



COTERRA
ENVIRONMENT

Environmental Summary Report

Ningaloo Reef Resort

Rev 1

July 2023



CALIBRE | COMMITMENT | COLLABORATION

This report was prepared by: Coterra Pty Ltd trading as COTERRA ENVIRONMENT
ABN: ABN: 92 143 411 456
Our Ref: RACNIN02
Author(s): W. Oversby
Reviewer: K. Watts
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This report was prepared for:
Jaco Laurens
The Royal Automobile Club of WA (Inc)
832 Wellington Street
West Perth, WA 6005

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1 Introduction

1.1 Background

The Royal Automobile Club of WA (RAC) are currently progressing the redevelopment and expansion of the Ningaloo Reef Resort in Coral Bay, Western Australia (the proposal). The proposal is located across Lots 1 (no. 14), 54 (no. 6) and 68 (no. 2) Robinson Street, Coral Bay, covering approximately 2.39 hectares (Figure 1).

The proposal involves the construction of additional facilities for the resort including visitor accommodation, a pool, clubhouse and reception, and additional supporting infrastructure available to the broader Coral Bay community, such as additional parking bays to facilitate beach access, and electric vehicle charging stations (Appendix 1).

The proposal will necessitate minor clearing of native vegetation on Lots 54 and 68, only.

1.2 Existing Land Use and Previous Approvals

Originally a part of Cardabia Station, the site was initially cleared for development in the 1960's. While initially only a small cluster of buildings were constructed on Lot 1, further native vegetation was cleared in the 1980's to facilitate development of the broader townsite (Landgate 2023). It is understood that the buildings currently comprising the Ningaloo Reef Resort are the same as those constructed in the 1960's.

Each lot is zoned as Tourism under the Shire of Carnarvon Local Planning Scheme No. 13 (LPS).

The scheme amendment to rezone the site from Foreshore Protection Precinct to Tourism under the LPS was reviewed by the Environmental Protection Authority (EPA) in 2014 (ref:14-868058). The scheme was determined as not assessed - advice given - no appeals by the EPA, with the following environmental factors considered relevant:

- Flora and vegetation
- Terrestrial fauna
- Hydrological processes

The EPA was of the view that the potential environmental impacts of development in accordance with the scheme amendment can be adequately managed by the Ningaloo Coast Regional Strategy Carnarvon to Exmouth and (then) Draft Shire of Carnarvon Coral Bay Settlement Structure Plan and through the planning process.

The now finalised structure plan (Appendix 2) identifies tourism as the land use for each subject lot, and General Use Local Road as the land use for a portion of Lots 54 and 68.

The proposed development is therefore considered to be in accordance with the Structure Plan (Appendix 1).

1.3 Purpose of this Report

This report has been prepared to detail the site's environmental context, identify potential impacts and discuss the environmental design/management response to address these impacts. This report is intended for submission as part of the proposal's development application.

1.4 Relevant Guidance and Policies

1.4.1 State Planning Policy 2.6 – Coastal Planning

State Planning Policy 2.6 – Coastal Planning (SPP 2.6) guides decision making within the coastal zone throughout Western Australia, on matters such as management development and land use change, establishment of foreshore reserves, and to protect, conserve and enhance coastal values. The objectives of SPP 2.6 are to:

- Ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria
- Ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities
- Provide for public coastal foreshore reserves and access to them on the coast, and
- Protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance.

In the context of development applications within Coral Bay, SPP 2.6 requires that adequate coastal hazard risk management and adaptation planning should be undertaken by the responsible management authority and/or proponent where existing or proposed development or landholders are in an area at risk of being affected by coastal hazards over the planning timeframe. Coastal hazard risk management and adaptation planning should include as a minimum, a process that establishes the context vulnerability assessment, risk identification, analysis, evaluation, adaptation, funding arrangements, maintenance, monitoring and review, and communication and consultation.

To address coastal hazard risk management associated with the proposed development, a dedicated Coastal Hazard and Risk Management and Adaptation Plan (CHRMAP) has been prepared by MP Rogers (2023). The CHRMAP should be read in conjunction with this Environmental Summary Report.

1.4.2 State Planning Policy 3.7 - Planning in Bushfire Prone Areas

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7) and the associated Guidelines for Planning in Bushfire Prone Areas have been developed to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.

SPP 3.7 applies to all strategic planning, subdivision and development applications in bushfire prone areas, and aims to support development through an assessment of bushfire hazard. The aims of SPP 3.7 are to:

- Avoid increases in the threat of bushfire to people, property and infrastructure
- Reduce vulnerability to bushfire through identification and consideration of bushfire risks
- Ensure higher order strategic planning documents, proposals, subdivision and development applications take into account bushfire protection requirements
- Achieve an appropriate balance between bushfire risk management measures, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration to climate change.

The Guidelines for Planning in Bushfire Prone Areas (WAPC 2021) provides guidance on the implementation of SPP 3.7, and assist in:

- Determining appropriate land use planning in relation to bushfire prone areas across Western Australia
- Specifying the requirements to be met at each stage of the planning process
- Ensuring the necessary bushfire protection measures are incorporated into development.

1.4.3 State Planning Policy 6.3 - Ningaloo Coast

The proposed development lies within the area of State Planning Policy 6.3 - Ningaloo Coast (SPP 6.3).

The four key objectives of SPP 3.6 are:

- Provide state agencies, local government, community and proponents with clear guidance regarding acceptable and sustainable development on the Ningaloo coast.
- Maintain the Ningaloo coast as an all-seasons recreation and nature-based tourism destination and limit growth with managed stages development, to ensure that the community continues to enjoy a remote and natural experience.
- Preserve and protect the natural environment and enhance and rehabilitate degraded areas within the environment.
- Consolidate future residential, commercial, higher-impact tourism and industrial development in the towns of Carnarvon and Exmouth and provide strategic directions for their future growth.

In the context of development applications within Coral Bay, SPP 6.3 requires that the Western Australian Planning Commission (WAPC) and local government (Shire of Carnarvon) ensure that:

- No application will be approved within Coral Bay or the significant environmental areas which is inconsistent with this policy and the following components of the Ningaloo coast regional strategy Carnarvon to Exmouth –
 - Regional land use plan
 - Coastal tourism framework
 - Planning and environmental guidelines for sustainable tourism on the Ningaloo coast, and
 - Coral Bay Settlement Plan
- No applications for higher impact tourism, residential, commercial or industrial developments will be approved unless:
 - They are within the townsites of Carnarvon and Exmouth; and
 - Consistent with this policy and the relevant structure plan components of the Ningaloo coast regional strategy Carnarvon to Exmouth; and
 - Consistent with the applicable local planning strategy policies and objectives and town planning scheme.

2 Environmental context

2.1 Physical environment

2.1.1 Climate

The climate of Coral Bay is described as a ‘semi-desert bixeric’, with average rainfall in the 180 to 300mm per annum range, and both summer and winter rainfall peaks (Beard 1975, Beard 1980). The rainfall in summer months is a result of tropical cyclones that occur predominantly between January and March while the winter rains are from the south-west. Mean monthly rainfall data for Cardabia station (approximately 5 km north of Coral Bay and about 100 km south of Learmonth), shows similar rainfall patterns, but with significantly less cyclonic summer rainfall than Learmonth. The temperature range is large and the summer maxima are high in the Coral Bay region (BoM 2023).

2.1.2 Geomorphology and Land Systems

Coral Bay lies in a geological structure known as the Carnarvon Basin (Beard 1990). The Carnarvon Basin is a sedimentary basin lying north of the Perth Basin and separated from it by the Hardabut Fault (Beard 1975). The Carnarvon Basin, along with the Canning, Officer and Perth Basins, were intermittently beneath the sea from early Phanerozoic times until the end of the Cretaceous period 65 million years ago, since when they have been dry land (Beard 1990). The Carnarvon Basin contains a column of sediments from Silurian age to recent, estimated to be up to 4,500 metres thick.

Along the west coast from Carnarvon to the base of Cape Range, there is a substantial width (up to 4km) of recent dunes. Along most of these dunes, there is an additional width of sandhills and sandy country up to 16 km in width (Beard 1975). Coral Bay is located along this section of the coast, in the physiographic sub-unit referred to as Coastal Dunes. Topography and soils in this unit include coastal calcareous sands overlying aeolianite limestone and sand dunes overlying limestone with some areas of loose calcareous sands or red earthy sands and red and brown sands (Beard 1975).

In terms of land systems (as defined in Payne et al. 1987), Coral Bay occurs within the Coast land system, which is defined by a geomorphology of quaternary dune and beach deposits to lime sands over limestones. Coastal Dunes, mostly very long-walled parabolics and swales.

Elevation across the site ranges from approximately 5 m AHD in the north to approximately 8 m AHD in the south (DWER 2023).

2.2 Hydrology

Geotechnical investigations undertaken by Galt Geotechnics (2018) identified groundwater occurring at depths of between 3.2 and 4.4 m below ground level across the site. It was considered that this groundwater level corresponds to sea level, and may therefore be influenced by the tide.

The site is not located within or adjacent to a Public Drinking Water Source Area as mapped by the Department of Water and Environmental Regulation (DWER) (2023). The nearest Public Drinking Water Source Area is located approximately 1,195 metres to the south-east, and is a P1 area associated with the Coral Bay Water Reserve (DWER 2023).

One groundwater license is in effect across part of the site (No. 151681). The allocation for this license is 200,000 KL, expiring on the 23/12/2025 (DWER 2023).

There are no existing surface water features at the site. Major rainfall events currently discharge north of the site to Robinson Street, where it is collected by street kerbing (Pritchard Francis 2022).

2.3 Vegetation and flora

2.3.1 Pre-European Vegetation

At a national level, the Interim Biogeographic Regionalisation for Australia (IBRA) is a representation of Australia that categorises the continent into 89 bioregions of like climate, geology, landform, native vegetation and species. The site is located within the Cape Range sub-region (CAR01) of the Carnarvon bioregion (Thackway and Cresswell 1995).

Regional vegetation mapping originally undertaken by Beard (1975) defined boundaries by vegetation systems and associations. The site lies within the boundary of the Coastal Dunes 662 system association, which is described as a hummock grassland with scattered low trees over dwarf shrubs or mixed sort grass and spinifex (*Triodia*) mixed species. There is approximately 99.11% (278,627 ha) of this vegetation system association remaining within Western Australia (GoWA 2019).

2.3.2 Vegetation

Vegetation was mapped across the site and surrounding areas by Coterra Environment in August 2019 as part of a detailed vegetation and flora survey (Coterra 2019). Three distinct vegetation units were identified and mapped in the course of the survey, of which two were confirmed to occur within the site boundary (Figure 2). These vegetation types, their description and their extent within the site boundary are provided below in Table 1.

Table 1: Vegetation Units within the site (Coterra 2019)

Vegetation Unit	Description	Area within site (ha)
AsMm	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , (<i>Myoporum montanum</i>) open to closed scrub over <i>Rhagodia preissii</i> subsp. <i>obovata</i> scattered shrubs over * <i>Cenchrus ciliaris</i> open grassland (forms a grassland around the scrub). Associated species include <i>Acacia coriacea</i> subsp. <i>Coriacea</i> , <i>Stylobasium spathulatum</i> , <i>Abutilon cunninghamii</i> and <i>Threlkeldia diffusa</i> .	0.1 ha within Lot 54 only
AcAoRp	<i>Acacia coriacea</i> subsp. <i>coriacea</i> , <i>Alectryon oleifolius</i> subsp. <i>oleifolius</i> , <i>Acacia tetragonophylla</i> , <i>Rhagodia preissii</i> subsp. <i>obovata</i> open shrubland over <i>Roepera fruticulosa</i> , <i>Senna glutinosa</i> subsp. <i>chatelainiana</i> , <i>Scaevola tomentosa</i> , <i>Threlkeldia diffusa</i> scattered low shrubs over * <i>Cenchrus ciliaris</i> grassland.	0.02 ha within Lot 68 only

The condition of vegetation within the site was considered to be either Poor to Degraded or Poor to Good (Figure 3). The remaining area of the site was mapped as completely degraded, and is associated with the existing Ningaloo Reef Resort (Figure 2).

No conservation significant ecological communities were identified within or in proximity to the site (Coterra 2019).

2.3.3 Flora

To inform the detailed flora and vegetation survey (Coterra 2019), a desktop assessment for conservation significant flora was undertaken of the commonwealth's Protected Matters Search Tool, and the Department of Biodiversity Conservation and Attractions (DBCAs) Threatened and Priority Flora databases. Based on a

search buffer of 10 km, nine flora species of conservation significance were identified, of which one species is listed as threatened at the state and federal level, and the remaining are listed as Priority species at the state level only. Based on a review of habitat requirements, five Priority species were considered to have a moderate to high likelihood of occurrence within the survey areas (Coterra 2019).

While no conservation significant flora were identified within the site boundary, two Priority listed flora species were identified within proximity to the site (Figure 2). These flora are:

- *Acacia ryaniana* - Priority 2
- *Carpobrotus sp. Thevenard Island* - Priority 3.

In Western Australia, flora species that do not meet survey criteria for threatened species listing, are otherwise data deficient, or have recently been removed from threatened species listing, are listed as Priority flora by DBCA.

2.4 Fauna and habitat

The terrestrial vertebrate fauna assemblage at the site was assessed by Western Ecological in April 2019 as part of a level 1 fauna survey (Western Ecological 2019). To initially inform the survey, a desktop review was undertaken utilizing DBCAs Naturemap database, and the Commonwealth's Protected Matters Search Tool. Within a 10 km buffer, 50 species of conservation significant terrestrial vertebrate fauna were identified, including one mammal species and 49 bird species.

An additional four species of conservation significant marine turtle were identified as potentially occurring within the desktop review's 10 km buffer. Based on the known presence of rocky shoreline in proximity to the site, it was considered that this portion of the coast would not be suitable as a nesting site for marine turtles (Western Ecological 2019).

To determine the likelihood of faunal presence, habitat mapping was undertaken of the site and surrounding areas. These fauna habitats were then assessed for their potential to support species of conservation significance and the quality of habitat they provide to a wider suite of fauna. The majority of the site was mapped as 'cleared' fauna habitat, with only a negligible area within the site (in the south of Lot 1) being mapped as a 'dune' habitat type (Figure 4; Western Ecological 2019). It should be noted the area of dune habitat within Lot 1 was mapped as being in a completely degraded condition as part of the flora and vegetation survey (Coterra 2019; Figure 3).

Based on a review of the available habitat, a total of two conservation significant fauna were considered to have the likely potential to occur within the site. These are:

- *Apus pacificus* (Fork tailed Swift) – Listed as Migratory / Marine at the State and Federal level
- *Hirundo rustica* (Barn Swallow) – Listed as Migratory / Marine at the State and Federal level

The Fork-tailed Swift is an almost exclusively aerial species, which does not breed in Australia. The Barn Swallow is an internationally widespread species inhabiting much of the northern hemisphere, visiting northern Australia south to Learmonth and appearing as a vagrant further south. Neither species is listed as Threatened at the State or Federal level. While neither species was recorded in the course of the field survey, one additional conservation species was identified; *Merops ornatus* (Rainbow Bee-eater) (Western Ecological 2019). This species is listed as Marine under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), however the Department of Climate Change Energy, the Environment and Water (DCCEE; 2023) states that the species is not globally threatened, has a wide distribution throughout Australia and eastern Indonesia, and is estimated to have a reasonably large population. Further, the only identified threat to the species is considered to be the introduced Cane Toad.

2.5 Bushfire risk

The site is located in a bushfire prone area, as mapped by the Department of Fire and Emergency Services (DFES) (Landgate 2023). These areas are defined as being subject to, or likely to be subject to, bushfire attack, and are identified by the presence of and proximity to bush fire prone vegetation and includes both the area containing the bush fire prone vegetation and a 100 m buffer zone immediately surrounding it.

To address the risk of bushfire to the development proposal, a dedicated Bushfire Management Plan (BMP) has been developed by Emerge Associates (Emerge 2023). This BMP is being submitted in support of the development application, and should be read in conjunction with this Environmental Summary Report.

2.6 Local Natural Areas and Conservation Areas

The site is located adjacent to Lot 501, which is currently zoned as Foreshore Reserve under the LPS. This reserve extends north to include Lot 45 on the opposite side of Robinson Street, encompassing land vested with the Conservation and Parks Commission of Western Australia, and managed on the commission's behalf by DBCA (Unnamed reserve; R 37500). While Lot 501 is currently zoned Foreshore Reserve, parts of the Lot have been identified in the approved Coral Bay Settlement Structure Plan as Local Roads – General Use.

The marine environment surrounding Coral Bay forms part of the Ningaloo World Heritage Area, a World Heritage Listing covering 604,500 ha of the marine environment, spanning 300 km along the Western Australian Coast. The Ningaloo World Heritage Area was inscribed in 2011 under the following two natural World Heritage Outstanding Universal Value criteria:

- Containing areas of incredible natural beauty
- Containing the most important and significant natural habitats for in situ conservation of biological diversity.

While the Ningaloo World Heritage Area encompasses a number of marine parks and reserves, the coastal area around Coral Bay comprises the Ningaloo Marine Park, a Class A reserve vested with the Conservation and Parks Commission and managed on the commission's behalf by DBCA. It is understood that both the Ningaloo World Heritage Area and Ningaloo Marine Park are applicable to the marine environment only, and do not intersect any terrestrial areas. These conservation areas are separated from the site by approximately 50 m of roadway, remnant vegetation and beach land at the narrowest point.

The Ningaloo World Heritage Area forms the basis for an Environmentally Sensitive Area (ESA), which was declared by the Minister for Environment in *Environmental protection (Environmentally Sensitive Areas) Notice 2005*. ESAs are only applicable in the context of clearing native vegetation, where the exemptions for clearing vegetation under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* do not apply. The site is separated from the Ningaloo World Heritage Area ESA by approximately 40 m of roadway and remnant vegetation at the narrowest point.

2.7 Contamination

A search of the Department of Water and Environmental Regulation (DWER) Contaminated Sites Database (2023) did not identify the presence of known contaminated sites within or immediately surrounding the site. The nearest potentially contaminated site is located approximately 0.6 km north-east of the site, and is associated with a pond based sewage treatment facility. The site is mapped as being Remediated for restricted use.

A review of potential contamination within the site has not been undertaken as part of this Environmental Summary Report.

2.8 Heritage

2.8.1 Aboriginal heritage

Based on a search of the Department of Planning, Lands and Heritage (DPLH) Aboriginal Heritage Inquiry System, there are no known Registered Sites or other Aboriginal Heritage Places within the site boundary. The nearest Registered Site is located approximately 500 m east of the development, and is listed as Artefacts / Scatter, Midden / Scatter (Place ID 6616) (Figure 5).

The following two surveys are known to have been undertaken within proximity to the site. The boundaries of these surveys are illustrated in Figure 5.

- Veth, P. & Wright, G. (1989). Report of an Archaeological and Ethnographic Survey of the Coral Bay Access Road, North West Australia
- Morse, K. (No Date). Preliminary Report of a Survey for Aboriginal Archaeological Sites in the Cape Range National Park, North West Cape, Western Australia.

While a review of these survey reports was outside the scope of this Environmental Summary Report, their undertaking suggests that Aboriginal cultural heritage within the Coral Bay area is relatively well understood.

The *Aboriginal Cultural Heritage Act 2021* (ACH Act) is scheduled to come into effect on 1 July 2023. For activities necessitating ground disturbance, the ACH Act requires a Due Diligence Assessment to be carried out for all but exempt activities in accordance with the ACH Act Management Code, to assess the potential risk of harm to Aboriginal Cultural Heritage. While no aboriginal cultural heritage has been identified within or in proximity to the development, a Due Diligence Assessment will be undertaken prior to ground disturbing activities commencing.

2.8.2 Other heritage

A review of the State Heritage Office's InHerit database identified the presence of one non-aboriginal heritage place within Lot 54 (French's Shack; Place No: 25560). While French's Shack is listed on the Shire of Carnarvon's Municipal Inventory, research undertaken by Element (2022) indicates that the building on Lot 54 is actually another structure built in 1975, and which is not heritage listed. Subsequent correspondence with the Shire of Carnarvon has confirmed that the location of French's Shack has been mis-identified, and that there are no non-aboriginal heritage places within Lot 54.

The nearest known non-aboriginal heritage site is Maud's Landing, located approximately 3 km north of Coral Bay (Place Number 04230). Maud's Landing is listed on the Shire of Carnarvon's municipal inventory.

No other heritage places are within or in proximity to the proposed development.

3 Potential Impacts and Environmental Response

3.1 Hydrological Processes

3.1.1 Potential Impacts

Uncontrolled stormwater run-off and wastewater has the potential to impact the marine environment. The site may also be impacted by coastal processes.

3.1.2 Proposed Management

Geotechnical investigations undertaken for the site identified subsurface conditions conducive to on-site disposal of stormwater utilising soak wells and storage basins (Galt Geotechnics 2018). In consulting with the Shire of Carnarvon on the proposed stormwater treatment, it was confirmed that a strategy consistent with the approved Shire of Exmouth District Water Management Strategy (DWMS; Cardno 2012) would be appropriate to mitigate impacts on hydrological processes. Namely, that the first 15 mm rainfall event (equating to a 2 year 15 minute storm event) is to be detained on-site via localised swales or basins throughout the development site, which will be integrated into the landscape design (Appendix 1). Stormwater runoff in excess of the 15mm rainfall event is to be provided with an overland flow path to Robinson Street road reserve to the north, which is consistent with existing, pre-development flows.

The proposed development will be connected to the existing Coral Bay sewerage network, which will remove wastewater generated on-site for treatment at the recently upgraded Coral Bay wastewater treatment facility. It is understood that the 2022 upgrades have allowed the facility to receive an extra 45,000 litres of wastewater daily, to cater for the growing local tourism industry (Water Corporation 2022).

To address coastal hazard risk management associated with the proposed development, a dedicated CHRMAP has been prepared by MP Rogers (2023). The coastal hazard risk assessment undertaken for the site as part of the CHRMAP determined that the proximal coastal environment is relatively stable, despite 15 significant cyclones having occurred within the previous 52 years of documentation. Notwithstanding, it is acknowledged that there is a risk of coastal hazards adversely impacting the site. While RAC consider this risk to the development as being of an acceptable level, an As Low As Reasonably Practical (ALARP) approach has been adopted for the planning and design to reduce the extent of impacts should a severe event occur. From an environmental perspective, this approach includes:

- Locating key service lines as far landward as possible to reduce the potential for exposure to coastal hazards
- Storing all hazardous materials at or above a level of 4.9 m AHD to reduce the risk of environmental damage should inundation occur
- Development of a coastal hazard response plan that outlines steps to be taken by staff pre and post coastal
- Monitoring of the shoreline to provide an early indication of shoreline change that can be used to prompt adaptation measures, such as the managed retreat or removal of certain assets.

Implementation of these strategies will ensure that the social and environmental values of the area are maintained (MP Rogers 2023). The CHRMAP should be read in conjunction with this Environmental Summary Report.

Based on the above stormwater, wastewater and coastal management strategies, potential impacts to hydrological processes and the associated marine environment are anticipated to be appropriately mitigated.

3.2 Vegetation and Flora

3.2.1 Potential Impacts

Implementation of the proposed development will necessitate the clearing of approximately 0.1 ha of the AsMm vegetation type (confined to Lot 54) and approximately 0.02 ha of the AcAoRp vegetation type (confined to Lot 68). Construction activities have the potential to cause indirect impacts to adjacent, retained vegetation and priority flora, via dust emissions only.

3.2.2 Proposed Management

No conservation significant vegetation or flora will be cleared to facilitate the proposed development. Clearing boundaries will be clearly demarcated to ensure that proximal priority flora are not incidentally cleared. Potential indirect impacts to these flora during the course of construction will be minimised as far as practicable through the implementation of dust minimisation strategies, which may include water carts being available for use on-site, works being limited to times of lesser wind conditions, and the temporary installation of perimeter fencing.

There are not anticipated to be any significant impacts to flora and vegetation as a result of the proposed development, on this basis. Should no exemption from a Native Vegetation Clearing Permit (NVCP) apply to the proposed development, then a NVCP application will be submitted to DWER prior to clearing and construction works commencing.

3.3 Fauna

3.3.1 Potential Impacts

No conservation significant fauna species are anticipated to be impacted by the proposed development, given the absence of threatened and priority fauna species, and the paucity of fauna habitat within the development site. The clearing of approximately 0.12 ha of native vegetation may result in the removal of habitat for non-conservation significant fauna.

3.3.2 Proposed Management

Impacts to fauna are anticipated to be limited the removal of 0.12 ha of native vegetation, which may provide habitat to non-conservation significant fauna. Directional clearing is proposed to be employed to ensure that any fauna inhabiting this area move into adjacent native vegetation, as a result of machinery noise. Notwithstanding, should injured, abandoned or distressed fauna be found on-site, then the DBCA Wildcare helpline will be contacted for expert advice on appropriate treatment.

Noting the unsuitability of the proximal coastline for nesting by marine turtles (Western Ecological 2019), the installation of lighting associated with the proposed development is not anticipated to have a significant impact on marine fauna or fauna habitat.

Based on the above, there are not anticipated to be significant impacts to fauna as a result of the proposed development.

3.4 Other matters

Implementation of the proposed development will necessitate the demolition of one existing structure on Lot 54. Noting the potential for contaminants within the structure, a Hazardous Materials (HAZMAT) assessment will be undertaken prior to demolition commencing. Appropriate management will be implemented through the course of subsequent demolition works, as per the recommendations of the assessment.



No known aboriginal or non-aboriginal heritage sites will be impacted by the proposed development. A Due Diligence Assessment in accordance with relevant guidelines under the ACH Act will be undertaken prior to ground-disturbing activities commencing, to ensure no impacts to yet unidentified aboriginal cultural heritage occur.

4 Conclusion

The site is predominately cleared, with only 0.12 ha of native vegetation remaining within Lot 54 and Lot 68, which is not considered to be conservation significant. Implementation of the proposal is considered to be consistent with both the Ningaloo Coast Regional Strategy Carnarvon to Exmouth and Shire of Carnarvon Coral Bay Settlement Structure Plan.

Hydrological impacts to the marine environment will be mitigated by detaining the first 15 mm from rainfall on-site. Post development surface water flow across the site will be the same as pre-development surface water flow. Sewerage will be connected to the existing town network and treated off site.

The proximal coastal environment is considered to be relatively stable. Implementation of the CHRMAP will ensure that the social and environmental values of the area are maintained.

Potential impacts to flora and vegetation are not considered to be significant. Indirect impacts to adjacent, retained vegetation will be mitigated through the implementation of dust minimisation strategies, as well as the clear demarcation of clearing areas.

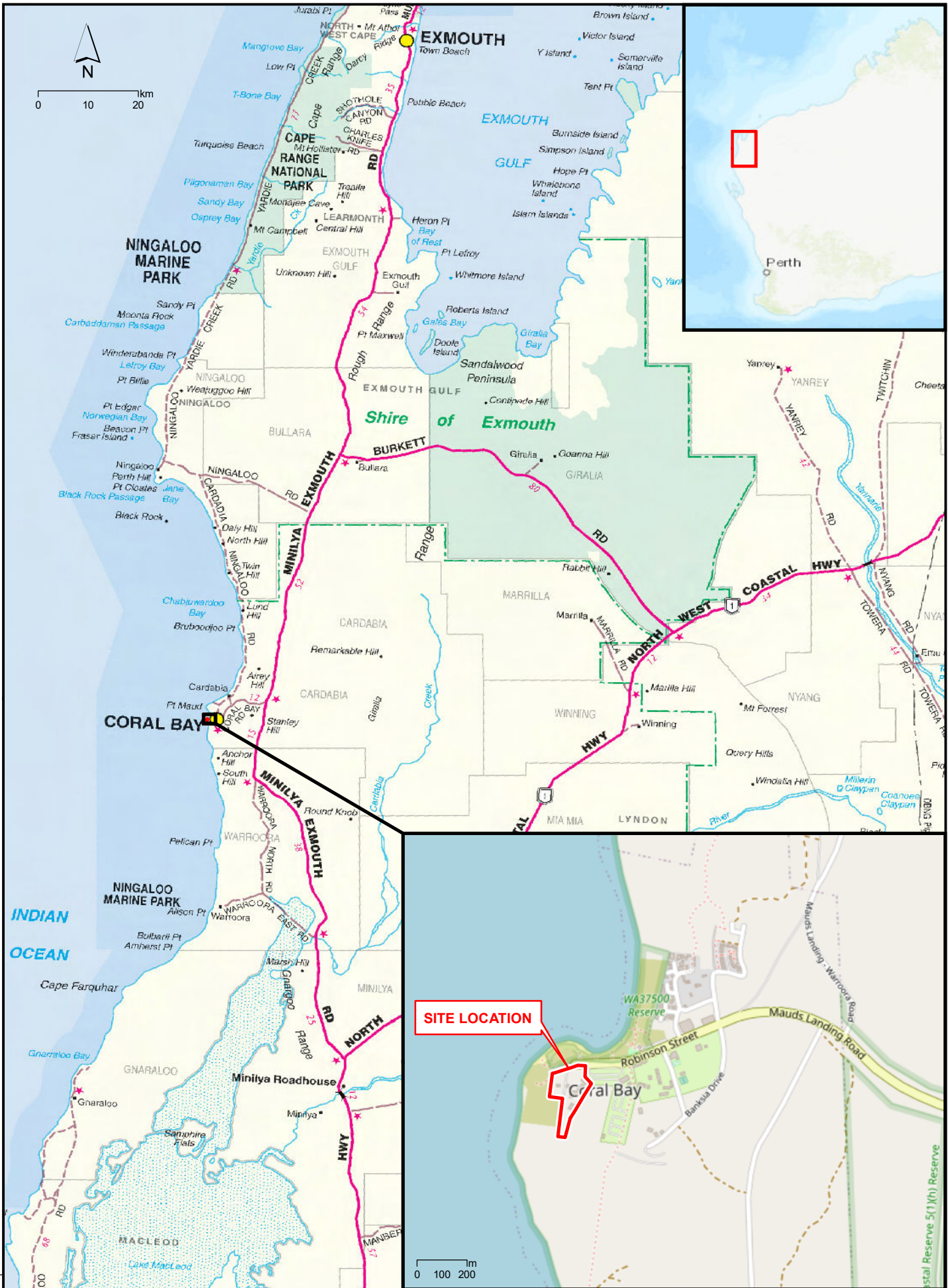
No conservation significant fauna are anticipated to be impacted as a result of the proposed development. Any resident fauna are expected to move away from works areas as a result of machinery noise.

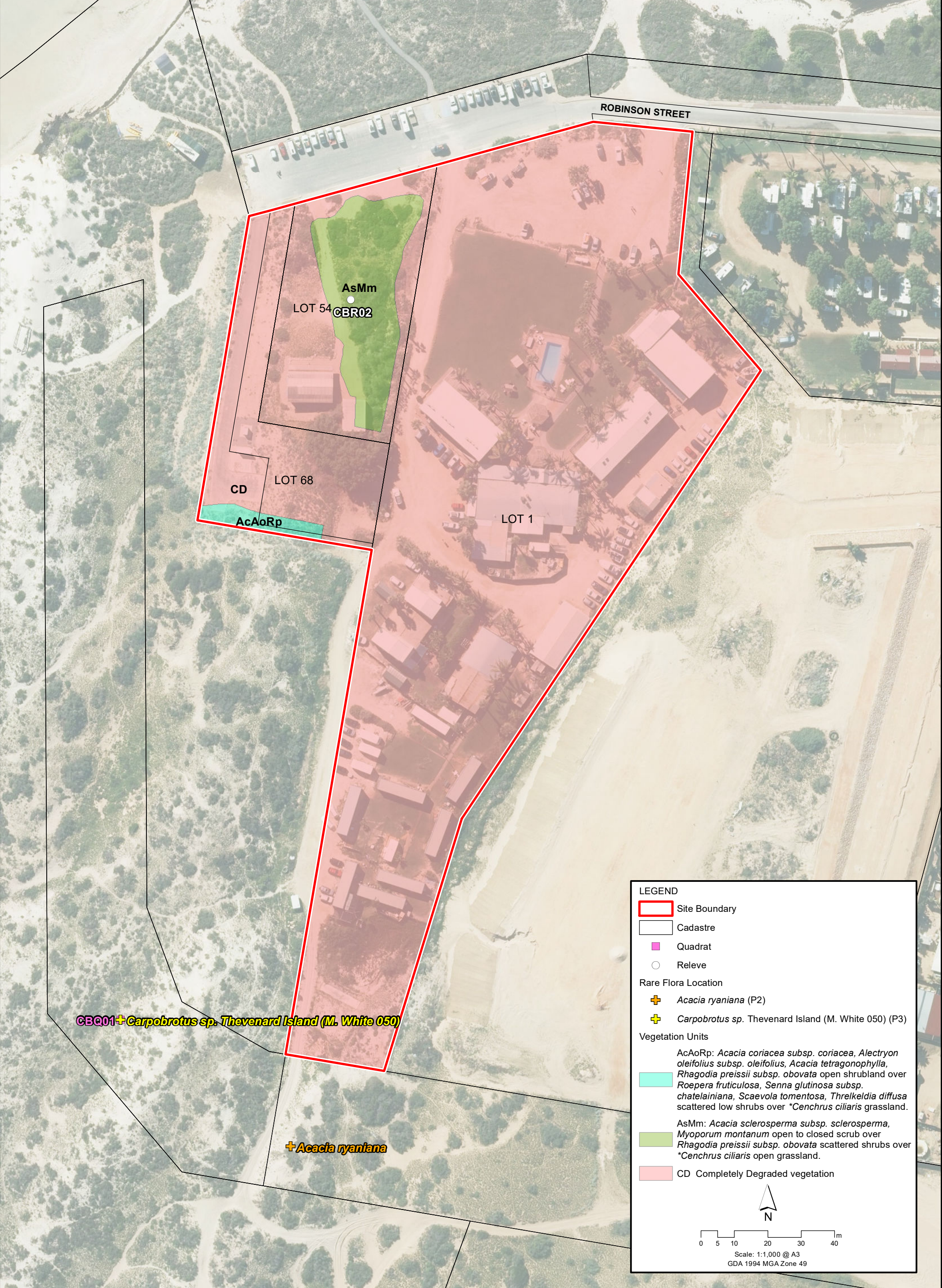
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5 References

- Beard, J. S. (1975). *Vegetation survey of Western Australia: Pilbara. 1:1 000000 Vegetation Series*. The Vegetation of the Pilbara Area. University of Western Australia Press.
- Beard, J. S. (1990). *Plant Life of Western Australia*. 2nd Edtn (2015). Eds George, A. S. and Gibson, N. Rosenberg Publishing PL.
- Bureau of Meteorology (BoM) (2023). Bureau of Meteorology, Australian Government website ‘Climate Data Online’, <http://www.bom.gov.au/jsp/ncc/cdio/weatherData/>.
- Cardno (2012). District Water Management Strategy – Shire of Exmouth. Published report prepared for the Shire of Exmouth.
- Coterra Environment (2019). *Detailed Vegetation and Flora Survey: Coral Bay Sites*. Unpublished report prepared for RAC.
- Department of Climate Change, Energy, the Environment, and Water (DCCEEW) (2023). *Species Profile and Threats Database: Merops ornatus – Rainbow Bee-eater*. Available online via: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=670
- Department of Water and Environmental Regulation (DWER) (2023). *Perth Groundwater Map*. Available online via: <https://maps.water.wa.gov.au/Groundwater/>
- Department of Water and Environmental Regulation (DWER) (2023). Contaminated Sites Database. Available online via <https://dow.maps.arcgis.com/apps/webappviewer/index.html?id=c2ecb74291ae4da2ac32c441819c6d47>
- Element (2022). *Planning Due Diligence Report: Land Parcels Adjacent to the Ningaloo Reef Resort Robinson Street, Coral Bay*. Unpublished report prepared for RAC Tourism Assets Pty Ltd.
- Galt Geotechnics (Galt) (2018). *Geotechnical Study – Ningaloo Reef Resort Redevelopment – Lots 1 and 54 Robinson Street, Coral Bay*. Unpublished report prepared for Pritchard Francis.
- Government of Western Australia (GoWA) (2019). *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth.
- Landgate (2023). Map Viewer Plus. [Online]. Available at: <https://map-viewerplus.app.landgate.wa.gov.au/index.html>. Government of Western Australia, Perth, Western Australia. Accessed on 06 June 2023.
- MP Rogers (2023). *Coastal Hazard Risk Management and Adaptation Plan*. Unpublished report prepared for RAC.
- Pritchard Francis (2022). Personal communications.
- Thackway and Cresswell, 1995). *An Interim Biogeographical Regionalisation for Australia: a Framework for Setting Priorities in the National Reserves System Cooperative Program*. Australian Nature Conservation Agency, Canberra, ACT.
- Water Corporation (2022). *Media Release: \$2.4 million wastewater project delivered to support growing tourism industry in Coral Bay*. Available online via: <https://www.watercorporation.com.au/About-us/Media-releases/2022/July-2022/Coral-Bay-wastewater-upgrades>
- Western Ecological (2019). *Fauna Assessment at Coral Bay for RAC Parks and Resorts*. Unpublished report prepared for RAC.

Figures





LEGEND


- Site Boundary
- Cadastre
- Quadrat
- Releve

Rare Flora Location

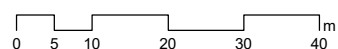
- + *Acacia ryaniana* (P2)
- + *Carpobrotus sp.* Thevenard Island (M. White 050) (P3)

Vegetation Units

- AcAoRp: *Acacia coriacea* subsp. *coriacea*, *Alectryon oleifolius* subsp. *oleifolius*, *Acacia tetragonophylla*, *Rhagodia preissii* subsp. *obovata* open shrubland over *Roepera fruticulosa*, *Senna glutinosa* subsp. *chatelainiana*, *Scaevola tomentosa*, *Threlkeldia diffusa* scattered low shrubs over **Cenchrus ciliaris* grassland.
- AsMm: *Acacia sclerosperma* subsp. *sclerosperma*, *Myoporum montanum* open to closed scrub over *Rhagodia preissii* subsp. *obovata* scattered shrubs over **Cenchrus ciliaris* open grassland.
- CD Completely Degraded vegetation

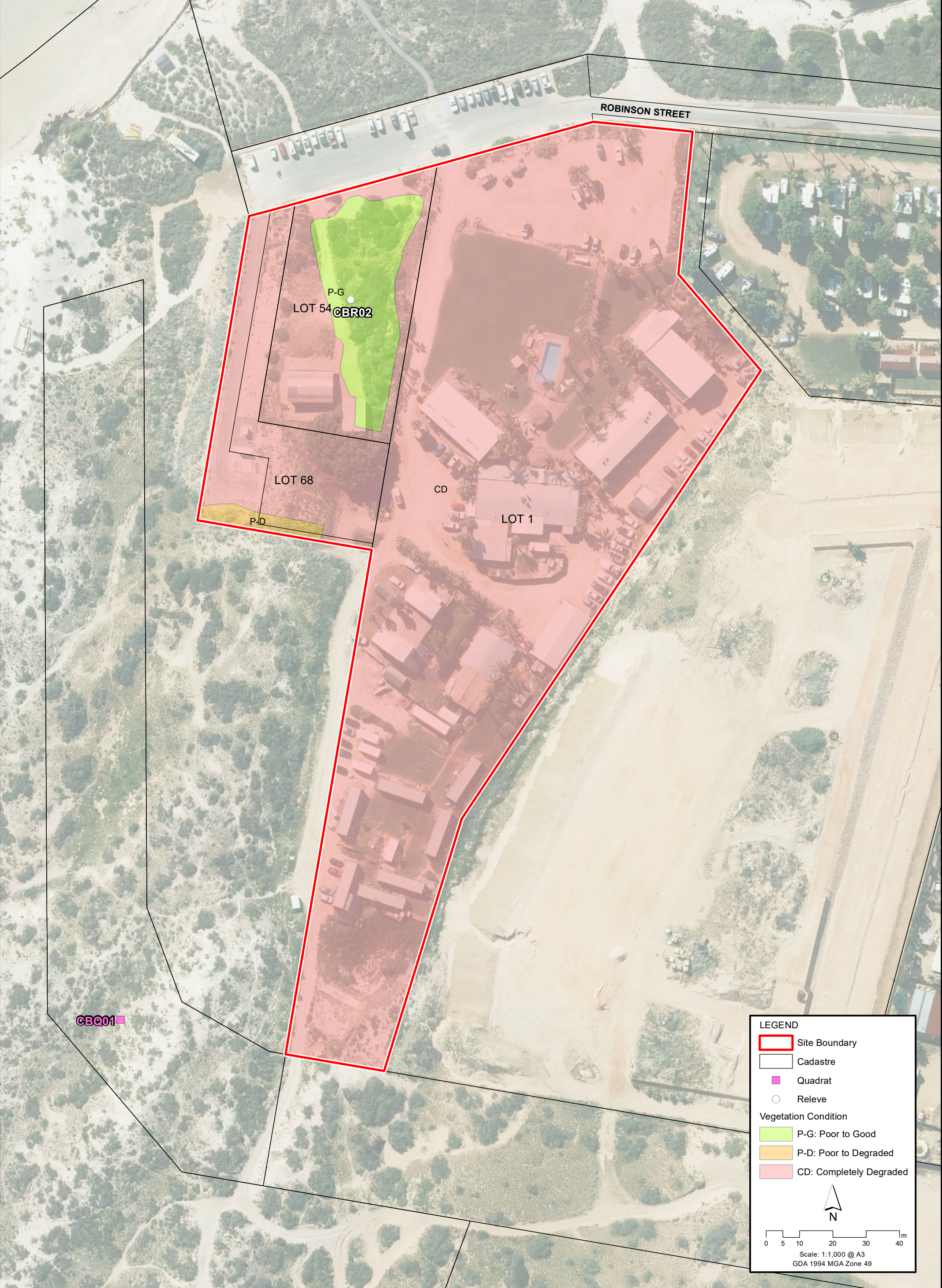


N



0 5 10 20 30 40 m

Scale: 1:1,000 @ A3
GDA 1994 MGA Zone 49



LEGEND

- Site Boundary
- Cadastre
- Quadrat
- Releve

Vegetation Condition

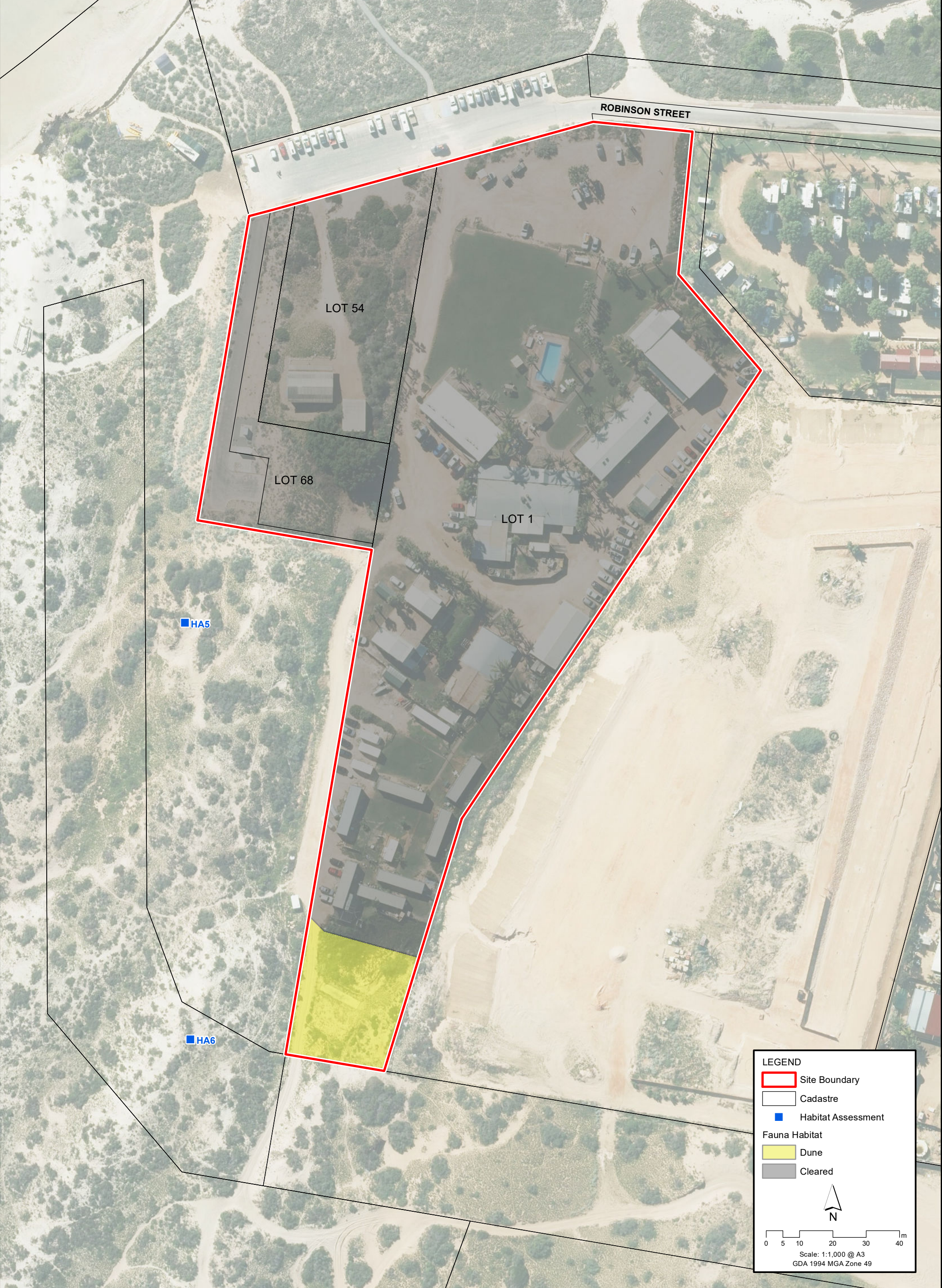
- P-G: Poor to Good
- P-D: Poor to Degraded
- CD: Completely Degraded

N

0 5 10 20 30 40 m

Scale: 1:1,000 @ A3
GDA 1994 MGA Zone 49

Figure 3




LEGEND

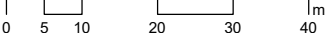
- Site Boundary
- Cadastre
- Habitat Assessment

Fauna Habitat

- Dune
- Cleared



N



0 5 10 20 30 40 m

Scale: 1:1,000 @ A3
GDA 1994 MGA Zone 49

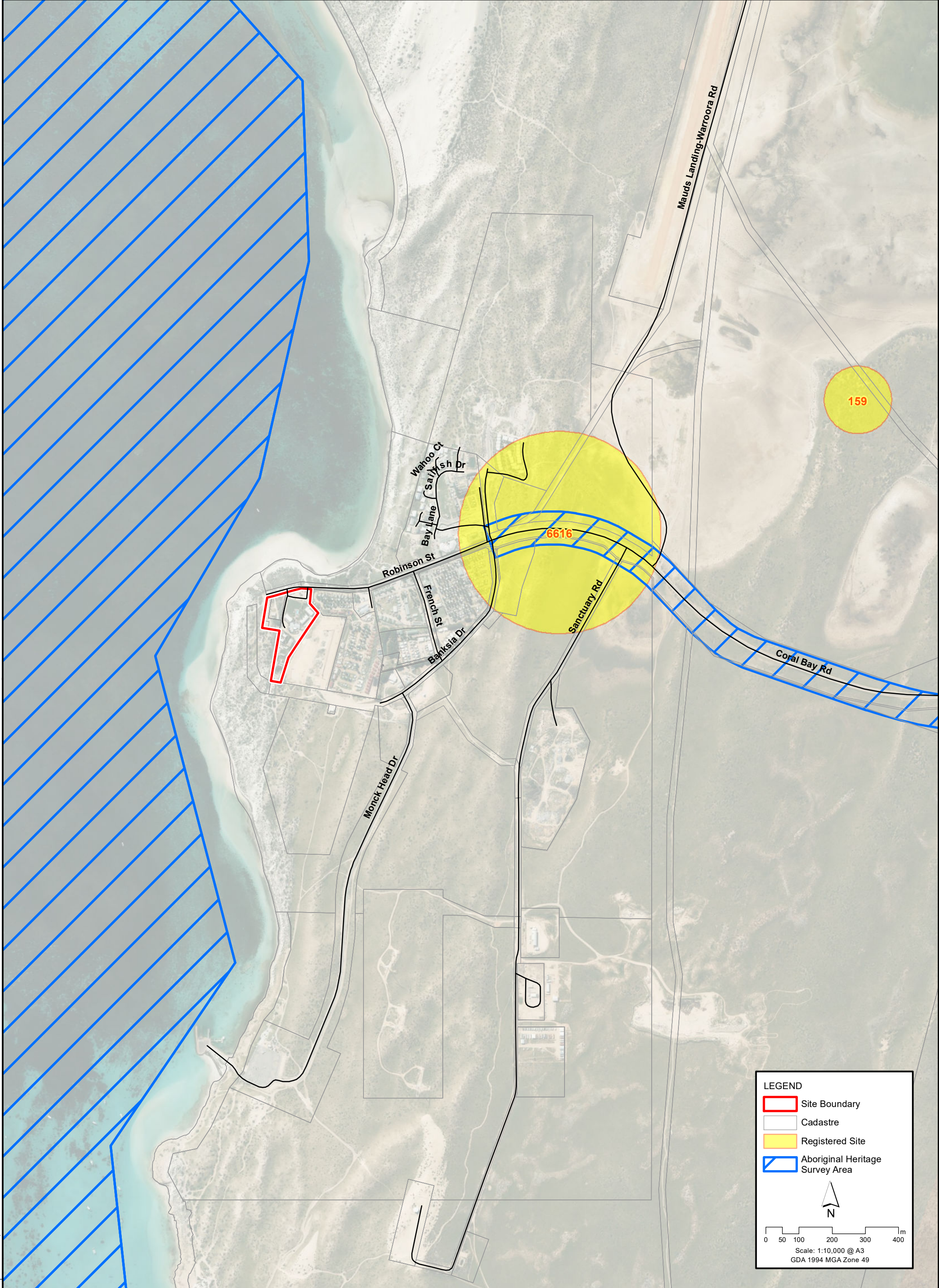
Source: Orthophoto - Open Source
Fauna - Western Ecological, 2019

COTERRA
ENVIRONMENT

Job: RACNIN02
Doc: 004
Date: 20/07/2023
Ph: (08) 9381 5513
Fax: (08) 9381 5514
E: info@coterra.com.au

RAC Tourism Assets Pty Ltd
ENVIRONMENTAL SUMMARY REPORT
LOTS 1 & 54 ROBINSON STREET, CORAL BAY W.A.
FAUNA HABITAT

Figure 4



LEGEND

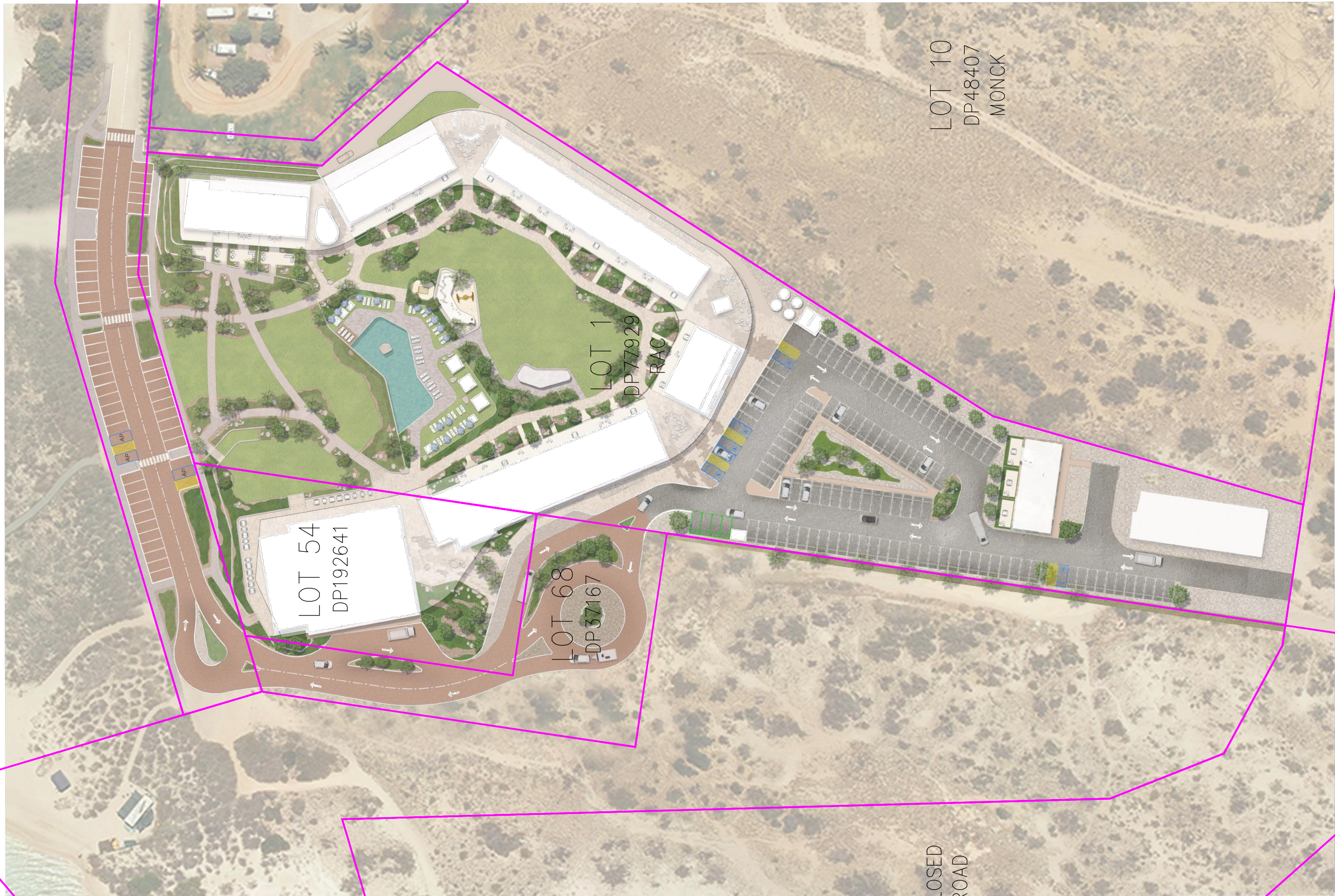
- Site Boundary
- Cadastre
- Registered Site
- Aboriginal Heritage Survey Area

N

0 50 100 200 300 400
m

Scale: 1:10,000 @ A3
GDA 1994 MGA Zone 49

Appendix 1 Development Plan



LOT 10
DP48407
MONCK

LOT 1
DP77929
RAC

LOT 54
DP192641

LOT 68
DP37167

CLOSED
ROAD

Appendix 2 Shire of Carnarvon Coral Bay Settlement Structure Plan

