

**ASIA / PACIFIC**

# **NINGALOO COAST**

**AUSTRALIA**



# WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

## NINGALOO COAST (AUSTRALIA) – ID No. 1369

**IUCN RECOMMENDATION TO 35<sup>th</sup> SESSION:** To inscribe the property under natural criteria in part, and refer back the remaining part to the State Party

**Key paragraphs of Operational Guidelines:**

77 Property meets one or more natural criteria.

78 Property meets conditions of integrity and has an adequate protection and management system in part.

### 1. DOCUMENTATION

**a) Date nomination received by IUCN:** 15 March 2010.

**b) Additional information officially requested from and provided by the State Party:** Following the IUCN World Heritage Panel the State Party was requested to provide supplementary information on 04 January 2011. The information was received on 16 February 2011. In addition, the State Party submitted a written request for a minor amendment of the boundaries to the World Heritage Centre on 28 February 2011.

**c) Additional Literature Consulted:** CALM (Western Australian Department of Conservation and Land Management) (2005). **Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015.** Management Plan 52, CALM, Perth, Australia. CALM (2010). **Cape Range National Park Management Plan 2010.** CALM, Perth, Australia. Colman, J. (1997). **Whale shark interaction management, with particular reference to Ningaloo Marine Park.** Western Australian Department of Conservation and Land Management, Marine Conservation Branch. Fremantle. DEC (2010). **Ningaloo Coast World Heritage Nomination.** Det Norske Veritas, (2001). **Coral Coast Resort Qualitative Risk Assessment.** Prepared for Coral Coast Marina Development Pty. Ltd DEWHA (2010). **Ningaloo Coast Consultation History 2006-2010.** Report provided specifically for IUCN assessment purposes. DEWHA (2010). **World Heritage Nomination Q and A.** Environment Australia, 2002. **Ningaloo Marine Park (Commonwealth Waters) Management Plan.** Environment Australia, Everton Park, Queensland. EPCH (Environmental Protection and Heritage Council) (2009). **Ningaloo Coast Strategic Management Framework.** Gillespie Economics, 2008. **Economic activity of Australia's world heritage areas: final report.** Gillespie Economics, BDA Group. Humphreys, W. F. (ed) (1993). **The Biography of Cape Range Western Australia.** Nahan, M. D. (2010). **The Department of Environment and Conservation's Management of Former Pastoral Leases.** Report No. 4. State Law Publisher, Perth, WA. Strategen Environmental Consultants Pty Ltd. (2008). **Review of**

**Ningaloo Coast Management Plans against national and international requirements for the protection of potential World and National Heritage values.** Prepared for the Department of Environment and Conservation. Strategen Environmental Consultants Pty Ltd. (2009). **Ningaloo Coast Unallocated Crown Land Management Framework.** Prepared for the Department of Environment and Conservation. Seminoff, J. (2002). Shire of Exmouth, DEC and National Parks and Nature Conservation Authority, 1999. **Jurabi and Bundegi coastal parks and Muiron Islands management plan 1999.** Perth, Australia. URS Australia Pty Ltd. (2001). **Environmental Management Plan for RAAF Learmonth and Associated Properties 2001.** Prepared for Department of Defence. WAPC (Western Australian Planning Commission) (2004). **Ningaloo Coast Regional Strategy: Carnarvon to Exmouth.** WAPC, Perth, Australia. World Heritage Consultative Committee (2004). **Report on a proposal to nominate the North West Cape - Ningaloo reef area for inscription on the World Heritage list.** Final report, Government of Western Australia.

**d) Consultations:** Eleven external reviewers were consulted. Extensive consultations were conducted during the field mission including with representatives of management agencies, administrators in state and federal government, representatives of academic institutions and non-governmental organizations and cultural practitioners.

**e) Field Visit:** Ameer Abdulla and Rainer von Brandis, October 2010.

**f) Date of IUCN approval of this report:** 29 April 2011.

### 2. SUMMARY OF NATURAL VALUES

The nominated property is located on the remote coast of Western Australia where the East Indian Ocean meets the Australian continent. The total nominated area of 708,350 hectares contains interconnected marine (71%) and terrestrial (29%) values and features. The Ningaloo Coast hosts a major near shore reef system and a directly adjacent limestone karst system and associated habitats and species along an arid coastline. The

nominated property is notable in that it contains a high level of terrestrial species endemism and high marine species diversity and abundance.

The 290 km long Ningaloo Reef is one of the longest near shore fringing reefs in the world. Although by some definitions Ningaloo would not be classified as a true barrier reef, the marine portion contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope and the continental shelf. Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also found within the nominated area. The water depths range from 5 to 30 m on the reef to oceanic waters over 500 m deep. The continuous “barrier” portion of the reef is approximately 200 km and includes a lagoon between 200 and 7000 meters wide. North and south of this continuous “barrier” reef are fringing and patch reefs that constitute an additional 100 km of reef habitat.

The various habitats not only support a high diversity of species but also jointly form diverse and aesthetically striking landscapes and seascapes. Less conspicuous but nevertheless one of the major features of the area is the rapid drop-off in bottom depth in the northern part, resulting in a narrow continental shelf that brings the shelf break unusually close to shore. In contrast, the continental shelf in the southern end of the Marine Park and nomination extends more than 30 km from the coastline.

The most dominant marine habitat is the Ningaloo reef, which sustains both tropical and temperate marine fauna and flora, with many species at the limit of their distribution or occurring at atypical latitudes to what is biogeographically considered their normal range. This exceptional transition zone is the result of the mixing between the cold north-flowing West Australian Current and the warm Indian Ocean Counter Current or Leewuin Current. The reef contains a high diversity of corals (300 species), reef fish (738 species), molluscs (655 species), crustaceans (600 species) and a multitude of marine plants (1,000 species). Due to the particular location and oceanography, tropical marine species from Ningaloo are transported more southerly than is typical, in some instances until the Great Australian Bight. An example of this are the reef systems of the Houtman Abrolhos Islands, the southernmost true coral reefs in the Indian Ocean and one of the highest latitude reef systems in the world, that are found 600 km south of the nominated area.

The nominated property is recognized for its large annual aggregations of whale sharks. Population estimates range between 300 and 500 Whale Sharks. Aggregations generally occur between March and June, and coincide with mass coral spawning events and seasonal localized increases in productivity.

Marine reptiles include six recorded marine turtle species, and the Olive Sea Snake. This extraordinary diversity of turtle species related to its location on the

ecotone between the tropical and temperate waters. Extrapolations from available data suggest that around 10,000 nests are deposited along the coast annually. This is a significant figure from a national, regional, and global perspective.

Manta rays have been recorded in the reserve and are found on the outer reef. Nineteen species of shark including the Oceanic White Tip Shark, Tiger Shark, Blue Shark and Grey Reef Shark also occur in deeper waters. The open ocean supports large aggregations of fish, including Trevally, Tuna, Mackerel, Marlin and Sailfish, many of which are found much closer to shore than in other parts of the world due to the narrow continental shelf.

Furthermore, dugong and dolphins frequent the lagoons and other marine areas, as do eight species of whales regularly with documented records of a total of 20 cetaceans. The nominated property is notable for the presence of Humpback Whales migrating through twice a year on their annual migration between calving grounds off the Kimberley coast and feeding grounds in Antarctica. Blue and Sperm Whales have been observed in the offshore regions of the nominated area, as have Minke, Bryde's, Southern Right and Killer Whales. The Humpback and Indo-Pacific Dolphin are also relatively common in this area.

Recent research has revealed a wide variety of bottom dwelling species in the Marine Park, including many previously unrecorded in Australia or even new to science. Sponges dominate the deeper water communities with soft corals and algae living among them. The high numbers of 155 sponge species and 25 new species of echinoderms, and unusual forms found in the diverse sponge garden habitats, add to the significance of the area.

A major feature of the terrestrial parts of Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range. Karst landscapes are characterized by sinking streams, caves, enclosed depressions, dry valleys, gorges, natural bridges, fluted rock outcrops and large springs. The Cape Range Peninsula within the Ningaloo Coast nomination is characterised by karst limestone that is the product of millions of years of marine fauna skeletons that were deposited in what is now ancient regressed seas and uplifted terrain. The karst system includes hundreds of separate features such as 535 caves, 180 dolines, and 5 permanently standing subterranean water bodies. Currently, below the arid terrain lies a substantial network of caves, conduits, groundwater streams, pools and aquifers that support a diversity of subterranean aquatic species. More than 80 subterranean taxa have been recorded, 75 of which are completely underground and confined to subterranean habitats. In addition to the large number of arthropods, there are two subterranean fish species. The species of the highly specialized underground fauna tell the story of a long-term evolutionary response to an inhospitable

environment and habitat. The biogeographic history and geological history of the region, including the movements of supercontinents, the emerging of the Range from the sea, and subsequent karstification, is narrated through the subterranean fauna and distribution of the karst communities.

The Cape Range Peninsula belongs to the Carnarvon Xeric Scrub ecoregion recognized by WWF for its high levels of species richness and endemism, particularly for birds and reptiles.

### 3. COMPARISONS WITH OTHER AREAS

The Ningaloo Coast is nominated according to criteria (vii), (viii) and (x) for its marine and terrestrial natural values as a large fringing coral reef, encompassing both a large lagoon and deep-sea continental shelf waters adjacent to an extensive karst system on land. The comparative analysis focuses on arid-zone coastal ecosystems and marine values and contrasts the merits of the Ningaloo Coasts with a large number of World Heritage properties and other sites.

Key features in relation to criterion (vii) are the large aggregations of whale sharks (*Rhincodon typus*) along with important aggregations of other fish species and marine mammals and the contrast and beauty of an arid coast next to a vivid reef and seascape. The rare aggregation of the whale shark, the largest fish in the world, is one of the main features highlighted under this criterion. Although whale shark aggregations occur in other parts of the world such as the Seychelles, Djibouti, Thailand and Belize with predictable periodicity, the aggregations in Ningaloo following the mass coral spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 individuals to gather, making this the largest whale shark aggregation documented in the world.

The most exceptional aggregations of single species contribute to the justification of inscription of the Monarch Butterfly Biosphere Reserve (Mexico), although inscriptions based on the presence of a single species alone are in general not sufficient basis to determine OUV. Several other properties are also recognized for important gatherings of single or multiple species, such as Malpelo Fauna and Flora Sanctuary (Colombia), the West Norwegian Fjords (Norway), and the Islands and Protected Areas of the Gulf of California (Mexico). Other examples include the Brazilian Atlantic Islands of Fernando de Noronha and Atol das Rocas Reserves known for major resident aggregations of dolphins and iSimangaliso Wetland Park (South Africa) featuring massive marine turtle nesting sites.

Many of the features of the Ningaloo Coast are comparable to other places. Aesthetically and in terms of beauty of landscapes and seascapes, it is the rare mix of largely intact marine, coastal and terrestrial environments that makes the nominated property

exceptional. Furthermore, the lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land.

As regards criterion (viii) the nomination acknowledges that all the elements of biogeography and geology can be found elsewhere but argues that no comparable complete and integrated limestone system exists. Main features described are the water bodies with underground connections to the ocean (anchialine systems) sheltering fauna, including aquatic species in caves and groundwater habitats entirely underground beyond the daylight zones of caves (stygo fauna).

A recent technical thematic report by IUCN highlights the poor coverage of World Heritage sites containing significant karst system in the Australasia and South Pacific geographic region and arid, semi-arid, and periglacial environments. The recommendation of the report is that future nominations should give particular attention to outstanding karst areas in these regions and/or environmental settings. The Ningaloo Coast is an example of a karst system in the Australasia region and in an arid environmental setting. What sets the Ningaloo Coast apart in terms of terrestrial values is the biodiversity above and below ground in the karst landscapes and features rather than the geology as such.

In terms of in-situ biodiversity under criterion (x) both the terrestrial and the marine systems are noteworthy. The oceanographic conditions on the Ningaloo Coast sustain a wide array of species, both temperate and tropical.

The nominated property lends itself to a comparison with Shark Bay, an existing World Heritage property likewise located in Western Australia and comprising both land and sea areas. Both the Ningaloo Coast and Shark Bay belong to the same WWF Global 200 marine priority ecoregion named "Western Australia Marine" and host distinct superlative features within this priority region as the longest nearshore reefs (Ningaloo) and the largest and most species-rich seagrass meadows (Shark Bay). Ningaloo does include seagrass areas but they are nowhere nearly as extensive and important as those in Shark Bay. In contrast, although coral communities are present in Shark Bay, they do not form reefs and are not a key feature of the property. Ningaloo does not contain major mangrove areas, while small areas of mangrove are found in Shark Bay. Unlike Shark Bay, Ningaloo contains mid- to deep-water areas that are of potentially high and unique biodiversity values associated with feeding communities, such as for example sponge gardens.

Ningaloo and parts of Shark Bay also belong to the same WWF terrestrial priority ecoregions, the "Carnarvon Xeric Scrub". Ningaloo does not lie in a terrestrial biodiversity hotspot or Centre of Plant Diversity, while parts of Shark Bay belong to the Southwest Australia terrestrial biodiversity hotspot and the South-west Botanical Province Centre of Plant Diversity, an



important distinction in terms of terrestrial biodiversity values. Unlike Shark Bay, Ningaloo contains significant arid karst areas, with associated subterranean habitats and fauna.

From a global biodiversity conservation perspective, Ningaloo and Shark Bay share a number of outstanding characteristics, habitats and species. However, there are also important differences in the biodiversity values of these two sites providing a sufficient basis to make a case for consideration of separate inscription. From a conservation perspective, the biological and ecological linkages between the two sites deserve further research and should be considered in management and protection.

In spite of the complicating effects of ancient versus modern geo-climatic processes, the broad differences in karst landscape styles are recognized between the humid tropics/subtropics (e.g. karsts of monsoonal Southeast Asia), the hot deserts (e.g. karsts of arid and semi-arid Australia), the humid temperate zone (e.g. the Dinaric Karst), and cold high altitude or high latitude regions (e.g. karsts of Canadian Rockies and Siberia). Relatively common in the northern hemisphere, the Cape Range is the only continental deep anchialine (landlocked water body with a subterranean connection to the ocean) system described in the southern hemisphere. The majority of anchialine species are not found elsewhere in the southern hemisphere and are not related to communities in other karst regions in Australia. The combination of relic rainforest fauna and anchialine stygofauna (small fully aquatic invertebrates) within the same cave system is exceptional.

While secondary to the truly exceptional underground terrestrial and aquatic underground fauna, the Cape Range Peninsula belongs to the Carnarvon Xeric Scrub ecoregion recognized for its high levels of species richness and endemism, particularly for birds and reptiles and a number of localised centres.

While the case for criterion (ix) is not made in the nomination the comparative analysis for other criteria provides evidence that this criterion might deserve additional scrutiny.

## 4. INTEGRITY, PROTECTION AND MANAGEMENT

### 4.1 Protection

The Ningaloo Coast is located in an isolated, remote and lightly populated part of Western Australia, and this isolation has contributed to its protection.

The area benefits from three governmental levels of formal protection. The nominated property, as nominated, includes six existing protected areas, (Ningaloo Marine Park, Muiron Islands Marine Management Area, Cape Range National Park, Muiron Islands Nature Reserve, Bundegi and Jurabi Coastal

Parks), Unallocated Crown Land, leaseholds, freeholds and Defence Land.

Because the World Heritage nominated property is already listed as a National Heritage area, it is subject to the Environment Protection and Biodiversity Act of 1999 (EPBC Act). Any proposed action taken inside or outside the heritage area's boundaries that may have, or is likely to have, a significant impact on the heritage values requires assessment under the Federal EPBC Act.

With exception of the Commonwealth portion of the Ningaloo Marine Park and the Defence Land, the nominated property is also subject to the Wildlife Conservation Act (1950), Environmental Protection Act (1986), Land Administration Act (1997), Heritage of Western Australia Act (1990), the Aboriginal Heritage Act (1972) and the Conservation and Land Management Act (exception: pastoral leaseholds) (1984). The entire marine component is subject to the Fish Resources Management Act (1994).

The marine portion of the property is owned by the Commonwealth and State governments of Australia. Land is owned by the Commonwealth Government (Department of Defence, ± 5%), State Government (Department of Environment and Conservation - DEC, ± 95%), Shire of Exmouth, 0.5%) and private freeholders (< 0.5%).

The State Government owns a 2 km wide coastal strip encompassing the southernmost 180 km of the nominated terrestrial property, which is currently under private pastoralist leasehold (Ningaloo, Cardabia, Warrora, Quobba and Gnaraloo stations). These leases expire in 2015. IUCN requested information from the State Party regarding the lease renewals, and the State Party response stated that: "World Heritage listing will not affect current management, tenure, land rights or the future renewal of current leases [and] the present or future status of privately owned land in the nominated property...".

A native title claim within the nominated property is currently in mediation with the National Native Title Tribunal. In response to an IUCN request the State Party confirmed that the ongoing "Gnulli Native Title Claim" would not be affected by World Heritage listing.

The small-scale commercial and recreational fishing is regulated and appears to constitute no threat to the integrity of the nominated property.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

### 4.2 Boundaries

The 2006 State Government proposal boundary for the proposed national and world heritage site was in excess of 2.5 million hectares and included the Exmouth Gulf

and larger portions of pastoral leaseholds. A combination of community consultation and further scientific assessment saw this extension reduced in 2009. The proposed boundaries encompass a coastal strip of some 260 km in length and the adjacent marine environment.

There are several exclusion zones within the terrestrial boundary detailed in maps contained in the nomination document. They include the Coral Bay town area (Coral Bay Exclusion Area); a military array on the tip of North West Cape (North West Cape Area A and a smaller area south of it according to map 1.7 included in the nomination, whereas Learmonth Air Weapons Range is within the nominated area), the Three Mile Camp on the Southern coast of the nominated area, a sand pit near Exmouth town, as well as the Cardabia, Warrora, Quobba and Gnaraloo pastoral Leaseholder Homesteads. Upon formal request by the State Party after submission of the nomination dossier, the Ningaloo pastoral station and its associated infrastructure was likewise excluded from the nominated property. These exclusions are generally small in size and do not significantly impinge on natural values. Marine boundaries follow those of existing protected areas, adequately encompassing the Muiron Islands and the Ningaloo coral reef along a series of geographical coordinates and interconnecting lines. Along the 50 km southern extremity of the property, where the state controlled marine park forms the boundary, the border follows the contour of the coastline at an approximate distance of 5 km. The remainder of the boundary extends at least 15 km out to sea.

No physical buffer zones have been delineated. However, the EPBC Act stipulates that activities outside of the nominated area that may significantly impact on heritage values are subject to assessment and approval from the minister for environmental protection. Hence, this Act, in addition to the overarching legal umbrella described above, serves as a functional legislative buffer to possible factors affecting the property.

The boundaries adequately encompass the key values listed in the nomination. The 2 km coastal strip does not contribute significantly to the criteria under which the property was nominated. This strip of land is characterized by low dunes, limestone beach ridges, and arid scrubland provides access to the marine park and is therefore of importance for site management, including for tourism. Despite being owned by the state government, the land in question is currently leased out to pastoralists (Ningaloo, Cardabia, Warroora, Quobba and Gnaraloo stations) who derive income from livestock farming and ecotourism. These leases are due to expire in 2015. Uncertainty over the future of this land has created a division between the leaseholders and DEC. The lessees strongly contest the inclusion of this land in the nomination, for a variety of reasons, which appear to include concerns that inscription may impact their lease renewal applications despite written governmental statements to the contrary. The pastoralists argue that

the land does not contain superlative heritage values in their judgment and that state government agencies may not have the management capacity for the additional land.

National conservation NGOs and other institutions advocate the inclusion of the nearby Exmouth Gulf on the grounds that the ecological integrity of the Ningaloo Reef and the gulf are inextricably linked. The gulf supports extensive mangrove stands and other shallow habitats that function as nurseries and adult foraging grounds for vulnerable species including sea turtles, sharks and rays, dugongs and commercially important fish. Furthermore, it was argued that the gulf provides fundamental nutrient source for the adjacent Ningaloo coral reef. Although an extensive prawn fishery exists in the gulf, it is reportedly sustainable and subject to strict fishery regulations.

IUCN considers that the majority of boundaries of the nominated property meet the requirements set out in the Operational Guidelines but some terrestrial areas require further consideration.

### 4.3 Management

With the exception of the pastoral leaseholds, all areas within the nominated property fall under one of the following management plans: Cape Range National Park management Plan 2010; Jurabi and Bundegi Coastal Parks and Muiron Islands Management plan 1999; Ningaloo Coast Unallocated Crown Land Management Framework 2009; Ningaloo Marine Park (Commonwealth Waters) Management Plan 2002; Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015; Environmental Management Plan, RAAF Learmonth and Associated Properties 2001.

An independent review (Strategen, 2008) concluded that the requirements for the protection of potential World Heritage values were adequately met. All management plans make adequate provision for the monitoring of management effectiveness. The individual management plans and their respective governance arrangements are combined under the Ningaloo Coast Strategic Management Framework. In addition, there are various species-specific conservation plans.

With the following exceptions, DEC is the management authority for the nominated property: Pastoral leaseholds are managed by the individual leaseholders. The 2 km coastal strip of the Cardabia leasehold (owned by the Baiyungu Aboriginal Council) is co-managed with DEC under a mutual agreement reached in 2006; Defence Land is managed by the Department of Defence; the Commonwealth Waters of the Ningaloo Marine Park are managed by the Department of the Environment, Water, Heritage and the Arts (DEWHA) and the Department of Fisheries with DEC responsible for day-to-day managerial duties; Jurabi and Bundegi coastal parks and the Muiron Islands are co-managed between DEC and

the Shire of Exmouth; the Marine Park (State waters) is co-managed between DEC and the Department of Fisheries.

Management of the existing parks is funded primarily by the state government, which expends approximately AU\$ five million annually on staff, offices, maintenance, enforcement, monitoring, research and general management. A further AU\$ 700,000 is allocated yearly to promote tourism and once-off funding is occasionally provided for specific projects, such as the goat eradication program. DEWHA provides approximately AU\$ 100,000 annually for the day-to-day management of the Commonwealth Marine Park. The Department of Defence occasionally allocates funding for special conservation projects (e.g. protection of Bundera sinkhole). The pastoralist leaseholders reported to provide private funds for the conservation and management of their land along the 2 km coastal strip. In the event of World Heritage listing, Ningaloo will become eligible to receive funding from the 'Caring for our Country' program that provides up to AU\$ six million annually to Australian World Heritage Sites. DEC currently employs 33 staff members in the Exmouth district. Because all staff are located at Exmouth (with the exception of one ranger based in the Cape Range National Park and one semi-permanent ranger at Coral Bay), areas south of the Cape Range National Park are rarely visited, the furthest distance from Exmouth being 260 km. The Ningaloo Marine Park includes a 40 m coastal strip and, although camping occurs predominantly in this zone, DEC is not able to adequately enforce regulations. Unless staff numbers and funding are significantly augmented, the additional management responsibility of the eastern foothills of the Cape Range, and particularly the 2 km coastal strip, may exceed DEC's management capacity in the foreseeable future.

As visitor numbers and resident populations increase, challenging tasks include law enforcement and the day-to-day management of remote regions of the Marine Park and the southern regions of the 2 km wide coastal strip. In this regard, the establishment and nurture of key collaborations with other management agencies such as the Department of Fisheries are crucial. Pastoralism is stated to be a principal land use along the coast. A cooperative management framework between management agencies, leaseholders and scientists is currently lacking.

Despite the work that the State Party notes on consultation, it is clear from the technical evaluation mission and numerous letters received by IUCN that there is considerable distrust of DEC amongst members of the Shire of Exmouth and Carnarvon, Exmouth Chamber of Commerce, Baiyungu Aboriginal Corporation, and particularly the pastoral leaseholders and stakeholders appear to question DEC's management capacity. Allegations of insufficient consultation with stakeholders indicate a need for better communication. DEC officials concede that an initial

communication and education program clearly outlining the consequences of World Heritage listing and the nomination process would have done much to prevent unnecessary misconceptions of the World Heritage nomination process and consequences of a possible inscription.

It is important that a possible World Heritage status is not perceived as impacting on land rights issues. The partial exclusion of areas from World Heritage status until these issues are resolved does not impact on the protection and management potential, since these areas are included in the national heritage area designation, and the SP confirms that it is that designation which will convey the principal protection to the property.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines with the exception of some disputed terrestrial areas.

#### 4.4 Threats

All future developments and resource extraction plans are subject to the EBPC Act providing an important umbrella of legal protection.

Learmonth Air Weapons Range Facility covering about 18,954 hectares within the nominated property is used for military exercises and as a bombing range. It includes an ancient reef-complex and cave fauna of exceptional importance. It was one of Australia's most active bombing ranges until around 1990. Future bombing activities on the Learmonth Air Weapons range may pose a potential threat, in particular to the Bundera sinkhole which is located on Defence Land. A 2009 review of Department of Defence ranges recommended its continued use in the future. Although Defence Land within the heritage site is subject to the EPBC Act, the act may be countermanded if this is "in the interests of Australia's defence or security, or in relation to a national emergency".

Although tourism is on the increase, associated threats (damage to vegetation, illegal fishing, sewage and waste disposal and disturbance to wildlife) are mitigated via comprehensive management programs and an overall tourism development strategy. Recreational boat launching facilities are limited and strictly controlled. Future concerns include increased water demand leading to water abstraction with effects on the groundwater systems as well document in arid areas with abruptly increasing numbers of visitors.

Pollution could result from accidents, including accidents provoked by natural disasters. There are important off-shore oil and gas resources near the nominated property. IUCN understands that the State Party has licensed oil exploration in permit WA-384-P roughly 50 km offshore of North West Cape. Given that offshore petroleum extraction is expected to increase in adjacent waters, accidental discharge of oil or other pollutants

poses a significant threat to the marine life and ecosystems of the Ningaloo coast. Although an integrated national contingency plan is in place and oil spill response equipment has been pre-deployed at Exmouth, the nominated coastline is too long and remote to afford any reasonable protection from an oil spill.

Invasive alien species, most importantly foxes, cats, goats and weeds on land and some marine species are satisfactorily monitored and controlled. Further potential concerns on land include limestone quarrying, which is taking place in an extraction lease but at its currently modest scale not posing a risk. Fire, historically part of local indigenous management, is a potential threat to the terrestrial vegetation and must be monitored and controlled.

Sea level rise and increases in seawater temperatures associated with climate change have comparatively little effect on the nominated property. The good overall integrity suggest a higher resilience than in disturbed systems under additional stress. Still, careful monitoring is highly recommended.

In summary, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines, with the exception of some terrestrial areas.

## 5. ADDITIONAL COMMENTS

The envisaged establishment of a "Ningaloo Coast World Heritage Advisory Committee" after a possible inscription of the nominated property, which would bring together representatives from the traditional owners, local government, scientific experts and members of the community is highly commended. IUCN notes that platforms and exchange mechanisms of this nature can be helpful even at a much earlier stage, including nomination processes and should be considered by States Parties as an investment accompanying nomination processes early on.

## 6. APPLICATION OF CRITERIA

The Ningaloo Coast has been nominated under criteria (vii), (viii), and (x).

### **Criterion (vii): Superlative natural phenomena or natural beauty**

The landscapes and seascapes of the property are comprised of mostly intact and large-scale marine, coastal and terrestrial environments. The lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land. The property supports rare and large aggregations of Whale Sharks (*Rhincodon typus*) along with important aggregations of other fish species and marine mammals. The aggregations in Ningaloo following the mass coral

spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 Whale Sharks to gather, making this the largest documented aggregation in the world.

IUCN considers that the nominated property meets this criterion.

### **Criterion (viii): Earth's history and geological features**

Main features are the water bodies with underground connections to the ocean (anchialine systems) sheltering fauna living aquatic lives in caves and groundwater habitats entirely underground beyond the daylight zones of caves (stygofauna) recording and illustrating geographic and biological change across 150 million years; subterranean karst systems with highly specialized and endemic forms of life; and geocological structure. The nomination acknowledges that all the elements of biogeography and geology can be found elsewhere but argues that no comparable complete and integrated limestone system exists. In IUCN's view the key value of the geological features is to host a remarkable and highly specialized fauna and is more appropriately recognised under criteria related to biodiversity.

IUCN considers that the nominated property does not meet this criterion.

### **Criterion (x): Biodiversity and threatened species**

In addition to the remarkable aggregations of Whale Sharks, the Ningaloo Reef harbours a high marine diversity of more than 300 documented coral species, over 700 reef fish species, roughly 650 mollusc species, as well as around 600 crustacean species and more than 1,000 species of marine algae. The high numbers of 155 sponge species and 25 new species of echinoderms add to the significance of the area. On the ecotone between tropical and temperate waters the Ningaloo Coast hosts an unusual diversity of marine turtle species with an estimated 10,000 nests deposited along the coast annually.

The majority of subterranean species on land, including aquatic species in the flooded caves are rare, taxonomically diverse and not found elsewhere in the southern hemisphere. The combination of relict rainforest fauna and small fully aquatic invertebrates within the same cave system is exceptional. The subterranean fauna of the peninsula is highly diverse and has the highest cave fauna (troglomorphic) diversity in Australia and one of the highest in the world. Above ground, the diversity of reptiles and vascular plants in the drylands is likewise noteworthy.

IUCN considers that the nominated property meets this criterion.



## 7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Inscribes the **Ningaloo Coast (Australia)** under criteria (vii) and (x), taking note that the adopted boundary includes the Ningaloo Marine Park (Commonwealth Waters), Ningaloo Marine Park (State Waters) and Muiron Islands Marine Management Area (including the Muiron Islands), Jurabi Coastal Park, Bundegi Coastal Park, Cape Range National Park, and the Learmonth Air Weapons Range;

3. Refers back the remaining areas of the nominated property to allow the State Party to further consider its collaboration with stakeholders, including holders of private leases within these areas. These areas could be considered via a subsequent minor boundary modification;

4. Adopts the following Statement of **Outstanding Universal Value**:

### **Brief synthesis**

*The Ningaloo Coast is located on Western Australia's remote coast along the East Indian Ocean. The interconnected ocean and arid coast form aesthetically striking landscapes and seascapes. The coastal waters host a major near shore reef system and a directly adjacent limestone karst system and associated habitats and species along an arid coastline. The property holds a high level of terrestrial species endemism and high marine species diversity and abundance. An estimated 300 to 500 Whale Sharks aggregate annually coinciding with mass coral spawning events and seasonal localized increases in productivity.*

*The marine portion of the nomination contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope and the continental shelf. Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also found within the property. The most dominant marine habitat is the Ningaloo reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals.*

*The main terrestrial feature of the Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range. The karst system includes hundreds of separate features such as caves, dolines and subterranean water bodies and supports a rich diversity of highly specialized subterranean species. Above ground, the Cape Range Peninsula belongs to an arid ecoregion recognized for its*

*high levels of species richness and endemism, particularly for birds and reptiles.*

### **Criteria**

#### **Criterion (vii)**

*The landscapes and seascapes of the property are comprised of mostly intact and large-scale marine, coastal and terrestrial environments. The lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land. The property supports rare and large aggregations of Whale Sharks (*Rhincodon typus*) along with important aggregations of other fish species and marine mammals. The aggregations in Ningaloo following the mass coral spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 Whale Sharks to gather, making this the largest documented aggregation in the world.*

#### **Criterion (x)**

*In addition to the remarkable aggregations of Whale Sharks the Ningaloo Reef harbours a high marine diversity of more than 300 documented coral species, over 700 reef fish species, roughly 650 mollusc species, as well as around 600 crustacean species and more than 1,000 species of marine algae. The high numbers of 155 sponge species and 25 new species of echinoderms add to the significance of the area. On the ecotone between tropical and temperate waters the Ningaloo Coast hosts an unusual diversity of marine turtle species with an estimated 10,000 nests deposited along the coast annually.*

*The majority of subterranean species on land, including aquatic species in the flooded caves are rare, taxonomically diverse and not found elsewhere in the southern hemisphere. The combination of relict rainforest fauna and small fully aquatic invertebrates within the same cave system is exceptional. The subterranean fauna of the peninsula is highly diverse and has the highest cave fauna (troglomorphic) diversity in Australia and one of the highest in the world. Above ground, the diversity of reptiles and vascular plants in the drylands is likewise noteworthy.*

#### **Integrity**

*The property is embedded into a comprehensive legal framework for the various protected areas and all other land. As a National Heritage area, it is subject to the federal Environment Protection and Biodiversity Conservation Act of 1999 (EPBC) according to which all proposed activities with possible significant impacts on the values of the site require assessments. The EPBC is applicable to activities located outside of the boundaries of the property. While no formal buffer zones have been established for the property the Act therefore serves as a legal buffer zone. The boundaries encompass the key marine and terrestrial values with the exclusions being small in size and not conflicting with the maintenance of the values if managed adequately.*

Both the marine and the terrestrial areas may face a number of threats to the property's integrity. Learmonth Air Weapons Range Facility, located within the property, includes an ancient reef-complex and cave fauna of exceptional importance. It was one of Australia's most active bombing ranges until around 1990 and future bombing activities may pose a threat, in particular to the Bundera sinkhole which is located on Defence Land. Tourism is on the increase leading to associated threats such as damage to vegetation, illegal fishing, sewage and waste disposal and disturbance to wildlife. Comprehensive management programs and an overall tourism development strategy are functioning and appropriate responses which require consolidation in anticipation of further increasing visitation. Future concerns include increased water demand leading to water abstraction with effects on the groundwater systems as well document in arid areas with abruptly increasing numbers of visitors.

Fire, historically part of local indigenous management, is a potential threat to the terrestrial vegetation and requires monitoring and control. Livestock raising on pastoral leases continues to be an important land use which is compatible with nature conservation when managed appropriately.

Potential off-shore hydrocarbon extraction in the region surrounding the property requires careful consideration in order to prevent potential pollution and disturbance. The coastline's significant length and remoteness poses major challenges to responses to pollution incidents suggesting a need for further investments in emergency response.

Sea level rise and increases in seawater temperatures associated with climate change have had comparatively little effect on the property. The good overall integrity suggests a higher resilience than in disturbed systems under additional stress. Still, careful monitoring is highly recommended.

A concern affecting both marine and terrestrial parts of the property and requiring permanent monitoring and management are invasive alien species, most importantly foxes, cats, goats and weeds on land and some marine species.

### **Management and protection requirements**

The Ningaloo Coast benefits from its remoteness and low population density affording it a high degree of natural protection. The entire, mostly state-owned property is comprehensively protected and managed, including by an overarching strategic management framework. Given the various governmental levels and agencies involved and the differentiation between terrestrial and marine parts of the property effective coordination of the multiple plans in an overall management framework is critical. Full cooperation between agencies, including fisheries, are necessary to ensure management and law enforcement in the vast and remote marine and terrestrial areas. Funding from

federal and state levels and staffing as of the time of inscription would benefit from increases.

There is a need for ongoing management of fisheries and careful planning of resource extraction and corresponding monitoring and disaster preparedness to protect the values of the property.

Communication, consultation and joint efforts with local and indigenous stakeholders, including negotiation of native title claims and pastoral leases are indispensable elements of effective management and local acceptance of conservation efforts. Given the vastness of the area and the limited human and financial resources co-management approaches with local stakeholders are a promising option. The establishment of a "Ningaloo Coast World Heritage Advisory Committee" or a similar body bringing together representative from the traditional owners, local government, scientific experts and members of the community has an important role to play in this regard.

Tourist numbers are expected to rise which will require additional management efforts. Increased water abstraction, including from demand from increased tourism may affect fragile subterranean aquatic habitats and species communities will require constant monitoring and management.

5. Commends the State Party on its conservation and management efforts on the Ningaloo Coast, including the innovative volunteer camp manager and turtle monitoring programs, eradication of terrestrial invasive species, and the management of increasing tourist numbers;

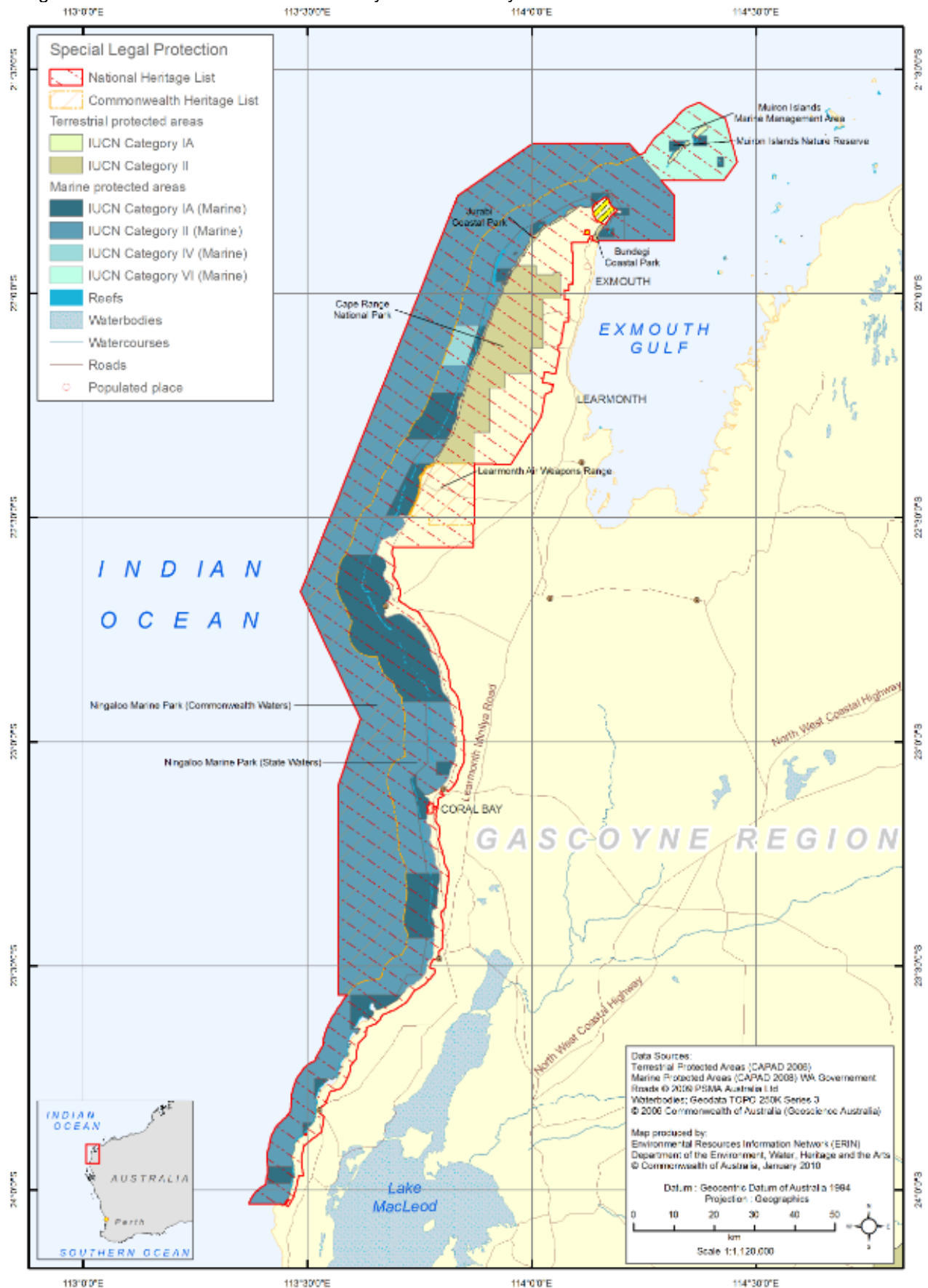
6. Recommends the State Party to:

- a) increase the overall management budget and resources, specifically focused at remote regions of the nominated property, to increase field capacities, strengthen co-management arrangements and consolidate monitoring and law enforcement in both marine and terrestrial areas;
- b) strengthen the working collaboration with the Fisheries Department in order to pool resources and strengthen monitoring, surveillance and enforcement considering the vast expanse of ocean and land;
- c) utilize existing and successful management models for Marine World Heritage sites in other Australian states, such as the Great Barrier Reef Marine Park Authority to enhance the management framework and capacity of the Ningaloo Coast;
- d) bolster its innovative volunteer programs to manage and monitor the large area of the nomination;

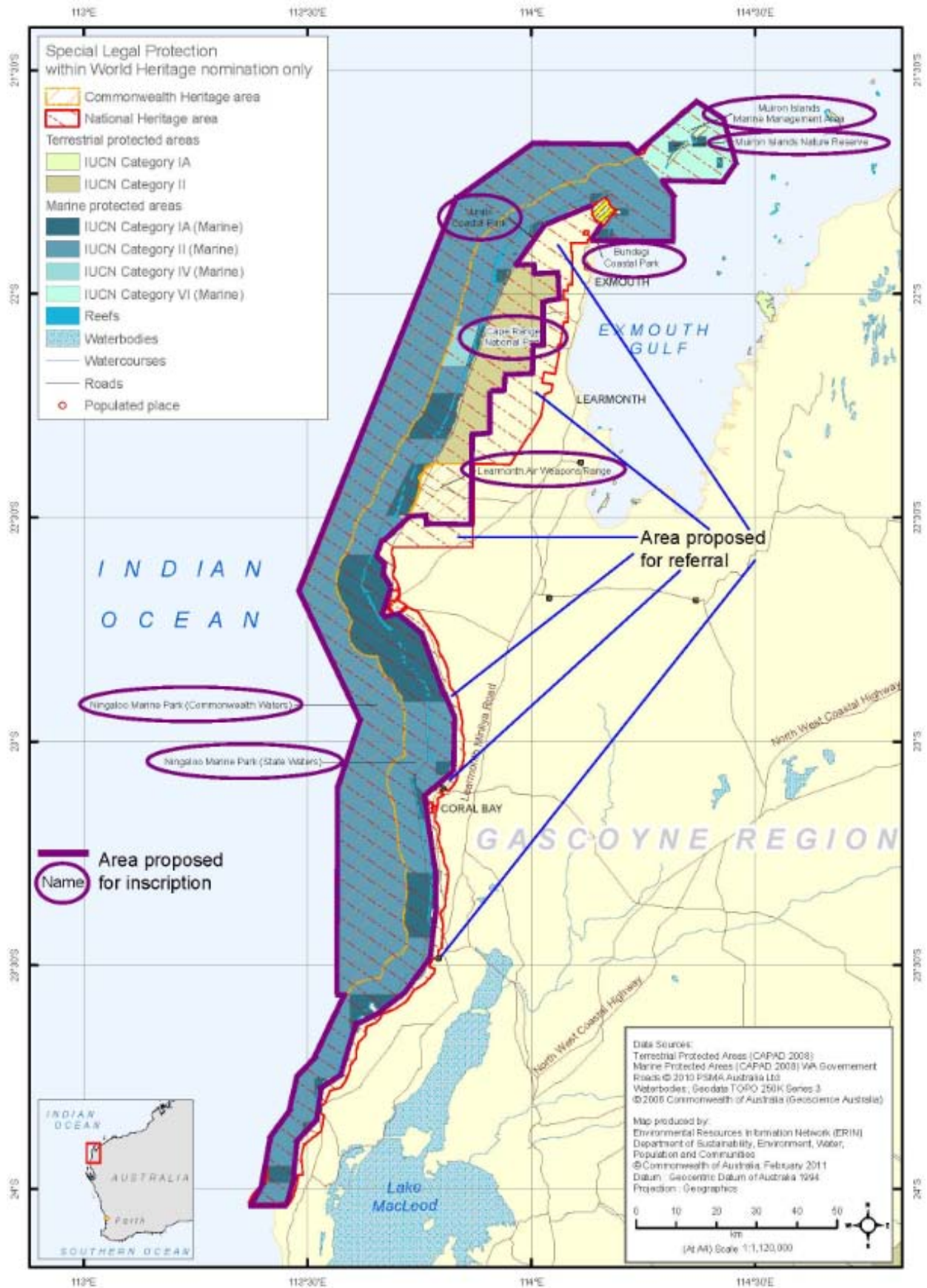
- e) consider a re-nomination of the property under criterion (ix);
- f) consider inclusion of the Exmouth Gulf on the grounds of ecological linkages between the Ningaloo Reef and the gulf, in particular the extensive mangrove stands and other shallow water habitats that function as nurseries and adult foraging grounds for many species;

7. Notes with appreciation the assurance of the State Party that the inscription of the property on the World Heritage List will have no impact on the status of leasehold land, or indigenous title claims related to the property and adjacent areas.

Map 1: Ningaloo Coast nomination as submitted by the State Party



**Map 2:** Recommended area for inscription and recommended area for referral.



**Footnote:** This map has been annotated by IUCN based on the map of the nominated property submitted by the State Party, in order to indicate the area IUCN considers can be recommended for inscription, and the area IUCN recommends for referral. The boundary of the area proposed for inscription includes elements detailed in paragraph 2 of the draft decision for the property. The boundaries of the area recommended for inscription are clearly marked in the large scale maps included in the nomination as submitted by the State Party, and have been verified between IUCN and the World Heritage Centre.