotourism Accreditation Program);
- a five-year licence is issued to an operator who is accredited with two tourism programs such as a business accreditation program and an ecotourism activity/product accreditation program; and
- a two-month licence is issued and no accreditation required to meet the needs of seasonal or interstate operators.

'E' Class licences are issued where there are safety, environmental or management concerns that require the number of licences to be restricted, for example, boat tours in confined areas. Generally 'E' Class licences are issued following a formal 'Expression of Interest' process. There are currently no operators with 'E' Class licences operating in the terrestrial reserves. 'E' Class licenses have been issued for marine wildlife encounters in the Shark Bay area.

Private tourism developments exist and others are likely to be proposed for Dirk Hartog Island. It is important that, such tourism developments do not adversely impact on World Heritage and other key values and this will be monitored through the approvals process. Dirk Hartog Island currently provides tourist accommodation and services at the homestead. The eco-tourism development at the homestead and the proposed eco-tourism development within the freehold lots at Sunday Island Bay and area adjacent to the homestead is likely to result in an increased level of commercial tourism on the island.

There is a lease for an eco-tourism development located in the vicinity of Cape Levillain, in part of the proposed Dirk Hartog Island National Park. This lease area is part of the agreement between the pastoral lease holder and the Government to purchase Dirk Hartog Island. Once the national park has been created the lease will be established under section 100 of the CALM Act.

Fees are associated with all commercial tourist activities conducted on lands or waters managed by the Department. Tour operators using parts of Dirk Hartog Island will require a licence to operate.

Commercial tourism activities are compatible with other park and reserve management objectives by:

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1. ensuring all commercial operations operate under a lease, licence or permit agreement with appropriate conditions that:
   - are consistent with other management objectives within the national park;
   - facilitate park and reserve management;
   - provide a service or facility to visitors that the Department would not otherwise be able to provide; and
   - reviewed as appropriate.
2. encouraging tour operators to acquire quality assurance through industry accreditation and qualification programs;
3. evaluating proposals for licences and commercial tourism leases according to Departmental policy and permitting their establishment where appropriate; and
4. identifying sustainable levels of operator use and monitoring the impact of these activities.

20. VISITOR SAFETY

The Department manages risks to visitors' safety by implementing a visitor risk management program (Policy Statement No. 53 – *Visitor Risk Management*, CALM 1997), which includes:

- carrying out periodic safety audits of all recreation sites, facilities and visitor services to identify and assess risks and potential hazards and using this information as part of the basis for preparing and implementing recreation site and facility maintenance programs;
- developing and maintaining a database to monitor the hazard condition of sites and facilities and the frequency, situation and type of injury and misadventure incidents that occur in the parks and reserves; and
- promptly investigating all reported visitor accidents and injuries on Department-managed lands and waters and implementing appropriate risk mitigation measures.

In addition to a genuine concern for visitor welfare, the Department has a legal responsibility to consider the personal safety and welfare of visitors to the public conservation estate. The Department aims to minimise the potential for injuries and misadventure to visitors, in a manner that does not render the environment sterile or unnecessarily diminish visitor use and enjoyment in the process.

Rock fishing along the west coast of Dirk Hartog Island can be a dangerous activity and has resulted in a number of serious injuries. Appropriate visitor risk strategies will need to be implemented.

Objective and Strategies

Minimise risks to the public who visit Dirk Hartog Island while maintaining a range of visitor experiences.

1. adopting codes of safe conduct for popular activities (such as four-wheel driving, hiking, swimming, fishing, sea kayaking and surfing) and promoting and publicising them as appropriate.

21. DOMESTIC ANIMALS

Domestic animals are not permitted in nature reserves. They are not usually permitted in national parks or conservation parks although, under the *Conservation and Land Management Regulations 2002*, they are allowed in 'designated areas'. The exception is guide and hearing dogs for visually and hearing impaired visitors and specially trained dogs for search and rescue operations.

Within Dirk Hartog Island National Park, domestic animals are considered undesirable. It is important domestic animals, and especially dogs, are not taken into parks and reserves because:

- domestic animals can increase the spread of weed species and also increase vegetation disturbance;
- domestic dogs and cats can predate on and disturb native fauna;
- the lasting scent left by dogs can scare some native fauna away, which in turn can also affect the opportunity for visitors to interact with wildlife;
- dog faeces carry diseases which can be harmful to wildlife and people;
- dogs can interfere with the enjoyment of other visitors to the island; and
- fox baits regularly used in parks and reserves are poisonous to dogs

Dogs are currently not permitted in Dirk Hartog Island National Park and this will continue during the life of these guidelines.

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Objective and Strategies

Protect native fauna and visitors from the impacts of domestic animals by:

1. not permitting domestic animals in the Dirk Hartog Island National Park, with the exception of guide dogs and dogs associated with search and rescue operations.

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MANAGING RESOURCE USE

22. TRADITIONAL HUNTING AND GATHERING

The hunting and gathering of food by traditional owners is an important part of their culture, enabling them to maintain traditional relationships with the land and water, share knowledge and partake in traditional practices. Traditional owners in the region accessed the lands and waters of Shark Bay for a range of food that included various plants, mammals, fish, birds, reptiles, frogs and invertebrates.

Use of flora and fauna by Aboriginal people is provided for under section 23 of the Wildlife Conservation Act. Flora and fauna can be taken by Aboriginal people for food for consumption with the prior consent of the occupier of the land (Chief Executive Officer of the Department). Aboriginal people may take flora and fauna for food from all land (including waters) except in a nature reserve or wildlife sanctuary. Conditions associated with approval include:

- that the use of wildlife does not result in a overall decline in the population;
- food is only taken by a cultural group associated with the area;
- special provisions for the taking of some species (e.g. specially protected species);
- the activity does not impinge upon the safety of others;
- the food taken is not sold; and
- the activity is consistent with other land management objectives.

The only exception to this is the dugong. Dugong may be taken (the definition of 'take' includes to kill or capture, disturb or molest) under certain circumstances and for certain purposes in Western Australia. A "person of Aboriginal descent" (as defined in Section 4 of the *Aboriginal Affairs Planning Authority Act 1972*) may take dugong sufficient only for food for himself and his family. Dugong may not be sold, given to persons outside the hunter's family or taken from a Marine Park, Marine Nature Reserve or Marine Protected Area without a licence issued under the Wildlife Conservation Act.

General provisions of the CALM Act and Wildlife Conservation Act apply to other Aboriginal activities. For instance firearms may not be carried on a reserve, existing access tracks to be used and visitor safety is paramount.

The Department will ensure conformity with any changes to legislation or Government policy in relation to Native Title rights of Aboriginal people during the life of these guidelines.

Objective and Strategies

Provide the traditional custodians with an opportunity to maintain their social, economic and cultural practices, while ensuring the protection of the key values will be provided by:

1. allowing Aboriginal people to hunt and gather in Dirk Hartog Island National Park, provided:
   - they are from a cultural group associated with the area or have permission from traditional owners who can speak for the country;
   - have authorisation from the Department's Chief Executive Officer; and
   - safety and sustainable resource use issues have been addressed.
2. ensuring that management adapts to and conforms to any legislative or policy changes during the life of these guidelines.

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23. MINERAL AND PETROLEUM EXPLORATION AND DEVELOPMENT

Legislative Framework

Mining on land and waters managed by the Department is subject to the Mining Act, the Petroleum and Geothermal Energy Resources Act, the Petroleum Pipelines Act and Petroleum (Submerged Lands) Act, the Environmental Protection Act, the Wildlife Conservation Act and various State Agreement Acts. The Environmental Protection Act takes precedence over most other acts and mining projects that potentially may cause significant environmental impacts can be referred to the Environmental Protection Authority. The Commonwealth EPBC Act needs to be considered for any mineral and petroleum exploration and development proposal for protection of nationally threatened species, World Heritage values and National Heritage values.

Across the State, the granting of a mining lease (or general purpose lease associated with mining operations) within a national park requires the concurrence of the Minister for Environment and concurrence of both Houses of Parliament. Where given, Parliamentary approval may involve the imposition of conditions.

Guano was mined from several islands in Shark Bay. Several islands still have "collection of guano" in their purpose. Guano is no longer collected from these islands.

The removal of gravel and other raw materials from Department-managed lands in the Shark Bay area is subject to the *State Gravel Supply Strategy* and the Conservation Commission's Policy Statement No. 3 – *Basic raw materials: government and local government access to conservation estate (national parks, nature reserves and conservation parks)* (CCWA 2006). The *Local Government Act 1955* (Local Government Act) is used to give effect to the Conservation Commission Policy. Department procedures have been modified to the extent that a Notice of Entry (NOE) under the Local Government Act is used in lieu of a CALM Act lease to access BRM.

Extraction of basic raw material (BRM) by Shires is regulated under the Local Government Act. Although there are small areas of limestone and sand and several birridas, for the most part there is limited BRM on Dirk Hartog Island National Park. The clay rich birrida gypsum has been used for road construction in other parts of the Shark Bay area.

For accessing BRM from adjoining proposed conservation estate, the Conservation Commission's *Policy Statement No. 3 - Basic Raw Material: Government and Local Government access to conservation estate (National parks, Nature Reserves and Conservation parks)* (2006) is applied. Access to BRM from conservation estate will only be granted by the Conservation Commission where a road or facility is within the boundaries or road reserve enclaves in that reserve/park, where the use of that BRM provides access for the protection and management of the reserve/park and provided that a more environmentally acceptable alternative is not available. Extraction of basic raw material by Shires from conservation estate is regulated by a Notice-of-Entry procedure under the Local Government Act in lieu of a CALM Act lease. It is important to note that there is a presumption against accessing BRM in the conservation estate, and that any such application will be assessed on a case by case basis.

Conservation Commission Policy Statement No. 3 also states that access by LGAs to BRM in the conservation estate will require the provision (by the LGA) of rolling 3 year plans for all works that require resource from the conservation estate.

Where extraction of BRM does occur, nature conservation values of the island can be maintained by:

- siting pits only in vegetation communities that are adequately represented;
- applying best practice hygiene management;
- applying best practice visual landscape management; and
- applying best practice rehabilitation following extraction (see Section 24 – *Rehabilitation*).

Objective and Strategies

Protect the key values of Dirk Hartog Island through minimising the environmental impacts from mineral and petroleum exploration and development are protected by:

1. in conjunction with the Department of Mines and Petroleum (DMP), evaluating the likely impact of any proposed mineral, petroleum and geothermal energy exploration activities on the island;
2. liaising and providing formal advice to the EPA and DMP regarding environmental assessment of proposed mineral, petroleum and geothermal energy exploration activities on the island.

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24. REHABILITATION

Rehabilitation is the establishment of a stable, self-regulating ecosystem following disturbance, consistent with the purpose for which the area is managed. Rehabilitation requirements will vary according to the type and extent of disturbance. Appropriate methods of rehabilitation can minimise environmental impacts and visual amenity.

Where possible, local native species should be used for rehabilitation purposes to ensure the greatest degree of success, enable new vegetation to blend into the existing environment and limit the introduction of exotic (non-local) plants and disease. Sources of brushing material (branches of trees and shrubs) should also be free of disease. Rehabilitation in the Shark Bay area, and particularly on Dirk Hartog Island National Park, can be difficult because of the variable rainfall and exposure to salt-laden strong winds. It can take a long time before the benefits of rehabilitation can be seen.

Across Dirk Hartog Island National Park, various vehicle and pedestrian tracks may need to be closed and rehabilitated. In addition, some areas impacted by feral animals such as goats may require rehabilitation.

Objective and Strategies

To restore degraded areas to a stable condition resembling as close as possible the natural ecosystem function by:

1. ensuring that activities are carried out in accordance with Policy Statement No. 10 – *Rehabilitation of Disturbed Land* (CALM 1986a);
2. managing Dirk Hartog Island National Park, as far as practicable, to avoid disturbance;
3. developing rehabilitation working plans for different parts of Dirk Hartog Island National Park including allocating priorities for works based on:
4. rehabilitating, closing or relocating roads and tracks that have the potential to erode or impact on visual amenity of the island;
5. ensuring local plant species are used in rehabilitation schemes wherever possible; and
6. monitoring, evaluating and recording progress of rehabilitation programs and projects.

25. POLLUTION AND WASTE MANAGEMENT

A range of potential pollution sources exist which could impact on World Heritage and natural values of Dirk Hartog Island National Park. Waste can come from a variety of sources within the island and can include:

- visitor waste from camping and other recreational activities;
- waste associated with former pastoral leases; and
- the potential for the dumping of urban, agricultural and industrial waste on the island.

The management and, where required, rehabilitation of existing rubbish tips requires addressing, especially in remote localities such as Dirk Hartog Island. There are old fence lines, poly pipe used to distribute water, and other rubbish associated with pastoral activities scattered across the island. Landholders will be responsible for managing waste generated by their operations. Best practice waste minimisation schemes, Government waste and litter management policies and legislation will be applied across the island. The Shire of Shark Bay by-laws and EPA regulations will apply to the management of waste in freehold enclaves within Dirk Hartog Island.

Objective and Strategies

Minimise the likely environmental impact on the key values from activities that might lead to pollution or waste by:

1. removing and the careful disposal of waste from the island including toilet waste, waste from pastoral activities and waste generated by visitors;
2. managing waste generated from Department operations appropriately and encouraging waste minimisation schemes;
3. monitoring potential sources of pollution that are likely to lead to pollution of the natural environment; and
4. liaising with relevant government agencies to prevent and minimise polluting activities.

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26. PUBLIC UTILITIES AND SERVICES

The provision of new services and infrastructure has the potential to impact on the natural and cultural values of the island, depending on their location and type. Such impacts may include the clearing of vegetation, the introduction of weeds, visual impacts and the destruction of important habitats.

The Australian Maritime Safety Authority operates the lighthouse at Cape Inscription which provides a valuable service to shipping in the area.

The provision of new services and infrastructure on the island such as an airstrip, accommodation/housing, electricity, water supply, waste disposal and communications has the potential to impact on the natural and cultural values of Dirk Hartog Island, depending on their location and type. Such impacts may include the clearing of vegetation, introduction of weeds, visual impacts and the destruction of important habitats.

Department VHF radio repeater towers to service Dirk Hartog Island National Park are likely to be required and if so then, visual landscape assessment procedures to ensure the towers do not compromise the landscape quality of the sites will be applied.

Further staff accommodation and workshop facilities are being considered for Dirk Hartog Island National Park including the provision of a range of utilities and services. The siting of the Ranger station at Dirk Hartog Island will be assessed using a range of appropriate environmental, social and economic criteria.

Objective and Strategies

The key values of Dirk Hartog Island through minimising the environmental impacts of siting and constructing utilities and services will be protected by:

1. permitting new utilities and services within Dirk Hartog Island National Park where there are no viable alternatives and where they are consistent with Government policy and do not impact on the key values of the island; and
2. applying appropriate environmental, social and economic assessment criteria to measure the impact of proposed infrastructure and services

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INVOLVING THE COMMUNITY

Dirk Hartog Island National Park provides a valuable opportunity for the community to experience and learn about world heritage, national heritage, cultural heritage, coastal and arid environments and their landforms, marine systems and biota.

27. INFORMATION, INTERPRETATION AND EDUCATION

An effective communication program to involve the community is vital to achieving the vision and objectives of these guidelines. It informs the public of the attractions, facilities, opportunities and interpretive services available, and assists in increasing appreciation and understanding of natural and cultural environments. It also fosters a sense of community ownership of the island, engenders support for management and encourages appropriate behaviour. Communication is also vital to managing visitor risk so visitors have safe, enjoyable experiences on Dirk Hartog Island National Park.

A range of communication strategies that target different audiences can be used, including:

- information – embracing publicity, promotions and marketing and providing basic data about the reserves such as access, facilities, attractions, activities, regulations, code of care and cost;
- interpretation – explaining and enhancing appreciation of the natural and cultural features;
- education – providing resource materials, presentations, organised field activities and other programs designed to facilitate learning (particularly school groups and visitors with special interests);
- community involvement – public participation, volunteers, friends and advisory groups; and
- liaison, consultation and advisory services to stakeholder groups.

Planning for Community Involvement

For the Shark Bay World Heritage Property, a community education coordinator was appointed to develop comprehensive and integrated communication and interpretive plans for the Property, in consultation with the local community and key stakeholders. The result was two reports: *Shark Bay World Heritage Area Communication Strategy* (Chapman 2002) and *Shark Bay World Heritage Area Interpretation Action Plan* (Chapman 2003). These documents provide comprehensive and detailed guidelines for presenting information to the community and visitors.

The *Interpretation Action Plan* (Chapman 2003) suggests information to be displayed at Dirk Hartog Island National Park to include: the first landing by Dirk Hartog; a history of maritime exploration and whaling; the lighthouse and its operation; and welcome and orientation information. Turtle ecology and nesting at the nearby Turtle Bay, the story of the French exploration and use of the tramway by lighthouse keepers are also to be interpreted (Chapman 2003).

Objective and Strategies

Community awareness, understanding and appreciation of the World Heritage and other key values of Dirk Hartog Island and engender support of management activities wil be promoted by:

1. providing information to visitors on the World Heritage, natural and cultural values and appropriate activities and behaviour;
2. ensuring the information, interpretation and education provided is guided by the Communication Strategy and the Interpretation Action Plan and the objectives, strategies, stories and themes outlined in these documents;
3. providing interpretation at both existing and proposed key entry and visitor sites including Cape Inscription and Dirk Hartog Island homestead.
4. ensuring that traditional custodians have a primary and active role in communication planning pertinent to Indigenous cultural heritage;
5. ensuring that commercial tour operators have relevant and factual interpretive material that enables them to provide quality service in communicating messages regarding the key values and management; and
6. offering interpretation accreditation/certification course to tour operators;

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28. WORKING WITH THE COMMUNITY

Key functions of the Department and the Conservation Commission are to promote and facilitate community involvement in management of conservation lands. The community, as groups or individuals, is encouraged to be involved in both the planning and management of many of Department's activities, including volunteer programs. Ongoing community support is essential for the successful implementation of the approved final management plan. Principles for effective neighbour relations outlined in the Department's *Good Neighbour Policy* (DEC 2007) are important for developing partnerships with the community.

Objective and Strategies

Effective community involvement in the management of Dirk Hartog Island National Park is facilitated by:

1. continuing to provide and promote opportunities for involvement of interested community members in the management of Dirk Hartog Island including local Aboriginal people, neighbours, local Government authorities, relevant Government agencies, various advisory committees and other stakeholders; and
2. continuing to support volunteer involvement in Department programs.

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MONITORING AND IMPLEMENTING THE MANAGEMENT PLAN

29. RESEARCH AND MONITORING

Monitoring can increase knowledge and lead to a better understanding of the values of protected areas, aid performance assessment and provide a basis for improving and adapting future management to achieve best practices. Monitoring, regular review and analysis of management outcomes and ongoing research are critical to continuously improve management.

In addition, monitoring of visitors is required to determine if their expectations are being met and they are satisfied with the services and facilities provided. DEC will be undertaking surveys of visitors to the national park.

It is appropriate that research and monitoring involve a wide range of organisations and groups. The involvement of volunteers, educational institutions and individual researchers can extend and improve research efforts and reduce research and monitoring costs.

Objective and Strategies

Develop knowledge and understanding of key values, natural processes and visitor needs on Dirk Hartog Island to provide for and monitor the possible impacts associated with implementing these necessary operations. This can be achieved by:

1. identifying and implementing integrated research and monitoring programs that improve management of the island;
2. establishing baseline monitoring programs for assessing the condition of natural and cultural values of Dirk Hartog Island and the impacts of human activities and management programs within the life of these guidelines;
3. focussing research and monitoring on addressing issues and protecting key values and establishing baseline information for future auditing;
4. undertaking social research;
5. researching habitat requirements of selected threatened or restricted fauna and threatened ecological communities; and
6. ensuring that research and monitoring activities do not adversely impact on the key values of the island.

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READINGS

Aguirre A.A. and Lutz P.L. 2004 Marine turtles as sentinels of ecosystem health: is fibropapillomatosis an indicator?, *EcoHealth*, 1, pp. 275-283.

Balazs G.H., Murakawa S.K.K., Ellis D.M., Aguirre A.A. 2000 Manifestation of fibropapillomatosis and rates of growth of green turtles at Kaneohe Bay in the Hawaiian Islands, In: F.A. Abreu-Grobois, R. Brisen˜o-Duen˜as, R. Ma´rquez & L. Sarti (editors), *Proceedings of the 18th Annual Symposium on Sea Turtle Biology and Conservation*, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SEFSC-436, pp 112–113.

Bowdler, S. 1990a Before Dirk Hartog: Prehistoric archaeological research in Shark Bay, Western Australia, *Australian Archaeology*, v 30, pp 46-57.

Bowdler, S. 1999 Research at Shark Bay, W.A. and the nature of coastal adaptations in Australia, In: Jay Hall and Ian McNiven (eds) *Australian Coastal Archaeology*, pp. 79-84. ANH Publications, R.S.P.A.S., Australian National University, Canberra.

Burbidge, A.A. and McKenzie, N.L. 1989 Patterns in the modern decline of Western Australia's vertebrate fauna: causes and conservation implications. *Biological Conservation* 50: 143-198.

CALM 2002 *Workshop on disease in Western Barred Bandicoot population*s, Internal report, Department of Conservation and Land Management, Perth.

Cornell, C. (trans. & ed.) 1974 *The Journal of Post Captain Nicholas Baudin*, Libraries Board of South Australia, Adelaide.

Curry, S.S., D.R. Brown, J.M. Gaskin, E.R. Jacobson, L.M. Ehrhart, S. Blahak, S. Hirama, L.H. Herbst, and P.A. Klein. 2000 Persistent infectivity of a disease-associated herpesvirus in green turtles after exposure to seawater, *Journal of Wildlife Disease*, 36(4), pp. 792-797.

Edwards, H. 1999 *Shark Bay Through Four Centuries 1616 to 2000: A World Heritage Area*, Scott Four Color Print, Perth.

Green, J., Anderson, R., Carpenter, J., Cooper, D., Ford, A., McCarthy, M. and Stanbury, M. (2007) Report on the 2006 Western Australian Museum, Department of Maritime Archaeology, Cape Inscription National heritage Listing Archaeology Survey, Western Australian Museum, Perth.

Grey, G 1841 *Journals of two expeditions of discovery in north-west and western Australia during the years 1837, 38 and 39*, T & W Boone, London.

Hocking, R.M., Moors, H.T. Van de Graaff, W.J.E. and Geological Survey of Western Australia 1987 *Geology of the Carnarvon Basin Bulletin (Geological Survey of Western Australia)*. Department of Mines, Perth.

Johnstone, R.E., Burbidge, A.H. & Stone, P. 2000 Birds of the southern Carnarvon Basin, Western Australia: Distribution, status and historical changes, In: A.H. Burbidge, M.S. Harvey & N.L. McKenzie (eds) *Biodiversity of the southern Carnarvon Basin*, Records of the Western Australian Museum Supplement No. 61, pp. 371-448.

Marchant, L.R. 1982 *France Australe*, Artlook Books, Perth.

Playford, P. 1998 *Voyage of Discovery to Terra Australis by Willem de Vlamingh in 1696-97*,

Robert, W.C.H. 1972 *The Explorations, 1696-1697, of Australia by Willem De Vlamingh*, Philo Press, Amsterdam.

Spencer, J. (Ed.) 1981 *A Voyage of New Holland: The English Voyage of Discovery to the South Seas in 1699 by William Dampier*, Alan Sutton, London.

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Storr, G.M. and Harold, G. 1990 Amphibians and reptiles of the Shark Bay area, Western Australia, In: P.F Berry, S.D Bradshaw & B.R Wilson (eds) *Research in Shark Bay - Report of the France-Australe Bicentenary Expedition Committee*, pp.279-282, Western Australian Museum, Perth.

Trudgen, M.E. and Keighery, G.J. 1995 *Flora of the Shark Bay World Heritage Area and Environs*, Unpublished report for the Australian Heritage Commission, CALM, Wanneroo.

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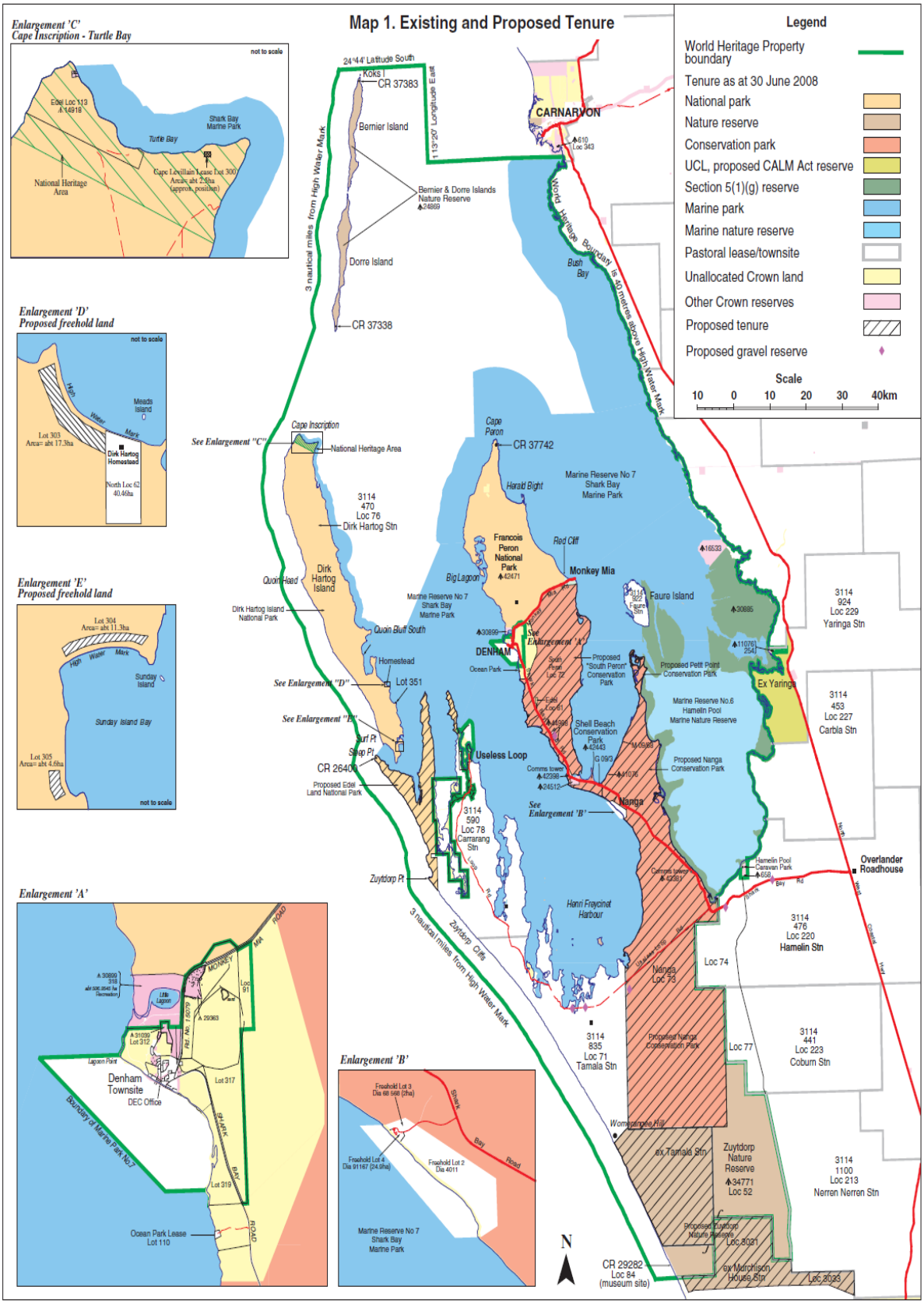
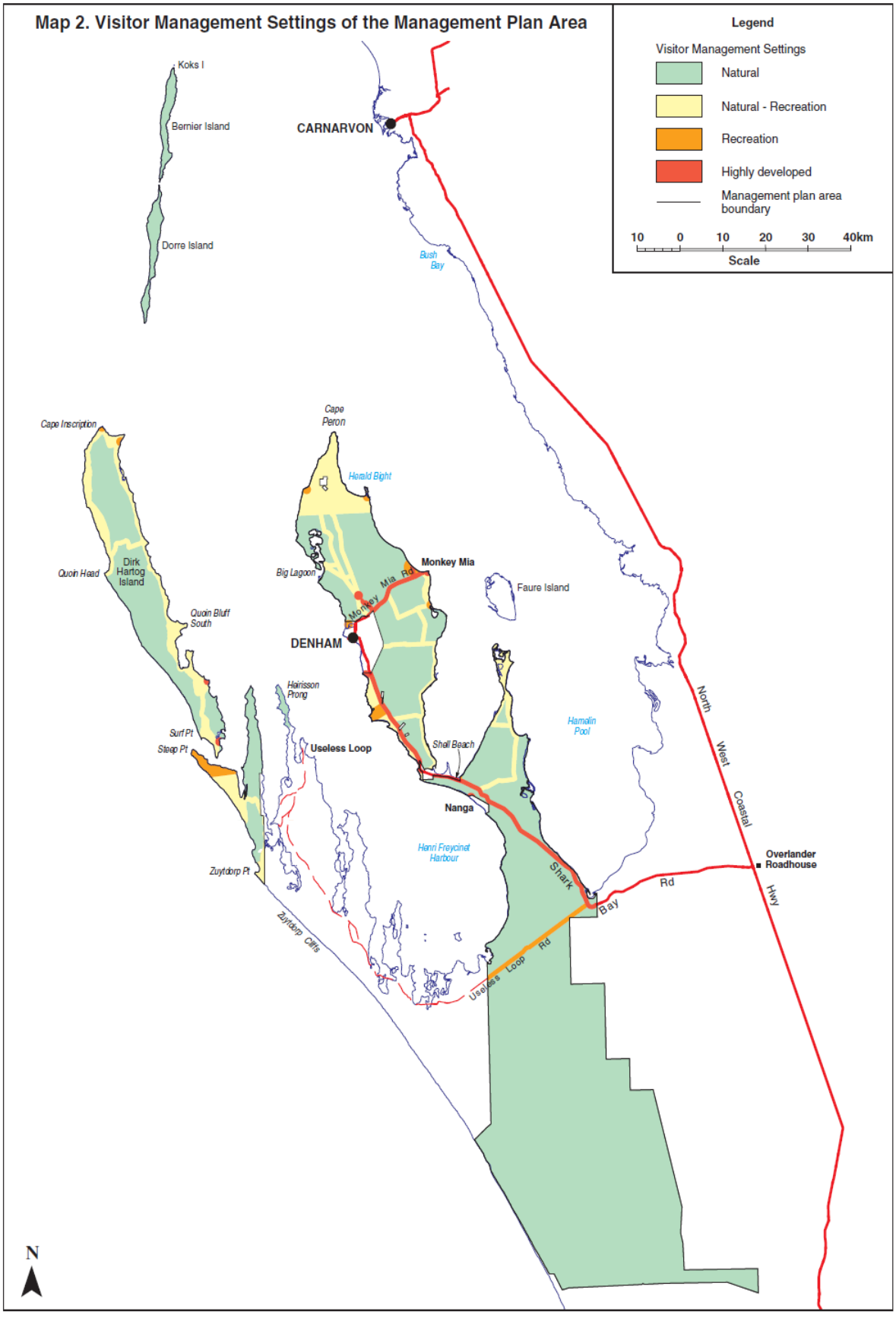
Map 1: Management Plan Area



Map 2: Visitor Management Settings in the Planning Area



Map 3: Existing and Proposed Public Access and Recreation Sites on Dirk Hartog Island.