Lindeman Great Barrier Reef Resort project

Coordinator-General's evaluation report on the environmental impact statement

March 2018

Queensland Government

The Department of State Development, Manufacturing, Infrastructure and Planning

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Department of State Development, Manufacturing, Infrastructure and Planning
PO Box 15009 City East, Queensland 4002.
1 William Street Brisbane Qld 4000 (Australia)

Phone: 13QGOV (137468)
Fax: 07 3220 6465
Email: info@dsd.qld.gov.au
Web: www.statedevelopment.qld.gov.au

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Synopsis

This report evaluates the potential impacts of the Lindeman Great Barrier Reef Resort project (the project). It has been prepared in accordance with section 34D of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act).

The proponent, White Horse Australia Lindeman Pty Ltd, proposes to redevelop the existing Lindeman Island resort and revitalise it after the resort experienced considerable damage from Cyclone Yasi in 2011, resulting in its closure.

White Horse Australia proposes to develop a leading example of an island resort at an international level which sets new standards for integrated resort design. The project will provide a variety of accommodation options such as beach, spa and eco-villas, an ecotourism education centre, restaurants, bars, a night club, conference centre and supporting amenities. In terms of accommodation, the project will deliver 169 villas, 136 suites and 20 apartments.

The project is located on Lindeman Island in the Great Barrier Reef, 35 km south-east of Shute Harbour and approximately 13 km south-east of Hamilton Island. The project would require capital expenditure of $583 million. Key project benefits include:

- restoring a key tourism facility to operational status
- promoting economic growth and providing local employment opportunities
- generating 203,670 visitors per year to the island, or 558 visitors per day
- adding $480M during construction to the Mackay region's Gross Regional Product (GRP) and $620M to the state's Gross State Product (GSP) over the three-and-a-half-year construction period
- adding $100M to the Mackay region's GRP annually during operations
- generating employment of 300 direct full-time equivalent (FTE) jobs on average during construction, and 300 FTE persons on average during operations on the island

In addition to generating economic opportunities, the project will have other benefits, including the following:

- generating a net benefit to the Great Barrier Reef in line with the Australian Government's Reef 2050 Long-Term Sustainability Plan – through improved water quality and new wastewater capture and reuse systems
- no discharge from Lindeman Island's wastewater, sewerage or desalination plant to the marine environment, with salt and biosolids to be disposed at a mainland licensed facility
- renewable energy to power the project through solar generation and large-scale battery storage
- previously disturbed areas and degraded habitats will be revegetated and restored with non-invasive and local species
- all water requirements for the project to be supplied from onsite, and water to be recycled and reused (for example, Class A+ recycled water to be used for golf course irrigation)

As a result of the environmental impact statement (EIS) process, the project:

- no longer proposes new development in the national park
- no longer required the revocation of over 35 hectares of national park
- will not directly impact on coral as construction of the once proposed safe harbour will not proceed
- no longer requires dredging.

In undertaking my evaluation, I have considered the draft EIS, revised draft EIS, issues raised in submissions during the public consultation period and advice I have received from relevant Commonwealth, state and local government agencies.

The following provides an overview of the main issues arising from my evaluation.

Land use

Lindeman Island was one of the first islands in the Whitsunday Island group to be used for tourism purposes. Since the 1920s a range of facilities have been constructed on the island including an airstrip, resort rooms, water supply dam and golf course. A jetty, boat-turning basin and boat channel were constructed in 1966. The resort and jetty were redeveloped in the 1980s and again by Club Med in 1992 when the existing 225-room resort was constructed.

Lindeman Island is around 637 ha in size. The project proposes to occupy around 139 ha of the island, equating to around 21 per cent of its total area. Of the project area, the disturbance footprint for the project is 69.23 ha, which includes 10.43 ha of remnant vegetation, or 15 per cent of the disturbance area.

The EIS confirms the project is consistent with the strategic intent of the Mackay Region Planning Scheme 2017 (planning scheme) which states that “Tourism development that maintains sensitive environmental and landscape character values is encouraged on Lindeman, Brampton and Keswick Islands” and anticipates ongoing tourism development on the island.

In line with the requirements of the *Planning Act 2016* (planning act), the proponent will apply for an approval to vary the planning scheme. The variation approval would contain additional site-specific planning provisions to those set out in the planning scheme.

To support the application, a draft Plan of Development (PoD) and development code have been included in the EIS. The PoD specifies matters such as development that is assessable or accepted, the level of assessment required for the different aspects of the project and assessment benchmarks that must be met.

The PoD also includes indicative master plans for the development and demonstrates how the project will conform with the Lindeman Great Barrier Reef Resort Code (the Lindeman Resort Code). The Lindeman Resort Code specifies performance outcomes and objectives for matters such as land uses, infrastructure, visual impacts, natural hazards and environmental management.

The PoD confirms how the development will meet the performance outcomes and objectives, for example, through the approaches of the project’s Environmental

Management Plan (EMP) which seeks to avoid, minimise, mitigate or manage environmental impacts; and design principles, including infrastructure to be built to withstand climatic conditions and ensure the development complements its natural setting.

As part of the EIS process, the PoD has been developed and refined in consultation with Mackay Regional Council (MRC) who advise that they support the proponent making an application. I am satisfied that for the purpose of a variation approval under the planning act, the EIS adequately describes the proposed land use characteristics of the project. The draft PoD and its Lindeman Resort Code provides sufficient detail for the assessment of all proposed stages of development and will ensure sustainable development outcomes.

Further, I am satisfied that state interests such as water quality, biodiversity and the coastal environment have been appropriately considered by the EIS and reflected in the PoD and that the project would comply with the relevant codes of the State Development Assessment Provisions (SDAP) that are designed to protect state interests.

To ensure that the environmental objectives of the PoD are met, I have stated conditions for the variation approval at Appendix 2. My conditions will ensure that, for example, the impacts of stormwater discharge and effluent disposal are appropriately managed from both environmental and public health perspectives.

Tenure

Tourism related development leases have supported resort operations on Lindeman Island since 1928.

The existing resort is situated on a perpetual lease of approximately 70 ha and an additional term (temporary) lease area over three lots of approximately 66 ha. The proposed resort buildings and infrastructure cover an area of 69.23 ha within the perpetual lease. The proposed project is consistent with the conditions of the perpetual lease that allow the proponent to maintain tourist accommodation of an acceptable standard and conduct a tourist resort.

The proposed golf course and water storage dam are located within the 66 ha term lease. The term lease, issued in 1989 for 30 years, has underlying tenure of national park and will expire in October 2019. The proponent will apply to the Department of Natural Resources Mines and Energy (DNRME) to extend the lease term. The conditions of the term lease permit the proponent to provide and operate a golf course and other associated facilities and services.

As a result of the EIS process, the proponent is no longer proposing revocation of over 35 ha of national park. The proposed revocation was an issue that was raised in many submissions on the EIS.

However, the proponent will seek revocation of a small area of land (0.101 ha) which currently supports Queensland Parks and Wildlife Services (QPWS) ranger's accommodation and is surrounded by the perpetual lease. This is supported by relevant advisory agencies, subject to the proponent entering into a deed of agreement

with QPWS which will ensure that staff are provided with accommodation within the resort.

I am satisfied that the proposed tenure arrangements are appropriate to allow the project to proceed, while protecting national park values and maintaining public access to the island. The proposed tenure arrangements are consistent with the existing arrangements and anticipated uses of the island.

I require the proponent to develop a tenure management plan for the project in consultation with QPWS, DNRME, the Department of Environment and Science (DES), the MRC and the Department of State Development, Manufacturing, Infrastructure and Planning to ensure that any outstanding tenure issues are resolved prior to the commencement of construction.

Marine and coastal impacts

In response to concerns raised during the EIS process about possible impacts on coral, the final EIS confirmed that the proposed safe harbour has been removed from the project's scope. Therefore, there will be no direct damage to coral, dredging of the seabed or construction of new breakwaters or revetments by the project.

Potential impacts on the marine and coastal environment are largely associated with the indirect effects of stormwater run-off, upgrades to existing infrastructure, increased use and visitation of natural areas and increased vessel movements.

I have stated conditions for the variation approval to be obtained from MRC requiring the proponent to manage impacts on fresh and marine waters, manage stormwater to ensure that environmental values are protected and ensure that sewage is treated and disposed of in accordance with all environmental standards, including the off-site disposal of biosolids.

The EIS confirms the project will construct an urban stormwater management system to standards which includes features such as pollutant traps, vegetated buffers, biofiltration swales and detention basins. The stormwater treatment system would ultimately improve stormwater quality run-off from the site.

The proponent has committed to developing a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that stormwater discharges and effluent do not significantly affect the environmental values of adjacent receiving waters or land. These plans will require regular and ongoing monitoring of water quality at key stages of treatment, for example, before releasing treated effluent to land. I have stated conditions for the variation approval from MRC to ensure that these commitments are met and that these matters are addressed to council's satisfaction.

In addition, I have recommended conditions for the Commonwealth Minister for the Environment and Energy which require the proponent to prepare a water quality monitoring program for approval which focuses on marine water quality within the Great Barrier Reef Marine Park. This program would identify appropriate water quality objectives for the site and how these thresholds will be met. The Water Quality

Monitoring Program (WQMP) will ensure the project will achieve a net water quality benefit to the marine environment, in line with the Reef 2050 Plan.

Water resources

Sewage treatment and effluent disposal

Construction and operation of the project will require the effective treatment and disposal of wastewater (including effluent) on the island. This was an issue of concern to advisory agencies both in submissions on the EIS and in ongoing consultation. Following consultation with advisory agencies with specific expertise relating to this issue, I am satisfied that the impacts of wastewater disposal can be satisfactorily managed.

The proponent has committed to implementing a range of mitigation and management measures as part of the project's environmental management plans to manage potential impacts to surface and groundwater resources. I have stated conditions for the variation approval from MRC to ensure that these commitments are met.

The project will require an environmental authority (EA) for sewage treatment and effluent disposal, which is an environmentally relevant activity (ERA 63 – Sewage Treatment) under the *Environmental Protection Act 1994* (The EP Act). The EA application will require the refinement of modelling presented in the EIS in consultation with DES. I have imposed a condition which sets out the specific information which must accompany the ERA 63 application. This will ensure a streamlined EA application process.

I am satisfied that the EIS investigations into wastewater collection, treatment, reuse and disposal, and the proponent's commitments and associated further approval processes under the EP Act are adequate to manage the potential impact of wastewater from the development.

Stormwater

The EIS indicates that the project will improve the quality of stormwater leaving the site by implementing a range of Water Sensitive Urban Design (WSUD) measures such as establishing bioretention gardens and basins, constructed wetlands, installation of litter baskets, porous pavements and use of proprietary stormwater treatment devices.

As discussed above, to ensure that any potential impacts of stormwater run-off on the marine environment are identified and managed, I have made a recommendation to the Commonwealth Minister for the Environment and Energy for a marine water quality monitoring program. This program will ensure a net water quality benefit to the marine environment, as required by the Reef 2050 Plan.

In addition, I have stated a condition requiring the stormwater system to comply with the Queensland Urban Drainage Manual and the planning scheme and policies. The condition also requires the avoidance of any contamination to ground or surface waters and that systems associated with stormwater be designed to maintain environmental values.

I am confident that the stormwater treatment proposed and modelling presented in the EIS shows that the project will meet water quality objectives and improve stormwater quality run-off from site. I am satisfied that the proponent's commitments, together with my recommendations and stated conditions for the project will ensure that the environmental values of waters surrounding Lindeman Island will be protected and improved.

Water supply and treatment

Raw water would be supplied to the revitalised resort from the existing Gap Creek Dam. To ensure adequate capacity to meet the projected demands of the development, a diversion which captures additional catchment area is proposed. The dam diversion would increase the dam capacity from 199.6ML to 207.3ML. I accept that these works are necessary to improve the reliability of the supply for the resort.

I note that a small number of staff currently reside on the island and rely on portable sewage treatment systems and there is no potable water supply. The current sewage treatment and water treatment systems are effectively decommissioned.

To ensure that the quality of potable water is maintained and reliable supply is delivered, the proponent has committed in the EIS to develop both a Drinking Water Quality Management Plan and a Water Contingency Action Plan which will be submitted and approved by MRC. The management of algal blooms and prevention of cross-contamination from irrigation activities, along with actions to be taken for alternate water provisions in the event of failure of the main supply, will be managed through these plans. I support this commitment, and require it to be undertaken.

In addition to these commitments, I have stated conditions in this report to be attached to any variation approval from MRC which relate to water supply and treatment. These conditions will ensure that the development is connected to a reticulated water supply system provided with a supply of potable water in accordance with relevant health and safety standards.

Matters of State Environmental Significance

Matters of state environmental significance (MSES) are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP) and defined under the *Environmental Offsets Regulation 2014* (Offset Regulation). MSES includes certain environmental values that are protected under Queensland legislation including regulated vegetation, connectivity areas, wetlands and watercourses, fish habitat areas, marine plants, protected wildlife habitat and protected areas.

The EIS confirms the project would impact on regulated vegetation but would not result in a significant residual impact on any other MSES.

While the EIS confirmed the project has been designed to maximise the retention of native vegetation, the disturbance of around 10.43 hectares of remnant vegetation will be required for the construction of the project. This impact represents approximately 15 per cent of the total 69.23 ha disturbance footprint of the project.

The EIS included a preliminary Environmental Management Plan (EMP) which considered impacts on remnant vegetation and potential management measures. To ensure that appropriate management measures are put in place, I recommend the proponent prepare and implement a vegetation management plan (VMP). The VMP will outline how the proponent will protect and restore biological values of remnant vegetation within the project area.

I note that the Commonwealth Department of the Environment and Energy (DEE) has considered residual significant impacts on the Outstanding Universal Values (OUV) of the Great Barrier Reef World Heritage Area (GBRWHA), including matters which are also MSES such as regulated vegetation.

DEE advised the Office of the Coordinator-General on 12 October 2017 that it will not be imposing offset conditions relating to residual impacts as the vegetation impacts would not constitute a residual significant impact to the attributes of the OUV of the GBRWHA. As such, offsets are not required and will not be imposed under the State's *Environmental Offsets Act 2014*.

I am satisfied that impacts on MSES have been adequately described in the EIS and that impacts on these values can be managed. I also accept that there will not be a significant residual impact on any MSES requiring an offset.

Traffic and transport

During operations, there will be at least two light aircraft flights per day to Lindeman Island from Shute Harbour airport, with the possibility of more flights should sufficient demand arise. The EIS confirms that there will be a single return ferry to the island each morning and each afternoon. Twenty-five per cent of visitors will arrive at the island by air, the rest will travel by ferry.

For construction, regular barge trips will be required between either Shute Harbour or Abel Point to supply materials and remove demolition material. As the commercial barge operator is yet to be appointed, details of specific barge trip routes and frequency of barges were not finalised in the EIS. To ensure that the increased vessel traffic is effectively managed, a vessel traffic management plan will be required which must be approved by the Regional Harbour Master, Maritime Safety Queensland (MSQ) prior to the commencement of the activity.

Consultation with the Department of Transport and Main Roads (DTMR) through the EIS process confirmed that discussions with the Regional Harbour Master in relation to vessel management would commence following the release of this evaluation report. The proponent has committed to working with MSQ and the Regional Harbour Master to ensure all relevant information and agreements are in place prior to the implementation of each stage of the project. In addition, the proponent commits to developing mitigation strategies in accordance with MSQ guidelines. I require these commitments to be implemented.

The project will increase vehicular traffic on the mainland during the three and a half years of construction. The most significant increases will be on the Proserpine-Shute Harbour Road between Flametree and Shute Harbour where the predicted increases

are considered significant because they exceed a 5 per cent trigger set out in the Guidelines for Assessment of Road Impacts of Developments.

The EIS presented a preliminary road impact assessment which identified potentially significant impacts on the state road network, particularly in relation to Proserpine-Shute Harbour Road. Due to the preliminary nature of the assessment presented in the EIS and to address the impacts on the state road network, I have recommended that the proponent submit a Road Impact Assessment to DTMR covering all stages of the project that must be approved by DTMR for state controlled road impacts and MRC for local roads. The proponent must work with agencies in advance to ensure these approvals are completed no later than six months prior to the commencement of construction.

The proponent must also undertake any required works and other impact mitigation strategies as required by the Road Impact Assessment prior to the commencement of any project related construction traffic.

Waste

I am satisfied that the nature and volume of waste to be generated during demolition, construction and operational phases of the project has been appropriately described in the EIS, as have a range of practical approaches to waste management and disposal.

The majority of waste generated during construction and operation of the project will be collected from Lindeman Island by a commercial waste contractor licensed to transport waste under the EP Act and disposed of at municipal facilities on the mainland. This includes salt from the desalination facility and biosolids from the treatment plant.

I am satisfied that the potential impacts associated with waste management, handling, storage and disposal would be effectively managed by the proponent.

Cultural heritage

The EIS assessed the potential impacts of the project on both Aboriginal and Torres Strait Islander and Queensland cultural heritage values. The project is expected to have minimal impacts on Aboriginal and Torres Strait Islander cultural heritage values, given there were no values identified within the project area. Any impacts would be managed through the preparation of a Cultural Heritage Management Plan in accordance with the requirements of Part 7 of the *Aboriginal Cultural Heritage Act 2003*.

I am satisfied that the proposed mitigation measures would ensure potential impacts on Queensland cultural heritage values are appropriately managed.

Hazard and risk

I consider the management measures and controls identified in the EIS to be adequate to safeguard against any health and safety consequences from hazards associated with the project, such as natural hazards (for example, cyclones), fires and major spills or leakages of hazardous materials.

I am also satisfied that the emergency management planning processes for the project are consistent with current industry practice for emergency management and the proponent's need to meet its obligations in respect of work health and safety, environmental and other regulatory areas. I also recognise that the project will assist with the ongoing refinement of district and state disaster management strategies that are managed by state and local government agencies, which will continue during the construction and operation of the project.

Notwithstanding the efforts of the proponent, fire management within those parts of Lindeman Island that are managed by QPWS will affect the risk profile of the proposed development. As such, the proponent will need to work cooperatively with QPWS to develop a consolidated approach to the management of bushfire risk. The proponent has committed to working collaboratively with QPWS to minimise bushfire risk and to the development of a Bushfire Management Plan. These commitments are included in Appendix 4 and must be implemented.

Social impacts

Overall, I consider that the project presents significant social benefits for Mackay, Airlie Beach, Jubilee Pocket, Cannonvale, Proserpine and Shute Harbour and the Mackay and Whitsunday regions generally. Social benefits will include increased employment and business opportunities during both construction and operation.

As the majority of the workforce is expected to live locally, I consider that the project is unlikely to result in excess demand for housing during construction and operation. I note that the proponent has committed to prioritising local content to the greatest extent possible in procurement.

I am satisfied that any potential impacts on health and community wellbeing as a result of the project can be appropriately managed through implementation of the commitments the proponent has made.

I am satisfied that the proponent has undertaken adequate community and stakeholder engagement to inform the EIS, and I note some stakeholders have requested an ongoing and wider engagement program with potentially impacted stakeholders. To ensure that this occurs, I have imposed a condition to require a Community and Stakeholder Engagement Plan, which will provide a practical framework for the delivery of ongoing community and stakeholder engagement activities.

Economic impacts

The project would promote economic growth, provide local employment opportunities and generate a net increase in visitor numbers to the region.

The project would generate employment of 300 direct full-time equivalent jobs on average during the three-and-a-half-year construction phase on the island, and 420 direct and indirect full-time equivalent jobs for the Mackay region.

In the operations phase, the project would require 300 direct full-time equivalent jobs on the island and 460 direct and indirect full-time equivalent jobs for the Mackay region.

It would also generate positive impacts for local business by contributing $480 million to the Mackay region's GRP over the three-and-a-half-year construction period, and $100 million (net) annually during operations.

I am satisfied that the project would not have significant negative impacts on the housing or labour markets in the region as the majority of the workforce is expected to reside in the local region and there is significant existing spare capacity within the labour market.

The project would also assist the region to attain its goal of almost doubling visitor expenditure (as included in the State's DestinationQ Blueprint) through the reopening and expansion of a key tourism facility. It will generate a net increase of 203,670 visitor nights per year to the region, or 558 visitors per day.

Matters of national environmental significance

The bilateral agreement between the Commonwealth of Australia and the State of Queensland relating to environmental assessment (the assessment bilateral agreement) allows the Commonwealth Minister for the Environment and Energy to rely on specified environmental impact assessment processes of the State of Queensland in assessing actions under the *Environment Protection and Biodiversity Act 1999* (EPBC Act). In accordance with the assessment bilateral agreement, I have assessed the matters of national environmental significant (MNES) applicable to the project as part of this report in consultation with DEE.

With regard to the project's potential impacts, proposed mitigation and management measures, I am satisfied that as a result of my assessment, the project will not cause unacceptable impacts on the OUV of the GBRWHA or the Great Barrier Reef as a listed National Heritage Place. In some instances, for example by improving water quality associated with stormwater discharges and improving the visual amenity of resort buildings, I consider the project would achieve a net benefit for the Great Barrier Reef.

The EIS concluded that the project would improve the quality of stormwater discharged into the Great Barrier Reef. A comparison of the existing and developed scenario found that total suspended solids, for example, would be reduced by 14,400 kg per annum following the resort upgrade and expansion.

I consider that the proposed development has the potential to generally improve the visual aesthetics of the island, particularly when viewed from the south. The project's development would generally improve the scenic attributes of the island through demolishing a dilapidated resort in the GBRWHA, sophisticated resort design and enhanced landscape screening. I am, however, recommending to the Commonwealth Minister for the Environment and Energy a condition that the proponent submits the final precinct development plans for approval before the commencement of the controlled action. This will ensure development is consistent with the relevant planning benchmarks, further reducing the potential of the project to impact on the scenic values of the GBRWHA.

I am satisfied that the proponent's field surveys and assessment of potential impacts on threatened species and communities and migratory species are comprehensive. The EIS found that project and marine areas provide potentially suitable habitat for marine and terrestrial species. I accept this conclusion.

Two listed threatened ecological communities (TEC) under the EPBC Act were confirmed present on Lindeman Island. These are:

- Littoral rainforest and coastal vine thickets of Eastern Australia
- Broad-leaf tea-tree (*Melaleuca viridiflora*) woodland in high rainfall coastal north Queensland.

To ensure the integrity of these two ecological communities, I have recommended the proponent prepare and implement a Vegetation Management Plan which is required to be submitted to DEE for approval. The plan would identify measures to minimise potential impacts on the TECs by managing threats including weeds, pests, fire and other associated edge effects such as human disturbance.

The project would require trimming and ongoing disturbance to 1.5 ha of the *Melaleuca viridiflora* TEC during construction and operation of the airstrip. In consultation with DEE, I am satisfied this disturbance would not constitute a residual significant impact requiring an offset.

The project was assessed against the Great Barrier Reef Marine Park Zoning Plan 2003 (GBRMZP) and the Great Barrier Reef Whitsunday Plan of Management (WPM). As the proposed development is consistent with the pre-existing land use on the Island, the project generally supports the implementation of the GBRMZP and WPM.

I am satisfied the project will not cause unacceptable impacts on MNES, in consideration of the conditions I have imposed, stated and recommended at Appendices 1-4. My full assessment of MNES is provided in section 6 of this report.

Coordinator-General's conclusion

I consider that the environmental impact assessment requirements of the SDPWO Act for the Lindeman Great Barrier Reef Resort project have been met and that sufficient information has been provided to enable a thorough evaluation of the potential impacts of the project.

I conclude that there are significant local, regional and state benefits to be derived from the project, and that any adverse impacts can be acceptably avoided, minimised or mitigated through the implementation of the measures and proponent commitments outlined in the EIS. The conditions I have specified in this report have been formulated to further manage impacts associated with the project. Further approval processes under the EP Act will consider specific risks associated with environmentally relevant activities.

Accordingly, I recommend that the project proceed, subject to the conditions and recommendations set out in the appendices of this report. In addition, I require the proponent's commitments to be fully implemented.

This report will lapse on 26 March 2022.

A copy of this report will be provided to the proponent and the relevant local, state and Australian government agencies, and will also be made publicly available at **www.statedevelopment.qld.gov.au/lindeman**

Barry Broe

Barry Broe
Coordinator-General

27 March 2018

1. Introduction

This report has been prepared in accordance with section 34D of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and provides an evaluation of the environmental impact statement (EIS) for the Lindeman Great Barrier Reef Resort project (the project).

This report does not record all the matters that were identified and subsequently addressed during the assessment. Rather, it concentrates on the substantive issues identified during the EIS process and the measures and conditions required to address the impacts. This report:

- summarises the key issues associated with the potential impacts of the project on the physical, social and economic environments at the local, regional, state and national levels
- presents an evaluation of the project, based on information contained in the EIS, submissions made on the EIS as well as information and advice from advisory agencies and other relevant authorities
- states conditions and makes recommendations under which the project may proceed
- documents the proponent's commitments.

2. About the project

2.1 The proponent

The project is proposed to be undertaken by White Horse Australia Lindeman Pty Ltd (White Horse Australia), a subsidiary of the White Horse Group. The White Horse Group was established in 1986 and is an advertising, media and marketing company in China that has expanded into the property and tourism sector.

White Horse Australia has two directors and the directors are experienced in hotel and resort design and operations, and have an interest in three resorts in China, including:

- Heaven and Earth Qixianling Boating Tropical Resort
- Sanya Yalong Bay Tropical Paradise Forest National Park and Yalong Bay Earthly Paradise Bird's Nest Resort in Sanyam Hanian, China
- Spring Alpha Resort and Scenic Town in Anji, Zhejiang, China.

Following its purchase of the existing Lindeman Island resort and its leases in 2012, White Horse Australia has undertaken consultation with a wide range of tourism industry experts and hotel operators to investigate a range of potential development scenarios for the Island.

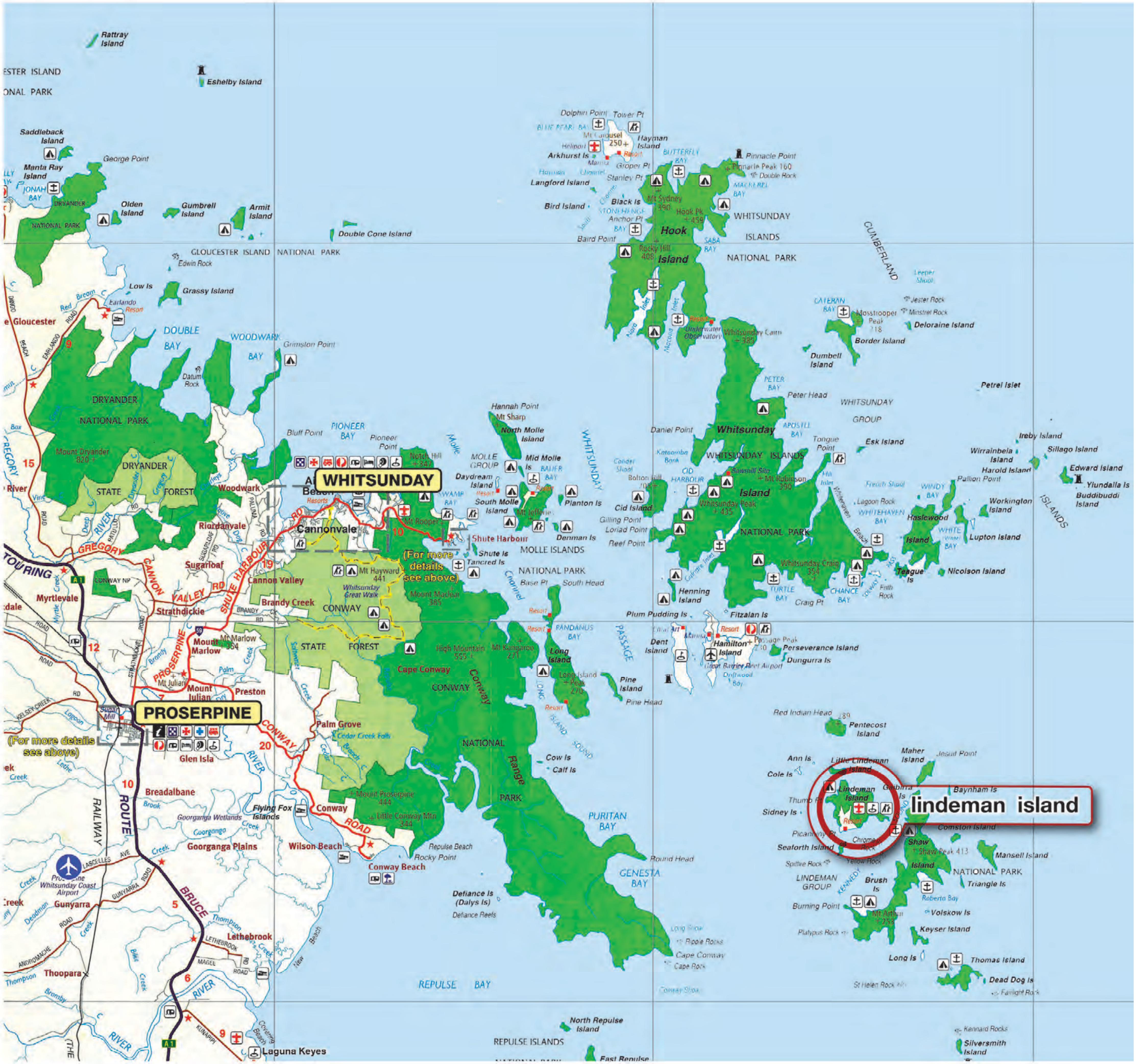
2.2 Location

The project is proposed on Lindeman Island, located 35 km south-east of Shute Harbour on the mainland and approximately 13 km south-east of Hamilton island. The island is located within the Great Barrier Reef World Heritage Area (GBRWHA) and abuts the Great Barrier Reef Coast Marine Park (GBRCMP). The island is within the Mackay Regional Council (MRC) local government area. Refer to Figure 2.1.

The redevelopment and expansion would take place near the existing resort located on the south-western portion of the island, which is surrounded by the Lindeman Islands National Park.

Lindeman Island has a total area of approximately 637 ha. The development area (inclusive of all resort buildings, infrastructure, airstrip, dam, golf course and undeveloped areas) covers 139 ha. The development area is situated on a perpetual lease of 70 ha and a term lease of 66 ha as well as small areas of road reserve, beach reserve and a reserve for departmental and official use (ranger's accommodation) (refer Table 5.1 and Figure 5.2). The remainder of the island is undeveloped national park (approximately 498 ha).

The project area fronts a beach referred to interchangeably as the Resort Beach, Rocky Beach or, most commonly, as Home Beach in the EIS documentation. For consistency with the EIS, this beach is referred to as Home Beach in this report.



LEGEND

Lindeman Island

N S E W

0 2.5 5.0 7.5 10.0 12.5

1:250,000 (kilometres)

original map compiled at A3 size

DRAWING TITLE	Map 3-2: Local Context
DRAWING DATE	20 December 2016
DRAWING VERSION	2.0
COORDINATE SYSTEM	Unprojected Geographics
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078

DATA SOURCE

Basemap: State of Queensland (Department of Natural Resources and Water)-Sunmap Regional Map 'Mackay District and the Whitsundays'.

Lindeman Great Barrier Reef Resort & Spa

ENVIRONMENTAL IMPACT STATEMENT

Local Context

Figure 2.1

Figure 2.1 Project location

2.3 Project description

The project involves the following key components:

- Beach Resort - redevelopment of the existing resort to achieve a new 5-star Beach Resort with 136 suites, conference centre, beach club, lagoon and a central facility building with restaurants, bars and lounges
- Spa Resort - a new 6-star Spa Resort with 59 villas, central facilities, entry lounge, spa, sea view restaurant, pool and a signature rock bar providing spectacular alfresco dining close to the sea
- Eco Resort - a new 5-star Eco Resort consisting of 14 villas, 20 village accommodation apartments and 7 hilltop villas
- Resort Villas – 89 new 4-star villas located to the east of the airstrip in a Tourist Villa Precinct
- Village - a central activity node comprising restaurants, bar, night club, conference facility buildings, arrival centre, shops, sport and recreation centre, staff village
- Services infrastructure precinct - an expansion of the current services area providing for power generation (solar with diesel back-up), sewage treatment and water treatment
- Airstrip - the existing airstrip is proposed to be upgraded to provide for near all-weather status and for the landing of light aircraft and helicopters
- Marine access - the proponent seeks approval for upgrades to the existing jetty and additional moorings in sheltered locations around the island to enable the resort's marine craft to obtain safe shelter under a range of wind and wave conditions
- Golf course - upgrades to the existing recreational golf course
- Ecotourism facilities - a National Park and Great Barrier Reef Education Centre
- Environmental enhancements - native vegetation replanting, improvements to stormwater management and a shift towards renewable energy sources.

Following release of the EIS for public comment and in response to submissions received, amendments were made to the project description and these refinements are described below. The project elements described above remain unchanged.

2.3.1 Design refinement

In response to feedback from advisory agencies during the drafting of the EIS, and then in response to submissions received on the draft EIS, the proponent revised the project scope from that described in the Initial Advice Statement (IAS). The following describes the key changes made by the proponent during the EIS process.

Table 2.1 Description of project changes

Project as described in IAS	Project as publicly notified in draft EIS	Project as evaluated in CGER
Beach Resort – 136 suites, conference centre, beach club, central facilities building which includes restaurants, bars and lounges	No change from IAS	No change from IAS
Spa Resort – 55 villas, central facilities, entry lounge, spa, sea view restaurant, pool and signature rock bar	Spa Resort – 59 villas, central facilities, entry lounge, spa, sea view restaurant, pool and signature rock bar. Increase of 4 villas following further design during preparation of draft EIS	No change from draft EIS
Two tourist villa precincts – 95 tourist villas across both precincts	Two tourist villa precincts – 89 tourist villas across both precincts. Decrease of 6 tourist villas following further design during preparation of draft EIS	One tourist villa precinct (eastern precinct) - 89 tourist villas. Location of villas changed to remove villas from National Park term lease area (western precinct) so in accordance with existing lease arrangements.
Eco Resort – 49 villas, a central facility, boathouse and waterside restaurant	Eco Resort – 41 villas, a central facility, boathouse and waterside restaurant. Decrease of 8 villas following further design during preparation of draft EIS	Eco Resort - 14 villas, 20 village accommodation apartments and 7 hilltop villas. Changed to accommodate villas removed from the term lease area (western precinct).
Ecotourism facility - no “Glamping” facilities proposed in IAS	Ecotourism facility - 30 “Glamping” facilities proposed following further design during preparation of draft EIS	Ecotourism facility “Glamping” facilities removed in response to submissions received on the draft EIS
Village – a central village accommodating a bar, nightclub, restaurant, conference facility buildings, arrival centre, shops, restaurants, sport and recreation centre and staff village	No change from IAS	No change from IAS
Services infrastructure precinct – power including solar arrays and diesel generators, sewerage and water treatment plant upgrades	No change from IAS	No change from IAS

Project as described in IAS	Project as publicly notified in draft EIS	Project as evaluated in CGER
Airstrip upgrade to provide for all weather status and to allow landing of small jets and helicopters	No change from IAS	No change from IAS
Four-hole golf course (a reduction in size from existing layout)	Upgrades to the existing recreational golf course are proposed (9 holes)	Upgrades to the existing recreational golf course are proposed (9 holes)
Safe harbour	Upgrades to the existing jetty and additional moorings. Safe harbour proposal removed following further design during preparation of draft EIS	Repair and reinstatement of the existing jetty and addition of floating pontoon, additional moorings following further design during preparation of draft EIS
Coral planting program, Great Barrier Reef education centre and vegetation replanting program	Coral planting program no longer proposed as project would not require dredging of coral as a result of safe harbour being removed Great Barrier Reef education program – no change from IAS	Great Barrier Reef education program – no change from IAS
Boundary realignment and tenure amendments – including the revocation of national park to provide for a perpetual lease and a sea bed lease for the safe harbour	Boundary realignment and tenure amendments – including the revocation of national park to provide for a perpetual lease, a sea bed lease for the jetty and an authorisation under the *Nature Conservation Act 1992* for the ecotourism facility	Extension to the existing term lease. No revocation of National Park, with the exception of the ranger's accommodation reserve (0.1012 ha). Beach reserve not added to existing perpetual lease area. Sea bed lease not required as jetty to remain in DTMR ownership Authorisation under the *Nature Conservation Act 1992* for an ecotourism facility no longer required as "glamping" no longer proposed

2.4 Project staging

The construction period would be undertaken over a period of approximately three and a half years. Due to the size and magnitude of the overall project, the proponent's construction work strategy is to deliver the project over four stages:

- Stage 1 – civil works, construction camp, demolition and civil infrastructure (for example, water and wastewater systems, power supply)
- Stage 2 – jetty upgrades, beach resort, beach resort central facilities, arrival and departure facilities, airstrip runway and facilities, village, sports centre, education

centre and facilities, staff accommodation, golf course and fixtures, fittings and equipment, luxury villas and apartments

- Stage 3 – spa resort and facilities including rock bar and day spa, facilities and fixtures, fittings and equipment and luxury villas
- Stage 4 – villa construction.

The majority of the construction workforce would be fly-in, fly-out with some workers commuting to the Airlie Beach area.

It is anticipated that the project would be operational in late 2022.

2.5 Project rationale

2.5.1 Project alternatives

The EIS assessed a number of alternatives to the proposed project, including a 'do nothing' option. The EIS notes that a 'do nothing' option is inconsistent with the perpetual lease conditions which requires the lessee to provide and maintain tourist accommodation of an acceptable standard and conduct a tourist resort on the land.

The EIS also found that the continued loss of a 225-room resort has also had a deleterious impact on visitor capacity in the Whitsunday region and on the local and regional economy resulting in job losses and reduction in suppliers' productivity.

The repair and partial renovation of the existing resort was assessed as an option but was not considered viable as the existing buildings have substantially deteriorated from the extreme weather and environmental conditions, lack of maintenance and general wear associated with their age.

The redevelopment of the existing resort was identified in the EIS as the preferred option based on the delivery of greatest social, economic and environmental benefit.

2.5.2 Redevelopment strategy

The EIS notes that a key element of the redevelopment strategy is the creation of a variety of accommodation options and a wide range of supporting amenities within the resort. This strategy responds to the demand by visitors for a greater choice of facilities and activities in one location. It is of particular importance to an island resort because it would provide a critical mass of facilities and experiences needed to attract visitors. The EIS states that this strategy is fundamental to establishing Lindeman Island's international profile and its competitiveness as a world-class destination resort.

The Club Med Resort which operated on Lindeman Island from 1992 to 2012 as a 3 to 4 Star resort struggled to be financially viable due to competition with other island resorts that have significantly better facilities, modern rooms and a range of accommodation styles.

The EIS finds that, by comparison, high quality resorts such as Qualia at Hamilton Island and the One&Only Resort at Hayman Island have achieved excellent room rates and high occupancy levels, indicating that there is currently greater market demand in

the region for quality resorts that have significant amenities and dining options. The EIS cites that a report by the Tourism Think Tank has identified that in 2012 Qualia averaged 87 per cent occupancy, with 100 per cent occupancy at weekends. Accordingly, high levels of occupancy for the redeveloped Lindeman Island resort are anticipated.

2.5.3 Policy alignment

The continuation of tourist development at Lindeman Island aligns with the State's Ecotourism Plan 2016 – 2020, the Mackay Region Planning Scheme 2017 (the planning scheme) and the Great Barrier Reef Marine Park Authority (GBRMPA) Whitsundays Plan of Management.

The Ecotourism Plan seeks to facilitate investment in tourism products that showcase the Great Barrier Reef and address issues with existing unoccupied island resorts.

The planning scheme in its Strategic Intent states "Tourism development that maintains sensitive environmental and landscape character values is encouraged on Lindeman, Brampton and Keswick Islands."

The Tourism Zone Code (within the planning scheme) states that its purpose is to provide for tourist facilities enabling the region's residents and visitors to experience the region's outstanding landscape character and areas of ecological significance, in high-quality, environmentally sensitive and integrated resorts at Brampton Island, Keswick Island, Laguna Quays and Lindeman Island.

The GBRMPA WPM sets limits on vessel length, group size, types of craft, facilities and certain activities in coastal waters. These waters have been assigned 'settings', based on their values, existing use and management requirements.

The marine park immediately adjacent to the existing resort is described in the Plan of Management as falling within the "Intensive Setting". The intensive (Setting 1) areas envisage intensive tourism and recreation uses. These areas are defined as heavily used by a wide range of craft, and containing permanent facilities including marinas, jetties and boat ramps. Ongoing use of the area by the project for those purposes, as proposed in the EIS, is consistent with the Whitsundays Plan of Management.

3. Environmental impact statement assessment process

In undertaking this evaluation, I have considered information including:

- the IAS
- the EIS and technical reports
- issues raised in submissions on the EIS
- advice from the proponent
- revised reports and plans in response to further information requested from the proponent
- advisory agency advice on the EIS from:
  - Department of Environment and Science (DES) (including the former Department of Environment and Heritage Protection (DEHP))
  - Department of Agriculture and Fisheries (DAF)
  - former Department of National Parks, Sport and Racing (DNPSR)
  - Department of Transport and Main Roads (DTMR)
  - State Assessment and Referral Agency (SARA)
  - former Department of Science, Information Technology and Innovation (DSITI)
  - MRC
  - Commonwealth Department of the Environment and Energy (DEE)
- private correspondence received subsequent to the EIS process.

The stages of the project's EIS process are documented on the project's webpage at **www.statedevelopment.qld.gov.au/lindeman**

3.1 Coordinated project declaration

On 19 May 2015, I declared this project to be a 'coordinated project' under section 26(1)(a) of the SDPWO Act. This declaration initiated the statutory environmental impact evaluation procedure of Part 4 of the SDPWO Act, which required the proponent to prepare an EIS for the project.

3.2 Terms of reference

The draft terms of reference (TOR) for the EIS for the proposed project were released for public and advisory agency comment from 30 May 2015 to 3 July 2015. Comments were received from 16 submitters.

The draft TOR were amended having regard to comments received and issued to the proponent on 21 August 2015.

3.3 Commonwealth assessment

The Commonwealth has accredited the State of Queensland's EIS process, conducted under the SDPWO Act, under a bilateral agreement between the Commonwealth and the Queensland Governments. Under the agreement (made under section 45 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)), if a controlled action is a 'coordinated project for which an EIS is required' under the SDPWO Act, certain types of projects do not require assessment under Part 8 of the EPBC Act. The agreement enables the EIS to meet the impact assessment requirements of both Commonwealth and Queensland legislation.

Under Part 4 of the SDPWO Act and section 36 of the State Development and Public Works Organisation Regulation 2010 (SDPWO Regulation), the Coordinator-General must ensure the assessment report evaluates all relevant impacts that the action has, will have, or is likely to have, and provide enough information about the action and its relevant impacts to allow the minister to make an informed decision on whether or not to approve the action under the EPBC Act.

The controlled action may be considered for approval under section 133 of the EPBC Act, once the Commonwealth Minister for the Environment and Energy has received the Coordinator-General's evaluation report on the EIS (prepared under section 34D of the SDPWO Act).

On 7 May 2015 the Commonwealth Minister for the Environment and Energy determined that the project is a 'controlled action' under the EPBC Act. The relevant controlling provisions under the EPBC Act are:

- sections 12 and 15A, world heritage properties
- sections 15B and 15C, national heritage places
- sections 18 and 18A, listed threatened species and communities
- sections 20 and 20A, listed migratory species
- sections 24B and 24C, the Great Barrier Reef Marine Park.

The Commonwealth Minister for the Environment and Energy will use the information in Section 6 of this report to assess the project under the EPBC Act.

3.4 Review of the EIS

The EIS, prepared by the proponent, was released for public and agency comment from 22 July 2017 to 4 September 2017.

51 submissions were received, copies of which were forwarded to the proponent and DEE.

The most prominent issues raised in public submissions were:

- the proposed revocation of and impacts on the national park
- compensation arrangements for the revocation of the national park
- water quality and water balance

- further information requirements about the proposed ecotourism (glamping facility)
- emergency preparedness and response, particularly in relation to extreme weather events
- jetty design and associated impacts.

3.5 Additional information to the EIS

On 18 October 2017, I requested that the proponent submit additional information regarding:

- responses to submissions on the draft EIS
- proposed project changes
- project approvals
- water and wastewater management
- management of potential impacts on the marine environment
- proposed jetty and coastal works
- state development assessment provisions.

Comment was sought from relevant advisory agencies on the additional information.

4. Project approvals

Following the release of this evaluation report, the proponent will be required to obtain statutory approvals from Commonwealth, state and local government jurisdictions before the project can proceed.

Table 4.1 provides a list of key approvals required for the project.

Table 4.2 provides a list of possible subsequent approvals required for the project which would be subject to separate applications and assessment processes. The proponent acknowledges that further information may be required for subsequent approvals required for the construction and operation phases of the project.

Table 4.1 Key approvals sought from this Coordinator-General's report

Project activity	Approvals/ permits	Legislation	Assessment Manager/Referral Agency
Commonwealth approvals			
Whole of project	Approval of controlled action (EPBC 2015/7461)	*Environment Protection and Biodiversity Conservation Act 1999*	DEE
State approvals			
Clearing of regulated vegetation	Development permit for operational work - clearing of native vegetation for a relevant purpose (under s22A of the *Vegetation Management Act 1999*).	*Planning Act 2016* *Vegetation Management Act 1999*	SARA (DSDMIP) or MRC
Local government approvals			
Whole of project	Variation Approval – approval to vary the planning scheme	*Planning Act 2016*	MRC
Prescribed tidal works – rock wall and associated structures, jetty upgrade and water intake pipe	Preliminary approval for operational work - Prescribed tidal works	*Planning Act 2016*	MRC

Table 4.2 Possible subsequent approvals required for the project

Project activity	Subsequent approvals/ permits	Legislation	Assessment manager
Additional moorings	Marine Park Permit - installation and/or use of moorings	*Great Barrier Reef Marine Park Act 1975*	GBRMPA
Jetty upgrade	Marine Park Permit - installation and/or use of structures/ facilities	*Great Barrier Reef Marine Park Act 1975*	GBRMPA
Lagoon intake pipe	Marine Park Permit - installation and/or use of structures/ facilities	*Great Barrier Reef Marine Park Act 1975*	GBRMPA
Expanded uses within the marine park (such as an increase in water craft / water sport activities)	Marine Park Permit	*Great Barrier Reef Marine Park Act 1975*	GBRMPA
Excavation, filling and other civil site works	Development permit for operational work – excavation and filling	*Planning Act 2016*	MRC
Tidal works and works within a coastal management district – rock wall and associated structures, jetty upgrade and water intake pipe	Development Permit for operational work - prescribed tidal works	*Planning Act 2016*	SARA (DSDMIP)
Tenure	Term lease extension	*Land Act 1994*	DNRME
Tenure -revocation of ranger's hut	Tenure – perpetual lease application – unallocated state land	*Land Act 1994*	DNRME
Works within the state-controlled road network	Carry out road works on a state-controlled road	*Transport Infrastructure Act 1994*	DTMR

Project activity	Subsequent approvals/ permits	Legislation	Assessment manager
Works within the state-controlled road network	Location of vehicular accesses to state roads (section 62)	*Transport Infrastructure Act 1994*	DTMR
Works within the state-controlled road network	Structures or activities to be located or carried out in a state-controlled road corridor (section 50)	*Transport Infrastructure Act 1994*	DTMR
Vegetation clearing	Protected plant clearing permit	*Nature Conservation Act 1992*	DES
Commercial activities -guided tours, construction of tourism or operational infrastructure	Commercial activity permit - where located within a national park	*Nature Conservation Act 1992*	DES
Environmental authority (EA) Environmentally relevant activities (ERA)	EA ERA 8 – Chemical Storage	*Environmental Protection Act 1994*	DES
Environmental authority (EA) Environmentally relevant activities (ERA)	EA ERA 15 – Fuel Burning	*Environmental Protection Act 1994*	DES
Environmental authority (EA) Environmentally relevant activities (ERA)	EA ERA 16 – Extractive Activities	*Environmental Protection Act 1994*	DES
Environmental authority (EA) Environmentally relevant activities (ERA)	EA ERA 33 – Crushing, Milling, Grinding or Screening (no more than 5,000t of rock/fill processing in a year	*Environmental Protection Act 1994*	DES

Project activity	Subsequent approvals/ permits	Legislation	Assessment manager
Environmental authority (EA) Environmentally relevant activities (ERA)	EA ERA 63 – Sewage Treatment	*Environmental Protection Act 1994*	DES
Removal of quarry material from existing quarry site	Removal of state-owned quarry material	*Forestry Act 1959*	DAF
Whole of project	Cultural Heritage Management Plan	*Aboriginal Cultural Heritage Act 2003*	DATSIP

4.1 Approvals through this evaluation

This evaluation report provides conditions at Appendices 1-4 relating to approvals for the project, including:

- Appendix 1, Schedule 1 which includes an imposed condition for the project relating to social impact assessment
- Appendix 1. Schedule 2 which includes an imposed condition to provide information to support an application for ERA 63 – Sewerage treatment
- Appendix 2, Schedule 1 which includes stated conditions for preliminary approval for a variation to the planning scheme under the *Planning Act 2016*
- Appendix 2, Schedule 2 which includes stated conditions for preliminary approval for operational work – prescribed tidal works under the *Planning Act 2016*
- Appendix 2, Schedule 3 which includes a stated condition for a development permit for operational work for clearing native vegetation under the *Planning Act 2016*
- Appendix 3, which includes recommended conditions for the Commonwealth Minister for the Environment and Energy under the EPBC Act
- In addition to the above conditions, this report also makes recommendations in Appendix 4, Schedule 1-3, for assessment managers, including:
  - Schedule 1, relating to the *Nature Conservation Act 1992*
  - Schedule 2, relating to the *Transport Infrastructure Act 1994*
  - Schedule 3, relating to the *Land Act 1994*.

4.2 Australian government approvals

4.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

A decision on the controlled action (EPBC reference 2015/7461) will be made by the Commonwealth Minister for the Environment and Energy under section 133 of the EPBC Act. The Minister will use the information in this report to determine whether to approve the controlled action under the EPBC Act and, if so, apply conditions to the approval necessary to limit the impact on MNES. I have recommended conditions for the Minister's consideration that relate to MNES (Appendix 3).

4.3 State government approvals

4.3.1 Operational work clearing of native vegetation

In accordance with section 39 of the SDPWO Act, I have stated conditions in Appendix 2 of this report for operational works clearing native vegetation. The conditions limit the clearing to that required to allow construction and operation of the expanded resort.

Stated conditions must be adopted by the assessment manager in approving any application for operational work clearing native vegetation for a relevant purpose (under s22A of the *Vegetation Management Act 1999*) – being a project declared to be a coordinated project under the *State Development and Public Works Organisation Act 1971*.

I note that depending on the timing of the vegetation clearing application and its relationship with other development applications, the assessment manager for this approval would be either SARA - DSDMIP, DNRME or MRC.

4.4 Local government approvals

4.4.1 Variation approval under *the Planning Act 2016*

A draft Plan of Development (PoD) (Appendix 5) and development code was included in the final EIS in November 2017. The draft PoD is intended to function as part of a preliminary approval under section 43 of the planning act to vary the effect of the planning scheme (variation approval) by specifying:

- development as assessable or accepted development
- the categories of assessment required for different types of assessable development
- matters (the assessment benchmarks) that an assessment manager must assess assessable development against, including a code.

In accordance with section 39 of the SDPWO Act, I have stated conditions for a preliminary approval to vary the effects of the planning scheme. Stated conditions are provided in Appendix 2 of this report which must be adopted by MRC when an

application is made for a variation approval to vary the effects of the planning scheme under the planning act.

4.4.2 Prescribed tidal works

In accordance with section 39 of the SDPWO Act, I have stated conditions for a preliminary approval for operational work – tidal work (prescribed tidal work) and works within a coastal management district under the planning act (Schedule 10, Part 17 of the Planning Regulation 2017).

Stated conditions are provided in Appendix 2 of this report which must be adopted by MRC when an application is made by the proponent for any development permits for prescribed tidal works as defined by the *Coastal Protection and Management Act 1995* (CPM Act).

5. Evaluation of environmental impacts

This section discusses the major environmental effects identified in the EIS. For each matter, I have included a detailed evaluation and stated or imposed conditions or made recommendations to manage adverse impacts.

5.1 Land use and planning

The EIS detailed the existing land use and planning framework relevant to Lindeman Island and identified potential land use impacts resulting from the construction and operation of the project.

Submissions received

Submissions received on the EIS identified the following key issues related to land use and planning:

- capability and capacity of the proponent to comply with the national park management principles
- development of an ecotourism facility (glamping) within the national park for private use – as previously discussed, this is no longer proposed.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.1.1 Existing environment

Lindeman Island is located 35 km from Shute Harbour on the mainland and 13 km south-east of Hamilton Island. Lindeman Island is located within the jurisdiction of the MRC (See Figure 2.1).

Major land uses on Lindeman Island are conservation, open space and tourism. European settlement of Lindeman Island commenced in 1897 where early settlers grazed sheep and goats on the island and constructed dwellings towards the western end of Home Beach. Lindeman Island has operated as a resort since 1928 and is one of the first islands in the Whitsunday Island group to be used as a tourist resort. Since 1928, accommodation buildings and improvements to infrastructure have occurred, including the construction of the airstrip, jetty and golf course.

The existing resort is located on the south-west corner of Lindeman Island and includes accommodation, central facilities and services such as the power generation, sewage treatment and water filtration plants (see Figure 5.1). In 1990 Club Med purchased the resort, which closed in 2012 following damage sustained from a tropical cyclone and a downturn in the global tourism industry. Accommodation and central facilities remain in a dilapidated condition and are generally uninhabitable given their degraded state, with the exception of the caretaker accommodation.

Lindeman Island is accessible by air and by boat. Aircraft access is by a grassed unlicensed airstrip which is suitable for small aircraft and helicopters. Marine access is from a jetty adjacent to the existing resort owned by the Queensland Government (permitted to the DTMR).

Lindeman Island is located within the Great Barrier Reef which was inscribed on the World Heritage List in 1981 following recognition of its outstanding universal values (OUV). The GBRWHA extends from the low water mark on the Queensland coast to the edge of the continental shelf, including all islands. Potential impacts of the project on the GBRWHA are discussed further in section 6 of this report (MNES).

Lindeman Island is also located within the GBRMP and the State Marine Park. Commonwealth and State Marine Park boundaries overlap and the marine parks have generally adopted complementary zoning in accordance with the Great Barrier Reef Marine Park Zoning Plan (GBRMPZP). This means that activities permitted within the two marine parks are usually the same. For planning and assessment purposes, Lindeman Island is located within the Planning Area of the WPM, of which further details are provided below. While the GBRMPZP helps to protect plants, animals, habitat and heritage, plans of management allow for a finer scale level of protection and management.

The majority of Lindeman Island is a declared national park protected under the *Nature Conservation Act 1992 (*NC Act*)*. The national park allows camping at Boat Port Beach to the north-west of the island and there are several walking tracks with an approximate length of 15 km.

The current resort area (with the exception of Lot 2 on CP858366 – part of the perpetual lease area) is located within a Coastal Management District declared under the CPM Act. Low lying areas of the resort area are also located within the coastal hazard areas including erosion-prone areas and a storm tide inundation area (medium and high risk).

Figure 5.1 **Aerial image of existing resort**

5.1.2 Commonwealth planning framework

The project site is located wholly within the GBRMP and any proposed development must therefore consider the GBRMPZP and the Planning Area of the WPM. For further details on the GBRMPZP and WPM see section 6 of this report.

Great Barrier Reef Marine Park Zoning Plan 2003

The GBRMPZP provides for the establishment, control, care and development of the GBRMP.

Lindeman Island is zoned within the Conversation Park Zone and Marine National Park Zone with the proposed project located primarily within the Conservation Park Zone. The Conservation Park Zone objective is to provide for conservation in the Marine Park and provide opportunities for reasonable use and enjoyment, including limited extractive use, for example for fishing, tourism, research, vessel or aircraft charter and operating a facility for the landing of aircraft.

Lindeman Island is also within the GBRMPZP's Whale Protection Area (WPA) which is designed to minimise disturbance to whales that may be caused by whale-watchers and tourism operators using boats, aircraft and helicopters.

I consider the ongoing use of Lindeman Island for tourism purposes to be consistent with the objectives of the GBRMPZP as the proposed use is consistent with those allowable (with permission) in the Conservation Park Zone which surrounds the island.

Whitsunday Plan of Management 1998

The purpose of the WPM is to, in conjunction with other management mechanisms, protect and conserve identified values and world heritage values of the GBRMP and Planning Area, while allowing for reasonable opportunities to access and use the Planning Area. As the project is located in the Planning Area of the WPM it must support the objectives and any requirements of the WPM.

The proposed project is adjacent to an area designated under the WPM as Setting 1 (intensive use) with the remainder of the island adjacent to Setting 3 (moderate use) and Setting 4 (low use) areas.

Setting 1 is heavily used by a wide range of watercraft, and contains permanent facilities, including marinas, jetties and boat ramps. As the project is located adjacent to Setting 1, the project is consistent with uses envisaged by the WPM.

Setting 3 is a natural setting that may have moderate levels of visitation, with appropriate moorings and management facilities to manage impacts. I consider the project is also consistent with Setting 3 because the project does not propose new infrastructure in these zones which would intensify the use of Setting 3 areas significantly. The WPM does consider visits of groups of up to 40 persons appropriate for this setting and there are no proposed uses of the Setting 3 area which would exceed this limit.

I consider the project to be consistent with the uses envisaged by the WPM for Setting 1 and 3 areas. Furthermore, the proponent has committed to a range of management

measures which would ensure that the environmental values of high value areas such as low use (Setting 4) and protected areas (Setting 5).

As the project involves a continuation and expansion of existing uses envisaged within Setting 1 and 3 areas, I consider the project to be consistent with the WPM.

Reef 2050 Long-Term Sustainability Plan

The Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan) was released by the Australian and Queensland governments in March 2015 and is the overarching framework for protecting and managing the Reef until 2050. The Plan outlines management measures for the next 35 years to ensure the OUV of the Reef is preserved.

The Reef 2050 Plan has seven themes reflecting the priorities for action — ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits and governance.

The Reef 2050 Plan includes an implementation strategy which is a rolling document, revised annually to capture new priority actions, and to map the next year's implementation pathway.

The Reef 2050 Plan sets actions, targets, objectives and outcomes to drive and guide the short, medium and long-term management of the Great Barrier Reef. The consistency of the project with the Reef 2050 Plan is a key consideration for the project.

The EIS provided an assessment of the project against the objectives of the Reef 2050 Plan and I am satisfied that the project is consistent with the strategic intent of the plan. The EIS demonstrates that the project would protect the OUV of the Great Barrier Reef.

From a practical point of view the project presents an opportunity to generate a net benefit for the GBRWHA. For example, the project's management measures would further reduce concentrations of stormwater pollutants currently discharged from the existing resort. A comparison of the existing and developed scenario found that total suspended solids leaving the site, for example, would be reduced by 14,400 kg per annum.

These measures are consistent with the Reef 2050 Plan and more specifically the Draft Reef 2050 Water Quality Improvement Plan 2017-2022 which identifies the modification of existing urban stormwater management systems as an opportunity to support water quality improvement.

Draft Reef 2050 Water Quality Improvement Plan 2017-2022

The draft Reef 2050 Water Quality Improvement Plan 2017-2022 (draft water quality plan) guides how industry, government and the community will work together to improve the quality of water flowing to the Great Barrier Reef. The draft water quality plan addresses all land-based sources of water pollution, including run-off from urban, industrial and public lands, while recognising the majority of pollution comes from the run-off from agricultural activities.

The stormwater and water management strategy for the project aims to reduce the pollutant load being discharged to the GBRMP. Specifically, stormwater and water management strategies would be adopted that:

- re-use rainwater, reducing potable and irrigation water demand and stormwater pollutant loads
- treat and re-use wastewater for non-potable uses on site
- minimise the potential sources of stormwater pollutants
- treat storm water run-off to remove sediment and nutrient load
- replicate existing flow patterns
- reduce potential for scour and erosion
- integrate open space with stormwater drainage corridors and treatment areas to maximise public access and recreation and preserve waterway habitats and wildlife corridors.

Stormwater modelling presented in the EIS indicates that pollutant loads discharged to the marine park would be lower than the existing case for all pollutants, including suspended solids, phosphorous, nitrogen and gross pollutants.

Given the dilapidated state of the existing resort and associated stormwater infrastructure, I consider that the project's management measures would further reduce concentrations of stormwater pollutants currently discharged from the existing resort and achieve a net benefit for the GBRWHA.

I require the proponent to design stormwater systems in accordance with the Queensland Urban Drainage Manual, the Environmental Protection (Water) Policy 2009 and the planning scheme and associated policies.

Additionally, I have recommended to the Commonwealth Minister for the Environment and Energy a condition that requires the proponent to achieve a water quality standard that at a minimum maintains or improves the current quality of stormwater discharged from the existing resort area. This would require the proponent to establish an existing water quality baseline and ongoing monitoring over the life of the project to demonstrate a net benefit is being achieved.

These measures are consistent with the Reef 2050 Plan and more specifically the Draft Reef 2050 Water Quality Improvement Plan 2017-2022 which identifies the modification of existing urban stormwater management systems as an opportunity to support water quality improvement.

5.1.3 Queensland planning framework

State Planning Policy

The State Planning Policy (SPP) guides the assessment of projects and through development assessment triggers and determines a project's impact on state interests. A project may be refused if identified impacts on a state interest is unacceptable.

The SPP has effect throughout Queensland and sits above regional plans and local planning instruments in the hierarchy of planning instruments under the planning act.

This means that the SPP prevails over these instruments, to the extent that they are inconsistent with the SPP. The SPP July 2017 outlines the guiding principles that should underpin plan-making processes and development decisions in Queensland.

Given the role of the SPP in development assessment, the SPP July 2017 may also need to be used by applicants when preparing a development application if the SPP July 2017 has not yet been appropriately integrated into the relevant local planning instrument.

As the current planning scheme does not integrate the revised state interests, interim development assessment provisions apply in accordance with Part E of the SPP. Accordingly the proponent conducted a preliminary assessment of the project against the interim development assessment requirements which was later confirmed by MRC and DSDMIP through the EIS assessment process.

The proponent identified in the EIS that the project has five state interests, being:

1. biodiversity
2. coastal environment
3. water quality
4. natural hazards, risk and resilience
5. strategic airports and aviation facilities.

The proponent has considered the SPP through the EIS process and I am satisfied that the proposal is not inconsistent with state interests. The state interests will be managed through subsequent approvals for which I have stated conditions and through environmental authorities which will be obtained by the proponent subsequent to the completion of my evaluation.

Mackay, Isaac and Whitsunday Regional Plan 2012

The Mackay, Isaac and Whitsunday Regional Plan (MIWRP) is a statutory planning framework introduced in 2012 to guide future planning decisions for the region. Regional plans set the long-term strategic direction to guide how the region will grow and respond to change over time by ensuring good planning outcomes are delivered.

The MIWRP recognises tourism as one of the three key economic drivers for the region alongside resources and primary industries. The MIWRP supports tourism on the southern Whitsunday Islands (including Lindeman Island, which is identified as a major accommodation precinct), provided it is reflective of the character and scale of the area, can be serviced and is sympathetic to the existing residential amenity and the natural environment.

In the EIS the proponent provided an assessment of the project against the relevant Desired Regional Outcomes demonstrating that the project is consistent with the MIWRP. The project will create a rejuvenated tourist resort consistent with other island developments in the GBRWHA including Hamilton Island and Hayman Island. Based on the assessment in the EIS and the focus of the MIWRP, I am satisfied that the project is consistent with the regional plan.

Mackay Region Planning Scheme 2017

When the proponent prepared the EIS, the Mackay Region Planning Scheme 2006 was the relevant planning scheme for the project. The planning scheme has now come into effect and applies to the project. The proponent has provided an assessment of the project's consistency with both planning schemes in the EIS.

The planning scheme aims to maintain and strengthen the prosperity, sustainability, vibrancy and liveability of the Mackay region and includes a strategic framework that sets out the policy direction and forms the basis for ensuring appropriate development in the region through to 2036.

The planning scheme is particularly focused on the effective management of the development of tourist facilities in sensitive locations. The planning scheme envisages that tourist development in the highly sensitive coastal and island locations in the Mackay region is subservient to the landscape and the cultural, ecological and recreation values of the area; maintains the stability of the coast and the quality of receiving waters; avoids excessive development intensities or removal of coastal vegetation; and is sustainable and self-sufficient in terms of infrastructure requirements and emergency access.

The planning scheme encourages tourism development that maintains sensitive environmental and landscape character values on Lindeman, Brampton and Keswick Islands and this is reflected in the zoning over the island. The planning scheme identifies Lindeman Island in the Conservation Zone, Open Space Zone and Tourism Area (Major Zone). The proposed continuation of tourism uses on the island is consistent with the current zoning of the planning scheme.

The planning scheme has nine overlays which provide for additional assessment criteria where development is proposed within areas subject to particular issues, features or constraints. Five overlays are relevant to the project, namely landscape character, biodiversity, bushfire hazard, flood and coastal hazards and landslide hazard overlays.

The planning scheme includes assessment tables for each overlay code which set out specific outcomes and acceptable or probable solutions which would demonstrate consistency with the outcomes sought. The EIS included an assessment of the project against the relevant overlay codes and found that the project can generally meet the specific outcomes sought by the planning scheme. Where acceptable or probable solutions cannot be achieved, alternative solutions have been proposed.

I consider that the project is consistent with the intent and policy direction of the planning scheme. The project would maintain the stability of the coastline and improve the quality of discharges from the resort to receiving waters. The project avoids excessive development intensities and minimises the removal of vegetation, consistent with the planning scheme. The project would also be sustainable and self-sufficient in terms of infrastructure requirements and emergency access.

Draft Plan of Development

In line with the requirements of the planning act, the proponent will apply for a variation approval to vary the planning scheme. To support the application, a draft PoD and development code were included in the EIS and is provided at Appendix 5. The draft PoD supports a variation approval under section 43 of the planning act to vary the effect of the planning scheme by specifying:

- development as assessable or accepted development
- the categories of assessment required for different types of assessable development
- matters (the assessment benchmarks) that an assessment manager must assess assessable development against, including a code. The code will form part of the material against which subsequent development applications within the Plan of Development Area will be assessed.

The PoD also includes indicative master plans for the development and demonstrates how the project will conform with the Lindeman Great Barrier Reef Resort Code (the Lindeman Resort Code). The Lindeman Resort Code specifies performance outcomes and objectives for matters such as land uses, infrastructure, visual impacts, natural hazards and environmental management.

The PoD confirms how the development will meet the performance outcomes and objectives, for example, through the approaches of the project's Environmental Management Plan which seeks to avoid, minimise, mitigate or manage environmental impacts; and design principles, including infrastructure to be built to withstand climatic conditions and ensure the development complements its natural setting.

As part of the EIS process, the PoD has been developed and refined in consultation with MRC who advise it is appropriate to now support the application, which, following release of this report, will be assessed by Council.

I am satisfied that for the purpose of a variation approval under the planning act, the EIS adequately describes the proposed land use characteristics of the project. The draft PoD and its Lindeman Resort Code provides sufficient detail for the assessment of all proposed stages of development and will work to ensure sustainable development outcomes.

Further, I am satisfied that state interests such as water quality, biodiversity and the coastal environment have been appropriately considered by the EIS and reflected in the PoD and that the project will work to uphold and comply with the relevant codes of the State Development Assessment Provisions (SDAP) that are designed to protect the state interests.

To ensure that environmental objectives of the PoD are met, I have stated conditions for the variation approval at Appendix 2. My conditions will ensure that, for example, the impacts of stormwater discharge and effluent disposal are appropriately managed from both environmental and public health perspectives.

5.1.4 State Development Assessment Provisions

The State Development Assessment Provisions (SDAP) set out the matters of interest to the state for development assessment. It contains the matters the State Assessment Referral Agency (SARA) considers when assessing a development application on behalf of the chief executive of the planning act.

The SDAP assessment criteria are contained in stand-alone state codes which are broadly grouped into locational, use-based or advice only considerations. The SDAP is a statutory document and is prescribed in the Planning Regulation 2017. Development is required to comply with the performance outcomes of the relevant code and where compliance is not demonstrated, a performance solution is required.

The SDAP modules relevant to the project are:

- State Code 7 – Maritime safety
- State Code 8 – Coastal development and tidal works
- State Code 16 – Native vegetation clearing
- State Code 22 – Environmentally relevant activities.

Maritime safety

The proposed project will occur in tidal waters which triggers State Code 7. State Code 7 of the SDAP ensures development supports the safe operation of vessels in navigable waterways. Maritime Safety Queensland (MSQ) has statutory responsibilities under various maritime safety and transport operations Acts.

The proponent must implement all impact mitigation measures necessary to avoid adverse impacts to the safety, condition and efficiency of vessel operation in Queensland waters. To meet this obligation, I have stated a condition for the variation approval under the planning act which requires the proponent to develop and implement vessel management plans in consultation with the regional harbour master and MSQ. These management plans include:

- maritime execution plan
- vessel traffic management plan
- aids to navigation management plan
- vessel-sourced pollution prevention management plan.

As these management plans would be developed in consultation with the regional harbour master and MSQ, I am satisfied that the project would comply with the performance outcomes of State Code 7, particularly as they relate to the safe operation of vessels in navigable waterways.

Coastal development and tidal works

State Code 8 of the SDAP maintains and conserves coastal processes and avoids impacts to matters of state environmental significance.

Erosion-prone area

State Code 8 requires development to not occur in the erosion-prone area unless the development is one of the following:

- coastal-dependent development
- temporary, readily relocatable or able to be abandoned
- essential community infrastructure
- redevelopment of an existing permanent building or structure that cannot be relocated or abandoned
- cannot feasibly be located elsewhere.

The proponent identified in the EIS that the project complies with all relevant performance outcomes of the erosion-prone area State Code, as the development that is proposed to be located within the erosion-prone area is coastal dependent development which must be located in tidal waters or access tidal water and cannot be located anywhere else. The proposed works to raise and improve the strength of the existing revetment wall are designed to ensure there is no increase in the severity of coastal erosion both on and off site. I am therefore satisfied that the project would comply with this code.

For a more detailed assessment on the potential impacts of storm tide inundation and to the erosion-prone area refer to sections 5.3 and 5.9 of this report.

Water quality

The State Code 8 performance outcome for water quality requires that development maintains or enhances environmental values of receiving waters and achieves the water quality objectives of Queensland waters.

The EIS indicated that stormwater quality is predicted to improve due to enhancements in treatment and re-use within the upgraded resort. The project does not propose to discharge waste water directly into the Great Barrier Reef. Monitoring and maintenance programs to manage terrestrial and marine water quality will be implemented as part of the project.

I have stated conditions for the variation approval to be obtained from MRC in Appendix 2 requiring the proponent to manage impacts on receiving fresh and marine waters, to manage stormwater to ensure that environmental values are protected, and to ensure that sewage is treated and disposed of in accordance with applicable environmental standards.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a water quality monitoring program (WQMP).

I have also stated a condition for the variation approval in Appendix 2 requiring the proponent to develop and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that the

stormwater discharges from the development do not significantly affect the environmental values of adjacent receiving waters.

Through the management measures required by stated conditions and recommendations, I am satisfied that the performance outcome for water quality under State Code 8 can be achieved by the project.

Public use of and access to state coastal land

The performance outcome in the SDAP seeks to maintain or enhance public use and access to and along state coastal land. This ensures that private marine development works are used for marine access purposes which do not interfere with access to navigable waterways. The performance outcome also seeks to ensure erosion control structures are located within the premises they intend to protect, unless there is no feasible alternative.

The project has been designed to maintain public access to state land. The existing jetty provides a public access to Lindeman Island and this will be upgraded as part of the project. Public access tracks will be maintained through the resort and the proponent has committed to maintaining access tracks through the adjacent national park.

The project seeks to upgrade existing erosion control structures rather than establish new structures. Primarily the works relate to reinforcing an existing rock revetment along Home Beach. I accept that these works are required to protect existing and proposed resort infrastructure and that the proposed marine development would comply with the performance outcome.

Matters of state environmental significance

The SDAP performance outcome seeks to avoid impacts to matters of state environmental significance (MSES) in the first instance and prescribes the use of offsets only after it is demonstrated that all reasonable avoidance, minimisation and mitigation measures have been incorporated into the development proposal.

Other than remnant vegetation communities, the EIS identified limited values for MSES in the project area. I am satisfied that the project has been designed to minimise impacts on regulated vegetation, with clearing limited to that necessary to allow construction and operation of the expanded resort.

I note that DEE has considered residual significant impacts on the OUV of the GBRWHA, including matters which are also MSES, including regulated vegetation. In submissions made on the EIS, DEE advised that their assessment had concluded that there would not be residual significant impacts on any MNES. Given that the MSES within the project site overlap completely with matters of national environmental significance (MNES), and impacts have been considered by DEE, DEE advised that offset conditions will not be imposed under the *Environmental Offsets Act 2014*.

My full assessment of MSES and MNES is provided in section 5.5 and Chapter 6 of this report.

I am satisfied that the commitments made by the proponent (see Appendix 6), in combination with the conditions and recommendations set out in this report would ensure that the project complies with the performance outcomes of State Code 8.

Native vegetation clearing

State Code 16 (Native Vegetation Clearing) ensures that development avoids clearing or where avoidance is not reasonably possible, minimises clearing to conserve vegetation, avoid land degradation, avoid loss of biodiversity and maintain ecological processes.

The project triggers State Code 16 and is assessable development as the project requires clearing of regulated vegetation. State Code 16 requires that clearing of native vegetation is avoided where possible.

Ground-truthing of remnant vegetation within the project area confirmed that five remnant regional ecosystems (REs) are present. They are: 8.3.2, 8.12.11a, 8.12.12d, 8.12.13a, and 8.12.14c. The vegetation types within the project area and surrounding national park land are eucalypt woodland to open forest, broad-leaf tea-tree woodland, native grasslands, and coastal vine thicket to dry rainforest.

The project would involve the disturbance/clearing of approximately 10.43 ha of remnant vegetation for the construction of the resort and associated amenities, including 5.07 ha of 'Endangered' RE 8.3.2, 4.2 ha of 'Of Concern' RE 8.12.13a and 1.16 ha of 'Least Concern' RE 8.12.12d.

The EIS demonstrates that the project would comply with State Code 16 by avoiding or minimising clearing to that reasonably required to enable the construction of the expanded resort.

I am satisfied that the development has been designed to avoid clearing where possible and to minimise impacts on native vegetation. Proposed buildings and infrastructure have been located so as to avoid direct disturbance to native vegetation and maximise the use of areas which have been cleared historically.

Environmentally relevant activities

State Code 22 of the SDAP ensures that ERAs are located and designed to avoid or mitigate environmental harm on environmental values of the natural environment, adjacent sensitive land uses and sensitive receptors. The code also ensures development avoids impacts to MSES, and where avoidance is not reasonably possible, to minimise and mitigate impacts and provide an offset for significant residual impacts where appropriate.

The project triggers State Code 22 as the project requires various ERAs including:

- ERA 63 – sewage treatment

The project may require additional ERAs, including:

- ERA 8 – chemical storage
- ERA 15 – fuel burning
- ERA 16 – extractive activities

- ERA 33 – crushing, milling, grinding or screening.

The requirement to secure ERAs for chemical storage (ERA 8), fuel burning (ERA 15), extractive industries (ERA 16) and crushing, milling, grinding or screening (ERA 33) may not be triggered due to the generally small scale of the activities proposed. The proponent will provide further information to DES during detailed design to determine if these approvals are required. I have therefore not set conditions in this report about these matters.

The EIS confirmed that an approval for ERA 63 (Sewage treatment) would be required for the project and I have imposed a condition that sets detailed technical information required to be provided to DES to ensure a streamlined approval process. This detail will be developed during the project's detailed design stage.

The proponent has demonstrated that the project generally complies with this code as the ERAs will be designed and managed to avoid, minimise or mitigate site impacts and that all development will be designed to achieve the relevant objective. I am satisfied that the project complies with this code on the basis that:

- the project would be constructed and operated to avoid environmental harm to the acoustic environment
- the project would be managed to minimise environmental harm to the air environment
- environmental harm due to odour related impacts is unlikely
- the project has been designed to avoid or mitigate environmental harm to the receiving waters environment
- hazardous wastes and contaminants would be managed appropriately and disposed of off-site
- impacts on MSES have been avoided or mitigated.

5.1.5 Coordinator-General's conclusion: Land use and planning

The EIS found that the project is consistent with relevant strategic documents which apply to the GBRWHA including the GBRMPZ, WPM and Reef 2050 Plan. I accept this conclusion.

The consistency of the project with the SPP, Regional Plan and planning scheme was also considered in the EIS. I am satisfied that the project would be consistent with the objectives of those planning instruments.

SDAP provisions relating to maritime safety, coastal development, native vegetation clearing and environmentally relevant activities are relevant to the project. The EIS demonstrates that the project would comply with the performance outcomes of the relevant codes.

For the purpose of a preliminary approval under the planning act, the EIS adequately describes the proposed land use characteristics of the project. The draft PoD and

development code provides sufficient detail to inform the detailed design stage of the project, and for the assessment of all proposed stages of development.

The draft PoD includes a master plan and precinct structure plan that demonstrates the likely form of development, consistent with the proposed development code. Key features include:

- preliminary design code to reduce impacts on scenic amenity associated with the GBRWHA
- ensuring development maintains and enhances the ecological integrity of environmentally significant features on the site and adjoining national park and GBRMP.

While the built form and relationships between the different land uses will be refined by the proponent during detailed design, any development must be consistent with the draft PoD and development code. I have stated a number of conditions in Appendix 2 relating to the variation approval to ensure that environmental outcomes envisaged by the development code are met.

In addition, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 requiring that the proponent submit final precinct development plans for the Minister's approval before the commencement of the action.

I am satisfied that the project would comply with the relevant codes of the SDAP and where compliance has not been demonstrated, an acceptable performance solution has been identified or would be developed by the proponent.

5.2 Tenure

Lindeman Island comprises a variety of tenure, with the majority being national park. Tourist-related development leases have allowed resort operations since 1928. Since this time, accommodation buildings and improvements to infrastructure, including the construction of the airstrip, jetty and golf course have occurred.

Submissions received

Submissions received on the EIS identified the following key issues related to tenure:

- concern with the proposed revocation of over 35 ha of national park for private use
- development of an ecotourism facility (glamping) for private use within national park.

Following the submission period and concerns raised, the proponent has revised the project description and no revocation of national park or use of the national park for glamping is now proposed as part of the project. For detail on project changes see section 2 of this report.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.2.1 Existing tenure arrangements

Lindeman Island comprises seven lots over approximately 637 ha with the existing resort leases totalling an area of 139 ha located on the south-western portion of the island as detailed in Table 5.1 and Figure 5.2 of this report. The balance of the land is undeveloped national park.

Lindeman Island also has an existing jetty which is currently owned by DTMR with the proponent as the appointed manager under section 450 of the *Transport Infrastructure Act 1994*. The jetty is considered a public marine facility on unallocated state land (USL).

Native title has been extinguished over Lindeman Island. Any future native title considerations would be assessed by the state as part of any tenure applications and addressed by the proponent. See section 5.8 of this report for further details.

Table 5.1 Current tenure arrangements

Lot on Plan	Current land use	Tenure	Lot area
Lot 2 on CP858366	Tourist resort Airstrip Service precinct	Perpetual lease	70.362 ha
	Road reserve	Road	1.295 ha
Lot B on HR2029 (part of Lot 429 on NPW622)	Vacant	Term lease	3.28 ha
Lot C on HR2029 (part of Lot 429 on NPW622)	Vacant	Term lease	22.27 ha
Lot D on HR2029 (part of Lot 429 on NPW622)	Gap Creek Dam and golf course	Term lease	40.73 ha
Lot 3 on CP858361	Ranger's hut	Reserve	0.101 ha
Lot 8 on HR1954	Part of pool, accommodation buildings and resort infrastructure	Beach reserve	0.331 ha
Existing jetty	Public access	Owned by DTMR	0.545
Total current resort area:			**138.914 ha**

Figure 5.2 Current tenure arrangements

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Shaping the Future

LEGEND

Existing Tenure (whole of Lindeman Island)

COLOUR ON MAP	TENURE TYPE	PLAN NUMBER	LOT AREA (ha)
	National Park	Lot 429 NPW622	498
	National Park with Lease	Lot B HR2029	3.280
	National Park with Lease	Lot C HR2029	22.270
	National Park with Lease	Lot D HR2029	40.730
	Lands Lease	Lot 2 CP858366	70.362
	Reserve	Lot 3 CP858361	0.101
	Reserve	Lot 8 HR1954	0.331
	Road or Esplanade		1.295
	Existing Jetty		0.545

The lot areas in the above table are based on survey plan data current at the time of the plan issue date

Other

- Proposed Site Boundary
- Cadastral Boundary

N, W, E, S

0 75 150 225 300 375

1:7,500 (metres)

original map compiled at A3 size

14

DRAWING TITLE	Map 3-6: Site Plan with Existing Tenure (enlargement)
DRAWING DATE	14 March 2018
DRAWING VERSION	3.0
COORDINATE SYSTEM	GDA 94; MGA Zone 55
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078

DATA SOURCE

Cadastral data: State of Queensland (Department of Natural Resources and Mines) 2015; Property Boundaries Queensland; Publication date: 02/04/2015.

Lindeman Great Barrier Reef Resort & Spa
ENVIRONMENTAL IMPACT STATEMENT

Site Plan with Existing Tenure (enlargement)

Figure 5.2

5.2.2 Proposed tenure arrangements

National Park

In consideration of concerns raised in EIS submissions the proponent is no longer proposing any changes to national park boundaries. Public access to the national park will be maintained through the project, and the proponent will continue to work with DES to maintain walking tracks.

Term Lease – National Park

The proponent currently holds a term lease over Lots B, C and D of HR2029 totalling 66.28 ha, due to expire on 31 October 2019. The underlying tenure of this land is national park. The conditions of the term lease permit the proponent to provide and operate a golf course and other facilities and services normally associated with a golf course. The lease conditions also require the proponent to maintain public access to the leased area. The proponent is proposing to seek approval from DNRME to extend the term lease for a further 30 years, consistent with the current conditions. DNRME is generally supportive of the lease extension.

The proposed uses over this land remain unchanged from existing uses. The term lease area is currently used for the golf course, Gap Creek Dam and other facilities, including an effluent disposal area. Gap Creek Dam is the only permanent water source on the island with all creeks and streams being ephemeral.

The term lease area also includes land adjacent to the existing aircraft runway. The project involves a small expansion of the cleared area for the runway and some lopping of vegetation beyond the cleared areas to heights appropriate for compliance with relevant aviation standards and codes. Vegetation trimming/lopping will need to occur as a height gradient, with a 20° transitional surface commencing at the edge of the runway strip. Consultation with advisory agencies confirmed that the trimming of vegetation is consistent with the conditions of the term lease.

Perpetual Lease

The existing perpetual lease commenced in 1961 and was issued to the proponent in 2014. The proposed resort is consistent with the conditions of the existing lease that allows the proponent to maintain tourist accommodation of an acceptable standard and to conduct a tourist resort. The lease conditions also require the proponent to provide and maintain satisfactory transportation services between the mainland and the lease area for cruising and/or fishing trips.

The proponent is proposing to add the 0.101 ha reserve for the existing ranger's hut (Lot 3 on CP858361) to the existing perpetual lease. The total area of perpetual lease following the revocation of the ranger's hut would be approximately 70.4 ha.

To facilitate the ranger's hut reserve into the perpetual lease area, the proponent would be required to give notice to the trustee of the reserve (the State of Queensland, represented by DES). Prior to DNRME's consideration of revocation of the parcel, DES would be required to provide written confirmation that there is no objection to the

revocation of the parcel and that it is no longer required for the community purpose. Revocation of the parcel would revert the lot back to USL, which could subsequently be added to the perpetual lease by way of a survey plan.

DES has indicated that the department would be willing to consider the ranger's hut reserve moving into the perpetual lease area.

Alternate accommodation arrangements for the ranger would be negotiated with DES. The proponent has advised that ranger accommodation would be provided within the proposed staff accommodation facilities.

Reserve and road

The existing beach reserve (Lot 8 on HR1954) and the existing road are proposed to remain unchanged through the project. MRC would continue to act as trustee for the beach reserve. The proponent would continue to maintain the road access, consistent with the existing arrangement.

Jetty and moorings

The proponent is proposing to upgrade the existing jetty to include a floating pontoon. The upgrade of the jetty will be undertaken within the footprint of the current structure, using the existing pylons. The additional floating pontoon will not require additional piling. Potential impacts from the upgrade of the existing jetty and moorings are discussed in section 5.3 of this report.

To ensure that the upgraded jetty remains within the footprint of the current structure, and to limit the works associated with the proposed pontoon, I have stated a condition for the Preliminary Approval for Operational Work – tidal works within a coastal management district which requires the jetty upgrade to be consistent with that described in the EIS.

The jetty is proposed to remain in the ownership of DTMR, with the proponent to continue as the appointed manager.

The upgrade of the jetty will require a permit from the GBRMPA following detailed design. The proponent intends to apply for this permit following completion of the EIS process. In addition to the upgrade of the existing jetty, the proponent is proposing to construct additional moorings around Lindeman Island, which would be located on USL. The location of the additional moorings and design would be in accordance with the GBRMPA's *Policy on Moorings in the Great Barrier Reef* and the *Supporting information to the Policy on moorings in the Great Barrier Reef Resort*.

The moorings would be subject to an additional assessment to support a permit application to the GBRMPA and Queensland Parks and Wildlife Service (QPWS), which the proponent would also submit following the EIS process. GBRMPA and QPWS confirmed in-principal support of public and private moorings in the Great Barrier Reef which provide ecologically sustainable and equitable access while preventing environmental harm to sensitive environments. Despite a lack of specific information relating to the location of the proposed moorings, advisory agencies confirmed that suitable locations are likely to be available on soft sediment, away from coral reef communities.

N
W
E
S
0 80 160 240 320 400
1:8,000 (metres)
original map compiled at A3 size

LEGEND

- A — Term Lease (National Park) : ***65.064 ha***
- B — Perpetual Lease : ***70.362 ha***
- C — National Park Lease land proposed to remain in National Park (which requires vegetation management for aircraft safety reasons) : ***1.216 ha***
- D — Area to be added to Perpetual Lease : ***0.1012 ha***
- E — Land to remain as Beach Protection Reserve or other tenure to be determined : ***0.331 ha***
- F — Unallocated State Land : ***0.545 ha***
- Road : ***1.295 ha***

The areas in hectares above are based on survey plan data current at the time of the plan issue date.

Other

- Proposed Site Boundary
- Existing Site Boundary
- Existing Cadastral Boundaries

DRAWING TITLE	Proposed Tenure - Project Change Simplified
DRAWING DATE	09 March 2018
DRAWING VERSION	8.0
COORDINATE SYSTEM	GDA 94; MGA Zone 55
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078

DATA SOURCE

Cadastral data: State of Queensland (Department of Natural Resources and Mines) 2015; Property Boundaries Queensland; Publication date: 02/04/2015.
Basemap: DBI Masterplan; Date: 24/10/2017.

Proposed Tenure- Project Change

Figure 5.3

Figure 5.3 Proposed tenure arrangements

5.2.3 Coordinator-General's conclusion: Tenure

I acknowledge that the proponent made changes to the project during the EIS process which protect national park values while maintaining public access to the island. These changes include removing the need to revoke national park tenure and removing glamping facilities from the national park. I am satisfied that the proposed tenure arrangements are appropriate to allow the project to proceed. The proposed tenure arrangements are consistent with the existing arrangements and conditions on Lindeman Island.

I am satisfied that impacts are minimal and can be managed and to assist with the management, I have recommended the proponent prepare a tenure management plan in consultation with relevant agencies prior to project construction. The tenure management plan would inform the renewal or rolling over of existing leases and identify any proposed amendments to lease boundaries. The final lease arrangements would require the approval of DNRME.

5.3 Marine and coastal environment

The project has the potential to impact on a range of marine and coastal values dependent on water quality. Such values include seagrass beds, coral reefs and significant species and their habitats.

5.3.1 Submissions received

Submissions received on the EIS identified the following key issues related to the marine and coastal environment:

- impacts on water quality in the GBRMP
- impacts of the jetty upgrade
- impacts of artificial lighting on turtles
- marine animal stranding (beaching) response and ensuring adequate monitoring of impacts on marine ecology
- impacts to seagrass and microalgae (for example from anchor damage)
- indirect impacts to coral (for example from anchor damage and suspension of sediments).

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.3.2 Existing environment

Lindeman Island is located in the Whitsunday Islands off the central coast of Queensland. It is an area of high ecological value and is recognised as an area of conservation significance.

Areas of high conservation significance that occur in the study area include:

- GBRMP - which extends seaward from the low water mark and includes a Conservation Zone and Public Appreciation areas adjacent to the project site
- GBRCMP (State Marine Park) – which extends from Highest Astronomical Tide to the boundary of State waters being approximately 3 nautical miles from the coastline
- GBRWHA and National Heritage Place
- around 78 per cent of Lindeman Island is also protected as part of the Lindeman Islands National Park.

Existing coastal development

While Home Beach is generally only usable for swimming at high tide and is often affected by strong south-easterly winds, it supports a number of existing structures considered to be coastal-dependent development. These include a jetty, boat ramp, rock groynes (walls running into the sea), a revetment wall (wall protecting foreshore embankments from erosion), beach hire facilities, swimming pool, walkways and parts of the resort.

The majority of the project site is located within a Coastal Management District declared under the provisions of the CPM Act. Low-lying sections of the site including the structures mentioned above are also mapped as being located fully or partially within coastal hazard areas including the declared Erosion Prone Area and Storm Tide Inundation Area.

Coastal Processes

The EIS presented baseline data and numerical modelling relating to wind, tides, currents and sediment characteristics. This information has assisted the functional design of shoreline facilities.

The EIS is cognisant of projected climate change parameters, mainly in terms of sea level rise and intensification of cyclones, and such factors have informed project design.

Key coastal processes influencing the design of the proposed development, particularly coastal and marine access facilities, include small wind waves, tidal cycles and longshore sediment transport.

From an ongoing maintenance perspective, I note that the waters surrounding Lindeman Island are characterised by low siltation rates and limited sediment transport. These conditions minimise or eliminate the requirement for ongoing dredging, beach replenishment or maintenance of coastal structures.

I note that no maintenance dredging of the navigation channel has been required since construction and no capital or maintenance dredging would be required by the project.

Marine Water Quality

Lindeman Island is located within slightly disturbed, High Ecological Value (HEV) areas as defined under the Environmental Protection (Water) Policy 2009 (EPP (Water)). In

accordance with Schedule 1 of the EPP (Water), the Environmental Values and Water Quality Objectives applicable to the project include those for the:

- Proserpine River basin, including all waters of the basin and adjacent coastal waters (basin 122)
- Whitsunday Island basin, including all waters of the basin and adjacent coastal waters (basin 123)
- O'Connell River Basin, including all waters of the basin and adjacent coastal waters (basin 124).

The relevant environmental values to be considered for Lindeman Island's marine waters (i.e. Whitsunday Islands coastal and marine waters) include those for:

- aquatic ecosystems
- human consumption
- primary, secondary and visual recreation
- cultural and spiritual values.

The EIS stated that water quality of the Mackay Whitsundays region is under pressure from agriculture, forestry, grazing and urban development. Increased nutrients, sediment and herbicide loads resulting from development have impacted negatively on the health of the Great Barrier Reef. Urban and other intensive uses (including sewage treatment plants) account for just over 10 per cent of the total regional particulate nutrient load, and 4 per cent of the regional dissolved organic load (Mackay Whitsundays Water Quality Improvement Plan 2014-2021 (WQIP)).

The EIS confirmed that inshore water quality monitoring presented in the Queensland government's Great Barrier Reef Report Card 2016 (Reef Water Quality Protection Plan) found that inshore water quality in the Mackay Whitsundays region was moderate during 2015–16. The results present data for a site at Seaforth Island which is indicative of marine water quality in the project area, being located less than 1 km south of Lindeman Island.

Monitoring at Seaforth Island indicates that median concentrations of chlorophyll a, nitrate/nitrite, particulate phosphorous and total suspended solids exceeded the water quality guidelines. These background exceedances of water quality guidelines are an important consideration in the setting of site specific water quality objectives for the project and indicate that regional water quality objectives are not appropriate for these (and potentially other) parameters.

Coastal and Marine Ecology

Coral Reefs

Approximately 10 linear km of reef fringes Lindeman Island, extending from tens to hundreds of metres from the shoreline. The existing resort at Lindeman Island is fronted by a fringing reef (a rock platform with coral growing upon it). The reef extends between 100-350 m from the shoreline.

The EIS estimated living coral cover to be generally <25 per cent with most of the reef area consisting of 5-10 per cent cover. The EIS found that the largest area of high density living coral assemblages occurred on the southern side of the island adjacent to the existing jetty and channel.

Beaches and intertidal rocky shores

Lindeman Island has seven beaches, including the resort beach (also known as Rocky Beach or Home Beach) immediately west of the existing jetty, Plantation Beach in the south-east; Turtle Bay in the north-east, Gap Beach in the north; Boat Port in the north-west; and Coconut Beach on the western side of the island and an unnamed beach to the east of Plantation Bay. The existing resort beach consists of coarse sediment and extends for about 225 m west of the existing jetty.

The EIS found that rock platforms occur in intertidal areas, seaward of the boulder fields and beaches of the south-western tip of the island.

Aquatic Vegetation

The EIS reported that seagrass assemblages are generally sparse throughout the shoreline around Lindeman Island. While the EIS did not estimate coverage of seagrass, it found that the densest seagrass meadows were located offshore from Boat Port, at the base of the reef in the vicinity of the existing jetty, and at Coconut Beach.

The densest seagrass meadows are located approximately 300 m south of the existing jetty in soft sediment beyond the edge of the reef.

Halophila species (including *H. ovalis, H. decipiens* and *H. spinulosa*) and *Halodule uninervis* are the two most common seagrass taxa in the project area. These are fast growing, early colonising species that are known to survive well in unstable (shifting sediments) or depositional (subject to sedimentation) environments.

The EIS states that seagrass meadows are generally sparse (mostly between 1 per cent and 5 per cent cover and one patch south of the existing jetty with cover >10 per cent), with a low above-ground biomass, with some soft and hard corals occurring in the same area.

Macroalgae is common on intertidal and shallow subtidal reefs all around Lindeman Island. Macroalgae occurs in amongst living and dead coral as well as on loose rocks in soft bottom substratum with a distribution and abundance pattern virtually complementary to that of corals.

Intertidal and marine fauna

Soft sediment fauna

Soft sediment habitat occurs in both the existing boating channel and turning basin and the benthic habitat beyond the edge of the reef flat which fringes Lindeman Island. These soft sediment habitats are known to host infaunal (live in substrate) and epifaunal (live on substrate) assemblages. These animals are generally found within the upper 30 cm of the sediment.

Fish

The EIS reported that the subtidal rock and reef habitat at Lindeman Island is used by a range of adult and juvenile fish species including cod, butterflyfish, damselfish, wrasses and parrotfish. Over 48 taxa of fish were recorded from depths ranging from 2 to 4 m water depths in the vicinity of the existing jetty and channel.

Fish assemblages of Lindeman Island are typical of inshore waters of the Great Barrier Reef and major reef fin-fish families are likely to be generally similar to those found on reefs located a comparable distance from the mainland. The EIS found that no fish species of conservation significance were likely to be present in the project area.

Sharks and rays

The EIS reported that sharks and rays occur in the project marine area. Black tip reef sharks (*Carcharhinus melanopterus*) were observed over shallow subtidal reef in studies completed for the EIS. The EIS found that no shark or ray species of conservation significance were likely to be present in the project area.

Sea snakes

The EIS stated that sea snakes are likely to forage in all of the subtidal marine habitats in the project marine area. No sea snake species of conservation significance were recorded in the project area, and the EIS concluded that none are considered likely to occur.

Marine turtles

Four of the six species of marine turtles known to occur along Australian coasts would be common in the project marine area. These include flatback (*Natator depressus*) and green (*Chelonia mydas*) turtles, and less commonly theloggerhead (*Caretta caretta*) and hawksbill turtles (*Eretmochelys imbricata*). The leatherbackq (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles are less likely to occur in the project marine area but may occur there very occasionally. All of these turtles are listed threatened and migratory species under the EPBC Act and listed threatened species under the NC Act.

Marine mammals

Several marine mammals (whales, dolphins and porpoises) listed under the ‘cetaceans’ schedule of the EPBC Act and the dugong were considered likely to occur in the project marine area by the EIS. Along with humpbacks, the EIS considered and Bryde’s whales likely to use deeper waters of the project marine area.

There are two core humpback whale habitat areas in the Southern Great Barrier Reef. One of these is located south-east of Lindeman Island, within the inner reef area and extending for approximately 100 km parallel to the coast.

Indo-Pacific humpback, Australian snubfin, bottlenose, common and Risso’s dolphins are considered likely to occur in all subtidal habitats of the project marine area.

All of the whale and dolphin species considered known or likely to occur in the project area are listed under the EPBC Act.

Marine birds

Marine birds, including a number of threatened and migratory birds would occur in the project marine area. These can be grouped broadly into those found commonly on coastal shores, including beaches, rocky shores, mudflats, tidal wetlands and lagoons (shore birds) and those that spend most of their time at sea (sea birds). The majority of these species are listed as migratory or threatened under the EPBC Act and have been assessed in greater detail in section 5.5 (MSES) and 6 (MNES) of this report.

5.3.3 Methodology

Coastal Processes

The EIS presented baseline data and numerical modelling relating coastal processes, including the following key outputs:

- wave modelling obtained from the WaveWatch III™ (WW-III) global wind and wave model
- assessment of short-term storm erosion using the SBEACH modelling package
- determination of erosion-prone areas widths (EPAW) using the Queensland Coastal Hazard Guidelines provided by DES
- wave-overtopping rates were calculated in accordance with EurOtop 2007 guidelines
- investigation of sediment deposition and longshore transport relying on direct field observations and bathymetric survey
- hydrodynamic, sediment transport and water quality processes using the Delft3D hydrodynamic modelling system.

Advisory agencies raised no issues or specific concerns with the numerical modelling completed to support the EIS assessment of coastal processes. I am satisfied that the approach to modelling and assessing coastal processes in the EIS is technically sound and consistent with relevant guidelines.

Marine water quality

The EIS describes rainfall/run-off modelling undertaken for the project, including contaminant run-off. A 1-year ARI catchment run-off event was selected for contamination assessment with discharge to the shoreline occurring at two storm water outlets, one at the western end of the resort beach and one adjacent to the existing boat ramp.

Modelling of impacts on marine water quality was completed at five locations for total suspended solids (TSS), total nitrogen (TN) and total phosphorous (TP). The modelling was discussed with reference to relevant water quality guidelines.

The approach to water quality modelling in the EIS was not queried by advisory agencies, although the adequacy of baseline data was. While I am satisfied that the

approach taken to model the impact of stormwater on the marine environment is sound, further water quality monitoring (prior, during and post construction) would enhance the proponent's ability to identify and respond to any water quality impacts in the long term.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy (Appendix 3) which requires the proponent to prepare a water quality monitoring program (WQMP). The objective of the WQMP is to ensure that resort operations do not significantly impact environmental values of receiving waters. The WQMP would be approved by the Commonwealth Minister for the Environment and Energy.

Coastal and marine ecology

Preliminary marine ecology field surveys were conducted between 21 and 24 August 2013 at five study regions which included the existing jetty location, Plantation Beach, Gap Beach, Boat Point and Coconut Beach.

Rapid assessment methods were used to map and quantify benthic habitats and communities. A total of 167 spot dives were undertaken across the five study regions.

Bathymetry data was collected and interpolated to give a Digital Elevation Model (DEM), as was spatial distributions for per cent cover values of hard corals, soft corals, seagrass, and macroalgae to give "heat maps" of benthic cover.

Advisory agencies did not raise specific concerns relating to the methodology which underpins the marine ecological assessments presented in the EIS. I am satisfied that the combination of field transects and desktop analysis completed for the EIS adequately described marine ecological values.

5.3.4 Impacts and mitigation

Coastal Processes

Agencies raised issues with the safe harbour design proposed in the IAS. These issues include changes to currents and wave heights, siltation of the safe harbour, dredging related impacts and other impacts on coastal processes such as longshore sediment transport.

In response to concerns raised during the EIS process about possible impacts to coral, the Final EIS (FEIS) confirmed that the proposed safe harbour has been removed from the project's scope. Therefore, there will be no direct damage to coral, dredging of the seabed or construction of new breakwaters or revetments by the project. As confirmed in the FEIS the safe harbour is no longer proposed, so the issues raised by agencies have been addressed.

While not a key issue to submitters, the storm tide inundation required consideration in the EIS to address state interests and was of interest to advisory agencies. The EIS proposed measures to control and limit the effects of storm tide inundation and the effects of sea level rise. The EIS found that the issue of ocean inundation and wetting

of the resort complex would be addressed by raising the existing revetment to a crest height of 5.6 m AHD. Advisory agencies are satisfied that these works are necessary and appropriate. I have stated conditions for Preliminary Approval for Tidal Works in a Coastal Management District which would enable these works to be carried out.

In relation to shoreline erosion, the EIS established that there are either existing or proposed revetment works in the vicinity of all proposed coastal infrastructure. As such, shoreline erosion would not occur landward of these structures. EPAW has been established at 10 m landward from the seaward side of the crest level of the revetment(s).

The proponent has committed to all tidal work being designed and sited in accordance with the Guideline: Building and engineering standards for tidal works, Department of Environment and Heritage Protection, 2017. I have included this commitment in Appendix 6 and require it to be undertaken.

Marine water quality

Discharge of stormwater, spills of pollutants and other waste from the resort and vessel operations have the potential to contribute to the degradation of water quality within inshore waters of Lindeman Island and the marine park.

The EIS describes rainfall/run-off modelling completed for the project, including contaminant run-off from two stormwater outlets.

The EIS indicates that during a storm event, the TSS level would spike within 1 hour and be elevated at the outlet pipe for a period of up to 3-4 hours. Total nitrogen would also rapidly spike, returning to baseline levels within 4 hours of the flow event.

The EIS modelling demonstrates that TSS, TN and TP peak concentrations do not exceed marine water guidelines of 0.3 mg/L and 0.03 mg/L for TN and TP, respectively, and that TSS does not exceed 5 mg/L, apart from at the stormwater outlets themselves.

Significantly, stormwater modelling presented in the EIS indicates that pollutant loads discharged to the marine park would be lower than the existing case for all pollutants, including suspended solids, phosphorous, nitrogen and gross pollutants.

The stormwater and water management strategy for the project aims to reduce the pollutant load being discharged to the GBRMP. Specifically, stormwater and water management strategies would be adopted that:

- re-use rainwater, reducing potable and irrigation water demand and stormwater pollutant loads
- treat and re-use wastewater for non-potable uses on site
- minimise the potential sources of stormwater pollutants
- treat storm water run-off to remove sediment and nutrient load
- replicate existing flow patterns
- reduce potential for scour and erosion

- integrate open space with stormwater drainage corridors and treatment areas to maximise public access and recreation and preserve waterway habitats and wildlife corridors.

To ensure that these measures are implemented, I have stated conditions for the variation approval (Appendix 2) requiring the proponent to design stormwater systems in accordance with the Queensland Urban Drainage Manual, the Environmental Protection (Water) Policy 2009 and the planning scheme and associated policies.

The draft PoD is the key planning instrument attached to the variation approval. The variation approval and associated conditions would ensure that stormwater infrastructure is appropriately integrated with the open space network.

The proponent has also committed to ensuring that no refuelling, vessel maintenance or pump-out of wastewaters occurs at marine facilities at the resort. As this will significantly reduce the likelihood of spills and subsequent contamination of the marine environment, I commend the proponent for responding appropriately to the identified risk. I have included this commitment in Appendix 6 and require that it be undertaken.

My stated conditions for the development approval require the proponent to manage impacts on receiving fresh and marine waters, manage stormwater to ensure that environmental values are protected and to ensure that sewage is treated and disposed of in accordance with applicable environmental standards. The conditions require the proponent to prepare a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that stormwater discharges and effluent do not significantly affect the environmental values of adjacent receiving waters or land. These plans will require regular and ongoing monitoring of water quality at treatment stages, for example, before releasing treated effluent to land. These plans are required to be submitted to MRC for approval.

All construction activities will be carried out under the project's EMP and component plans, for example, the Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan. To ensure that these plans are prepared and implemented, I have stated conditions for both the variation approval under the planning act and preliminary approval for tidal works requiring that the full suite of management plans committed to in the EIS be prepared and implemented.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a water quality monitoring program (WQMP). The objective of the WQMP is to ensure that resort operations do not significantly impact environmental values of receiving waters. The WQMP must include:

- Baseline data for current water quality in the receiving environment
- Details of monitoring to be implemented
- Trigger points and additional measures that will be undertaken if monitoring demonstrates that resort operations are significantly impacting water quality in the receiving environment. The additional measures may include management actions for the resort site and/or the provision of environmental offsets.

Coastal and marine ecology

Increased recreational and boating activities

The EIS indicated that marine recreational activities would be essentially confined to the sheltered waters adjacent to the resort and in areas indicated in the Whitsundays Plan of Management as being suitable for motorised water sports.

The proponent holds an existing GBRMPA permit which provides approval for the use of no more than 11 kayaks, 29 windsurfers and nine catamarans.

Increased recreational use of the marine park was an issue raised by multiple submitters.

In addition to increased recreational use, there will be a temporary increase in boating activities during construction. It is estimated that four barge trips per weekday would be required for civil and building works. The length of the largest barge would be 40 m. The existing concrete barge ramp would be utilised during the island's major civil and building works.

It is estimated that during operation, the average daily passenger arrivals/departures by ferry would be approximately 222 people (42 staff per day and 180 visitors per day assuming a three-day average occupancy). It is envisaged that this level of passenger demand would be serviced by extending the current Cruise Whitsundays ferry services to include Lindeman Island.

The EIS stated that a Resort Watercraft and Reef Viewing Management Plan would be prepared as part of the Environmental Management Plan that would include the following:

- designation of no-go areas for watercraft and identification of anchor and berthing sites. This information would be conveyed to skippers of vessels operating in conjunction with the resort through training (site induction), supporting maps and appropriate signage
- demarcating specific vessel launch sites and launch times (determined by daily tidal cycles) to minimise impacts on coral. This would include catamarans, kayaks and windsurfers
- designation of fishing locations on the island, prohibiting fishing activities from occurring on the fringing reef so that pressures on the most productive fisheries habitats are reduced and damage to coral from anchoring and pollution from discarded fishing tackle are avoided
- details of resort education programs to inform resort staff and visitors how to operate their vessel and manage their behaviour in the vicinity of marine turtles or marine mammals. This would include details of minimum approach distances according to standard guidelines.

Coral reefs

The EIS presented modelling which considered the main hazards to corals to be changes to hydrodynamics, sedimentation, turbidity and wave climate. These impacts

were primarily associated with the construction of a safe harbour (and associated dredging), which is no longer proposed.

Potential water quality impacts associated with stormwater discharge, spills from vessels or landside activities at the jetty and boat ramp have the potential to impact coral reef communities. Increased recreational use of the reef adjacent to the resort also has the potential to adversely impact reef communities.

I note that modelling presented in the EIS indicates that pollutant loads discharged to the marine park would be lower than the existing case for all pollutants, including suspended solids, phosphorous, nitrogen and gross pollutants. Nevertheless, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a WQMP. The objective of the WQMP is to ensure that resort operations do not significantly impact environmental values of receiving waters. The WQMP would be submitted to the Commonwealth Minister for the Environment and Energy for approval, and compliance with these conditions would be monitored by DEE.

The proponent has proposed a suite of management measures (to be described in a Resort Watercraft and Reef Viewing Management Plan) to address the impacts of increased recreational usage of the marine park including establishment of no-go zones, management of recreational uses (including fishing) and education of users. I accept that the potential impacts can be effectively managed through the implementation of the Resort Watercraft and Reef Viewing Management Plan. I have stated conditions for the project approval (Appendix 2) which require that the plan is prepared and implemented to ensure that recreational impacts are appropriately managed.

I am satisfied that the approaches presented in the EIS to manage water quality and boating and recreational activities will protect the integrity of coral reef communities fringing Lindeman Island.

Beaches and intertidal rocky shores

The EIS confirms there would be no direct impacts to beaches or intertidal rocky shores as a result of the project as no resort buildings or infrastructure will be constructed in areas supporting these habitats. However, as with coral reef communities, potential water quality impacts associated with stormwater discharge, release of litter, spills of chemicals and wastes, and increased recreational use of areas adjacent to the resort also have the potential to adversely impact these areas.

As previously discussed, the proponent will prepare a water quality monitoring program which identifies appropriate water quality objectives for the site, thresholds for action and actions to be taken should these thresholds be exceeded. I am satisfied that water quality can be effectively managed and that the risk to intertidal shores is low.

I have stated a condition in Appendix 2 requiring the proponent to develop and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that the stormwater discharges from the

development do not significantly affect the environmental values of adjacent receiving waters.

I have also required the proponent to design stormwater systems in accordance with the Queensland Urban Drainage Manual, the Environmental Protection (Water) Policy 2009 and the planning scheme and associated policies.

Aquatic vegetation

The EIS found that moorings would be appropriately designed to accommodate the maximum load requirements (vessel sizes) and for minimising the risk of environmental damage. The precise mooring locations and designs would take into account 'best-practice' guidelines as given in GBRMPA's 'Policy on Moorings in the Great Barrier Reef' and the 'Supporting information to the Policy on moorings in the Great Barrier Reef' and would require additional assessment to support a permit application to the GBRMPA.

However, the establishment of proposed additional moorings has the potential to disturb seagrass and macroalgae communities. It is anticipated that the additional moorings would be located on soft sediment and at a sufficient distance beyond the reef edge to avoid potential harm to coral from the mooring structure and attachments, and vessels.

I am satisfied that the establishment of additional moorings on soft sediment habitats would avoid or minimise impacts on marine environmental values.

The moorings will require a permit from GBRMPA and QPWS and the installation of the moorings is subject to the application, assessment and decision-making processes under the Great Barrier Reef Marine Park Regulations 1983 for a relevant permission to install the moorings, including the suitability of the site.

Intertidal and marine fauna

Spills of pollutants and other waste associated with the resort have the potential to contribute to the degradation of water quality and may pose a direct hazard to soft sediment fauna in deeper waters beyond the nearshore reef. Measures to manage water quality are considered previously in this chapter, including construction of a contemporary stormwater treatment system. I consider these measures adequate to protect water quality as it relates to the habitat of soft sediment fauna.

I have however, stated conditions requiring the preparation of a range of management plans relating to stormwater and wastewater management and recommended conditions to the Commonwealth Minister for the Environment and Energy requiring ongoing water quality monitoring.

The risk to fish, sharks, rays, sea snakes and macrocrustaceans would be low as these species could move away from any areas temporarily impacted by decreased water quality.

Vessel strike

Increased vessel traffic near the marine project area during both construction and resort operation has the potential to increase the risk of collision between vessels and marine fauna. Marine turtles, cetaceans and dugongs are susceptible to harm from vessel strike.

Mitigation measures proposed by the proponent include the establishment of 'go slow' zones around the marine infrastructure, in line with Maritime Safety Queensland (MSQ) boating safety requirements and the preparation of a marine fauna management plan in consultation with relevant agencies including DES. I commend these commitments, listed in Appendix 6 and required them to be undertaken.

Artificial lighting

Artificial lighting has the potential to disturb species such as marine turtles or marine birds that are migrating, nesting or breeding. Artificial lighting was considered a moderate risk in the EIS due to the current artificial lighting profile on the island, the lack of turtle nesting in the project marine area and the availability of alternate bird roosting sites on the island.

I accept that the likely impact of artificial lighting is low and note that the proponent has committed to the implementation of light management strategies to prevent light spill to the coastal and marine environment.

To further reduce and manage the potential artificial lighting impacts of the project, the proponent through the draft PoD has stipulated lighting controls such as installing motion detectors and timers. Coupled with other design measures to reduce the visual amenity impacts of the project such as landscape screening, I am confident artificial lighting impacts will be low and sufficiently managed over the life of the project. I have also recommended the Commonwealth Minister for the Environment and Energy condition the proponent to submit the final precinct development plans for approval before the commencement of the action. The final precinct plans will include details of lighting design.

Jetty upgrade

The upgrade to the existing jetty would largely be accommodated within the same footprint as the existing structure, with the exception of a proposed floating pontoon. The existing pylons would be reused with a new proposed pontoon located to the west of the existing jetty. All necessary services, for example, power and water would be installed on the pontoon.

All work would be subject to a Construction Environmental Management Plan (CEMP) to ensure no adverse impact on the marine environment. I have stated conditions for the preliminary approval for tidal works within a coastal management district (Appendix 2) which require the jetty upgrade to be carried out in accordance with the approved EMP. I have also stated conditions for the variation approval under the planning act which require the proponent to prepare the full suite of some 30 management plans committed to in the EIS, including an updated CEMP.

5.3.5 Coordinator-General's conclusion: marine and coastal environment

My assessment of the potential impacts on the marine and coastal environment has considered the advice of agencies including DEE, DES, DAF, NPSR and MRC. Where relevant, these agencies have been consulted in relation to the development of appropriate conditions for the project.

As the previously proposed safe harbour has been removed from the project, there would be no direct damage to coral, dredging of the seabed or construction of new breakwaters or revetments.

Potential impacts on the marine and coastal environment are largely associated with the indirect effects of stormwater run-off, upgrades to existing infrastructure, increased use and visitation of natural areas and increased vessel movements.

The proposed upgrade to the existing jetty would largely be accommodated within the same footprint as the existing structure, with the exception of a proposed floating pontoon. The impacts of the construction of the pontoon have been considered in the EIS. The proposed addition of a pontoon to the existing jetty structure would require a permit from the GBRMPA.

The EIS indicates that the project will improve the quality of stormwater leaving the site by implementing a range of WSUD measures such as establishing bioretention gardens and basins, constructed wetlands, litter baskets, porous pavements and use of proprietary stormwater treatment devices. For example, a comparison of the existing and developed scenario found that total suspended solids released from the resort would be reduced by 14,400 kg per annum.

I have stated conditions for the variation approval to be obtained from MRC requiring the proponent to manage impacts on receiving fresh and marine waters, manage stormwater to ensure that environmental values are protected and to ensure that sewage is treated and disposed of in accordance with applicable environmental standards. The conditions require the proponent to prepare a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that stormwater discharges and effluent do not significantly affect the environmental values of adjacent receiving waters or land. These plans will require regular and ongoing monitoring of water quality at stages of treatment, for example, before releasing treated effluent to land.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions in Appendix 3 for the Commonwealth Minister for the Environment and Energy which require the proponent to complete 12 months of baseline water quality sampling. I have also recommended that a water quality monitoring program be developed which identifies appropriate water quality objectives for the site, thresholds for action and actions to be taken should these thresholds be exceeded.

I accept that upgrades and improvements to existing facilities within the marine and coastal environment are required to allow the safe and sustainable use of the resort. I

have stated conditions for the preliminary tidal works approval (Appendix 2) to ensure that the potential impacts associated with the upgrades and improvements are appropriately managed in accordance with the project's EMP.

5.4 Water resources

5.4.1 Existing environment

Water for the existing resort was provided from the Gap Creek Dam (Figure 5.4), which has a catchment area of 43.57 ha, an area of 5.9 ha, and a capacity of 199.6 ML.

The water treatment plant has a maximum treatment capacity of 600 kL/day providing water for domestic purposes with bottled water supplementing drinking and cooking requirements.

The wastewater treatment plant which serviced the previous resort at Lindeman Island is currently offline. A small dam located to the south of Gap Creek Dam was historically used for the disposal of treated effluent and subsequently used for golf course irrigation. A temporary treatment plant currently treats wastewater generated on-site for the island caretaker.

Although there are no permanent watercourses mapped onsite, the project site includes ephemeral drainage. Rocky terrain and small catchments mean that flows are minimal, generally occurring after rainfall events and would discharge to the ocean for short periods of time. Likewise, historical groundwater data records indicate that any groundwater resource is limited to rainfall events and is likely to be short-lived.

Other than vegetated swales, no stormwater treatment was provided at the existing resort. The previous resort operated a swimming pool, which will be removed as part of the resort upgrade.

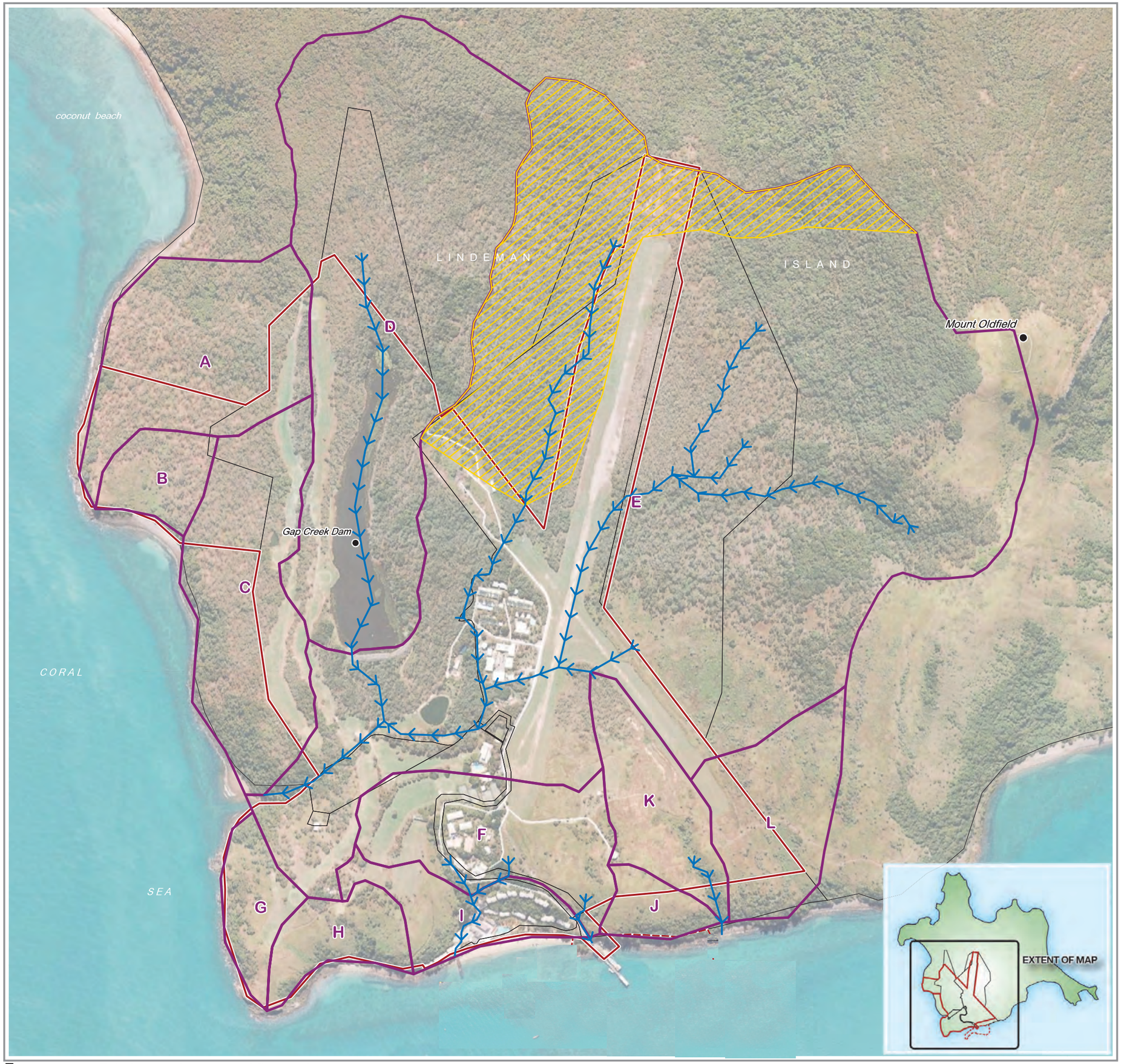

Figure 5.4 Existing catchments and flow paths

Cardno
Shaping the Future

LEGEND

Existing Catchments and Flowpaths

- A — Catchment Boundary
- Diverted Catchment
- Flowpath

Other

- Proposed Site Boundary
- Proposed Sea Bed Lease Boundary
- Cadastral Boundary

N, W, E, S

0 75 150 225 300 375

1:7,500 (metres)

original map compiled at A3 size

DRAWING TITLE	Map 3-10: Existing Catchments and Flowpaths
DRAWING DATE	20 December 2016
DRAWING VERSION	2.0
COORDINATE SYSTEM	GDA 94; MGA Zone 55
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078

DATA SOURCE

Google Earth: Date of Photography 07/03/2008.

Cadastral data: State of Queensland (Department of Natural Resources and Mines) 2015; Property Boundaries Queensland; Publication date: 02/04/2015.

Lindeman Great Barrier Reef Resort & Spa
ENVIRONMENTAL IMPACT STATEMENT

Existing Catchments and Flowpaths

Figure 5.4

5.4.2 Submissions received

Submissions received on the EIS identified the following key issues related to water resource matters:

- treatment of biosolids
- water quality objectives for waters with the potential to impact on public health
- impact and mitigation of algal blooms in Gap Creek Dam
- alternative drinking water supply – contingency planning
- consideration for water management, monitoring and maintenance strategy – timing and alignment with project's EMP
- modelling assumptions, particularly in relation to Model for Effluent Disposal to Land using Irrigation (MEDLI) modelling.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.4.3 Methodology

Water quantity and quality modelling was conducted to simulate operations at the proposed resort. GoldSim modelling was run to show the complex interactions and water flows across the site and to estimate water quantity and balance for the operating development. Model for Urban Stormwater Improvement Conceptualisation (MUSIC) modelling was conducted to determine the effectiveness of the proposed treatments to stormwater quality over the project area, and MEDLI modelling was run to model the capacity for irrigation on site and any wet weather storage requirements. I accept the modelling approach taken by the proponent and acknowledge that, while preliminary in nature, the assessment provides an adequate basis for the evaluation.

5.4.4 Impacts and mitigation

The following water and wastewater infrastructure is proposed to be constructed to service the proposed resort:

- raw water supply main to transfer water from the dam to the new water treatment plant
- water treatment plant located in the services infrastructure precinct
- water supply reticulation network
- sewage collection network
- wastewater treatment plant, located in the services infrastructure precinct
- desalination plant (for resort lagoon only).

In addition to the above new infrastructure, it is proposed to increase the capacity and catchment of Gap Creek Dam, to increase reliability of supply. A recycled water scheme will also support the proposed development.

Water supply and treatment

Water supply volumes were estimated for the project on the basis of an average equivalent population of 1351, accounting for fluctuations in occupancy rates across the year, however assuming 100 per cent occupancy during peak season. GoldSim modelling was conducted to determine the water demand for the site and the reliability of the proposed supply.

The total water demand for the project including internal water supply, pool top-up, irrigation (including losses) is estimated to be 160.1 ML/year or 325 litres per equivalent persons (EP) per day (L/EP/day). On average this would be supplied by:

- 75 ML/year from the dam
- 21.2 ML/year from rainwater tanks
- 18.3 ML/year from recycled water (for non-potable internal demands)
- 45.6 ML/year from recycled water for irrigation.

Raw water is proposed to be supplied from the existing Gap Creek Dam (Figure 5.5). To ensure adequate capacity to meet the projected demands of the development, a diversion of additional catchment is proposed. The dam diversion would involve a cut of 3.786 ha and would divert an additional 27 ha towards the dam, predicted to be equivalent to 71.6 ML/year. This would increase the dam capacity from 199.6 ML to 207.3 ML and thus provide the reliability of supply for the resort.

Run-off from the airstrip will be diverted to stormwater, not to the dam.

Rainwater harvesting would also support water supply for the site and would reduce stormwater volumes, which is discussed further below. The project proposes the following catchment areas and rainwater tanks:

- 350 kL of rainwater tanks proposed to be connected to a minimum of 6300m^2 of roof area catchment near the water treatment plant
- 10 kL tank for each villa with a minimum catchment of 100m^2
- 500 kL for resort pool/lagoon top-up, draining a roof catchment area of 3500m^2
- Rainwater tanks would be used for pool top-up and toilet flushing.

Water harvested from Gap Creek Dam and rainwater tanks would be transferred to a new 162 ML/year capacity water treatment plant. Potable water would then be stored in a 3 ML potable water storage tank located adjacent to the water treatment plant. Potable water mains would then service all resort and staff accommodation, commercial and retail facilities and maintenance areas.

To ensure ongoing potable water quality and reliability, the proponent proposes both a Drinking Water Quality Management Plan and a Water Contingency Action Plan which will consider the necessary actions in the event of failure of the main supply. The management of algae blooms and prevention of cross-contamination from irrigation activities would be managed through these plans.

To further ensure adequate ongoing supply, I expect the proponent to fulfil its commitment to raising and maintaining the existing earth bund near the dam to protect against dam crest failure. In the event of a prolonged dry season, the proponent

proposes that a number of water conservation actions above and beyond those proposed for everyday operations would be implemented, including:

- providing a cover for all pool areas to minimise evaporation
- staff and visitor awareness programs to encourage water saving initiatives
- limiting the occupancy of the resort temporarily until supply is restored.

I have also stated, at Appendix 2, conditions for the variation approval. These conditions further ensure that development is connected to a reticulated water supply system provided with a supply of potable water in accordance with health and safety standards.

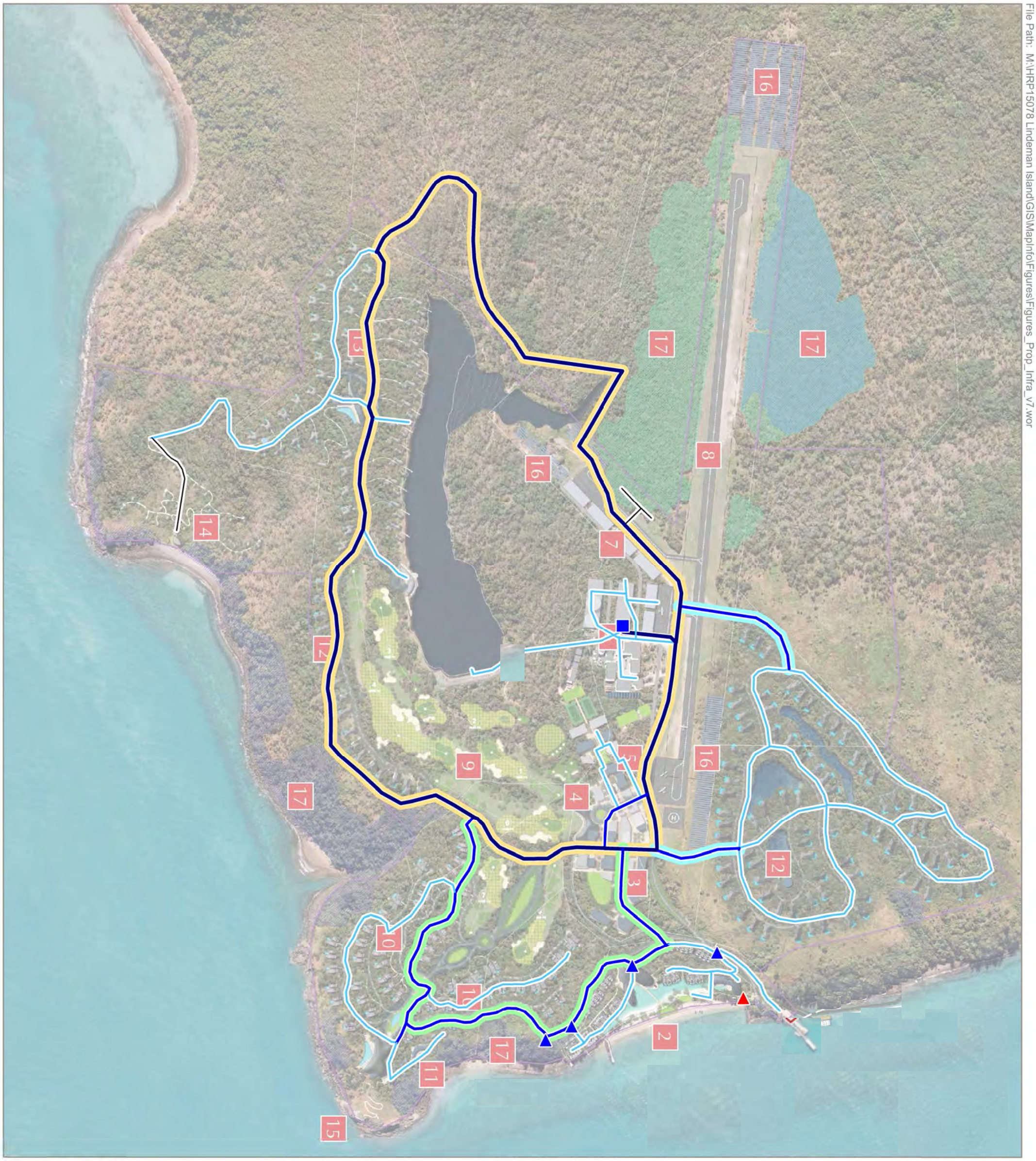

Figure 5.5 Existing catchments and flow paths

Wastewater treatment and irrigation to land

Wastewater generation on-site was conservatively estimated based on a fully occupied resort – 1478 equivalent persons.

A pressure sewage collection system is proposed consisting of a collection tank and grinder pump located at each serviced property, with a common pressure main to connect to a wastewater treatment plant. This style of system (compared with a gravity fed system) is considered appropriate to account for the wide range of elevations on the site, the height of the wastewater treatment plant, the geological constraints and the relative ease of pipe location in terms of both shallow depth and alignment with proposed paths and/or roads.

Wastewater generated on site will be collected and pumped to a new wastewater treatment plant, sized to treat daily flows up to 1 ML. A network of low diameter pipes and pumps will support transfer to the plant which would consist of a membrane bioreactor treatment process, capable of producing class A+ recycled water. A 15 ML storage tank will support the wastewater treatment plant.

Biosolids will be dewatered on the island and would be transported to the mainland for disposal via a registered facility.

Treated wastewater is proposed to be either returned to the hotels/communal areas for non-potable uses (such as toilet flushing or wash-down) or will be used for irrigation of the golf course and on various landscaped areas across the project site. A total of 11.88 ha of land would be irrigated with treated wastewater, including 9.1 ha for the golf course, 1.6 ha for the spa resort entrance, 0.22 ha across general landscaping and a further 0.96 ha over airstrip buffer zones.

The MEDLI modelling conducted has considered the capacity of the receiving environment to sustain the irrigation application rates proposed, in addition to wet weather storage capacity requirements. Modelling indicates, based on 100 per cent occupancy of the resort, with an irrigation area of 11.88 ha, an irrigation rate of 5.6 ML/ha/year and a storage of 15 ML, that zero overflows or discharges are anticipated, with less than 4mm run-off each year. MEDLI modelling shows the receiving environment has the capacity to handle the proposed application rate.

In the event of wet weather, or wastewater treatment plant failure, the following contingency measures are proposed:

- additional storage capacity at individual collection tanks (minimum four hours average dry weather flow)
- 100 per cent standby pumping capacity within the central pump station
- emergency bypass connection point in accordance with the requirements of the MRC Design guidelines
- an alarm system to alert maintenance staff of a power or mechanical failure
- backup power supply via an emergency generator
- emergency storage capacity (minimum four hours average dry weather flow) incorporated into the pump well

- additional offline storage providing four hours storage of three times the average dry weather flow, based on 100 per cent occupancy.

Geotechnical assessments undertaken on site confirm that the geology of the island is not conducive to the formation of aquifers. Further, a review of on-site bore water extraction confirms limited groundwater resource availability. With limited opportunity for aquifer formation and little evidence of groundwater resource, contamination of groundwater due to irrigation is not anticipated to be an issue.

The wastewater treatment plant would be subject to approval of ERA 63 sewage treatment (200 L/EP/day) under the EP Act. As part of the application process, the proponent would be required to confirm and revise MEDLI modelling conducted. A Recycled Water Management Plan (RWMP) would be prepared to guide ongoing monitoring, in addition to a golf course and irrigation management plan.

The RWMP will be required to include how the standards for A+ recycled water as specified in the Public Health Regulation 2005 will be achieved and monitored.

To support application for an ERA 63, I note the following would be required to be provided to DES:

- detail on the existing sewage treatment system, including detail on proposed demolition
- detailed information and revised MEDLI modelling for construction camp sewage treatment
- revised MEDLI modelling for the resort sewage treatment system
- impacts and management of noise for the resort sewage treatment system
- management plans relevant to sewage treatment.

To ensure a streamlined ERA 63 application process, I have imposed a condition at Appendix 1 which sets out the specific information which must accompany the ERA 63 application.

I note as part of the application process the proponent is encouraged to seek advice/ technical support from DES on the assumptions and inputs of the MEDLI model, which would be more readily available at detailed design stage, to ensure the proposal is adequate prior to application.

I am satisfied that the preliminary investigations into wastewater collection, treatment, reuse and disposal, coupled with the proponent's commitments and associated further approval processes under the EP Act are adequate to manage the potential impact of wastewater from the development. I have stated conditions for the variation approval at Appendix 2. These conditions further ensure that development is connected to a reticulated sewage treatment system and that disposal is in accordance with environmental standards.

Construction water supply and wastewater treatment

A 300-person construction camp is proposed for the construction of the resort, which will require both reliable and safe water supply and adequate wastewater treatment systems for the estimated three and a half years of construction.

The EIS details that the existing temporary wastewater treatment plant currently serving the caretaker on the island would continue to be utilised through the construction phase of the resort and that the sewage treatment system previously in operation on the island and currently decommissioned, be dismantled as part of project construction.

The proponent will be required to apply for an EA for ERA 63 to allow the construction of the project's sewage treatment and effluent disposal infrastructure. At that time, it is expected that the proponent will provide detailed information regarding the status of the existing sewage collection, treatment and disposal system. The capacity of the existing infrastructure to accommodate the 300 equivalent persons construction workforce would be determined at that time. If it is found that the existing infrastructure is not adequate to accommodate the construction workforce, the proponent may be required to partially commission the new sewage treatment plant and as such the EA would be required prior to construction.

Existing water supply arrangements will continue during early construction (first six months) including the existing water treatment plant supplying non-potable water demands with bottled water being brought over from the mainland for potable water supplies. Following the installation of the new water treatment facility proposed for the project, the temporary facility will be decommissioned and water supplied for the remainder of the construction period from the new plant. Given the estimated capacity of the new water treatment plant – 443 kL/day and the estimated construction supply demand of 72 kL/day (based on 300 full time employees/240 EP), the new plant is considered more than sufficient for the balance of the construction period.

Lagoon water supply and disposal

A 2.7 ML saltwater lagoon pool is proposed for the project and is to be located on the foreshore of Home Beach. The lagoon would be filled and topped up with seawater pumped through an inlet pipe from the ocean in front of the resort. Water would be filtered through an onsite filtration system prior to being transferred to the pool. The filtration system would filter seawater through sand. The inlet pipe would be fitted with screening to minimise the intake of marine fauna and would be subject to a marine park permit from the GBRMPA under the GBRMP Regulation 1983 and would be subject to approval as prescribed tidal works under the Planning Regulation 2017. The intake pipe design would consider low velocities of seawater intake to minimise disruption to marine life and the possibility of erosion of seabed around the intake structure. There is no outlet/outtake proposed, with pool water ultimately transferred to the wastewater treatment plant, rather than disposing of the water into the sea.

A desalination plant is proposed at the eastern end of the lagoon pool removing salt content prior to the remaining water being transferred to the wastewater treatment plant. The remaining salty brine would be removed from the island by barge and disposed of at a licensed waste facility. Based on similar examples, it is anticipated that the pool would need to be drained once every 2 years for maintenance. The size of the desalination plant is to be determined through detailed design, however it is not anticipated that ERA 64 will be triggered. This is due to the low volume of desalination

that would occur in a day, as wastewater would be received by the wastewater treatment plant on the island and as salt brine would be disposed of at a licensed facility.

The proponent has committed to preparation of a Pool Management Plan which would ensure the operational management and water quality of swimming pools. Due to the routine nature of swimming pool maintenance and management, I am confident a pool management plan would adequately manage water quality for the proposed lagoon and swimming pools.

Stormwater

There are no permanent watercourses on Lindeman Island. Gap Creek Dam spills into an ephemeral watercourse and there are several other small freshwater ephemeral streams on the island which ultimately discharge to the ocean. Several watercourses (referred to as flow paths in the EIS) traverse the project site as shown in Figure 5.4. Stormwater from the project site would be released to these watercourses following treatment. The watercourses which flow through the existing resort and proposed development area are classified as moderately disturbed freshwater. Limited treatment is currently provided to stormwater from the existing development, with vegetated swales providing a level of polishing before stormwater is discharged off-site. However, no other treatment measures are currently in place. Despite the MUSIC modelling conducted on the existing site, stormwater quality shows compliance with water quality objectives.

Water quality objectives for the operational development have been applied from the SPP 2014 and specify a minimum reduction in mean annual pollutant loads when compared to an unmitigated catchment. These include:

- 75 per cent reduction in TSS
- 60 per cent reduction in TP
- 35 per cent reduction in TN
- 90 per cent reduction in gross pollutants (>5 mm).

To achieve the objectives, the project modelled a number of stormwater treatment device options including:

- rainwater harvesting
- vegetated buffers for paths to villas
- vegetated swales maintained throughout the site
- treatment to run-off from impervious areas including bioretention basins, raised bioretention basins and end-of-line bioretention basins, constructed wetlands (with gross pollutant traps and sediment basins for pre-treatment)
- gross pollutant traps
- proprietary treatment devices where the use of water-sensitive urban design is not suitable.

MUSIC modelling was conducted with a combination of the above treatment device options and shows that all treatment options will result in compliance with the water

quality objectives. Modelling shows that despite small increases in impermeable surfaces with the proposed development in place, the additional stormwater quality treatment measures proposed would successfully improve stormwater quality run-off from the site.

To ensure potential impacts on the marine environment are managed as a result of stormwater run-off, the proponent has committed to a baseline marine water quality sampling program. In addition to this commitment, I have included a recommendation in Appendix 3 to the Commonwealth Minister for the Environment and Energy for a marine water quality monitoring program to be development and approved by the Minister that will consider the baseline water quality and that of the operational resort to ensure a net water quality benefit to the marine environment, as required by Reef 2050. For more details on the Reef 2050 plan, see Section 6 of this report.

In addition, I have stated conditions in Appendix 2 that the stormwater system must comply with the Queensland Urban Drainage Manual and MRC planning scheme and policies which address technical and regulatory aspects requiring consideration during the planning, design and management of urban stormwater drainage systems. The condition also requires the avoidance of any contamination to ground or surface waters and that systems associated with stormwater are designed to maintain environmental values specified in the EPP (Water) 2009.

I am confident that the stormwater treatments proposed and the modelling presented in the EIS demonstrates an ability for the project to meet water quality objectives and further can improve on the existing stormwater quality run-off from the site. I am satisfied that the EIS assessment in conjunction with the proponent's commitments, my stated conditions and recommendations can adequately manage potential impacts across the site to meet objectives and improve run-off.

5.4.5 Coordinator-General's conclusion: water resources

I am satisfied that the EIS has adequately assessed water supply and treatment, wastewater treatment and disposal/irrigation and stormwater treatment and release for the proposed project.

I accept the proponent's modelling of both water balance and water quality given the preliminary nature of the approvals sought and acknowledge the commitment to revise modelling, particularly MEDLI modelling at detailed design/ERA approvals stage. I note that in obtaining further approvals, particularly in relation to wastewater treatment, irrigation management will be considered in greater detail.

To ensure a streamlined ERA 63 application process, I have imposed a condition at Appendix 1 which sets out the specific information which must accompany the ERA 63 application.

I note the existing stormwater quality from the site meets specified objectives and commend the proponent's proposed stormwater treatment methods which will improve the current water quality released from the site. The additional treatments will result in the project achieving a net benefit on reef water quality, a key initiative of the government's Reef 2050 plan.

I have considered the development of key management plans such as a Stormwater and Water Management Plan, Irrigation Management Plan and Recycled Water Management Plan and actions committed to (Appendix 6) relating to water resources and their role in ensuring ongoing compliance and management of risks associated with water supply and treatment, wastewater collection and treatment and irrigation to land.

I have stated conditions in Appendix 2 requiring the proponent to manage impacts on receiving fresh and marine waters, manage stormwater to ensure that environmental values are protected and ensure that sewage is treated and disposed of in accordance with applicable environmental standards.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a water quality monitoring program (WQMP).

I have also stated conditions for the variation approval at Appendix 2 requiring the proponent to prepare and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan. Combined, these management plans will ensure stormwater discharges from the development do not significantly affect the environmental values of adjacent receiving water bodies.

I consider that the requirements of subsequent applications, the proponent's commitments and my stated conditions and recommendations are adequate to manage any potential impacts associated with water resources from the project.

5.5 Matters of state environmental significance

The project would require the clearing of native vegetation, potentially impacting terrestrial matters of state environmental significance (MSES). The project also has the potential to indirectly impact additional MSES such as the Lindeman Islands National Park, the Great Barrier Reef Coast Marine Park and marine plants.

Although the project represents brownfield resort development in the Great Barrier Reef, the EIS estimated the project would involve the disturbance and/or clearing of 10.43 ha of terrestrial ground-truthed regional ecosystems. This represents approximately 15 per cent of the total disturbance footprint of the project (including existing buildings and structures) which is calculated at 69.23 ha.

5.5.1 Submissions received

The key issues regarding matters of state environmental significance raised in submissions included the following:

- impacts on endangered and of concern regional ecosystems
- potential impacts associated with the spread of invasive species
- proposed offsets to manage residual impacts.

I have considered each submission and the responses provided by the proponent in my evaluation of the project and my assessment is provided in the relevant sections below.

Submissions which relate primarily to impacts on MSES within the marine and coastal environment are addressed in Section 5.3 of this report.

5.5.2 Existing environment

Protected areas

The project is located adjacent to (and overlaps with) Lindeman Islands National Park. Lindeman Islands National Park protects 14 islands featuring a variety of vegetation types including rainforest in sheltered pockets, open forest in drier areas, grasslands and wetlands.

The portion of Lindeman Islands National Park relevant to the project (Lot 429 NPW622) has an area of 637 ha and is a protected area under the NC Act.

Wetlands and watercourses

There are no wetlands or mapped watercourses within or immediately adjacent to the project area. Although the Queensland referrable wetland mapping identifies some general ecologically significant wetlands along the shoreline of Lindeman Island, these occur outside the extent of the project area and exist in small isolated pockets. The project area is generally categorised by steep scarps to the west and east and watercourses are ephemeral in nature. A man-made dam is present on the site providing water to the existing resort. This is described further in chapter 5.4 – (Water Resources) of this report.

Protected wildlife

Terrestrial

The EIS assessed the potential of the project to cause a significant residual impact (SRI) on protected wildlife habitat. This included:

- areas of essential habitat on the essential habitat map for an animal or plant that is endangered or vulnerable wildlife
- an area that is shown as a high-risk area on the flora survey trigger map and that contains plants that are endangered or vulnerable wildlife
- an area that is not shown as a high-risk area on the flora survey trigger map, to the extent the area contains plants that are endangered or vulnerable wildlife
- an area of habitat (for example foraging, roosting, nesting or breeding habitat) for an animal that is endangered, vulnerable or a special least concern animal.

The EIS noted that all remnant vegetation on Lindeman Island is classified as essential habitat for the coastal sheathtailbat (*Taphozous australis*), listed as near-threatened under the NC Act. Following the EIS, essential habitat mapping rules changed such

that the mapping is no longer valid. The changes to mapping since the EIS are discussed further in section 5.5.4.

No threatened or near-threatened flora or fauna species (as listed under the NC Act) were confirmed present during field surveys, despite targeted survey effort in potentially suitable habitat areas. There are no areas of the island mapped as high-risk on the flora survey trigger map.

A total of 76 fauna species from 42 families were identified within the project area using a variety of different observation and trapping techniques. This included 47 species of birds, 14 reptile species, two amphibian species, and 13 mammal species (including 12 bat species).

Habitat is present within the project area for special least concern animals, including the brown booby (*Sula leucogaster*), white-bellied sea eagle (*Haliaeetus leucogaster*), osprey (*Pandion haliaeetus*), crested tern (*Thalasseus bergii*) and spectacled monarch (*Monarcha trivergatus*). Each of these species is also a matter of national environmental significance and potential impacts on them have been assessed in Section 6 of this report.

Marine

The EIS notes that four of the six species of marine turtles known to occur along Australian coasts would be common in the project marine area. These include flatback(*Natator depressus*) and green (*Chelonia mydas*) turtles, and less commonly the loggerhead (*Caretta caretta*) and hawksbill turtles (*Eretmochelys imbricata*). The EIS considers the leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles are less likely to occur in the project marine area but notes that these species may occur there very occasionally. These species are listed threatened species under the NC Act and are considered MSES.

The EIS presented that the dugong (*Dugon dugon*) is likely to occur in the waters surrounding Lindeman Island. The dugong is a MSES and seagrass surrounding the island provides potential habitat for this species.

Regulated vegetation and connectivity areas

Ground-truthing of the remnant vegetation within the project area confirmed that five remnant REs are present. They are: 8.3.2, 8.12.11a, 8.12.12d, 8.12.13a, 8.12.14c. The vegetation types within the project area and surrounding national park land are eucalypt woodland to open forest, broad-leaf tea-tree woodland, native grasslands, and coastal vine thicket to dry rainforest. There are also areas of non-remnant grassland within the project area, which are dominated by exotic species, particularly Guinea grass.

The EIS discusses corridors and connectivity and concludes that there are no connectivity areas within the project site.

Offset areas

The project area does not contain any legally secured offset areas.

Highly protected zones of state marine parks

A highly protected area of a relevant Queensland marine park is a MSES. Highly protected area means:

(a) a zone classified, under the *Marine Parks Act 2004*, as a conservation park zone, marine national park zone or preservation zone, or

(b) another area prescribed under a regulation or zoning plan, under the *Marine Parks Act 2004*, as a highly protected area.

A conservation park zone within the Great Barrier Reef Coast Marine Park surrounds Lindeman Island and as such this MSES is relevant to the project.

Fish habitat areas

There are no fish habitat areas (FHA) within or adjacent to the project site. The nearest FHA (Repulse FHA-004) is located 14 km to the southwest of the project site. Repulse FHA is 69,496 ha in area and was declared for habitat conservation for fish and prawn stocks and fishing grounds.

Marine plants

A marine plant within the meaning of the *Fisheries Act 1994* is a MSES. The EIS discusses the occurrence of marine plants and notes the presence of seagrass meadows surrounding Lindeman Island. Seagrass assemblages are generally sparse throughout the shoreline around Lindeman Island. The densest seagrass meadows are located south of the existing jetty in soft sediment beyond the edge of the reef.

Weeds and Pests

The EIS found that pest plant species occur commonly throughout the project area, particularly in the non-remnant vegetation communities. Three restricted pest species were observed during the field surveys; giant rat's tail grass, Singapore daisy and lantana. Other significant environmental weeds were observed to be common in the study area, some of which the EIS concluded are impacting the biodiversity values of native vegetation communities.

The EIS concludes that exotic grasses and pasture species such as guinea grass, grader grass, sensitive weed, and Bidens (*Bidens alba var. radiata*) have significantly reduced the biodiversity value of native grasslands areas and these species continue to pose a significant threat to the native grassland areas.

No declared pest animal species were observed in the study area, but several non-native fauna species were observed in various parts of the study area including the cane toad (*Rhinella marina*) and black rat (*Rattus rattus*) and Asian house gecko (*Hemidactylus frenatus*).

5.5.3 Assessment methodology

Assessment of terrestrial values

The description of flora and fauna species, ecological communities and habitats in the project site and broader project area in the EIS was based on desktop analysis of relevant literature, Commonwealth and state online databases and field surveys.

Vegetation surveys were conducted over three survey periods: July 2013, May 2015 and December 2015. Fauna surveys were conducted during two survey periods. The first survey was conducted in autumn, from 11 – 15 May 2015. The second survey was conducted during late spring/early summer from 30 November – 6 December 2015.

I am satisfied that the combination of desktop analysis and field surveys described in the EIS is adequate to describe the terrestrial ecological values of the project area.

Assessment of marine values

Marine communities and habitats in the project area and surrounds were defined through searches of relevant databases, a review of previous studies and site surveys. Preliminary marine ecology surveys were conducted between 21 – 24 August 2013 at five study regions including the existing jetty location, Plantation Beach, Gap Beach, Boat Point and Coconut Beach. Rapid assessment methods were used to map and quantify benthic habitats and communities. A total of 167 spot dives were undertaken across the five study regions.

Bathymetry data was collected and interpolated to produce a Digital Elevation Model (DEM) of the project's marine area. Similarly, spatial distributions for per cent cover values of hard corals, soft corals, seagrass, and macroalgae provided "heat maps" to describe benthic cover. The combined biological and survey data were presented in the EIS.

I am satisfied that the combination of field transects and desktop analysis completed for the EIS adequately determined marine ecological values.

Significant residual impact assessment

The *Environmental Offsets Act 2014* outlines the framework for state environmental offsets and how they should be provided. The provision of an offset should only be required following reasonable efforts to minimise, mitigate and avoid impacts.

Significant residual impact (SRI) guidelines are used to determine the significance of a residual impact on MSES values from prescribed activities. An environmental offset is required when an SRI is considered likely to occur.

The SRI guideline is applied to development assessment under the SP Act. The SRI guideline was used to inform the preparation of the EIS and assess the potential for the project to cause a SRI impact on MSES values.

5.5.4 Impacts and mitigation

Regulated vegetation

The project would involve the disturbance/clearing of 10.43 hectares of remnant vegetation for the construction of the resort and associated amenities. This includes 5.07 ha of 'Endangered' RE 8.3.2, 4.2 ha of 'Of Concern' RE 8.12.13a and 1.16 ha of 'Least Concern' RE 8.12.12d.

The significant residual impact guideline identifies two hectares as the relevant threshold for disturbance to RE 8.3.2 (*Melaleuca viridiflora* woodland on seasonally inundated alluvial plains with impeded drainage), which has a 'sparse' structural category as defined under the VMA. The EIS concluded that there would be a SRI on this community.

DEE considers the endangered and of concern REs within the project site to be an attribute of the Great Barrier Reef World Heritage Area and as such, has assessed the potential for residual significant impact on these communities.

DEE conclude that:

> *"the Department does not consider that the proposed impacts to this vegetation (RE 8.12.3 and RE 8.3.2) would constitute a residual significant impact to the attributes of the OUV of the Great Barrier Reef World Heritage Area requiring compensation in the form of an offset"*.

Because the impacts on RE 8.12.13a have been assessed under the EPBC Act, environmental offset conditions cannot be imposed under the *Queensland Environmental Offsets Act 2014*.

State Code 16 (Native Vegetation Clearing), establishes the requirement to maintain the current extent of endangered and of concern REs for coordinated projects. One of the acceptable outcomes allows clearing of "Endangered" and "Of concern" REs provided that it does not exceed the width or area prescribed in the code. The code allows the proponent of a coordinated project to meet the requirements of the performance outcome – provided that the clearing does not exceed the specific threshold. In this case, clearing of up to 5 ha of grassland is consistent with the code and would not require an offset.

Protected areas

The project initially envisaged the revocation of more than 35 ha of national park. In response to submitter concerns, the proponent amended the project design and tenure arrangements and confirmed in the final EIS that the revocation was no longer required.

However, the proponent will seek revocation of a small area of land (0.101 ha) which currently supports Queensland Parks and Wildlife Services (QPWS) ranger's accommodation and is surrounded by perpetual lease. This is supported by relevant advisory agencies subject to the proponent entering into a deed of agreement with QPWS which will ensure that staff are provided with accommodation within the resort.

The EIS also notes that disturbance to certain areas of the protected area estate are unavoidable for reasons such as aviation safety. There would be trimming of vegetation either side of the airstrip. These areas fall within perpetual lease and the trimming of vegetation required is consistent with the current lease conditions.

Protected wildlife habitat

Terrestrial

Essential habitat is mapped within the project area for the coastal sheath tail bat, as shown on the state regulated vegetation mapping. All mapped remnant vegetation on Lindeman Island is identified as essential habitat for this species on the state published regulated vegetation map. The conservation status of this species was changed to 'near-threatened' on 12 December 2014 and is no longer considered protected wildlife. I note that this species was not positively identified by field surveys within the project area, and potential impacts would be minor, and not affect potential roosting or breeding habitat.

The EIS concludes that the absence of significant flora species from the project area and the retention of potential habitat areas indicate it is unlikely there would be a SRI to any 'threatened' or 'near-threatened' flora species as a result of the proposed development. I accept this conclusion.

Marine

The EIS confirmed that the safe harbour is no longer proposed and the project will not require direct disturbance to coral reefs.

The establishment of proposed additional moorings has the potential to disturb seagrass and macroalgae communities. It is anticipated that the additional moorings would be located on soft sediment and at a sufficient distance beyond the reef edge to avoid potential harm to coral from the mooring structure, vessels and associated attachments.

Moorings would be appropriately designed and sited to accommodate the maximum load requirements (vessel sizes) and for minimising the risk of environmental damage. The precise mooring locations and designs would take into account 'best-practice' guidelines as provided in GBRMPA's *'Policy on Moorings in the Great Barrier Reef'* and the *'Supporting information to the Policy on moorings in the Great Barrier Reef'* and would require additional assessment to support a permit application to the GBRMPA.

Aside from potential disturbance from additional moorings, no direct disturbance or loss of habitats for marine species are expected.

Highly protected zones of state marine parks

Potential impacts on the attributes of the state marine park are considered in detail in Section 5.3 of this report.

The EIS presented modelling which considered the main hazards to corals to be changes to hydrodynamics, sedimentation, turbidity and wave climate. These impacts

were primarily associated with the construction of a safe harbour (and associated dredging), which is no longer proposed.

There would be no direct impacts to beaches or intertidal rocky shores as a result of the project. However, as with coral reef communities, potential water quality impacts associated with stormwater discharge, release of litter, spills, and increased recreational use of marine areas adjacent to the resort have the potential to adversely impact these communities.

Increased recreational use of the marine park was an issue raised by multiple submitters on the EIS. The EIS indicated that marine recreational activities would be essentially confined to the sheltered waters adjacent to the resort and in areas indicated in the Whitsundays Plan of Management as being suitable for motorised water sports.

I am satisfied that these potential threats are adequately addressed by the proponent's approach to water quality management, and the management of recreational activities would protect the integrity of the state marine park in the project area. I have provided further commentary on these matters as part of my evaluation of MNES in chapter 6 of this report.

Impacts of noise and vibration

Submitters raised the issue of noise and vibration impacts on terrestrial and marine fauna, primarily associated with construction works.

The EIS concludes that noise and vibration impacts will be largely limited to construction and that these impacts will be temporary in nature and not significant. The impact of aircraft noise was specifically considered and due to the limited hours of operation of the runway and lack of sensitive species which might be impacted, the impacts of aircraft noise would also be limited. I accept these conclusions.

5.5.5 Coordinator-General's conclusion: matters of state environmental significance

Terrestrial MSES

The EIS confirms the proponent has designed the project with the intention of maximising the retention of native vegetation. However, the principal impact of the project on terrestrial ecological values is some clearing of remnant native vegetation. A total of 10.43 ha of remnant vegetation would be disturbed. This represents approximately 15 per cent of the total 69.23 ha disturbance footprint of the project or less than 2 per cent of the area of the island.

I have stated a condition for the operational work vegetation clearing approval (under s22A of the *Vegetation Management Act*) requiring the proponent to carry out the development in strict accordance with approved plans. This would ensure that no clearing occurs beyond that which was assessed in the EIS.

I am satisfied that the potential indirect project impacts of noise, vibration and lighting levels on terrestrial MSES can be satisfactorily managed and would be addressed by proponent commitments and subsequent approvals.

The issue of offsets for terrestrial MSES was addressed in the EIS in response to submissions. The project would impact on regulated vegetation but would not result in a SRI on any other MSES. Because the impacts on remnant vegetation have been assessed under the EPBC Act, environmental offset conditions cannot be imposed under the Queensland *Environmental Offsets Act 2014*.

To reduce edge effects of the project on threatened ecological communities and to compensate for the loss of remnant vegetation, I have recommended a condition to the Commonwealth Minister for the Environment and Energy requiring the proponent prepare and implement a vegetation management plan (VMP). The VMP will outline how the proponent will protect and restore biological values of remnant vegetation within the project area.

Marine MSES

I am satisfied that the EIS sufficiently assessed the potential of the project to impact on marine ecological values. As part of my evaluation of marine MSES, I have considered submissions received, the proponent's commitments (Appendix 3) as well as the downstream approvals required prior to construction.

To further reduce potential impacts on marine MSES, I have stated conditions in Appendix 2 requiring the proponent to manage impacts on receiving fresh and marine waters, manage stormwater to ensure that environmental values are protected and ensure that sewage is treated and disposed of in accordance with applicable environmental standards.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a water quality monitoring program (WQMP) which demonstrates a net benefit to the Great Barrier Reef. The WQMP must include:

- baseline data for current water quality in the receiving environment;
- details of monitoring to be implemented and how it will demonstrate that net benefit outcomes are being achieved;
- trigger points and additional measures that will be undertaken if monitoring results do not demonstrate that the required net benefit to water quality in the receiving environment is achieved. The additional measures may include management actions for the site and/or the provision of environmental offsets.

I have also stated conditions for the variation approval in Appendix 2 requiring the proponent to prepare and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan. Combined, these management plans will ensure stormwater discharges from the development do not significantly affect the environmental values of adjacent receiving water bodies.

5.6 Transport

The EIS addressed the transport infrastructure requirements of the project and potential traffic and transport-related impacts associated with the project. Potential traffic and transport impacts include:

- construction vehicle movements between Flametree and Shute Harbour via the Proserpine-Shute Harbour Road
- proposed increase in air traffic during operation
- increase in waterborne traffic during construction and operation.

Submissions received

Submissions received on the EIS identified the following key issues related to traffic and transport:

- impact from increased water traffic
- transportation of emergency services to the island
- requirement for a pavement impact assessment
- lack of detail around the potential impacts from visitor traffic on local roads.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.6.1 Existing transport infrastructure

Road transport

There is no information presented in the EIS on road traffic generated by guests and staff travelling to Shute Harbour or Airlie Beach during the previous operation of the resort. It is assumed that guests and staff would have utilised Proserpine-Shute Harbour Road to travel to Shute Harbour Marina.

Maritime transport

Marine access to Lindeman Island is currently available via a south-east facing jetty and barge ramp. As the resort is currently not operating, there are no regular barge services to the island.

The barge ramp is an existing all tide access landing ramp which was used by the former resort to move materials and equipment. There is no work proposed for the barge ramp as part of the project. Lindeman Island is 35 km south-east of Shute Harbour with the nearest mainland harbours being Abel Point Marina and Port of Airlie, approximately 50 km from the island. There is also a marina located at Hamilton Island, approximately 15 km away from the island.

The Whitsunday region has a large number of day maritime operators, extended voyage vessels, charter boats and private craft which service island resorts and key reef destinations.

During the operation of the previous Club Med Resort on Lindeman Island guests accessed the island by ferry from Shute Harbour Marina and via a water taxi from Hamilton Island. Guests arrived at Hamilton Island either by ferry from Airlie Beach or direct flights.

Air transport

The Whitsunday Islands have regular air transport access via the Whitsunday Coast Airport at Proserpine and Hamilton Island Airport. Lindeman Island currently has a grassed unlicensed airstrip which is used by small charter aircraft and helicopters from the mainland (Shute Harbour or Proserpine) and Hamilton Island. Aircraft operation at Lindeman Island requires clearance from Hamilton Island control tower as the island is within the control zone of Hamilton Island.

Island transport

Access around Lindeman Island is currently provided by golf carts and small trucks using a network of pathways. During the operation of the previous resort, golf carts were the main mode of transport around the island for staff and guests and will remain the primary mode of transport for the upgraded resort.

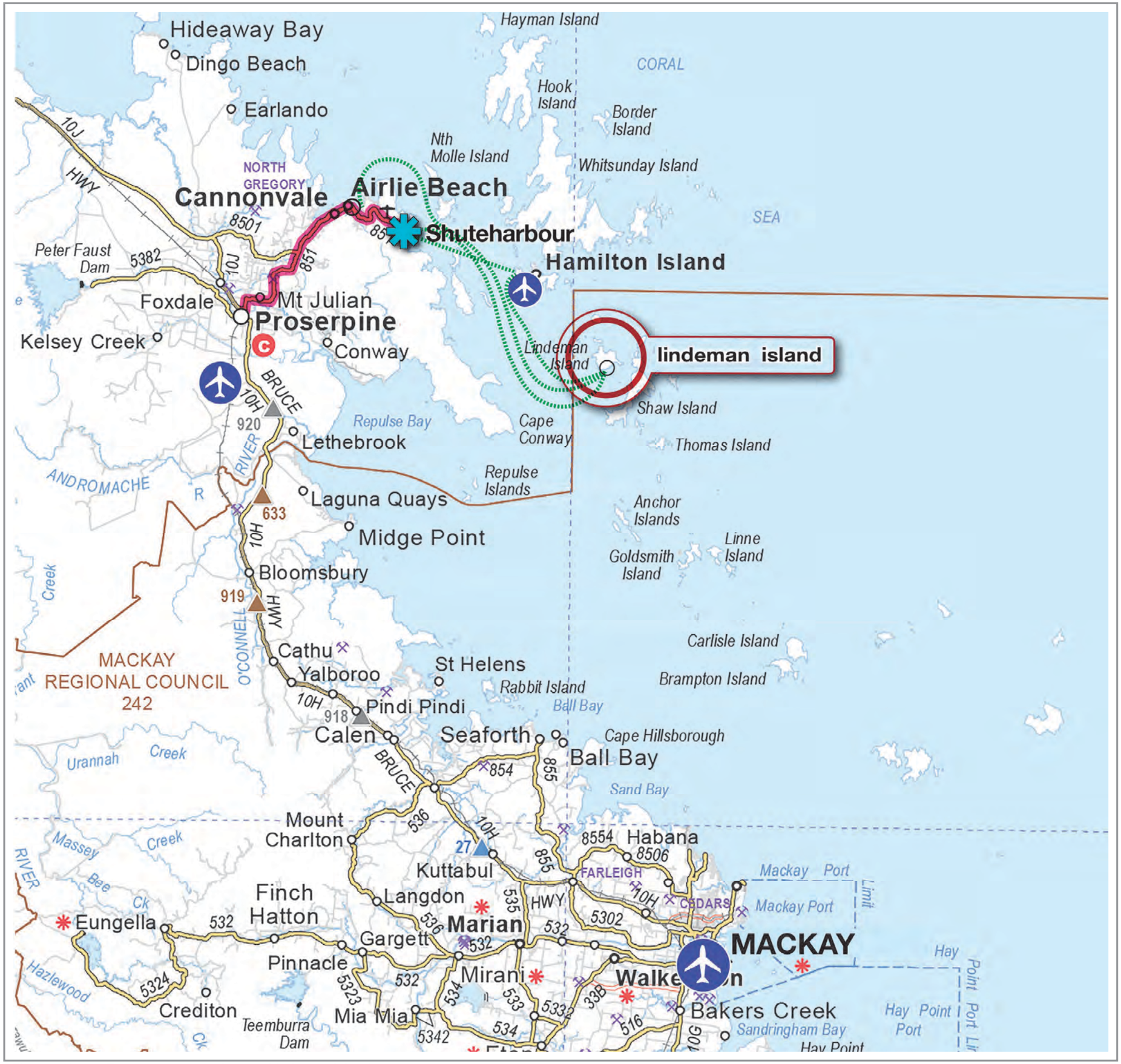

Figure 5.6 Transport connections to Lindeman Island

Cardno
Shaping the Future

LEGEND

- Lindeman Island
- Airport
- State Controlled Road
- State Controlled Road (Proserpine to Shutehaven)
- Ferry Route

N, W, E, S

0 5.0 10.0 15.0 20.0 25.0

1:500,000 (kilometres)

original map compiled at A3 size

DRAWING TITLE	Map 3-26: External Transport Connections
DRAWING DATE	20 December 2016
DRAWING VERSION	2.0
COORDINATE SYSTEM	Unprojected Geographics
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078

DATA SOURCE

Basemap: State of Queensland (Department of Transport and Main Roads); District Map - Mackay Whitsunday (Front); Date: 09/2011.

Lindeman Great Barrier Reef Resort & Spa
ENVIRONMENTAL IMPACT STATEMENT

Lindeman Island External Transport Connections

Figure 5.6

5.6.2 Assessment methodology

Road transport

The EIS used the Guidelines for Assessment of Road Impacts of Developments (GARID), published by DTMR, which sets out the framework for traffic assessments, including road impact assessments and pavement impact assessments.

To establish baseline data, the proponent used DTMR's data on traffic movements. The study area was based on the Mackay Whitsunday District.

To determine future traffic volumes, the proponent used existing traffic data with a general growth trend, derived from historical Annual Average Daily Traffic (AADT) data.

The proponent classified traffic generation under two stages, being construction and operation. The construction stage will generate the majority of trips, with the bulk of deliveries being made via road. The proponent has therefore categorised trips as either workforce or delivery trips.

State-controlled roads identified in the EIS that would be affected during construction include the Bruce Highway, Gregory-Cannon Valley Road, and Proserpine-Shute Harbour Road.

There is a dedicated public road on Lindeman Island which is used to access the National Park and would be maintained in its current form. Some areas of the road would be used for the movement of people and goods during construction. The proponent is responsible for the maintenance and upkeep of the dedicated road. All other roads throughout the resort are private roads.

Consultation with DTMR indicated that the EIS traffic impact assessment methodology was appropriate, although some additional technical assessment would be required to support a revised Road-use Management Plan and Traffic Management Plan. I accept that the methodology presented in the EIS is appropriate for the purpose of assessing the potential road traffic impacts of the project.

Maritime transport

The EIS presents an assessment of existing marine traffic in the wider region including trailerable vessel activity at Airlie Beach and Shute Harbour and vessel traffic from Abel Point Marina, Hamilton Island Marina and Port of Airlie Marina. The EIS also considered the number of commercial vessels operating from either Port of Airlie Marina or Shute Harbour to the Whitsunday Islands.

Increases in marine traffic associated with the project were predicted for trailer boats, marine vessels, personal water sports vessels, barge traffic and ferry traffic.

DTMR made submission on the EIS relating to maritime transport and vessel traffic management. Further consultation with DTMR on this issue resolved that the EIS adequately addressed their concerns, noting that ongoing consultation with the regional harbourmaster was critical to vessel traffic management.

I am satisfied that the EIS adequately and appropriately considers the likely impacts of the project on maritime transport operations in the Whitsundays.

Air transport

The airstrip will be upgraded in accordance with Civil Aviation Safety Authority (CASA)'s Manual of Standards Part 139 – Aerodromes to allow for Code 1B non-instrument, day only (take-off and landing from the south) aircraft to use the airstrip during the operations phase.

The EIS used noise data from *Australian Standard AS2021 – 2000 Acoustics – Aircraft Noise Intrusion – Building siting and construction* (AS2021) to determine the noise from the aircraft overpasses associated with the proposed upgraded runway. AS2021 does not contain source noise level data for the aircraft which would most likely be used for transporting visitors to the operational resort (ALA B350 aircraft) and therefore the proponent based the assessment on the following similar aircraft:

- SAAB 320, Boeing Dash 8, Fokker F50
- corporate jet
- light general aviation aircraft.

I am satisfied that the methodology presented in the EIS is appropriate for determining the noise impacts on visitors and resident workers of the resort associated with increased aircraft activity associated with the project.

5.6.3 Impacts and mitigation

Construction

Road transport

The proponent estimates construction to take three and a half years and construction workforce trips are based on workers arriving and leaving the island during the construction stage. All construction workers would be accommodated on the island so as to reduce daily trips to and from the mainland.

DTMR's GARID determines a significant impact trigger to be a 5 per cent increase in traffic volumes. For construction traffic, the 5 per cent is triggered at the eastern section of the mainland's Proserpine-Shute Harbour Road; which has an 8 per cent impact. This assessment provides the area of investigation for a pavement impact assessment.

The EIS estimates that 66 workers will changeover daily and of this, 36 will drive to Shute Harbour for each shift and 30 will arrive by charter bus. Parking at Shute Harbour is available on a pay by the hour/day basis and the EIS found that there is sufficient capacity to accommodate resort workers. I am satisfied that parking infrastructure at Shute Harbour could accommodate the project workforce.

Based on the materials required, the proponent estimates that during the peak construction period, the daily traffic demand will be a total of 70 truck movements per day (including inbound and outbound truck movements). The EIS identified that there is currently no information provided in relation to the schedule for barge deliveries or the capacity for the barge. The EIS estimates that there will be four barge trips per week day required for civil and building works during the period of major construction. The proponent will be required to consult with the relevant barge operator to accommodate

the additional barges for the project trucks. Once trucks arrive at Lindeman Island they will use the network of existing roads and tracks throughout the resort to reach construction sites until such time as new resort roads are constructed. Distances travelled by trucks on the island during construction would be generally less than 1 km.

The proponent has identified that the deliveries will have a significant (greater than 5 per cent) impact on the entire length of Proserpine-Shute Harbour Road. As a result of this impact, the proponent investigated the potential impact to the Bruce Highway and assumed that 50 per cent of deliveries will originate from the north and 50 per cent from the south. The EIS estimated that the impact on the Bruce Highway is less than 5 per cent, but concluded that a more detailed assessment may yield greater impact.

Based on the potential significant impact on roads during construction, I am recommending the proponent prepare, in consultation with DTMR, a road impact assessment plan and road use management plan to ensure the impacts will be managed appropriately. These plans are required to be submitted to DTMR prior to construction commencing. The proponent has also committed to minimising impact of vehicular traffic by restricting truck movements during daytime and evening periods.

I am satisfied that the proponent's commitments and my recommendations will adequately manage any impacts to the road network during construction.

Maritime transport

The EIS estimates that four barge trips per day would be required for civil and building works and these barge trips will utilise the existing concrete barge ramp.

The EIS assumed that there would be 858 visitors and staff per day to the island and concluded that a regular ferry service would be essential for the successful operation of the resort. The EIS estimates that all staff and 75 per cent of guests would arrive/depart by ferry either from the Port of Airlie Marina or Shute Harbour. The proponent predicts that the level of passenger demand would be serviced by extending the current Cruise Whitsundays ferry services to include Lindeman Island.

The EIS determined that the marine traffic impacts would be substantially confined to Shute Harbour and Port of Airlie, the coastal waters between the island, the mainland and the region's other island and reef destinations.

The proponent has committed to the development of management strategies for vessel movements in and out of the upgraded jetty and barge landing facility in consultation with the Regional Harbour Master and other Maritime Safety Queensland staff. This commitment is captured in Appendix 4 and I require that it be undertaken. The proponent has also indicated that consultation with local recreational fishers, GBRMPA and DES will be undertaken as part of the planning of appropriate schedules and routes to minimise impacts.

Mitigation measures proposed by the proponent include installing appropriate vessel mooring lighting to ensure navigational safety. The proponent has committed to preparing the following management plans prior to construction in consultation with the Regional Harbour Master:

- Marine Execution Plan, including:

  - information about all development related to construction vessels and their operation and relevant impacts of the development construction on the availability of navigable waterway to existing vessel traffic.
- Vessel Traffic Management Plan, including details:
  - about the type and size of vessels, frequency of movements, proposed patterns of operation and existing and proposed navigational channels or waterways.
  - of under keel clearance allowance, cyclone and other extreme weather procedures and tidal information, as relevant.
- Aids to Navigation Management Plan, including details:
  - of possible impacts from the project on operation of existing aids to navigations, changes to existing aids to navigation required, any new aids to navigation required and infrastructure and services required for the proposed project to ensure safety of navigation at all times.
- Vessel-sources Pollution Prevention Management Plan, including details:
  - about any changes to existing vessel-sourced pollution prevention systems required
  - any new vessel-sourced pollution prevention systems required
  - infrastructure and measures required for the project once built and operation to ensure compliance at all times.

To ensure that this commitment is met, I have stated a condition for the variation approval under the planning act (Appendix 2) which requires the proponent to prepare and implement all the management plans listed in Schedule 1 of the draft PoD, including the Marine Execution Plan, Vessel Traffic Management Plan, Aids to Navigation Management Plan and Vessel-sources Pollution Prevention Management Plan.

I am satisfied that these plans, which would be prepared in consultation with Maritime Safety Queensland would adequately manage any adverse impacts to maritime safety.

Air transport

The proponent is not proposing to utilise the airstrip during the construction stage.

Operational

Road transport

The EIS established that of the approximately 300 employees, there would be a changeover of 42 workers per day. Of these 42 workers per day, 24 would arrive by car (24 trips in and 15 trips out) and 19 arrive by bus (3 buses in and 3 buses out) to/from Shute Harbour. The EIS does not include an assessment of impacts on roads during the operational stage of the project. DTMR has recommended conditions requiring that an updated Road Impact Assessment be prepared which considers all stages of the project. I fully support this approach and have recommended conditions in Appendix 5 to ensure that all stages of the project are considered.

The EIS found that a total of 16 car parks will be required on the mainland to accommodate resort workers during operation. As discussed previously, I am satisfied that existing parking facilities at Shute Harbour are adequate to accommodate the car parks required by employees during the operation of the project.

Maritime transport

The proponent currently has approval for seven moorings at Lindeman Island and will obtain approval for additional moorings at sheltered locations around the island to enable the resort's marine craft to obtain safe shelter under a range of wind and wave conditions. As a result of the increase in moorings, the proponent estimates that there will be a marginal increase in vessel activity regionally. For details on the impacts of the moorings see section 5.3 of this report.

Regular barge trips will be required for the resort's provisioning and servicing following completion of construction phase and it is estimated that one barge per day for supplies will be required, including return trip waste removal.

Maritime safety

The EIS identified that the main risk for maritime safety is the risk of marine vessel accidents during the construction and operation stages of the project, including loss of control of a vessel, operator error, adverse weather conditions and poor visibility.

The proponent has committed to implementing the following control measures to prevent or minimise marine vessel accidents:

- develop a cyclone contingency plan in consultation with the Regional Harbour Master
- no storage of hazardous materials
- no refuelling facilities provided
- navigation aids to be install as directed by MSQ
- boat recovering procedures to be put in place
- all moored vessels will be required to be equipped with hydrocarbon spill kits
- emergency spill clean-up equipment to be provided at the jetty.

These commitments would be captured by the proposed Marine Execution Plan.

The Aids to Navigation Management Plan developed during construction, will also include, during all stages of operation:

- the type of systems and infrastructure required, following consultation with the Regional Harbour Master
- changes needed to existing (vessel traffic service) VTS systems and infrastructure
- operational and maintenance requirements
- lifecycle costs and funding schedules.

To ensure that this commitment is met, I have stated a condition for the variation approval under the planning act (Appendix 2) which requires the proponent to prepare and implement all the management plans listed in Schedule 1 of the Plan of

Development, including the Marine Execution Plan and Aids to Navigation Management Plan.

I am satisfied that these measures, in combination with management plans to be developed in consultation with the Regional Harbour Master, will ensure that potential impacts of increased vessel movements will be effectively managed.

Air transport

The existing aerodrome is proposed to be upgraded as part of the project to ensure that the runway is safe and designed to meet CASA safety standards and to improve accessibility to the island by air, especially during the wet season.

The proponent proposes to upgrade the runway by constructing a sealed runway of 966 metres in length and 18 metres in width to facilitate Code B non-instrument, day only flight (such as Beechcraft 200 King Air, DHC-6 Twin Otter and Dornier 228-200). Due to the topography, aircraft would be restricted to take-off and land in a southerly direction only. The smaller, secondary runway to the west is proposed to be used for aircraft parking and hangars.

The proponent has confirmed that detailed discussions will occur with local airports and estimates that two return flights per day will arrive at Lindeman Island, originating from Shute Harbour Airport.

The EIS states that the locations that will be most affected by aircraft noise are:

- new tourist villas
- conference and wedding centre
- 6-star spa resort

The EIS identified maximum aircraft noise levels for the project at 93 decibels. This noise level was adopted to determine the minimum building facade noise reduction likely to be required for buildings within the proposed development to ensure compliance with Australian Standard AS2021: Acoustics – Aircraft noise intrusion – Building siting and construction.

The proponent has committed to minimising aircraft noise intrusion by constructing buildings to specifications which would achieve the Aircraft Noise Reduction (ANR) requirements of the Australian Standard. Such measures are typically practical in nature including secondary glazing of windows and a greater insulation volume in ceilings and walls. In addition, night flights will not be permitted except for emergencies.

I am satisfied that the construction of resort buildings to meet the noise reduction requirements of the Australian Standard would ensure that impacts of aircraft noise on workers and visitors to the resort are minimised.

There are no private residential dwellings on Lindeman Island which might be impacted by increased aircraft movement. The EIS noted that the nearest sensitive receptors from a noise perspective are located on Hamilton Island, some 16 km distant. The EIS subsequently concluded that impacts on sensitive receptors on Hamilton Island as a

result of increased aircraft movement were unlikely to be significant. I accept this conclusion.

The proponent has also committed to ensuring the safety and efficiency of aircraft movement through compliance with CASA requirements. I am satisfied this commitment will manage the safety of aircraft movements to and from the island. This commitment is included in Appendix 4 (Proponent Commitments) and I require that it be undertaken.

Island transport

The proponent is proposing to use golf carts as the primary mode of transport for the island. Conditional registration is required for golf buggies which are operated away from the golf course, golf course parking lot or the road across from the golf course. Route restrictions and a maximum speed limit of 20 km/h apply for registered golf buggies and would be the speed limit for the resort.

The proponent has committed to ensuring the safety of staff and resort guests through ensuring all vehicles are appropriately serviced and lighting is provided in key locations. The use of golf carts as the primary mode of transport is consistent with prior and ongoing use of Lindeman Island and I consider this to be appropriate.

5.6.4 Coordinator-General's conclusion: transport

As a result of the potential impacts on state-controlled and local roads during construction, I have recommended a range of conditions which would ensure that the proponent maintains the safety, condition and efficiency of state-controlled roads during each stage of the project. These conditions require the finalisation of a Road Impact Assessment and preparation of a Road-use Management Plan which must be provided to the DTMR Mackay/Whitsunday office no later than three months prior to the commencement of significant construction works, or as otherwise agreed between DTMR and the proponent.

The proponent is also required to implement a range of management plans to manage the impacts as a result of increased marine traffic. To ensure that this commitment is met, I have stated a condition for the variation approval under the planning act (Appendix 2) which requires the proponent to prepare and implement all of the management plans listed in Schedule 1 of the draft Lindeman Island Plan of Development, including a Marine Execution Plan, Vessel Traffic Management Plan and Aids to Navigation Management Plan. I am satisfied that these plans will adequately manage the potential impacts associated with increased marine traffic.

Overall, I am satisfied that through my stated and recommended conditions and the proponent's commitments, impacts on roads, and from maritime and air transportation can be adequately managed and mitigated.

5.7 Waste

There are environmental risks associated with the proposed demolition of existing resort infrastructure and the construction and operation of the project. A range of

controls and mitigation measures were proposed in the EIS to minimise potential risks associated with waste management practices. These measures include regular monitoring and inspections, tracking of wastes, and regular audits of waste streams to identify opportunities for increased reuse and recycling, and improved waste management practices.

5.7.1 Submissions received

Submissions received on the EIS identified the following key issues related to waste:

- management of waste during demolition and construction, including disposal
- proposed on-site waste management during operation, including disposal
- management of hazardous wastes (including asbestos)
- odour impacts from waste storage/treatment areas.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.7.2 Existing environment

From approximately 1992 until the closure of the resort in 2012, general waste was collected by a waste contractor and taken to the mainland for disposal at the Whitsunday Regional Council's landfill facilities. Waste was compacted at a waste transfer facility located in the island's maintenance compound.

5.7.3 Methodology

The EIS provided a summary of wastes likely to be generated during the demolition and construction phases of the project. Estimated volumes and proposed methods for managing each of these wastes were also presented. These estimates were based on waste volume estimates of similar island resorts and average composition data for demolition and construction (commercial) in Queensland derived from *Construction and Demolition Waste: Waste Management and Resource Use Opportunities* published by the Queensland Environmental Protection Agency (now DES) in July 2002.

To determine the likely volume and composition of waste generated by the operation of the upgraded resort, recent studies conducted for other resorts were reviewed. The EIS assumes a waste generation rate of 2.2kg/person/day (excluding green waste) and suggests that this is a conservative estimate of waste likely to be generated by the project during operation.

I am satisfied that the methodology used in the EIS to determine the wastes likely to be generated during demolition, construction and operation is appropriate and adequately supports the assessment of impacts and development of mitigation measures.

5.7.4 Impacts and mitigation

Construction and demolition waste

The EIS assumed that 10 per cent of construction materials would ultimately be disposed of via the construction waste stream. On that basis, it was estimated that 32,250 m^3 of construction waste would be generated during the three-and-a-half-year construction period.

Estimates of key waste streams generated by proposed demolition works within the resort area are:

- Concrete, bricks, tile and rubble – 2,580 m^3
- Timber – 40 m^3
- Plasterboard – 200 m^3
- Glass – 37 m^3
- Scrap metal – 30 m^3.

Following completion of construction works, decommissioning of construction areas would occur progressively and this would also generate a range of wastes.

The proponent has committed to a range of routine waste minimisation procedures in the EIS including maximising the use of renewable or recyclable materials, use of modular components where possible and selection of materials and resources with less packaging. I accept that the measures proposed by the proponent would reduce the volume of waste generated by the project.

Construction and demolition wastes would be collected and temporarily stored within the island construction compound, prior to being collected and transported to the mainland by a licensed waste contractor for recycling or disposal at approved facilities.

All construction and demolition waste materials would be assessed for the ability to be reused or recycled to minimise the volume of waste requiring disposal. This approach is consistent with the waste management hierarchy described in the *Queensland Waste Avoidance and Resource Productivity Strategy (2014–2024).* Separate waste bins would be provided to enable efficient separation of waste materials, including designated waste storage bins for separation of:

- domestic waste generated by staff and contractors;
- recyclable wastes – paper and cardboard, timber, glass, metals and plastic (separate bins for each); and
- non-recyclable waste for disposal.

The majority of construction wastes that cannot be reused or recycled on the island would be transported to Whitsunday Regional Council's Waste Management Facilities (Landfill and Waste Transfer Station).

All outgoing wastes from the island would be transported by appropriately licensed waste transporters and would be accompanied by relevant waste tracking documentation.

Daily inspections of construction areas would be undertaken during construction works to identify waste management issues and results recorded in an appropriate site inspection register/checklist, in accordance with the CEMP.

To ensure that these measures are implemented, I have stated conditions for the variation approval under the planning act which require the proponent to prepare the full suite of management plans committed to in the EIS, including an updated CEMP.

Operational phase waste management

The EIS adopted a waste generation rate of 2.2 kg/person/day (excluding green waste) for the operational phase of the upgraded Lindeman Island Resort. This equates to the generation of up to 2.1 tonnes of general waste per day.

The key components of the waste stream generated during operation of the resort will comprise paper, food waste and packaging (plastics, glass, cans - all recyclable) consistent with domestic and commercial waste sources. The EIS reports that recycling rates of greater than 70 per cent should be achievable for the resort.

The proponent has proposed a range of practical waste minimisation procedures for the operational phase of the project, including the following:

- purchasing policies would be developed which give preference to products with less packaging;
- electronic marketing would be preferentially used to reduce the amount of paper waste generated; and
- staff would be trained to ensure they are aware of the environmental risks and costs associated with inappropriate waste management.

Wastes that cannot be reused or recycled on Lindeman Island would be transported on barges to the mainland. Wastes would be collected from the island by a commercial waste contractor licensed to transport waste under the EP Act. Waste collection vehicles would travel to and from the island by a barge.

Management of hazardous wastes

The EIS confirms that all potentially hazardous wastes (for example waste oils, batteries, fuels and chemical wastes etc) would be stored in separate containers located within a bunded and roofed hardstand area. No hazardous substances would be placed in general waste bins or recyclable bins.

Hazardous wastes from Lindeman Island will be transported directly to the Kelsey Creek Landfill and adjacent waste facilities in Proserpine. This facility is also able to accept a range of hazardous wastes subject to prior approval from the relevant council and compliance with limitations specified the environmental licence. In particular, this facility can accept asbestos material that may be derived from demolition of the existing resort, provided this material is packaged and sealed in accordance with the relevant Australian Standards. Removal, transport and disposal of asbestos material must be completed by licensed contractors.

A spill response procedure would be established and implemented, and appropriate clean-up equipment/materials would be provided where any construction activities or

waste storage activities (during operation) are undertaken, to prevent the contamination of stormwater.

Any stormwater captured within bunded areas used for the storage and handling of wastes or other hazardous materials would be pumped out and disposed of at an appropriately licensed facility. Routine inspections of bunds would be carried out under the resort's revised Environmental Management Plan.

To ensure that these measures are implemented, I have stated conditions for the variation approval under the planning act which require the proponent to prepare and implement the full suite of management plans committed to in the EIS, including an updated EMP which would include waste management and disposal measures and spill response procedures.

Management of odour

The EIS described measures which would be implemented to minimise odour and dust generation and prevent environmental nuisance, including the following:

- waste receptacles and storage bins for organic and food wastes would be covered;
- no bulk storage of food or other putrescible wastes would occur within 50 metres of sensitive land uses (such as accommodation or dining facilities);
- no biosolids storage would occur within 200 metres of sensitive land uses, and biosolids would be appropriately stabilised to reduce pathogens and odour potential prior to reuse in landscaping;
- composting activities would be managed to prevent odour generation through regular mechanical aeration and screening of feedstock, and/or use of composting systems incorporating odour containment/aeration systems;
- no food waste would be composted on the island; and
- mulching and chipping of green wastes would not be undertaken during windy conditions or close to apartments/villas or tourist areas that may be impacted by dust and other particulates.

The approach to odour management described above would be supported by routine inspection of waste management and storage areas. I am satisfied that the approach proposed by the proponent would prevent environmental nuisance associated with waste storage and handling, including generation of odours and dust.

To ensure that these measures are implemented, I have stated conditions for the variation approval under the planning act which require the proponent to prepare the full suite of management plans committed to in the EIS, including an updated CEMP. The CEMP will include waste management strategies and actions.

5.7.5 Coordinator-General's conclusion: waste

The EIS presents a waste management strategy which is consistent with the *Queensland Waste Avoidance and Resource Productivity Strategy (2014–2024)*.

The nature and volume of waste to be generated during demolition, construction and operational phases of the project has been appropriately described in the EIS, as have a range of practical and achievable approaches to waste management and disposal.

The majority of waste generated during both construction and operation of the resort will be collected from the island by a commercial waste contractor licensed to transport waste under the EP Act 1994 and disposed of at municipal facilities on the mainland.

I am satisfied that the potential impacts associated with waste management, handling, storage and disposal would be effectively managed by my stated and recommended conditions which require the development and implementation of management plans which address waste-related issues. In addition, it is expected that the proponent's commitments will be fully implemented as presented in the EIS and summarised in Appendix 4 of this report.

5.8 Cultural heritage

The project is expected to have minimal impacts to Aboriginal and Torres Strait Islander and Queensland cultural heritage values. There are no known areas of Aboriginal and Torres Strait Islander cultural heritage value within the project site, and Queensland cultural heritage values are limited.

Submissions received

One submission was received during the EIS process that related to the integration of Aboriginal and Torres Strait Islander engagement and consultation throughout the process, including raising public understanding of Aboriginal and Torres Strait Islander interests and affairs, both historical and current and cultural heritage values. The submission also raised concerns around the degradation of cultural heritage sites and landscapes.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.8.1 Existing environment

Lindeman Island has been identified as part of the Ngaro People's traditional country and has been part of areas claimed by a number of native title groups, most recently the Yuibera People. There is no current native title determination applications over the island.

Aboriginal and Torres Strait Islander cultural heritage

The EIS reported that there is one recorded Aboriginal and Torres Strait Islander site, a shell midden, within the project area. This site is located off a remote beach (approximately 2 km north-east of the existing resort) which is inaccessible to resort workers and visitors. The EIS also noted that numerous sites and objects were potentially present in the project area including stone artefacts and shell middens.

Queensland cultural heritage

The Queensland cultural heritage assessment found that there is one site of cultural heritage significance on Lindeman Island which is the existing airstrips. The airstrips are considered significant for their role in the development of tourism on the island. There are two airstrips, one north-south and the other northwest-southeast, intersected to form an X shape. The northwest-southeast airstrip is considered to be in the same location as it was in 1933, being extended in 1946 and 1956 and a new north-south airstrip added in 1957 to accommodate larger planes.

5.8.2 Assessment methodology

Aboriginal and Torres Strait Islander cultural heritage

The proponent completed a contextual desktop assessment to determine the existence, extent and probable levels of significance of Aboriginal and Torres Strait Islander cultural heritage places within the project area. A literature review also informed an assessment of the potential for (currently unknown) places of significance to be present.

Queensland cultural heritage

A desktop assessment was also completed to determine the existence, extent and probable levels of significance of any places of Queensland cultural heritage significance likely to be located within the project area. This assessment comprised searches of statutory and non-statutory registers and databases, and a review of existing published and unpublished reports.

A field survey was also undertaken across the majority of the project area on 27 October 2015. The field survey focused on areas known to be of historical interest within the development footprint, based on desktop analysis.

5.8.3 Impacts and mitigation

Aboriginal and Torres Strait Islander cultural heritage

There will be no direct impact on the site of Aboriginal and Torres Strait Islander cultural heritage significance which is located approximately 2 km from the proposed resort and on an inaccessible part of Lindeman Island.

Acknowledging that further sites may be present, and to address potential impacts on Aboriginal and Torres Strait Islander cultural heritage, the proponent has committed to the development of a Cultural Heritage Management Plan (CHMP) in consultation with traditional owners. The CHMP would include:

- approaches that would manage avoidance of harm to Aboriginal and Torres Strait Islander cultural heritage, or if harm cannot reasonably be avoided, to minimise harm
- arrangements for notification about project activities and work programs, including project area access

- the reasonable requirements and methodologies for carrying out cultural heritage surveys and preparing cultural heritage survey reports
- processes to achieve acceptable protection, management or mitigation of potential harm to Aboriginal and Torres Strait Islander cultural heritage during both the construction and operational phases of the development
- arrangements to ensure workplace health and safety requirements are observed during cultural heritage surveys and management or mitigation work programs
- a dispute resolution process
- a new finds process covering procedures for managing incidental finds
- a cultural heritage induction for project staff, to be incorporated into the contractor/employee manual and induction manual.

I am satisfied that the development of a CHMP in consultation with traditional owners, would ensure that Aboriginal and Torres Strait Islander cultural heritage values are protected within the project area.

Queensland cultural heritage

The EIS notes that the project would impact the airstrips, which are considered to hold Queensland cultural heritage value. The impact relates to the construction of the tourist villa precinct over most of the 1933 airstrip alignment. The 1957 airstrip would be extended and sealed, maintaining its use as an airstrip. The remaining part of the 1933 airstrip would be sealed and used as a taxiway to the hangars, which are to be constructed around it.

Despite being of interest, the EIS found that the airstrips have low inherent heritage value. The EIS concludes that impacts on Queensland cultural heritage values are manageable, provided that the following measures are implemented:

1. archival recording (including historical research, consultation, photography, site plans and related drawings where relevant)
2. development of a Queensland cultural heritage induction booklet for construction workers, to be incorporated into a general site induction. The induction booklet would set out actions to be taken if suspected items or sites of Queensland cultural heritage significance are encountered and would be prepared by a qualified heritage specialist.

The proponent has committed to recording Queensland cultural heritage values in accordance with the relevant guidelines for archival recording. I expect that the proponent's commitments will be fully implemented as presented in the EIS and summarised in Appendix 4 of this report.

I am satisfied that the proposed approach to managing Queensland cultural heritage is adequate to protect identified values and any additional values which may be identified during construction works.

5.8.4 Coordinator-General's conclusion: cultural heritage

The EIS concluded that project would have minimal impacts on Aboriginal and Torres Strait Islander cultural heritage values and any impacts would be managed through a CHMP in accordance with the requirements of Part 7 of the *Aboriginal Cultural Heritage Act 2013* (ACH Act 2013).

I am satisfied that the EIS has adequately investigated and assessed the potential impacts of the project on Aboriginal and Torres Strait Islander and Queensland cultural heritage.

I support the proponent's commitment to the preparation of a CHMP in consultation with traditional owners and note that the CHMP would be required to meet the requirements of the ACH Act.

I am also satisfied that the proposed mitigation measures for Queensland cultural heritage would ensure potential impacts to are appropriately managed.

5.9 Hazard and risk

The EIS presented a project hazard and risk assessment consistent with Australian Standards, which prioritised and recommended mitigation for potential impacts to property and people. The EIS assessed key issues relating to hazard and risk at the expanded resort including the health and safety of construction workers, resort staff and the broader community and the management of emergency events.

The AEIS confirmed that the amended project design does not compromise the validity of the assessment presented in the EIS in relation to hazard and risk; accordingly, the proponent has indicated that the previous assessment remains applicable for the amended project.

5.9.1 Submissions received

Submissions received on the EIS identified the following key issues related to hazards and risks associated with the project:

- evacuation and emergency response procedures
- management of the resort during natural disasters (for example cyclones)
- bushfire hazard and management
- environmental risks such as spills of hazardous substances.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

1.1.2 Existing environment

The EIS identified a range of unplanned events which could impact the project during construction and operation, including the following:

- natural hazards such as cyclones, storm tide inundation, flooding, bushfire, landslide, shoreline erosion and implications related to climate change

- fire and abnormal events
- failure of environmental protection and control devices
- impacts from increased visitation and use of the natural environment; and
- major spills or leakages of hazardous materials including spills from marine vessels into the GBRMP.

Wildfire

Records of wildfire events on Lindeman Island presented in the EIS almost exclusively list the cause as 'escaped from rubbish dump'. There are however, relatively frequent occurrences of wildfire initiated by natural events. The EIS notes that bushfire is likely to occur in any given year and that during the life of the development multiple bushfire events are likely to occur on the island and present a potential risk of harm to human health and property.

Cyclones

The EIS found that the average number of cyclones affecting the Whitsunday region each year is between 1 and 2, occurring most frequently between January and March. Cyclones are expected to generate significant winds on the project site. The most extreme waves affecting the project are likely to be cyclonic-wind driven waves. Project design has responded to the risk posed by cyclones.

Floods

The existing case 1 per cent Annual Exceedance Probability (AEP) flood levels and depths across the project site were assessed in the EIS (a 1 per cent AEP has a one in a hundred chance of being exceeded in any year). The results show that the flood flow is currently conveyed in a steep valley which discharges towards the existing resort. Some overflow occurs during the 1 per cent AEP event, causing flooding to existing buildings.

The EIS provided a detailed design of the stormwater drainage system for the project which has taken these flood flows into account. All future buildings would be immune to flooding in the hypothetical 1 per cent AEP event.

5.9.2 Methodology

The hazard and risk assessment presented in the EIS was undertaken in accordance with AS/NZS ISO 31000:2009 Risk Management and SA/SNZ HB 436:2013 Risk management guidelines - companion to AS/NZS ISO 31000:2009.

The hazard and risk assessment (risk register) includes reasonably anticipated hazards associated with the redevelopment of the Lindeman Great Barrier Reef Resort, together with an assessment of the likelihood of occurrence to obtain a measure of risk associated with each hazard. A residual (mitigated) risk ranking was provided in the EIS for the major hazards identified.

I am satisfied that the approach to hazard and risk assessment in the EIS is consistent with industry standards and appropriate in the context of the project.

5.9.3 Impacts and mitigation

Health and Safety

The risk assessment completed for the project in accordance with Australian standards concluded that health and safety risks can be reduced to an acceptable level.

Risks to health and safety considered in the EIS included the following:

- worker accidents during construction
- safety risks to pedestrians (in Airlie Beach) due to construction traffic
- visitor accidents or illness during operation of the resort
- mental health of construction workers
- communicable disease outbreak
- natural disasters requiring evacuation.

As the proponent has committed to the development of an Environmental, Health and Safety Management Plan and the risk assessment undertaken for the project does not identify any unmanageable risks, I am satisfied that systems can be successfully established to capture and control health and safety risks associated with the project. I support these commitments, included in Appendix 4, and require the proponent to fulfil the commitments.

Natural disasters

The EIS notes that a Natural Disaster Strategy (NDS) would be developed in consultation with key local and state agencies to respond to all possible natural disasters that may occur during the life of the project. The strategy would reference the *Whitsunday Disaster Management Plan 2014* in the nomination of mitigation measures to protect the community and community assets from identified natural disasters which may impact all or part of the Whitsunday Region. The strategy will focus on preparation for the impact of, and recovery from, a disaster, mitigation and post disaster response.

Bushfire

The EIS includes a bushfire assessment and management plan which responds to a site-specific bushfire hazard and risk assessment. The operating resort has been assessed as having an extreme risk of sustaining harm to human health and property in the event of a high-intensity bushfire, in the absence of appropriate mitigation measures; and having a medium risk of sustaining harm to human health and property in the event of a high-intensity bushfire, in the presence of appropriate mitigation measures.

The bushfire assessment presented in the EIS concludes that the resort's infrastructure, patrons and staff should not be exposed to an unacceptable level of risk of harm in the event of a bushfire, so long as appropriate management measures are put in place. Management measures proposed in the EIS include responsive design principles (for example construction of a perimeter road to separate built structures from bushfire hazard areas), establishment of asset protection zones, development of a

bushfire management plan and provision and maintenance of appropriate firefighting equipment.

Notwithstanding the efforts of the proponent, fire management within those parts of Lindeman Island that are managed by QPWS will affect the risk profile of the proposed development. As such, the proponent will need to work cooperatively with QPWS to develop a consolidated approach to the management of bushfire risk. I commend the proponent for committing to working collaboratively with QPWS to minimise bushfire risk and to the development of a Bushfire Management Plan. These commitments are included in Appendix 6 and I require that they be undertaken.

Cyclones

The risk of damage to persons and property due to cyclones is considered in detail in the EIS. The EIS confirms that the proponent has committed to the development of an NDS and a set of emergency response procedures and evacuation procedures. In addition, the EIS also includes the commitment that a refuge shelter and associated facilities will be provided within the revitalised resort complex. Several sites have been identified as suitable for the development of cyclone shelters. This is consistent with the WDMP and I fully support this commitment and require it to be undertaken.

Flooding

Detailed hydrologic and hydraulic modelling presented in the EIS shows that for the proposed development the 1 per cent AEP flood event in the Gap Creek catchment there is flooding in the vicinity of some of the proposed buildings including the aircraft hangars, and a small part of the tourist villa district located east of the runway.

The proposed extension to Gap Creek Dam will increase the catchment area contributing to the dam. During small rainfall events, a constructed waterway will direct flow contained in the main channel of the creek to the extension of the dam. During medium to large rainfall events, some of the run-off from the additional catchment will be directed to the dam, but the remainder will continue in a southerly direction along the existing floodplain to maintain natural flow patterns.

The flood assessment also included a dam-break analysis. In a dam-break scenario the sudden release of a large volume of water from the dam has the potential to overtop the existing ridge near the golf course, allowing flow to discharge towards the resort area. A dam crest failure has the potential to increase the population at risk. The proponent has committed to raising the elevation of the existing earth bund by 500 mm to protect against dam crest failure. This commitment is included in Appendix 6 of this report and I require that it be undertaken.

Storm tide inundation

The EIS proposed measures to control and limit the effects of storm tide inundation and the effects of sea level rise. The EIS found that the issue of ocean inundation of the resort complex would be addressed by raising the existing rock revetment wall on Home Beach to a crest height of 5.6 m AHD. In addition, appropriate floor levels have been adopted for building design to address storm tide inundation and sea level rise. I have stated conditions for preliminary approval for tidal works within a coastal

management district, including the proposed works to raise the crest height of the rock revetment wall to 5.6 m, thereby protecting the resort from storm tide inundation.

I am satisfied that the risk posed by storm tide inundation and potential impacts of sea level rise have been appropriately considered in the EIS and that the residual risk is low.

Environmental risks

A project-wide EMP has been developed to guide the management of the project and incorporate key commitments of the EIS. The EMP provides performance criteria to minimise the impacts of the project on the surrounding physical and social environment during the construction and operational phases, provides mechanisms whereby the environmental performance of the works can be measured, and specifies corrective actions in the event of non-compliance with the stated criteria.

The EMP includes the requirement for preventative maintenance programs as an additional control measure to reduce the risk of environmental harm, including inspection, maintenance and maintenance records requirements for all site equipment and infrastructure.

I am satisfied that the proposed approach to the management of environmental risk is appropriate to the scale and nature of the project. To ensure that the EMP is updated, I have stated conditions for the variation approval under the planning act which require the proponent to prepare the full suite of some 30 management plans committed to in the EIS, including an updated EMP. The EMP would be approved by MRC.

Evacuation and emergency response

Evacuation and Emergency Response Plan

An Evacuation and Emergency Response Plan (EERP) will be prepared for the resort construction and operation and will include specific provisions relating to training, criteria for declaring an emergency, emergency contact details, onsite plans to handle emergencies, a description of the mechanisms to alert people to an emergency, emergency procedures, and evacuation routes and procedures.

The plan will be developed in consultation with the Whitsunday Disaster Management Group (which includes representatives from Whitsunday Regional Council, Queensland Police Service (QPS), Queensland Fire and Rescue Service (QFRS), State Emergency Service (SES) and MSQ), Queensland Health, Emergency Services, and other stakeholders to determine the most efficient, safe and practical management and transport procedures (for example transport to Proserpine or Mackay).

Emergency response procedures

The EIS confirms that emergency response procedures will be prepared by the resort operators to outline instructions which all project personnel and emergency service personnel would follow in the event of an emergency (for example bushfire; flooding; cyclones; dam failure event and disease outbreaks). The procedures will provide guidelines for actions to be taken during an emergency to minimise the potential for:

- loss of life and/or injury to people
- damage to the environment
- damage to the built environment.

The procedures will consider all relevant matters including:

- analysis of foreseeable hazards
- assessment of the impacts from the identified foreseeable hazards
- assessment of what constitutes an emergency
- emergency contact details for key personnel who have specific roles or responsibilities under the Environmental Emergency and Management Plan (for example fire warden, medic etc.)
- onsite plan to handle incidents with contact details for emergency services
- a description of the mechanisms for alerting people to an emergency or possible emergency (for example siren) and post emergency procedures (for example notifying the regulator)
- testing of emergency procedures under emergency-like conditions including the frequency of required emergency drills
- analysis of possible evacuation routes and hazardous areas.

Emergency management planning for the project follows formal processes structured on the principles of AS 3745-2010 - Planning for emergencies in facilities. The EIS has considered and assessed risks associated with disaster and catastrophic events as part of its ongoing operation of the resort.

Based on the results of the assessment the proponent has committed to the development of governance frameworks, procedures and plans for emergency management of situations that may potentially arise from its business and operational responsibilities. The frameworks, procedures and plans would be prepared in consultation with the Whitsunday Regional Council, QPS, QFRS, SES, MSQ and Proserpine Hospital.

I am satisfied that the proponent's approach would ensure that appropriate and effective emergency response procedures are in place during all stages of the project. These commitments are included in Appendix 6 and I require them to be undertaken.

5.9.4 Coordinator-General's conclusion: hazard and risk

I am satisfied that the emergency management planning processes for the upgraded resort are consistent with current industry practice for emergency management and the proponent's need to meet its obligations in respect of workplace health and safety, environmental and other regulatory areas.

The EIS confirms that both an EERP and NDS will be developed in consultation with the Local Disaster Management Group, Queensland Health, Emergency Services, and other stakeholders.

Fire management within those parts of Lindeman Island that are managed by QPWS will have a substantive influence on the risk profile of the proposed development. In

that respect, it will be important that a co-operative approach to fire management is implemented between the new operators of the expanded resort and the QPWS.

The proponent has committed to working collaboratively with QPWS to develop and implement fire management strategies.

The proponent has also committed to works on the existing dam to improve safety. The elevation of the existing earth bund would be raised by 500 mm to protect against dam crest failure.

I am satisfied the management measures and controls identified in the EIS, along with the commitments described above, are adequate to safeguard against any health and safety consequences from hazards associated with the project. These commitments are included in Appendix 6 and I require that they be undertaken.

5.10 Social impacts

5.10.1 Introduction

A Social Impact Assessment (SIA) was undertaken for the project in accordance with the requirements of the project's TOR and the Coordinator-General's SIA Guideline (2013). Specifically, the proponent was required to:

- engage with key stakeholders
- establish a local and regional social baseline for communities surrounding Lindeman Island
- identify the likely social and economic impacts arising from the project
- identify measures to enhance or mitigate impacts
- identify workforce arrangements and management strategies
- propose a framework to monitor the effectiveness of the enhancement and mitigation measures during all stages of the project.

The SIA considered potential social impacts in the context of the following areas of influence:

- the Whitsunday and Mackay regions
- local workforce traveling from Mackay, Airlie Beach, Jubilee Pocket, Cannonvale, Proserpine and Shute Harbour
- the potential resident locations for non-resident workforce, which included the regions of Townsville, Rockhampton and Brisbane.

5.10.2 Submissions received

Public submissions received in response to the draft EIS raised the following key issues relating to social matters:

- general support for the project to stimulate to the regional economy, provide local jobs and opportunities for local businesses

- pressure on existing infrastructure such as emergency services, disaster management, and health and safety
- road network access issues related to traffic and transport management and maintenance during construction and operations.

I have considered each submission, and the responses provided by the proponent in my evaluation of the potential social impacts of the project. My assessment is provided in the relevant sections below

5.10.3 Community and stakeholder engagement

Community and stakeholder engagement in support of the EIS process commenced in March 2016 and included:

- meetings with key stakeholders, including government agencies, peak industry groups, community organisations and business groups
- circulation of a newsletter to over 144 stakeholders seeking comments
- project website providing information and an opportunity to provide comments on the project
- two community meetings in Airlie Beach and Mackay supporting the public notification of the EIS.

I consider the engagement which the proponent has undertaken to date to be adequate for the purposes of supporting the EIS. However, stakeholders have expressed the need for an ongoing engagement program and wider engagement with potentially impacted localities. Ongoing engagement should be broadened to fully capture the directly impacted communities in the Whitsunday region; including Airlie Beach, Jubilee Pocket, Cannonvale, Proserpine and Shute Harbour.

To ensure that stakeholder interests are clearly identified, effectively managed and the proponent is responsive to stakeholder feedback, I have imposed a condition to require the proponent develop a community and stakeholder engagement plan (CSEP). I require the CSEP to be submitted to me for approval at least 3 months prior commencement of the construction phase of the project and that it be regularly reviewed and updated.

5.10.4 Workforce management

The project would require an average annual workforce for the construction phase of approximately 300 persons over 3 years. It is proposed for the construction workforce to be housed on Lindeman Island in temporary workers accommodation.

The proponent states that the construction workforce will be predominately ‘drive-in, drive-out’ (DIDO) (70 per cent) with the remainder being ‘fly-in, fly-out’ (FIFO). Local DIDO workers would commute to the Shute Harbour departure point and travel by ferry to the Island. The DIDO construction workforce is expected to be drawn from Mackay, Airlie Beach, Jubilee Pocket, Cannonvale and Proserpine. The FIFO construction workforce would fly into Proserpine and travel by charter bus and ferry or fly into Hamilton Island airport and travel by ferry to Lindeman Island.

The EIS noted the available pool of labour in the Mackay region with relevant skills and experience in the construction industry. It is anticipated that the construction workforce would be initially sourced from the Mackay and Whitsunday regions, taking advantage of available skilled labour. The expected annual employment generation for construction represents 0.4 per cent of the projected 2018 total labour market and 5.1 per cent of the current unemployed persons in the Mackay region. The EIS states that the construction of the project is not likely to place an undue strain on the Mackay labour market due to the significant spare capacity that exists within the labour market.

It is estimated that 300 full-time equivalent (FTE) employees will be required once the resort is fully operational. The operational workforce would be sourced primarily from the Whitsunday region and accommodated during their roster in a new workers accommodation village precinct on the island, built during the construction phase. It is estimated that the day-to-day running of the resort would comprise 0.5 per cent of the projected 2023 labour market for the Mackay region. The Whitsunday region has the capacity and a long-established role in the provision of labour to support the operation of tourism facilities in the Whitsunday Islands.

I consider it unlikely that the project will cause a local workforce shortage during construction or operation.

Mitigation measures

The proponent has committed to sourcing employees from within the local and regional area.

The EIS includes the commitment to develop strategies that will provide a healthy environment for DIDO and FIFO workers that support social and family connection and good mental health. The EIS confirms initiatives that will deliver on these strategies including:

- a contractor wellbeing plan to be developed and undertaken by all contractors
- onsite facilities and activities for rest and relaxation to support work-life balance
- mental health practitioner/counselling services
- an alcohol and drugs policy and code of conduct to be developed and enforced
- consideration of flexible rostering arrangements.

I note that the proponent has committed to maximise employment opportunities for local skilled workers, young trainees and apprentices, Aboriginal and Torres Strait Islanders and mature age trainees and apprentices. I support these commitments and require them to be undertaken.

The CSEP will also provide a framework for the identification of training, employment and collaboration opportunities.

5.10.5 Housing and accommodation

As the majority of the project construction and operation workforce is expected to be drawn from the existing local and regional resident population, there will be a negligible impact on the local and regional housing market and short-term accommodation.

All of the on-site construction workforce would be accommodated in a temporary workers camp on the island and the operational workforce would be housed in a new village precinct on the island.

Mitigation measures

I consider that the utilisation of local workforce would alleviate any strain on housing availability in the local area normally associated with the influx of workers to the region seeking local accommodation. Additionally, the provision of on-site accommodation for local and FIFO workers would manage the impact of demand for housing on the mainland.

5.10.6 Local business and industry content

The project will provide opportunities for local industries during construction, for example in the supply of contractor personnel, construction materials, charter flights, ferry and bus services.

Once the project becomes operational, there will be increased opportunities for local businesses and particularly those in tourism and hospitality to provide goods and services to the project.

Mitigation measures

The proponent has committed to prioritising local content, where there is the capacity in the Mackay and Whitsunday regions.

In addition to this commitment, I have required that the proponent's CSEP detail the manner in which the proponent will engage with local industry service providers to ensure that they are aware of potential opportunities.

5.10.7 Health and community wellbeing

The EIS documents have identified a range of issues that may potentially impact the health and wellbeing of the local community in the construction and operation of the project. If not appropriately managed these may include:

- increased traffic volumes and increased road safety concerns
- potential anti-social behaviour by project workers during project construction and operation
- increased demands on emergency services and existing disaster management arrangements
- increased demands on health and other public community services.

The EIS noted that both Airlie Beach and Mackay have a range of fire and ambulance services. There are a range of doctors, medical services and allied health professionals on the mainland, and there is also a doctor available on Hamilton Island, 15 minutes away by boat from Lindeman Island.

The mainland centres of Mackay and Airlie Beach/Cannonvale (as well as some of the nearby islands) have facilities and services upon which visitors and employees of the resort will ultimately rely for a broad range of needs.

Mitigation measures

The proponent has committed to adopting strategies and programs that ensure accessible transport and safe traffic conditions for local pedestrians, commuters and workers. These commitments include:

- limiting the transport of large, non-standard loads of equipment to off-peak and to avoid, where possible, the main streets of townships leading into Shute Harbour
- implementation of a Traffic Management Plan.

The proponent has also committed to developing strategies that ensure local health and emergency services are not unduly stretched when workers are either injured or unwell. These strategies include:

- ensuring sufficient first aid qualifications on-site
- development of a resort onsite health management plan in liaison with Queensland Health, emergency services, and other stakeholders to determine the most efficient and practical management and transport procedures
- liaison with emergency services to determine the most efficient route for transporting sick or injured workers (Proserpine or Mackay)
- consideration of engaging a nurse practitioner when a peak visitor threshold is reached and/or during peak periods.

The proponent has also committed to strategies and programs that support community cohesion and prevent anti-social behaviour. These initiatives include:

- engaging workers in community-based activities such as sports tournaments and volunteering
- providing good behaviour pacts with employees.

I consider these commitments to be appropriate and require them to be undertaken.

5.10.8 Coordinator-General's conclusion: social impacts

Overall, I consider that the project presents social benefits for Mackay, Airlie Beach, Jubilee Pocket, Cannonvale, Proserpine and Shute Harbour and the Mackay and Whitsunday regions generally. Social benefits will include increased employment and business opportunities during both construction and operation.

As the majority of the workforce is expected to reside locally, I consider that the project is unlikely to result in excess demand for housing during construction and operation. I note that the proponent has committed to prioritising local content, to the extent possible.

I am satisfied that any potential impacts on health and community wellbeing as a result of the project can be appropriately managed through implementation of the commitments which the proponent has made.

I am satisfied that the proponent has undertaken adequate community and stakeholder engagement to inform the EIS, however I note some stakeholders have expressed the need for an ongoing and wider engagement program with potentially impacted stakeholders. To ensure that this occurs, I have imposed a condition at Appendix 1 to require a CSEP, which will provide a practical framework for the delivery of ongoing community and stakeholder engagement activities.

5.11 Economic impacts

The EIS addressed direct and indirect economic impacts on local, regional and state economies arising from the project using input-output multipliers. Major project impacts were estimated using a Net Present Value (NPV) methodology that considered the direct and indirect benefits and costs of the project. Overall, the construction and operation of the proposed resort would have a significant positive impact on the regional economy. The project will add $480M to Mackay's Gross Regional Product (GRP) during construction and $100M annually to Mackay's GRP during operations.

5.11.1 Submissions received

Submissions received on the EIS identified the following key issues related to the economic impacts associated with the project:

- potential flow-on economic impacts to industries and companies in the region
- non-monetary benefits of the project
- promoting engagement and/or services of Traditional Owners in business and employment
- maximising employment opportunities for local skilled workers.

I have considered each submission, and the responses provided by the proponent in my evaluation of the project. My assessment is provided in the relevant sections below.

5.11.2 Terminology

The economic impact assessment presented in the EIS uses a wide range of terms to describe the local and regional economies impacted by the project. This is primarily the result of the project potentially impacting two regions and two local government areas.

The EIS uses the following terminology:

- Mackay local area – refers to the Mackay region local government area within which the subject site is located
- Whitsunday local area/Whitsunday tourism area – refers to the Whitsunday region local government area. The subject site is located within 5km of the boundary of this local area and is likely to directly impact this area due to the proposed transport of

employees, materials, supplies and tourists through this local government area (via Shute Harbour)

- Mackay region – refers to the Mackay region statistical area 4, which is defined by the Australian Bureau of Statistics (ABS) as including Mackay region, Whitsunday region and Isaac region local government areas. This region is defined as a region for economic purposes by state and federal government agencies and economic data is more readily available for this region
- Mackay tourism area – refers to the Mackay region and Isaac region local government areas, which has been defined as a tourist destination by state and federal tourism agencies and for which tourism data is readily available
- Airlie Beach local area – refers to the urban area of the corridor from Shute Harbour to Cannon Valley, including Airlie Beach and Cannonvale. It is equal to the Airlie – Whitsundays SA2 defined by the ABS and is a smaller area contained within the Whitsunday local area.

5.11.3 Regional and local economy

The EIS found that the Mackay region's economy is primarily based upon coal, tourism and agriculture. Coal is Queensland's largest export and the western part of the region contains the northern part of the Bowen Basin, Australia's largest coal resource. The Bowen Basin recorded a boom in activity during the 2008 to 2012 period, followed by three years of contraction, in line with falling coal prices. At a regional level, this has led to lower population growth, higher unemployment rates and excess housing capacity.

Tourism is a significant economic sector for the Whitsunday local area, which boasts a number of popular island resorts and associated infrastructure at Airlie Beach and Shute Harbour.

The EIS reported that the Whitsunday local area has a small population of 34,300 centred on the Airlie Beach area, Proserpine, Bowen and Collinsville. The Mackay local area has a moderate population, numbering 123,700 persons with major population centres in Mackay and Sarina.

The Mackay region is one of 13 regions for which GRPs have been prepared in the Experimental Estimates of GRP prepared by the Queensland Government's Statistician's Office. In 2010/11, the Mackay region contributed 8.5 per cent of the state's Gross State Product (GSP), with its GRP estimated at $22.8B.

The dominance of the mining sector in the Mackay region is demonstrated by it contributing more than half of the region's economic output. Mining's contribution to economic output is more than five times the state average.

The EIS reported that accommodation and food services sector is the region's third largest contributor (behind mining and construction,) At 7.6 per cent, this is almost three times the average state contribution. This reportedly reflects a strong tourism sector in the Whitsunday local area.

5.11.4 Project demand

The Mackay and Whitsunday tourism areas have recently released Destination Tourism Plans that set out the areas' visions, brands, market opportunities, growth strategies and target visitation levels. Both Plans support the state government's commitment to double visitor expenditure by 2020 (to $3B) in the *DestinationQ Blueprint 2012-2015.*

Tourism forecasts released by Tourism Research Australia in 2016 project that international visitor arrivals to Australia will increase by 5.6 per cent per annum over the next decade, whereas domestic visitor nights are projected to increase by 3.1 per cent per annum over the same period. International visitor arrivals will be driven by the emerging China market, which is expected to increase at 13 per cent per annum over the next decade.

The Mackay tourism area is aiming to increase domestic visitor expenditure by 45 per cent in the 2013 to 2020 period and international visitor expenditure by 71 per cent in the same period. The Whitsunday Tourism Area is aiming to increase domestic visitor expenditure by 76 per cent in the 2013 to 2020 period and international visitor expenditure by 78 per cent in the same period.

The redevelopment of the Lindeman Island resort is consistent with the Queensland Government's Mackay Destination Tourism Plan, which presents priority strategies for increasing leisure and air access, including support for the re-opening and investment in major accommodation and attractions (Brampton Island, Lindeman Island, Keswick Island and Laguna Quays).

5.11.1 Assessment methodology

Economic Impact Assessment

Input-output multipliers

The proponent used input-output multipliers to inform the Regional Impact Analysis (RIA) and estimate the direct and indirect impacts of project construction. The EIS notes that the use of published input-output multipliers is a cost-effective tool for providing 'order of magnitude' economic impacts.

A detailed justification for appropriateness of this methodology has been provided in the EIS and I accept that the approach is sound. I note that the proponent has also provided an assessment of NPV of the project and has not relied on input/output modelling in isolation in the impact assessment.

Net present value

The EIS presents the significant economic benefits and costs arising from all stages of the project using a NPV methodology. When the NPV is positive, the project can be said to provide a net benefit over costs. When the NPV is negative, the project costs outweigh the benefits. I am satisfied that the methodology used to determine NPV in the EIS is robust and informs the economic assessment appropriately.

5.11.2 Economic impacts and mitigation

The EIS estimated the potential positive impacts to the local, regional and state economies during the construction and operational phases of the project.

The potential positive impacts presented in the EIS included:

- capital expenditure of $583M
- contribution of $480M to the Mackay region's GRP during construction
- The project would generate employment for an average of 300 direct full-time equivalent jobs on average during the three-and-a-half year construction phase on the island, and 420 direct and indirect full-time equivalent jobs for the Mackay region
- In the operations phase, the project would require 300 direct full-time jobs on the island and 460 direct and indirect jobs for the Mackay area
- Adding $100M during operations to the Mackay region's annual GRP
- Generating a net present value to the community of between $69M and $237M
- Restoring a key tourism accommodation facility to operational status
- Generating a positive impact upon the local marine transport operators through the need for a significant increase in visitors being transported between Lindeman Island and the mainland
- Generating a positive lift in backpacker visitors to the region, as an increase in operational staff stimulates this market, which is an important source of operational labour.

The EIS concludes that construction of the project is not expected to have an adverse impact upon the local or regional housing market. As the construction workforce would be primarily housed on the island, limited demand for mainland accommodation is expected to be derived from a small proportion of workers.

The EIS also found that the region's high unemployment levels would prevent the resort construction or operational phases from placing undue price pressures on the region's labour market.

The impact of the project on the local and regional housing market has been considered in section 5.10 of this report which considers the potential social impacts of the project. I am satisfied that the project would not have significant negative impacts on the housing or labour markets in the region.

To maximise the economic benefits of the project, I expect the proponent to:

- maximise local employment opportunities over the life of the project, including opportunities for local Aboriginal and Torres Strait Islander people and other disadvantaged groups
- provide training and development opportunities for people locally and regionally, including targeted programs to promote Aboriginal and Torres Strait Islander employment
- ensure that Queensland suppliers, contractors and manufacturers are given full, fair, and reasonable opportunity to tender for project-related business activities
- prepare a local procurement plan.

To ensure that local job seekers and industry service providers are appropriately informed regarding potential project opportunities I have imposed a condition at Appendix 1 requiring the proponent to prepare a community and stakeholder engagement plan.

5.11.3 Coordinator-General's conclusion: economic impacts

I am satisfied that the project would promote economic growth, provide local employment opportunities and generate a net increase in visitor numbers to the region.

The proponent has committed to ongoing community engagement to identify any socio-economic impacts associated with the project. I have imposed a condition which requires the proponent to prepare a CSEP prior to the commencement of project construction. The CSEP would be submitted to me for approval and would ensure that community and stakeholder interests in the project are clearly identified and effectively managed.

6. Matters of national environmental significance

This chapter presents the findings of my assessment on matters of national environmental significance (MNES) for the Lindeman Great Barrier Reef Resort project (the project).

On 9 April 2015, the proponent referred the project to the Commonwealth Minister for the Environment and Energy (EPBC 2015/7461) for a determination as to whether or not the project would constitute a controlled action under section 75 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).
On 7 May 2015, the Commonwealth Minister determined the project to be a controlled action.

The relevant controlling provisions under the EPBC Act are:

- sections 12 and 15A, world heritage properties
- sections 15B and 15C, national heritage places
- sections 18 and 18A, listed threatened species and communities
- sections 20 and 20A, listed migratory species
- sections 24B and 24C, the Great Barrier Reef Marine Park

The Commonwealth Minister determined the assessment method to be the EIS process under Part 4 of the SDPWO Act, which is accredited under the EPBC Act.

It should be noted that the DEE's comments are restricted to the adequacy of the information provided in the EIS for the minister to make an informed decision under the EPBC Act, and do not encompass the department's assessment of the impacts of the actions.

The following subsections summarise the Queensland Government's assessment of the project against each of the above controlling provisions.

6.1 Description of the proposed action

The project involves the following key components:

- Beach Resort - redevelopment of the existing resort to achieve a new 5-star beach resort with 136 suites, conference centre, beach club, lagoon and a central facility building with restaurants, bars and lounges
- Spa Resort - a new 6-star spa resort with 59 villas, central facilities, entry lounge, spa, sea view restaurant, pool and a signature rock bar providing spectacular alfresco dining close to the sea
- Eco Resort - a new 5-star eco resort consisting of 14 villas, 20 village accommodation apartments and 7 hilltop villas
- Resort Villas – 89 new 4-star villas located to the east of the airstrip in a tourist villa precinct

- Village - a central activity node comprising restaurants, bar, night club, conference facility buildings, arrival centre, shops, sport and recreation centre, staff village
- Services infrastructure precinct - an expansion of the current services area providing for power generation (solar with diesel back-up), sewage treatment and water treatment
- Airstrip - the existing airstrip is proposed to be upgraded to provide for near all-weather status and for the landing of light aircraft and helicopters
- Marine access - the proponent seeks approval for upgrades to the existing jetty and additional moorings in sheltered locations around the island to enable the resort's marine craft to obtain safe shelter under a range of wind and wave conditions
- Golf course - upgrades to the existing recreational golf course are proposed
- Ecotourism facilities - a National Park and Great Barrier Reef Education Centre is proposed and
- environmental enhancements - native vegetation replanting, improvements to stormwater management and a shift towards renewable energy sources are proposed.

The EIS notes that a key element of the redevelopment strategy is creation of a variety of accommodation options and a wide range of supporting amenities within the resort. This strategy responds to the demand by visitors for a greater choice of facilities and activities in one location.

The GBRMPA Whitsundays Plan of Management (the Plan of Management) sets limits on vessel length, group size, types of craft, facilities and certain activities in coastal waters. These waters have been assigned ‘settings’, based on their values, existing use and management requirements.

The marine park immediately adjacent to the existing resort is described in the Plan of Management as falling within the “Intensive Setting”. The intensive (Setting 1) areas envisage intensive tourism and recreation uses. These areas are heavily used by a wide range of craft, and contain permanent facilities including marinas, jetties and boat ramps. Ongoing use for those purposes, as proposed in the EIS is consistent with the Whitsundays Plan of Management.

6.2 Project location

The project is proposed on Lindeman Island, located 35 km south-east of Shute Harbour on the mainland and approximately 13 km south-east of Hamilton island. The island forms part of the GBRWHA and abuts the Great Barrier Reef Coast Marine Park. The island is within the MRC local government area.

The redevelopment and expansion would take place near the existing resort located on the south-western portion of the island, and is surrounded by the Lindeman Islands National Park.

The development area (inclusive of all resort buildings, infrastructure, airstrip, dam, golf course and undeveloped areas) covers approximately 140 ha. The development area is situated on a perpetual lease of approximately 72 hectares and a term lease of

approximately 66 hectares as well as small areas of road reserve (1.3), beach reserve (0.3 ha) and unallocated state land (0.5 ha). The remainder of the island is undeveloped national park.

6.3 World heritage properties

In deciding whether or not to approve the proposal for the purposes of section 12 or 15A of the EPBC Act, and what conditions to attach to such an approval, the Commonwealth Minister for the Environment and Energy must not act inconsistently with:

- Australia's obligations under the World Heritage Convention
- the Australian world heritage management principles
- a plan that has been prepared for the management of a declared world heritage property under section 316 or as described in section 321.

The Great Barrier Reef is the world's most extensive reef system, covering 348 000 km^2. The entire ecosystem was listed as a world heritage property in 1981 and includes waters up to the low water mark on the mainland.

The Great Barrier Reef extends over 2000 km along the north-eastern coast of Australia. The Great Barrier Reef coastal zone covers a vast area that is acknowledged by UNESCO as a mixed-use area and was listed as a World Heritage Area on that basis. In addition to sustaining a population of around one million people, it also supports industries such as tourism, commercial fishing, mining and agriculture. These industries are vital to the ongoing viability and strength of the Queensland economy; collectively contributing more than $40 billion a year.

The Great Barrier Reef is one of only a small number of world heritage properties worldwide that has been adopted for all four natural criteria, which follow, and meet the conditions of integrity and authenticity:

- Criterion VII—contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- Criterion VIII—be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features
- Criterion IX—be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals
- Criterion X—contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

In Australia, an action that has, will have, or is likely to have a significant impact on the world heritage values of a declared world heritage property requires approval under the EPBC Act. The *Matters of National Environmental Significance: Significant Impact Guidelines* consider an action is likely to have a significant impact on the OUV of a

declared world heritage property if there is a real chance or possibility that it will cause one or more of the values to be lost; degraded or damaged; or notably altered, modified, obscured or diminished.

For each criterion, there are a number of attributes for which the property was listed. The *EPBC Act Referral Guidelines for the Outstanding Universal Value of the Great Barrier Reef World Heritage Area* (2014) details the attributes which underpin each criterion. These attributes may not be expressed equally over the whole GBRWHA, and as such only attributes that are relevant to the project have been assessed in this report. Many attributes are relevant to more than one criterion; therefore, these have only been described in detail under one criterion and referred to in other sections to avoid repetition.

The potential impacts of the project on OUV include impacts to the marine environment including:

- impacts to species and their habitats
- changes to the visual amenity of Lindeman Island
- impacts to water quality.

The following discussion describes the potential impacts on each of the World Heritage Area listing criteria.

6.3.1 Criterion VII

Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance.

The Great Barrier Reef is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reef structures along Australia's north-east coast.

The OUV relating to this criterion includes visual aesthetics of landscape and seascapes, naturalness and the abundance and diversity of marine fauna and colonies of seabirds. The statement of OUV is included as Appendix 6 of this report.

Lindeman Island is a 637-hectare continental island with mountains and ridges, rocky headlands, steep escarpments, internal catchments and a plateau. The island has a variety of bays, beaches and fringing reefs in close proximity to smaller nearby islands such a Little Lindeman Island to the north and Seaforth Island to the south. OUV attributes relevant to the project for Criterion VII include:

- superlative natural beauty above and below the water
- string of reef structures
- mosaic patterns of reefs, islands and coral cays that produce an unparalleled aerial panorama of seascapes
- green vegetated islands
- azure waters
- coral assemblages of hard and soft corals

- coral spawning.

Lindeman Island is characterised by contrasting landscapes of natural coastal environments. The majority of the island is protected under the Queensland *Nature Conservation Act 1992* as a national park with leases for tourist purposes in the south-western part of the island overlooking Kennedy Sound and the smaller Seaforth Island. These lease areas constrain existing infrastructure and tourism-related development which are predominantly featured on the southern portion of the island. Following destructive cyclones and neglect in recent years, such development has fallen into a dilapidated state, not suitable for occupancy.

It is important to note that construction of a safe harbour and swing basin at the location of the existing boat ramp and jetty is no longer proposed as part of the project. Further, the proponent is not seeking to revoke areas of national park.

Visual amenity

Values and existing environment

The complete statement of OUV of the GBRWHA is included as Appendix 6 of this report. The aesthetic values of the GBRWHA assessed most relevant to the context of the project are:

- the vast extent of the reef and island systems which produces an unparalleled aerial vista
- Islands ranging from towering forested continental islands complete with freshwater streams, to small coral cays with rainforest and unvegetated sand cays
- coastal and adjacent islands with mangrove systems of exceptional beauty
- the rich variety of landscapes and seagrasses including rugged mountains with dense and diverse vegetation and adjacent fringing reefs.

Lindeman Island is predominantly a natural environment with an existing resort and associated infrastructure located on the southern portion. When viewed from the air, the island is characterised by its natural features including azure waters, sandy beaches, green vegetation and coral assemblages. Lindeman Island is one of the 74 continental islands in the Whitsunday group and one of the 14 islands comprising the Lindeman Islands National Park. These islands are aesthetically pleasing and their fringing reefs contribute to the vast extent of the Great Barrier Reef system as seen from the air. Notwithstanding this, aerial views of Lindeman Island also reveal the extent of historical clearing on the island for grazing purposes and various buildings and infrastructure associated with the pre-existing resort. An aerial image of the existing site is provided at Figure 5.1.

Lindeman Island has generally low visibility from the mainland and surrounding islands due to its location south of the main Whitsunday Islands. The existing resort on Lindeman Island is not viewable from land and marine areas associated with the northern, eastern and south-eastern viewsheds investigated as part of the EIS. The lack of current ferry and charter boat movements in its vicinity further limits vistas to the project site when viewed from the marine areas. The existing viewsheds of the island contribute to the ‘perceived naturalness’ of Lindeman Island and the OUV of the

GBRWHA. Due to the unique locational features of the island, disturbance from previous grazing activities and the existing resort are largely confined to the southern viewshed which incorporates the land and marine areas associated within Kennedy Sound.

Potential impacts and mitigation

The elements of the project with potential visual impacts on world heritage aesthetic values are those which change the appearance of any natural part of the island and its surrounding waters, as viewed from external vistas. These include potential impacts on views of the skyline, vegetation, landform, and landscape caused by poor integration of built form, earthworks, scarring, inadequate landscaping and artificial lighting.

EIS investigations provided the results of the proponent's viewshed modelling and the visual absorption capacity assessment to determine the visual constraints applicable to the development. Visual amenity constraints informed the project's development planning including the chosen locations of project infrastructure and buildings. Consideration was provided to the biophysical conditions of the islands (slope, stormwater, run-off, rocky outcrops and significant vegetation) as well as previous areas of disturbance and vistas from the sea. This has resulted in development characterised by a low-rise built form predominantly 2-4 storeys in height as well as the preparation of preliminary design codes specific to each resort precinct and significant buildings.

The existing development on the island is well concealed from neighbouring island and marine areas to the north of Lindeman Island. As the project represents a brownfields development, potential visual amenity impacts were assessed to be the greatest in instances where the project is located outside the existing resort and infrastructure footprint.

Similar to existing resort development, the proposed development will be most prominent from the Whitsunday Passage viewshed southwest of Lindeman Island and from Kennedy Sound, immediately south-east of Lindeman Island. Additional visual impacts would result from the construction of the central facilities building (spa resort precinct) on Picaninny Point and new villas on the western and southern hillslopes. Such buildings will be visible from offshore observers, particularly from the south, however there is also a possibility for the central facilities building to be viewed from the Dent Island golf course approximately 11 kilometres to the north-west.

The EIS assessed the risk of the project on scenic amenity values of the GBRWHA and provided preliminary design constraints to reduce risks in the instances identified. The design constraints for the project would be applied to all precincts of the proposed development and tailored to each site's visual absorption capacity. Sites with a low visual absorption capacity would require more stringent design constraints such as the villas proposed on unvegetated upper slopes of scarps and the central facilities building on Picaninny Point. Preliminary design constraints for each of the proposed project's precincts were identified in the EIS. Preliminary measures to reduce the project's potential impact on visual amenity included:

- low-rise built development form (1-4 storeys in height)

- designing and situating buildings that are sensitive to each site's 'genius loci', landform, vegetation, climate light and materials
- implementing the design criteria and natural colour palette including the use of non-reflective surfaces and natural building materials.
- landscape screen planning to increase the site's visual absorption capacity.

Artificial lighting of the project during night-time operations was similarly assessed in the EIS. To reduce artificial lighting impacts of the project, the proponent has proposed to prepare and implement a resort EMP in conjunction with the design criteria stipulated in the proponent's Plan of Development. Artificial lighting impacts will be reduced by incorporating vegetation screening and installing timers and motion detectors for prominent external lights at the development.

The draft plan of development presented in the EIS has incorporated design measures and planning benchmarks to reduce visual amenity and artificial lighting impacts associated with the project. The draft Plan of Development seeks to override the existing planning scheme and will be subject to negotiation and assessment by the local council as part of the project's downstream approvals. Due to the potential impact on visual amenity, I am recommending a DEE condition (Appendix 3) requiring the proponent to submit the final precinct development plans for approval before the commencement of the action. This will ensure development is consistent with the relevant planning benchmarks, further reducing the potential of the project to impact on the scenic values of the GBRWHA.

Visual amenity below the waters surrounding Lindeman Island consists of corals, seagrass and macroalgae which provide foraging habitat for numerous marine species. There is an abundance and diversity of shapes and sizes of corals surrounding Lindeman Island which is characteristic of the Great Barrier Reef and establishes a mosaic pattern of reefs when observed from the air. As the proponent no longer proposes construction of a safe harbour, direct impacts to reef and seagrass habitats will be avoided.

To ensure marine access is maintained to the island, the proponent will seek approval from GBRMPA for additional boat moorings. The EIS proposed any such moorings would be placed in sheltered positions surrounding the island and designed to minimise impacts on marine habitats.

Water quality

Values and existing environment

The key attribute is azure waters (water quality) which supports reef structures, marine health and species. (i.e. fringing reef directly adjacent to Home Beach). In accordance with Schedule 1 of the EPP (Water) the environmental values for Lindeman Island's marine waters (i.e. Whitsunday Islands coastal and marine waters) include:

- aquatic ecosystems
- human consumption
- primary, secondary and visual recreation

- cultural and spiritual values.

Inshore water quality monitoring presented in the Great Barrier Reef Report Card 2016 (Reef Water Quality Protection Plan) found that inshore water quality in the Mackay Whitsunday region was moderate in 2015–16.

The water quality of the Mackay Whitsundays region is under pressure from land uses such as agriculture, forestry, grazing and urban development. Increased nutrients, sediment and herbicide loads resulting from development have impacted negatively on the health of the Great Barrier Reef. Urban and other intensive uses (including sewage treatment plants) account for just over 10 per cent of the total regional particulate nutrient load, and 4 per cent of the regional dissolved organic load (Mackay Whitsundays Water Quality Improvement Plan 2014-2021 (WQIP)).

The project site includes Gap Creek Dam as well as several other freshwater ephemeral stream that traverse the site and ultimately discharge to the waters of the GBRWHA. Rocky terrain and small catchments mean that flows are minimal, generally occurring after rainfall events and would discharge to the ocean for short periods of time.

Historical groundwater data records indicate that any groundwater resource is limited to rainfall events and is likely to be short-lived. Limited treatment is currently provided to stormwater from the existing development. Other than vegetated swales, no other stormwater treatment was undertaken at the existing resort.

Potential impacts and mitigation

Stormwater run-off

Uncontrolled stormwater run-off and discharges into the ocean can cause sedimentation and the release of pesticides, fuels and other wastes. When they occur in high concentrations, these wastes can be hazardous to marine species and degrade the attributes of the GBRWHA.

The introduction of new and additional impermeable surfaces on the island including buildings, roads and pathways have the potential to increase the rate, volume and pollutants discharged to the GBRWHA via stormwater.

The EIS describes rainfall/run-off modelling completed for the project, including contaminant run-off. Modelling of discharge to the shoreline from two stormwater outlets indicated that the highest concentration of TSS, TN and TP occurred within the safe harbour, which is no longer proposed.

The EIS indicates that during a storm event, the TSS level would spike within 1 hour and be elevated at the outlet pipe for a period of up to 3-4 hours. Total nitrogen would also rapidly spike, returning to baseline levels within 4 hours of the flow event.

The EIS modelling demonstrates that TSS, TN and TP peak concentrations do not exceed marine water guidelines of 0.3 mg/L and 0.03 mg/L for TN and TP, respectively, and that TSS does not exceed 5 mg/L, apart from at the stormwater outlets themselves.

The stormwater and water management strategy for the project aims to reduce the pollutant load being discharged to the GBRMP. Specifically, stormwater and water management strategies would be adopted that:

- Re-use rainwater, reducing potable and irrigation water demand and stormwater pollutant loads;
- Treat and re-use wastewater for non-potable uses on site;
- Minimise the potential sources of stormwater pollutants;
- Treat storm water run-off to remove sediment and nutrient load;
- Replicate existing flow patterns;
- Reduce potential for scour and erosion; and
- Integrate open space with stormwater drainage corridors and treatment areas to maximise public access and recreation and preserve waterway habitats and wildlife corridors

Significantly, stormwater modelling presented in the EIS indicates that pollutant loads discharged to the marine park would be lower than the existing case for all pollutants, including suspended solids, phosphorous, nitrogen and gross pollutants.

The proponent has committed to ensuring that no refuelling, vessel maintenance or pump-out of wastewaters occurs at marine facilities at the resort.

I have stated conditions for the development approval to be obtained from MRC in Appendix 2 requiring the proponent to manage impacts on receiving fresh and marine waters, manage stormwater to ensure that environmental values are protected, and ensure that sewage is treated and disposed of in accordance with applicable environmental standards.

In relation to the identification of environmental values and local water quality objectives, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 which require the proponent to prepare a water quality monitoring program (WQMP) which demonstrates a net benefit to the Great Barrier Reef. The WQMP must include:

- baseline data for current water quality in the receiving environment;
- details of monitoring to be implemented and how it will demonstrate that net benefit outcomes are being achieved;
- trigger points and additional measures that will be undertaken if monitoring results do not demonstrate that the required net benefit to water quality in the receiving environment is achieved. The additional measures may include management actions for the site and/or the provision of environmental offsets.

I have also stated a condition in Appendix 2 requiring the proponent to develop and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that the stormwater discharges from the development do not significantly affect the environmental values of adjacent receiving waters.

Lagoon water supply and disposal

The construction of a 2.7ML / 3000 m^2 saltwater lagoon is proposed to be located on the foreshore of Home Beach. The lagoon is proposed to be filled and topped with seawater pumped through an inlet pipe located adjacent to the existing jetty. Water would be filtered through sand allowing a natural sanitation prior to filling the lagoon. The inlet pipe would be fitted with screening to prevent the intake of marine fauna and would be subject to a marine park permit from the GBRMPA under the *GBRMP Regulation 1983* and approval under the *Planning Regulation 2017* as prescribed tidal works.

The intake pipe design would consider low velocities of intake to minimise disruption to marine life and the possibility of erosion of seabed around the intake structure. No outfall pipes to the ocean from the lagoon are proposed.

A small-scale desalination plant is proposed at the eastern end of the lagoon to reduce the salt concentration of the water. This water would then be treated in the wastewater plant prior to discharge across the site along with the other treated effluent. The salty brine residue from the desalination plant will be removed from the island by barge.

The proponent has committed to preparing and implementing a Pool Management Plan which would ensure the operational management water quality of the lagoon is maintained to the relevant standard.

Treatment of effluent/release to land

Treated wastewater is proposed to be either returned to the hotels/communal areas for non-potable uses (such as toilet flushing or wash-down) or will be used for irrigation of the golf course and on various landscaped areas across the project site. A total of 11.88 ha of land would be irrigated with treated wastewater, including 9.1 ha for the golf course, 1.6 ha for the spa resort entrance, 0.22 ha across general landscaping and a further 0.96 ha over airstrip buffer zones.

The wastewater treatment plant would be subject to approval of ERA 63 sewage treatment (200L/EP/day) under the EP Act. As part of the application process, the proponent would be required to confirm and revise MEDLI modelling previously conducted. A Recycled Water Management Plan (RWMP) would be prepared to guide ongoing monitoring, in addition to a golf course and irrigation management plan.

In addition, I have stated a condition in Appendix 2 for the stormwater system to comply with the Queensland Urban Drainage Manual and MRC planning scheme and policies. The condition also requires the avoidance of any contamination to ground or surface waters and that systems associated with stormwater are designed to maintain environmental values specified in the Environmental Protection (Water) Policy 2009.

Conclusion

The EIS adequately describes the proposed land use characteristics of the project. The draft plan of development provides sufficient detail to inform the detailed design stage of the project and for the assessment of development required prior to construction.

With regard to the proponent's mitigation measures and downstream approvals required, I consider that the proposed development has the potential to generally improve the visual aesthetics of the island, particularly when viewed from the south. The project's development would generally improve the scenic attributes of the island through namely demolishing a dilapidated resort in the GBRWHA, sophisticated resort design and enhanced landscape screening.

Whilst the built form and relationships between the different land uses will be refined by the proponent during detailed design, any development must be consistent with the approved Plan of Development and the conditions of approval issued by MRC.

I am also satisfied the proponent has identified the key threats to manage potential water quality impacts across the project site. I am confident that stormwater emitted from the project's two discharge pipes into the GBRWHA will be suitably managed by the proponent in accordance with relevant state government approvals I have conditioned as part of my assessment. Given the dilapidated state of the existing resort and associated stormwater infrastructure, I consider that the project's management measures would further reduce concentrations of stormwater pollutants currently discharged from the existing resort and achieve a net benefit for the GBRWHA.

Towards safeguarding the water quality dependant attributes of the GBRWHA, I have required the proponent to design stormwater systems in accordance with the Queensland Urban Drainage Manual, the Environmental Protection (Water) Policy 2009 and the MRC planning scheme and associated policies.

Additionally, I have recommended to the Commonwealth Minister for the Environment and Energy a condition that requires the proponent to achieve a water quality standard that at a minimum maintains or improves the current quality of stormwater discharged from the existing resort area. This would require the proponent to establish an existing water quality baseline and ongoing monitoring over the life of the project to demonstrate a net benefit is being achieved.

6.3.2 Criterion VIII

Be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

The Great Barrier Reef is a globally outstanding example of an ecosystem that has evolved over millennia. It forms the world's largest coral reef ecosystem, ranging from inshore fringing reefs to mid-shelf reefs, and exposed outer reefs, including examples of all stages of reef development. Lindeman Island is a continental island which contributes to the unique and varied seascapes and landscapes of the World Heritage Area.

Examples of the attributes that contribute to the OUV of the Great Barrier Reef at this location include:

- fringing reef and associated coral reef ecosystems
- unique and varied seascapes and landscapes (rocky shores and sandy beaches)
- processes of geological and geomorphic evolution.

Landform

Values and existing environment

Lindeman Island is a hilly island, with several high ridges dominated by Mt Oldfield (at 212 metres) and other peaks including 'Gap Peak' and 'Plantation Peak' and many smaller spur ridges and headlands which separate the island into a number of valley catchments both hydrologically and visually, as well as a central plateau area.

The ridges generally meet the shoreline at rocky headlands, and separate the coastal strip into a series of bays and beaches around the perimeter of the island, together with a plateau and coastal escarpment or scarp in the southern part of the island.

Key threats to the current landform of the GBRWHA include earthworks to construct villas, rock bar lagoon, Gap Creek Dam, transport infrastructure (airstrip) and temporary quarrying (at an existing disused quarry site) to produce material for construction.

Impacts and mitigation

The primary mitigation strategy relating to landform is a project layout which was designed in response to biophysical conditions (slope, stormwater run-off, rocky outcrops and significant vegetation), as well as existing areas of disturbance and visibility from the GBRWHA.

The development is also supported by the planning controls stipulated in the GBRMPZ and the WPM. These planning controls are discussed further in section 6.6 as part of the GBRMP controlling provision.

The project is centred on an existing resort development with some expansion into primarily cleared portions of Lindeman Island. I am satisfied that impacts on landform have been appropriately considered by the proponent and accommodated by the plan of development.

Hydrodynamics

Values and existing environment

The EIS presented baseline data and numerical modelling relating to wind, tides, currents and sediment characteristics. This information has assisted the functional design of shoreline facilities.

The EIS is cognisant of projected climate change parameters, mainly in terms of sea level rise and intensification of cyclones, and has been used to optimise the project design.

Key coastal processes influencing the design of the proposed development include the following:

- wind waves from the east to south quadrant which are generally small, in the order of 0.3m
- median wave height of about 0.25m with a 1-year maximum wave height of about 0.9m

- typically, two high tides and two low tides every day at the site with 2.28m AHD being the Lowest Astronomical Tide
- very low siltation rates and limited longshore sediment transport with an average deposition rate of about 2 mm/year.

Significantly, no maintenance dredging has been required to date or is likely to be required in the future. Investigation of longshore sediment transport found that negligible infilling (if any) of the navigation channel has occurred over the past 23 years for which survey data is available.

Impacts and Mitigation

As the safe harbour is no longer proposed, some issues raised by submitters are no longer relevant. These issues include changes to currents and wave heights, siltation of the safe harbour, dredging-related impacts and other impacts on coastal processes such as longshore sediment transport.

The EIS proposed measures to control and limit the effects of storm tide inundation and the effects of sea level rise. The EIS found that the issue of ocean inundation and wetting of the resort complex would be addressed by raising the existing revetment to a crest height of 5.6m AHD.

In relation to shoreline erosion, the EIS established that there are either existing or proposed revetment works in the vicinity of all proposed coastal infrastructure. As such, shoreline erosion would not occur landward of these structures. The EPAW has been established at 10 m landward from the seaward side of the crest level of the revetment(s).

The proponent has committed to all tidal work being designed and sited in accordance with the Guideline: Building and engineering standards for tidal works, Department of Environment and Heritage Protection, 2017.

As the previously proposed safe harbour has been removed from the project, there would be no direct damage to coral, dredging of the seabed or construction of new breakwaters or revetments. There is no dredging associated with the project. Due to the limited nature of coastal works associated with the project, I am satisfied that Impacts on hydrodynamics would be minor and furthermore that any impact would be mitigated by the measures proposed by proponent or required by the conditions and recommendations of this report.

Conclusion

The EIS demonstrates that potential impacts on the seascapes and landscapes of the World Heritage Area have been minimised by responsive design which respects site constraints. I am satisfied that attributes which express significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features around Lindeman Island would be protected by the project.

6.3.3 Criterion IX

Be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

The OUV for this criterion focus on ecological processes, interconnectivity and biological evolution of the Great Barrier Reef ecosystem, including inshore coastal waters and continental islands (refer to attached statement of OUV).

The statement of OUV describes the extent of diversity of flora and fauna and the important habitat areas for resident species including shorebirds, cetaceans, sea turtles and dugongs.

The project may impact on OUV through impacting on ongoing ecological and biological processes should the quality of stormwater released into the GBRWHA be reduced.

Construction processes and equipment also have a potential to temporarily impact ecological and biological processes through the disturbance of marine and terrestrial environments. These include noise, vibration and air quality.

Key threats to the various ecosystem processes relevant to the project are described below.

Coastal and marine ecosystem processes

Lindeman Island's coastal and marine features are characterised by coral reefs, aquatic vegetation, water quality, beaches and intertidal rocky shores. Such coastal marine features support a variety of intertidal and marine fauna including various species of:

- soft sediment fauna
- fish
- sharks and rays
- sea snakes
- marine turtles
- marine mammals
- marine birds.

Coral Reefs

Approximately 10 linear km of reef fringes Lindeman Island, extending from tens to hundreds of metres from the shoreline. The existing resort at Lindeman Island is fronted by a fringing reef (a rock platform with coral growing upon it). The reef extends between 100-350m from the shoreline.

The EIS estimated living coral cover to be generally <25 per cent with most of the reef area consisting of 5-10 per cent cover. The EIS found that the largest area of high density of living coral assemblages occurred on the southern side of the island adjacent to the existing jetty and channel.

The EIS presented modelling which considered the main hazards to corals to be changes to hydrodynamics, sedimentation, turbidity and wave climate. These impacts were primarily associated with the construction of a safe harbour (and associated dredging), which is no longer proposed.

Potential water quality impacts associated with stormwater discharge, spills from vessels or landside activities at the jetty and boat ramp have the potential to impact coral reef communities. Increased recreational use of the reef adjacent to the resort also has the potential to adversely impact reef communities.

As the proposal for the safe harbour has been withdrawn from the project, there will no longer be direct damage to coral caused by dredging of the seabed, or the construction of new breakwaters or revetments.

Beaches and intertidal rocky shores

Lindeman Island has seven beaches, including the resort beach (also known as Rocky Beach or Home Beach) immediately west of the existing jetty, Plantation Beach in the southeast; Turtle Bay in the northeast, Gap Beach in the north; Boat Port in the northwest; and Coconut Beach on the western side of the Island. The existing resort beach consists of coarse sediment and extends for about 225 metres west of the existing jetty.

The EIS found that rock platforms occur in intertidal areas, seaward of the boulder fields and beaches of the south-western tip of the island.

The project would not result in direct impacts to beaches of intertidal rocky shores. However, as with coral reef communities, potential water quality impacts associated with stormwater discharge, release of litter, spills, and increased recreational use of areas adjacent to the resort have the potential to adversely impact these communities.

Aquatic Vegetation

The EIS reported that seagrass assemblages are generally sparse throughout the shoreline around Lindeman Island. The densest seagrass meadows are located south of the existing jetty in soft sediment beyond the edge of the reef.

Halophila species (including *H. ovalis, H. decipiens* and *H. spinulosa*) and *Halodule uninervis* are the two most common seagrass taxa in the project area. These are fast-growing, early-colonising species that are known to survive well in unstable (shifting sediments) or depositional (subject to sedimentation) environments.

Seagrass meadows were generally sparse (mostly between 1 per cent and 5 per cent cover and one patch south of the existing jetty with cover > 10 per cent), with a low above-ground biomass, with some soft and hard corals occurring in the same area.

Macroalgae is also common on intertidal and shallow subtidal reefs surrounding Lindeman Island. Macroalgae occurs in amongst living and dead coral as well as on loose rocks in soft bottom substratum with a distribution and abundance pattern virtually complementary to that of corals.

The establishment of additional moorings have the potential to disturb seagrass and macroalgae communities. It is anticipated that the additional moorings would be

located on soft sediment and at a sufficient distance beyond the reef edge to avoid potential harm to coral from the mooring structure and associated attachments and vessels.

I am satisfied that the establishment of additional moorings on soft sediment habitats would avoid or minimise impacts on the marine environmental values which contribute to the OUV of the GBRWHA.

The moorings will require a permit from GBRMPA and Queensland Parks and Wildlife Service and the installation of the moorings is subject to the application, assessment and decision-making processes under the regulations for a relevant permission to install the moorings, including the suitability of the site.

Intertidal and marine fauna

Key threats to maintaining the health of intertidal and marine fauna include vessel strike associated with increased ferry and water recreation activities and artificial lighting. Given construction of a safe harbour is no longer proposed, an upgraded jetty is now proposed to replace the existing access provided to the island at Home Beach. These threats are evaluated below.

Vessel strike

Increased vessel traffic near the project marine area during both construction and resort operation has the potential to increase the risk of collision between vessels and marine fauna. Marine turtles, cetaceans and dugongs are susceptible to harm from vessel strike.

During construction, it is estimated that four barge trips per weekday would be required for civil and building works. When the resort is operational, it is estimated that the average daily passenger arrivals/departures by ferry would be approximately 222 people (42 staff per day and 180 visitors per day assuming a three-day average occupancy). It is envisaged that this level of passenger demand would be serviced by extending the current Cruise Whitsundays ferry services to include Lindeman Island.

Mitigation measures proposed by the proponent include the establishment of ‘go slow’ zones around the marine infrastructure in line with Maritime Safety Queensland (MSQ) boating safety requirements. Such commitments will be enforced through relevant environmental management plans such as the resort EMP which will also control the locations of water recreational activities offered by the resort.

Artificial lighting

Artificial lighting has potential to disturb species such as marine turtles or marine birds that are migrating, nesting or breeding. Although the project area is not a known turtle breeding or nesting area, artificial lighting was considered a moderate risk in the EIS. The current artificial lighting profile on the island, the lack of turtle nesting in the project marine area and the availability of alternate bird roosting sites on the island and surrounding islands reduces the potential impacts associated with artificial lighting.

To further reduce and manage artificial lighting impacts of the project, the proponent through the draft Plan of Development has stipulated lighting controls such as installing

motion detectors and timers. Coupled with other design measures to reduce the visual amenity impacts of the project such as landscape screening, I am confident artificial lighting impacts will be low and sufficiently managed over the life of the project. I have also recommended the Commonwealth Minister for the Environment and Energy condition the proponent to submit the final precinct development plans for approval before the commencement of the action. The final precinct plans will include details of lighting design.

Jetty upgrade

The upgrade to the existing jetty would be generally accommodated by the same footprint as the existing structure, with the exception of a proposed floating pontoon. The existing jetty pylons would be reused with the proposed pontoon located to the west of the existing jetty.

Given that there is no piling required for proposed jetty upgrade, physiological impacts on marine species due to underwater noise are not likely. Specific monitoring and management measures for underwater noise are therefore unnecessary, however all work would be subject to a Construction Environmental Management Plan to ensure no adverse impact on the marine environment.

Terrestrial ecosystem processes

The project represents a brownfield development within the GBRWHA. Accordingly, the majority of disturbance required for the project will occur within the footprint of the existing resort development and associated infrastructure on the island.

The project will involve the disturbance or clearing of approximately 10.43 ha of native vegetation to allow for construction of the resort and associated amenities. This represents approximately 15 per cent of the total disturbance footprint of the project (including existing buildings and structures) which is calculated at 69.23 ha.

Construction impacts of noise and vibration and air quality have the potential to cause temporary environmental harm to threatened ecological communities (TECs) as well as other foraging habitat when they are in close proximity to such works. These potential impacts are discussed below.

Noise and vibration

Noise and vibration emissions during construction and operations have the potential to modify species behaviour and result in avoidance of the area by both terrestrial and marine species.

There is no marine piling proposed by the project and I accept that other noise impacts in the marine environment (for example the passing of marine vessels) would be minor and temporary in nature.

During construction, equipment with the potential to generate significant vibration include vibratory rollers, rock hammers and a range of other plant. Vibration levels would vary depending on the distance from the equipment in use, the energy level imparted to the ground by the construction process and the bedrock type.

Construction noise and vibration impacts would be managed by a suite of conventional and widely practiced mitigation measures and would be temporary in nature. I accept that these impacts would not be unacceptable.

The proponent has committed to preparing and implementing a noise and vibration management strategy based on *Australian Standard AS2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites*. Specific to marine impacts, the proponent has committed to a construction EMP which would include procedures to limit physiological impact to marine megafauna as a result of noise and vibrations generated during construction activities. The construction contractor would be responsible for ensuring all equipment is maintained in good operating condition and have sufficient noise attenuation controls applied including:

- maintaining equipment and machinery in good operating condition
- daily checks during prestart to ensure generators, compressors and welders produce minimal noise

During operations, noise and vibration sources would be from aircraft noise, truck movements, boat docking and mechanical plant noise such as those generated by pumps and generators. To reduce operational noise and vibration impacts of the project, the landing strip would only be used during daytime hours and attenuation mitigations would be implemented through the resort EMP which would limit vessel speeds and specify maintenance regimes in operational plant equipment.

Airborne dust and odours

The construction phase of the project has the potential to cause dust deposition and air emissions which could temporality impact world heritage attributes of the GBRWHA. Key sources of dust emissions during the construction phase include land clearing, demolition, earthworks, and operation of a temporary quarry facility and associated concrete batching plant.

Concentrations of dust emitted from the project were predictively modelled for the construction and operation phases of the project. These models were compared with the objectives set out in the *Environmental Protection (Air) Policy 2008* (EPP) and other guidance provided by DEHP. Of the air quality objectives studied in the EIS, daily dust deposition rates of the project were considered to potentially cause environmental nuisance. High dust deposition rates on plants have the potential to impact on:

- plant photosynthesis, transpiration and respiration
- incidence of plan pests and disease
- reduced light intensity on fruits
- flower pollination.

Dust deposition rates in excess of 120 milligrams per metre squared (120 mg/m2/day) are predicted to occur along the western shoreline and an area extending out 200 m from the shoreline to the south-west. Although the nuisance criteria for dust deposition is based on minimising impacts on human populations, I consider that if no mitigation measures are applied, dust deposition concentrations in these areas have a potential to cause temporary environmental nuisance.

To ensure potential dust impacts are managed during construction, the proponent has committed to employ best practice measures on the island including:

- regularly using water sprays on exposed areas of ground including any internal roadways to ensure moisture remains sufficient to suppress visible dust production
- minimising dust generating activities such as site cleaning, levelling and preparation during dry and windy conditions
- limiting vehicle speeds on site and/or use of gravel on heavily trafficked haul routes.

To ensure such measures are adopted by the building contractors, I have required the proponent to incorporate such measures as part of the CEMP. I have stated conditions in Appendix 3 for the preliminary approval from MRC which will ensure that the appropriate management plans are prepared.

Conclusion

I am satisfied that potential impacts on coastal and marine processes and terrestrial ecosystem processes have been adequately and appropriately considered in the EIS, and that suitable mitigation strategies have been proposed by the proponent.

I accept that upgrades and improvements to existing facilities in the coastal environment are required to allow the safe and sustainable use of the resort. I have however stated conditions for preliminary coastal works approvals to ensure that impacts are appropriately managed.

The proposed upgrade to the existing jetty would largely be accommodated by the same footprint as the existing structure, with the exception of a proposed floating pontoon. The impacts of construction of the pontoon have been considered in the EIS. The proposed addition of a pontoon to the existing jetty structure would require a permit from the GBRMPA.

I am satisfied that potential impacts due to noise and dust would be temporary and minor in nature and that such impacts are most appropriately addressed via the implementation of widely-practised site environmental management measures.

6.3.4 Criterion X

Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Diversity of species

Marine and terrestrial flora species

A total of 158 flora species from 55 families were recorded from the various vegetation assessments within the study area. The majority of flora species observed throughout the study area are common and widespread throughout the region in coastal eucalypt woodland and vine thicket communities.

The EIS reported that seagrass assemblages are generally sparse throughout the shoreline around Lindeman Island. The densest seagrass meadows are located south of the existing jetty in soft sediment beyond the edge of the reef.

Halophila species (including *H. ovalis*, *H. decipiens* and *H. spinulosa*) and *Halodule uninervis* are the two most common seagrass taxa in the project area. These are fast-growing, early-colonising species that are known to survive well in unstable (shifting sediments) or depositional (subject to sedimentation) environments.

Seagrass meadows were generally sparse (mostly between 1 per cent and 5 per cent cover and one patch south of the existing jetty with cover >10 per cent), with a low above-ground biomass, with some soft and hard corals occurring in the same area.

Macroalgae is common on intertidal and shallow subtidal reefs all around Lindeman Island. Macroalgae occurs in amongst living and dead coral as well as on loose rocks in soft bottom substratum with a distribution and abundance pattern virtually complementary to that of corals.

Marine and terrestrial fauna species

A total of 76 fauna species from 42 families were identified within the project area using a variety of different observation and trapping techniques. This included 47 species of birds, 14 reptile species, two amphibian species, and 13 mammal species (including 12 bat species).

The EIS reported that the subtidal rock and reef habitat at Lindeman Island is used by a range of adult and juvenile fish species including cod, butterflyfish, damselfish, wrasses and parrotfish. Over 48 taxa of fish were recorded from depths ranging from 2 to 4 m water depths in the vicinity of the existing jetty and channel.

The EIS reported that sharks and rays occur in the project marine area. Black tip reef sharks (*Carcharhinus melanopterus*) were observed over shallow subtidal reef in studies completed for the EIS. Other species of sharks and rays would forage in both nearshore and deeper habitats of the project marine area.

Four of the six species of marine turtles known to occur along Australian coasts would be common in the project marine area. These include flatback(*Natator depressus*) and green (*Chelonia mydas*) turtles, and less commonly the loggerhead (*Caretta caretta*) and hawksbill turtles (*Eretmochelys imbricata*). The leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtles are less likely to occur in the project marine area but may occur there very occasionally. All of these turtles are listed threatened and migratory species under the EPBC Act.

Several marine mammals (whales, dolphins and porpoises) listed under the ‘cetaceans’ schedule of the EPBC Act and the dugong (a listed marine species) were considered likely to occur in the project marine area by the EIS.

Integrity of the GBRWHA

Integrity of the GBRWHA is summarised in the statement of OUV and comprises wholeness, intactness and resilience to threats (refer to Appendix 6).

The proposed development is located wholly within the GBRWHA and therefore has a potential to threaten its integrity. Unmitigated, the project has the potential to reduce the integrity of the GBRWHA by:

- changing the viewsheds to the island from within the GBRWHA and therefore decreasing the perceived naturalness of the island
- increasing the rate and reducing the quality of stormwater run-off into the GBRWHA
- increasing recreational activities within land and marine areas of the island with the potential to cause fatality or disturbance to foraging marine and terrestrial species.

These impacts are assessed under criterions VII, VIII and IX of this report. My assessment concluded that no unacceptable impacts are apparent. The impacts identified would not, either alone or in combination with other actions, reduce the size or change the boundary of the property.

In evaluating the project's potential impacts in conjunction with suggested mitigations, approvals and conditions stipulated in this report, I consider the project could improve the integrity of the GBRWHA should the project deliver the intended net benefits. The proposal to rebuild an existing dilapidated resort on the Great Barrier Reef would improve the scenic amenity of the island when viewed from the south. Regarding water quality, I am satisfied the proposed mitigation measures to improve the quality of and volume of stormwater will be at a standard substantially more advanced than those currently employed on the island.

The EIS concluded that the project would not introduce additional threats or exacerbate existing threats that could deteriorate the GBRWHA and I accept this conclusion. The potential impacts to the GBRWHA are discussed in the section above and do not identify impacts that could exacerbate existing threats. Rather, the reduction in sediment and nutrient loads and improvement to the scenic amenity of the island from the south have been identified.

Management and protection of the GBRWHA

The statement of OUV of the GBRWHA (Appendix 6) identifies that the EPBC Act provides an overarching mechanism for protecting the world heritage values from inappropriate development, including actions taken inside or outside which could impact on its heritage values. This requires any development proposals to undergo rigorous environment impact assessment processes, often including public consultation, after which the Commonwealth Minister for the Environment and Energy may decide to approve, reject or approve under conditions designed to mitigate any significant impacts.

Other management arrangements that protect matters of state and national significance and support the EPBC Act in protecting the GBRWHA include the following:

- *Marine Park Act 2004*
- *Great Barrier Reef Marine Park Act 1975 (Cwlth)*
- *Planning Act 2016*
- *Environmental Protection Act 1994*

- *Nature Conservation Act 1992*
- *Transport Operations (Marine Pollution) Act 1995*.

Schedule 5 of the EPBC Regulations identifies the Australian world heritage management principles which apply to the GBRWHA (refer to Appendix 8 for full list of principles). The three overarching principles are:

(1) management of natural heritage and cultural heritage of a declared world heritage property must be, in accordance with Australia's obligations under the World Heritage Convention, to identify, protect, conserve, present, transmit to future generations and, if appropriate, rehabilitate the world heritage values of the property.

(2) preparation of a management plan for the declared world heritage property

(3) application of the environmental impact assessment and approval process for projects that are likely to have a significant impact on the world heritage values of a property (whether the action is to occur inside the property or not).

The project is not inconsistent with principle (1) as the project would have no significant residual impact on the OUV of the GBRWHA. Consequently, the project would also not be inconsistent with the World Heritage Convention. Section 6.4 of my report has evaluated the potential impacts of the project on OUV and has concluded that the project would have no significant residual impacts on the OUV of the GBRWHA.

No management plan exists for the Great Barrier Reef world heritage property; as such principle 2 does not apply.

Conclusion

In accordance with Schedule 5, section 3 of the EPBC regulations the project is not inconsistent with the principles related to undertaking the environmental impact assessment and approval process. The outcomes of the Coordinator-General's environmental impact assessment process and this evaluation report initiate a series of statutory approval decisions by Commonwealth, state and local governments. The subsequent approvals will include requirements to avoid and minimise impacts on the OUV of the GBRWHA.

6.4 National heritage places

In May 2007, the Great Barrier Reef was placed on the National Heritage List. This list comprises natural and cultural places that contribute to our national identity, providing a tangible link to past events, processes and people. The Great Barrier Reef has national heritage values because it contains:

- outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history
- outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history

- outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history
- outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
  - a class of Australia's natural or cultural places; or
  - a class of Australia's natural or cultural environments
- outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Many of the heritage values associated with the Great Barrier Reef national heritage place are similar to the GBRWHA values described in section 6.4 of this chapter. Therefore, the impacts to the Great Barrier Reef national heritage place are commensurate with the impacts from the project on GBRWHA discussed in section 6.4. Mitigation and management measures equally apply to the Great Barrier Reef national heritage places.

Consistent with the discussion on world heritage properties, the project would have no unacceptable impacts on the Great Barrier Reef national heritage. place.

A management plan for the Great Barrier Reef national heritage place has not been prepared under section 324S of the EPBC Act. I consider that likely impacts on the values of the national heritage places will be avoided and mitigated by the proponent to a reasonable degree under the conditions detailed as part of my evaluation. For further details on the potential impacts and mitigation measures, refer to section 6.4 World heritage properties.

6.5 Listed threatened species and communities

In deciding whether or not to approve the proposal for the purposes of a subsection of section 18 or section 18A of the EPBC Act, and what conditions (if any) to attach to such an approval, the Commonwealth Minister for the Environment and Energy must not act inconsistently with Australia's obligations under the:

- Convention on Biological Diversity (CBD)
- Convention on Conservation of Nature in the South Pacific (Apia Convention)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- a recovery plan or threat abatement plan (TAP).

The Minister must also, in deciding whether to approve the taking of the action, have regard to any approved conservation advice for the threatened species or ecological community that are likely to be or would be significantly impacted by the project.

This section assesses the project against the objectives and priority actions of conservation advices, recovery plans and threat abatement plans. Adequacy of the surveys undertaken for each species was also checked against relevant survey

guidelines. The residual impacts of the project on threatened flora, TECs, threatened fauna and threatened marine species are also assessed in this section.

A search of the protected matters search tool (PMST) in conjunction with the Queensland Government Wildlife Online database searches identified potential species, communities and areas of known conservation significance within the vicinity of the project site. These results were then ground-truthed via application of the proponent's key assessment criteria for likelihood of occurrence of threatened and near-threatened species.

6.5.1 Threatened flora species

A Protected Matters Report (PMR) generated for a 5km buffer around Lindeman Island in January 2018 indicates that no threatened flora species listed under the EPBC Act are listed as likely to occur. The EIS considered a broader search area of 50km, which indicated that 7 species listed under the EPBC Act are known from the region.

Habitat assessment

To confirm the presence of threatened flora species, vegetation surveys were conducted over three survey periods: July 2013, May 2015 and December 2015. I am satisfied that the survey effort reported in the EIS was sufficient to detect threatened flora species.

Of the 7 EPBC listed flora species identified through the desktop analysis, none were considered likely to occur within the study area and none were recorded during field surveys. I accept this finding based on the evidence presented in the EIS.

Conclusion

No threatened flora species were identified as 'known to occur' across the study area.

6.5.2 Threatened ecological communities

An ecological community is a naturally occurring group of plants, animals and other organisms that are interacting in a unique habitat. Its structure, composition and distribution are determined by environmental factors such as soil type, position in the landscape, altitude, climate and water availability. An ecological community becomes threatened when it is at risk of extinction.

Two TECs were identified in the PMR as potentially occurring within the study area or within 50 km radius. The surveys conducted in 2013 confirmed the presence of these TECs within the study area. They were:

- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (Critically Endangered) – small pockets on the southwest coastline
- Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland (Endangered) – east and west side of the runway strip.

Littoral Rainforest and Coastal Vine Thickets of Eastern Australia

Background

The TEC is a complex of rainforest and coastal vine thickets on the east coast of Australia influenced by its proximity to the sea. The canopy protecting less tolerant species and propagules on the understorey from salt-laden winds can range from patchy to closed and may include emergent as well as dead trees due to natural disturbance.

The Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community is critically endangered and was confirmed within the lease area and surrounding national park land. The community occurs mainly in small fragments restricted to the steep rocky slopes and gullies along the coastline of the island. The community is more substantially represented in the surrounding national park land where it has been ground-truthed along the west coast adjacent to the lease area.

The TEC occurs in multiple sections of the study area. Small areas of this community are located along the southern and south-western coastline and a larger continuous tract occurs along rocky slopes of the coastline to the west of the existing golf course.

Impacts and mitigation

The EIS confirms the design concept avoids disturbance to all areas where this community occurs. Direct disturbance to this community has been avoided entirely.

Although there will be no direct disturbance to this community, there is the potential for a range of unintended or indirect impacts, including accidental disturbance during construction, litter and degradation caused human interaction, introduction of weeds, pests and fire risks.

Residual significant impact

On the basis that there will be no direct disturbance to this community, I accept the findings of the EIS that no residual significant impact (RSI) predicted for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia TEC.

However, to ensure the integrity of this community into the future, I have recommended a condition for the Commonwealth Minister for the Environment and Energy in Appendix 3 which requires the proponent prepare a vegetation management plan which includes measures to ensure that appropriate action is taken to manage weeds, pests, fire, human incursion and other indirect effects of the project.

Coordinator-General's conclusion

Although the proponent has avoided direct disturbance on this TEC, the new development could introduce new edge effects and threats to this community. These include fire, pest weeds, pollutants and increased human interaction with the community. I accept that these impacts do no comprise a RSI on this community.

There is no Recovery Plan for this ecological community. However, there is an Approved Conservation Advice which sets out recovery and threat abatement actions required for this ecological community, including the management of invasive weeds

and development of suitable fire management strategies. The Threat Abatement Plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* is also relevant to this community. These plans have been considered throughout my evaluation and are summarised in Appendix 7.

To ensure the integrity of this community into the future, I have recommended a condition for the Commonwealth Minister for the Environment and Energy in Appendix 3 which requires the proponent prepare a vegetation management plan which includes measures to ensure that appropriate measures are put in place to manage weeds, pests, fire, human incursion and other indirect effects of the project.

Broad-leaf tea-tree *(Melaleuca viridiflora)* woodlands in high rainfall coastal north Queensland

Background

The Broad-leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland ecological community represents occurrences of woodland where *M. viridiflora* is dominant in the canopy and a diversity of grasses, sedges and forbs occupy the ground layer. The ecological community is restricted to the Wet Tropics and Central Mackay Coast bioregions in Queensland. The Broad-leaf tea tree woodlands in high rainfall coastal north Queensland community is listed as endangered.

A total of 5.38 ha of this community occurs in the project area. The full extent of vegetation consistent with the Broad-leaf tea-tree woodland TEC is restricted to a single patch on the eastern side of the runway strip.

Impacts and mitigation

The proposed disturbance to this community involves a small expansion of the cleared area for the runway and some lopping of vegetation beyond the cleared areas to heights appropriate for compliance with relevant aviation standards and codes to ensure safety. Vegetation trimming/lopping will need to occur as a height gradient, with a 20° transitional surface commencing at the edge of the runway strip.

The project would impact 1.5 ha of the Broad-leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland ecological community. Of the 1.5 ha, 0.69 ha of the community will be trimmed only, with 0.81 ha cleared. The disturbance to only 1.5 ha of this community represents disturbance to 27.9 per cent of the existing TEC on Lindeman Island or a 0.0049 per cent reduction in the total extent of this community.

In addition to clearing and trimming, there is the potential for a range of unintended or indirect impacts, including accidental disturbance during construction, litter and degradation caused human interaction, introduction of weeds, pests and fire risks.

The EIS notes that potential for impacts to the ecological integrity of the community will be mitigated through the implementation of a vegetation management plan. This plan will incorporate specific measures to manage exotic species invasion, particularly exotic grass species that pose a threat to the ecological integrity of the Broad-leaf tea-tree TEC.

To ensure the integrity of this community into the future, I have recommended a condition for the Commonwealth Minister for the Environment and Energy in Appendix 3 which requires the proponent prepare a vegetation management plan which includes measures to ensure that appropriate action is taken to manage weeds, pests, fire, human incursion and other indirect effects of the project.

Residual significant impact

To compensate for the predicted impact on this community, the proponent has committed to delivering a direct, on-the-ground conservation outcome that improves or maintains the viability of this community within the study area. To achieve this, the proponent anticipates the restoration of degraded areas of the community on the western side of the runway.

In this instance 3.66 hectares of Broad-leaf tea-tree woodlands would be retained that could be restored to an ecological condition consistent with the listed community. This would deliver a 40 per cent increase to the current extent of the listed community on Lindeman Island and a possible net benefit for the TEC on the island.

On the basis that there is likely to be a net increase in the area of this community, I accept the findings of the EIS that no residual significant impact predicted for the Broad-leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland ecological community.

Coordinator-General's conclusion

The project will require the clearing of the Broa-leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland ecological community. This would be balanced by the restoration of degraded areas of the community elsewhere on Lindeman Island. As such, I accept that there would not be a residual significant impact on this community.

There is no Recovery Plan for this ecological community. However, there is an Approved Conservation Advice which sets out recovery and threat abatement actions required for this ecological community, including the management of invasive weeds and development of suitable fire management strategies. The Threat Abatement Plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* is also relevant to this community. These plans have been considered throughout my evaluation and are summarised in Appendix 7.

To ensure the integrity of this community into the future, I have recommended a condition for the Commonwealth Minister for the Environment and Energy in Appendix 3 which requires the proponent prepare a vegetation management plan which includes measures to ensure that appropriate action is taken to manage weeds, pests, fire, human incursion and other indirect effects of the project.

6.5.3 Threatened terrestrial fauna

Desktop searches performed using the PMR and the Wildlife Online extract identified 26 near-threatened and threatened fauna species within 50 km of the study area. Of the 20 species listed under the EPBC Act, only two were considered to have a

moderate or high likelihood of occurring within the study area. These were the Australian painted snipe (*Rostratula australis*) and the eastern curlew (*Numenius madagascariensis*). The remaining 18 species were considered to have a low likelihood of occurring in the study area due to the lack of suitable habitat.

Field surveys

Two surveys were conducted representative of the seasonal variability in species presence, abundance and habitat utilisation. The first survey was undertaken from 11-15 May 2015 during autumn. The second survey was performed from 30 November – 6 December 2015, representative of spring to early summer. Six systematic survey sites were established across the study area where a range of trapping and surveying techniques were employed. The fauna survey incorporated the timing and effort recommendations outlined in the Terrestrial Vertebrate Survey Guideline for Queensland. I am satisfied that fauna surveys were adequate to describe the fauna communities present.

In addition to these general fauna techniques employed, targeted survey techniques were specially employed to determine the presence of the coastal sheath tail bat, northern masked owl, greater large-eared horseshoe bat and shorebirds. Although no threatenedfauna species were observed within the study area during field surveys, the Australian painted snipe and the eastern curlew were determined to have a high likelihood of occurrence due to previous recordings and suitable habitat.

Australian painted snipe *(Rostratula australis)*

The margins of the artificial waterway central to the study area potentially provide suitable habitat for the Australian painted snipe. The species is categorised by its migratory and dispersive movements and therefore possibly could occur in the study area from time to time. Lindeman Island is not known to provide important habitat for this species.

I am satisfied that the proponent has adequately identified the potential impacts that the proposed action could have on the Australian painted snipe. To ensure that there are no unacceptable impacts, I require that the proponent comply with the conditions recommended in this report, including measures to limit disturbance to habitat.

In light of the proposed mitigation measures and conditions recommended in this report, I consider the potential impacts on the Australian painted snipe are not unacceptable or inconsistent with the conservation advice (Appendix 7) for this species.

Eastern curlew (*Numenius madagascariensis*)

The eastern curlew is a migrant to Australia and found along the coast from August to March. The species is found in every state of Australia and prefers sheltered coasts, estuaries, bays, harbours, inlets and coastal lagoons with intertidal mudflats or sandflats.

There are various records of this species within 50 km of the study area including a single record on Lindeman Island in 1983. There is suitable habitat on the island for

this species to occur – predominantly the coastal beaches. The EIS found that due to the limited nature of disturbance to potential habitat areas in the locality it is unlikely that the project will have a significant impact on the species. I accept this conclusion and do not consider the action to be inconsistent with the recovery actions set out in the conservation advice for this species (Appendix 7).

6.5.4 Threatened marine fauna

Lindeman Island's intertidal and subtidal sediment and reef habitat supports a broad range of fish, sharks, rays, birds, marine replies and mammals. A search of the PMST database presented in the EIS identified nine threatened bird species listed under the EPBC Act as potentially occurring within 5 km of the project site.

The EIS found that a total of four species of sharks listed under the EPBC Act could occur in the search area, although the grey nurse shark (*Carcharinus taurus*) and the green sawfish (*Pristis zijsron*) would not occur in habitats of the project marine area and were not considered any further in the assessment. Two species of cetacean could occur in the search area but the blue whale (*Balaenoptera musculus*) was not considered further as it would be very unlikely to venture into the project marine area. Six species of marine turtles could occur in the search area and all could utilise habitats in the project marine area. Threatened marine species considered likely to occur in the project area are listed in Table 6.1.

Table 6.1 Listed marine species potentially occurring in the project area

Common name	Scientific name	EPBC Act listing status
Mammals		
Blue whale	*Balaenoptera musculus*	Listed as endangered Cetacean Listed migratory – Bonn
Humpback whale	*Megaptera novaeangliae*	Listed as vulnerable Cetacean Listed migratory – Bonn
Reptiles		
Loggerhead turtle	*Caretta caretta*	Listed as endangered Listed marine Listed migratory – Bonn
Green turtle	*Chelonia mydas*	Listed as vulnerable Listed marine Listed migratory – Bonn
Leatherback turtle, leathery turtle, luth	*Dermochelys coriacea*	Listed as endangered Listed marine Listed migratory – Bonn
Hawksbill turtle	*Eretmochelys imbricata*	Listed as vulnerable Listed marine Listed migratory – Bonn

Olive ridley turtle, Pacific ridley turtle	*Lepidochelys olivacea*	Listed as endangered Listed marine Listed migratory – Bonn
Flatback turtle	*Natator depressus*	Listed as vulnerable Listed marine Listed migratory
Sharks		
White shark, great white shark	*Carcharodon carcharias*	Listed as vulnerable Listed migratory
Grey nurse shark	*Carcharinus taurus*	Listed as endangered Listed as migratory
Green sawfish, dindagubba, narrowsnout sawfish	*Pristis zijsron*	Listed as vulnerable Listed migratory – Bonn
Whale shark	*Rhincodon typus*	Listed as vulnerable Listed migratory

Impacts and mitigation

The EIS determined that although the abovementioned threatened species could forage on habit within the project marine area, such habitat was not likely to represent habitat critical to the species' survival. Furthermore, the controlled action would not have any significant direct or indirect impacts on core habitat of the threatened species.

Although an additional 19 moorings (including safe weather moorings) are proposed in sheltered locations around Lindeman Island, these moorings would be located on soft sediment and at distances sufficiently beyond the reef edge to avoid potential environmental harm. Such anchorages and moorings are subject to permits from the GBRMPA which the proponent would lodge following approval of the EIS.

I am satisfied that the establishment of additional moorings on soft sediment habitats would avoid or minimise impacts on the marine environmental values which contribute to the OUV of the GBRWHA.

To reduce the potential for ingestion of, or entanglement of harmful marine debris, the proponent has committed to implementing Resort and Construction EMPs and a Waste Management Plan to guard against the accidental release of waste and debris to the marine environment.

To reduce the risk of boat strikes, a Resort EMP will be prepared outlining the governance procedures to ensure vessels maintain vigilance for marine turtles and maintain slow speeds in, around and nearby the marina where turtles and associated marine species may be foraging. Specific to whales, the Nature Conservation (Wildlife Management) Regulation 2006 would be incorporated in the project's EMP. The EMP would include policy for vessels using the jetty, barge landing and moorings at slow speeds and education of skippers as to how to avoid vessel strikes.

Residual significant impact

The EIS concluded that the proposed action is not expected to result in any residual significant impacts on threatened marine species. The project no longer requires construction of a safe harbour which has avoided disturbance of coral reef habitat and has eliminated the need for dredging.

The proponent will lodge applications for an additional 19 moorings with GBRMPA following determination of the project under the bilateral agreement. Suitable locations for the moorings will be determined in conjunction with GBRMPA and placement will seek to further avoid impacts to marine habitat. I accept that the moorings can be located so as to avoid residual significant impacts on the habitat of threatened marine species.

Coordinator-General's conclusion

I have considered potential impacts on threatened marine species as a result of the project. I consider the mitigation measures proposed by the proponent adequate to address adverse impacts on these species. Furthermore, I am of the view that there would not be a residual significant impact on threatened marine species or their habitats.

6.5.5 Listed migratory species

In deciding whether to approve the proposal for the purposes of section 20 or 20A of the EPBC Act, and what conditions to attach to such an approval, the Commonwealth Minister for the Environment and Energy must not act inconsistently with Australia's obligations under the following conventions and agreements:

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
- Japan-Australia Migratory Bird Agreement (JAMBA)
- China-Australia Migratory Bird Agreement (CAMBA)
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Many animals migrate to Australia and its external territories, or pass through or over Australian waters during their annual migrations. Many migratory species listed under international conventions and agreements that Australia is party to, are protected under the EPBC Act. These species include migratory birds and marine megafauna. Some migratory species also form part of the world heritage values of the GBRWHA.

In accordance with *Matters of National Environment Significance Significant Impact Guidelines*, an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- *Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;*
- *Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or*

- *Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.*

A search of the PMST database identified 36 listed migratory species as potentially occurring within 5 km of the project site. Of these 21 were listed migratory marine species and 15 were listed migratory wetland, terrestrial and marine birds.

The EIS reported that migratory birds may use habitat that will be cleared or disturbed for the project. As many different species of migratory birds utilise the same habitat areas, and therefore would be similarly impacted if the shared habitat were to be cleared or degraded, impacts to migratory bird species are discussed together below.

Terrestrial migratory species

The EIS reported that one predominantly terrestrial migratory species was listed as potentially occurring in the study area in database searches, the barn swallow (*Hirundo rustica*). I note a range of additional terrestrial migratory species were also assessed in the EIS, including the following:

- fork-tailed swift (*Apus pacificus*)
- great egret (*Ardea alba*)
- cattle egret (*Ardea ibis*)
- Oriental cuckoo (*Cuculus saturatus*)
- white-throated needletail (*Hirandapus caudacutus*)
- rainbow bee-eater (*Merops ornatus*)
- black-faced monarch (M*onarcha melanopsis*)
- satin flycatcher (*Myiagra cyanoleuca*)
- rufous fantail (*Rhipidura rufifrons*)
- spectacled monarch (*Symposiachrus trivirgatus*)

The great egret, cattle egret and rainbow bee-eater were removed from the list of migratory species under section 209 of the EPBC Act on 9 June 2016. Similarly, the white-bellied sea-eagle was removed from the list of migratory species on 18 June 2015. As such these species are not discussed further in this chapter.

Of all the terrestrial bird species potentially occurring within the study area, only the spectacled monarch was confirmed during fauna surveys. The distribution of the spectacled monarch is along the east coast of Australia, including the islands between Victoria in the south to Papua New Guinea, Moluccas and Timor in the north. The spectacled monarch feeds on insects and forages mostly below the canopy in rainforests, mangroves and waterside vegetation. There is no listing advice, recovery plan or threat abatement plan for this species.

The spectacled monarch was observed within the project site foraging in least concern high value regrowth adjacent to the Gap Creek Dam wall. A portion of this habitat is proposed to be cleared for the reconfigured golf course.

Shorebirds

Migratory shorebird species with a potential to occur within the project area were reported in the EIS. These bird species included:

- ruddy turnstone (*Arenaria interpres*)
- whimbrel (*Numenius phaeopus*)
- grey-tailed tattler (*Heteroscelus brevipes*)
- Despite targeted surveys only a single shorebird species, the sooty oystercatcher (*Haematopus fuliginosus*) was observed in the project area.

The EIS concludes that migratory shorebirds are unlikely to breed on Lindeman Island but would occasionally pass by Lindeman Island and forage on habitat in the coastal environment of the project marine area.

Migratory marine birds

The EIS considered potential impacts on migratory marine birds, including the common noddy (*Anous stolidus*), lesser frigatebird (*Fregata ariel*), great frigatebird (*Fregata minor*) and southern giant petrel (*Macronectes giganteus*).

Seabirds exhibit similar feeding niches as shorebirds. Seabirds feed on the surface as well as dive underwater for prey. They are mainly colonial, with densely populated nesting sites during breeding. As seabirds can be active during the night, artificial lighting can attract and disorientate birds during migration which at times can lead to fatality.

The presence of the brown booby was confirmed with a sighting of the bird flying over water between Lindeman Island and Shaw Island. The presence of the eastern osprey was confirmed with observations of the bird flying over the coastline. Although habitat for these species exist in the marine project area, no nesting sites were confirmed during fauna surveys.

Migratory marine species

The presence of a fringing reef and seagrass meadows surrounding Lindeman Island provide suitable habitat for a range and of migratory marine species which are also attributes of OUV. The PMST identified 21 listed migratory marine species that may occur within 5 km of the project area. These are provided in Table 6.2 along with an assessment of likelihood of occurrence as presented in the EIS.

Table 6.2 Listed migratory marine species

Common name	Scientific name	EPBC Act listing status	Likelihood of occurrence in Project Area
Narrow sawfish, knifetooth sawfish	*Anoxypristis cuspidata*	Listed migratory – Bonn	Low
Bryde's whale	*Balaenoptera edeni*	Cetacean Listed migratory – Bonn	High

Blue whale	*Balaenoptera musculus*	Listed as endangered Cetacean Listed migratory – Bonn	Low
White shark, great white shark	*Carcharodon carcharias*	Listed as vulnerable Listed migratory – Bonn	Moderate
Loggerhead turtle	*Caretta caretta*	Listed as endangered Listed marine Listed migratory - Bonn	High
Green turtle	*Chelonia mydas*	Listed as vulnerable Listed marine Listed migratory – Bonn	High
Saltwater crocodile, estuarine crocodile	*Crocodylus porosus*	Listed marine Listed migratory – Bonn	Moderate
Leatherback turtle, leathery Turtle, luth	*Dermochelys coriacea*	Listed as endangered Listed marine Listed migratory – Bonn	Low
Dugong	*Dugong dugon*	Listed marine Listed migratory - Bonn	High
Hawksbill turtle	*Eretmochelys imbricata*	Listed as vulnerable Listed marine Listed migratory	High
Porbeagle, mackerel shark	*Lamna nasus*	Listed migratory – Bonn	Low
Olive ridley turtle, Pacific ridley turtle	*Lepidochelys olivacea*	Listed as endangered Listed marine Listed migratory	Low
Reef manta ray, coastal manta ray, inshore manta ray, Prince Alfred's ray, resident manta ray	*Manta alfredi*	Listed migratory – Bonn	Moderate
Giant manta ray, chevron manta ray, Pacific manta ray, pelagic manta ray, oceanic anta ray	*Manta birostris*	Listed migratory – Bonn	Moderate

Humpback whale	*Megaptera novaeangliae*	Listed as vulnerable Cetacean Listed migratory – Bonn	High
Flatback turtle	*Natator depressus*	Listed as vulnerable Listed marine Listed migratory	High
Australian snubfin dolphin	*Orcaella heinsohni*	Cetacean Listed migratory as *Orcaella brevirostris*	High
Killer whale, orca	*Orcinus orca*	Cetacean Listed migratory – Bonn	Low
Green sawfish, dindagubba, narrowsnout sawfish	*Pristis zijsron*	Listed as vulnerable Listed migratory – Bonn	Low
Whale shark	*Rhincodon typus*	Listed as vulnerable Listed migratory	Low
Australian humpback dolphin, Indo-Pacific humpback dolphin	*Sousa sahulensis*	Cetacean as *Sousa chinensis* Listed migratory – Bonn as *Sousa chinensis*	High

The EIS did not assess the likelihood of occurrence for the narrow sawfish/knifetooth sawfish. This species was not identified in the PMST database search at the time of the EIS. Although the narrow sawfish may traverse through the waters of the project's marine area, it was not found during field surveys and the area is not considered to provide significant habitat for these species.

Impacts and mitigation

The EIS found that risks to terrestrial migratory species are generally those associated with habitat loss, but in the case of the Lindeman Great Barrier Reef Resort project, there will be no significant habitat loss for terrestrial migratory species. I accept that the project has been designed to minimise the clearing of native vegetation and that habitat loss for terrestrial migratory species will not be significant.

The key threatening processes to migratory marine species resulting from the project were identified as injury and fatality to vertebrate marine life caused by ingestion of or entanglement in harmful marine debris. Potential impacts that may occur as a result of the project identified in the EIS included:

- Boating incidents, including collisions with marine mammals and/or sea turtles (boat strikes)
- Marine debris and litter
- Poor water quality and pollution (for example from land-based erosion and run-off)

- Increased human presence (for example disturbance of marine life through noise, direct harassment, lighting and increasing vessel traffic)

To reduce these potential impacts the proponent has committed to a range of mitigation strategies including:

- Development of a Resort Watercraft and Reef Viewing Management Plan which includes management measures to address the impacts of increased recreational usage of the marine park including establishment of no-go zones, management of recreational uses (including fishing) and education of users.
- Establishment of 'go slow' zones around the marine infrastructure, in line with Maritime Safety Queensland (MSQ) boating safety requirements and the preparation of a marine fauna management plan in consultation with relevant agencies.
- Development of a water quality monitoring program which identifies appropriate water quality objectives for the site, thresholds for action and actions to be taken should these thresholds be exceeded.
- Preparation of a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that stormwater discharges and effluent do not significantly affect the environmental values of adjacent receiving waters or land.

I am satisfied that the mitigation measures proposed by the proponent are adequate to minimise the risk of the project to migratory marine species.

Residual significant impact

The project seeks to avoid impacts wherever possible on listed migratory species and their habitats via responsive design. A range of mitigation measures have been proposed to reduce any residual impacts of the project on listed migratory species. The EIS found that residual impacts on listed migratory species would not be significant and I support this conclusion.

Coordinator-General's conclusion

Although foraging habitat for migratory species occurs throughout the study area, no unique habitat features were identified by the EIS. No nesting sites were observed for any listed migratory species within the study area and no areas of important habitat were identified.

I am satisfied that the EIS has identified the potential impacts that the proposed action could have on listed migratory shorebirds and seabirds. I am also satisfied that the proposed actions stipulated by the proponent would be sufficient to reduce the potential for impacts over the life of the project.

A range of migratory marine species occur in waters surrounding Lindeman Island. The proponent has put forward practical measures to reduce the impact of boating, recreational activity, wastewater treatment and disposal, and the release of pollutants more broadly from the project site. In many cases, these measures are superior to the operational procedures of the previously operating resort.

In light of the proposed mitigation measures and my recommendations and conditions in this report, I consider the impacts on listed migratory species would not be unacceptable. I also consider the proposed management actions are not inconsistent with Australia's obligations under the Bonn Convention, CAMBA, JAMBA and ROKAMBA and relevant TAPs and recovery plans.

6.6 Great Barrier Reef Marine Park

6.6.1 Great Barrier Reef Marine Park

The GBRMP stretches along the coast of Queensland and is approximately 344,400 km^2. It has been established under the *Great Barrier Reef Marine Part Act 1975* (Cwlth) and is managed by the GBRMPA and the Queensland Parks and Wildlife Service (QPWS).

The project site is located wholly within the GBRMP and any proposed development must therefore consider the GBRMPZ and the WPM.

Great Barrier Reef Marine Park Zoning Plan 2003

In accordance with the GBRMPZ, Lindeman Island is located within the Conservation Park Zone and Marine National Park Zone. The project site is generally located within the footprint of the existing resort and directly adjacent to the Conservation Park Zone. The objective of this zone is to provide for conservation in the marine park and provide opportunities for reasonable use and enjoyment, including limited extractive use. Lindeman Island is also within a Public Appreciation Boundary which further restricts the activities allowed within the Conservation Park Zone. Accordingly, marine areas directly adjacent to the project site must not be used or entered for any of the following purposes:

- limited spearfishing
- the conduct of a harvest fishery
- aquaculture operations.

Lindeman Island is also within the Whale Protection Area (WPA) which is designed to minimise disturbance to whales that may be caused by whale-watchers and tourism operators using boats, aircraft and helicopters.

The EIS demonstrated the project would be consistent with the GBRMPZ plan. Usage of the marine areas associated with construction and operation of the project will be managed through various management plans to be prepared during the detailed design phase in consultation with the Marine Park Authority. Management plans relevant to the GBRMPZ will notably include the EMP and CEMP. These management plans will stipulate the locations and intensities of marine activities over the life of the project and will include limits on vessel speeds and fishing prohibitions.

I am satisfied that the management of the project in accordance with relevant plans and in collaboration with the Marine Park Authority will ensure consistency with the GBRMZP.

Great Barrier Reef Whitsunday Plan of Management

The purpose of the WPM is to, in conjunction with other management mechanisms, protect and conserve identified values and world heritage values of the GBRMP and planning area, while allowing for reasonable opportunities to access and use the planning area.

Lindeman Island is located within the Whitsunday planning area boundary of the WPM and therefore the project should be consistent with the WPM.

The proposed project is adjacent to Setting 1 (intensive) with the remainder of the island is within Setting 3 (moderate use) and Setting 4 (low use) areas.

In accordance with the WPM, existing marine areas within Setting 1 support the use by a wide range of craft, and contains infrastructure required by the existing resort including moorings, jetties and boat ramps. I consider the proposed development is consistent with the WPM in this instance as such infrastructure will continue to be used as part of the proposed project. Setting 1 in the WPM is also bound by an area zoned as an aircraft landing area. This area recognises the use of the existing airstrip on the island and generally supports its operation in the future as described in the EIS.

Setting 3 is a natural setting that may have moderate levels of visitation (maximum group size 40 people) with appropriate moorings and management facilities to manage impacts.

Similarly, setting 4 is a low use area which supports fewer visitation numbers. In this setting, maximum group sizes of 15 people are allowed. Setting 4 encompasses most of the marine areas surrounding Lindeman Island. Within Setting 4 on the northern side of the island, a single superyacht anchorage (< 70m) is also provisioned.

As the construction of a safe harbour is no longer proposed as part of the project, the proponent is seeking permits and approvals for an additional 19 moorings surrounding Lindeman Island. These moorings would likely be positioned within all three settings illustrated in the WPM. I have considered the proposed moorings would not be inconsistent with the WPM as they would be designed and sited to avoid impacts on corals and would be congruent to the WPM setting in which they are proposed. Impacts associated with the proposed moorings have been discussed further in section 6.4.3 of this report.

With regard the proposed development and proponent's commitments, mitigations and approvals to be sought from the Marine Park Authority, I consider the project would be generally consistent with the intent of the WPM.

6.7 Ecologically sustainable development

My assessment of the project has taken into account the principles of ecologically sustainable development, which as defined in Part 1, section 3A of the EPBC Act, are:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations

- if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
- improved valuation, pricing and incentive mechanisms should be promoted.

My report has analysed and taken into consideration the information from the EIS and additional material concerning the long-term and short-term economic, environmental, social and equitable considerations that are relevant to the project.

I have considered the importance of conservation of biological diversity and ecological integrity in relation to all of the controlling provisions for this project, and the assessment provided within my report reflects that consideration.

My evaluation of the project presented in this report also considers a range of information on the economic costs, benefits and impacts of the project. I have sought to ensure that financial costs of compliance with the conditions are reasonable to the extent that the project can proceed whilst also making a fair contribution to environmental protection.

6.8 Coordinator-General's conclusion: matters of national environmental significance

The EIS concludes that the project is unlikely to cause the degradation of world heritage values or significantly affect other matters of national environmental significance. I accept this conclusion.

To ensure that potential visual impacts on the GBRWHA and National Heritage Place are minimised, I have recommended conditions for the Commonwealth Minister for the Environment and Energy in Appendix 3 requiring that the proponent submit final precinct development plans for the Minister's approval before the commencement of the action.

The EIS indicates that the project will improve the quality of stormwater discharges to the GBRMP, thereby improving water quality. To ensure that a net benefit is achieved, I have recommended conditions in Appendix 3 for the Commonwealth Minister requiring the proponent to develop a water quality monitoring program which describes baseline values and identified trigger points and additional measures that will be undertaken if monitoring results do not demonstrate that the required net benefit to water quality in the receiving environment is achieved.

The project will require the clearing of 1.5 ha of the Broad-leaf tea-tree woodland, a threatened ecological community. The project also has the potential to indirectly impact the Littoral Rainforest and Coastal Vine Thickets ecological community. To ensure that potential direct and indirect impacts of the project on these communities are

appropriately managed, I have recommended a condition for the Commonwealth Minister in Appendix 3 requiring that the proponent prepares a vegetation management plan which details measures to mitigate impacts to terrestrial TECs from construction and operation of the resort, before the commencement of the action.

The potential impacts of the project are addressed by conditions that restrict environmental impacts, impose strict monitoring and adopt environmental standards, which if not achieved, require the application of timely response mechanisms to avoid adverse impacts.

The proposed conditions will ensure protection of world heritage properties, listed threatened species, listed migratory species and Commonwealth marine areas. These conditions allow for the project to be delivered and operated in a sustainable way to protect the environment for future generations and preserve matters of national environmental significance.

7. Conclusion

In undertaking my evaluation, I have considered the following:

- the EIS and supplementary material prepared for the project
- submissions on the EIS, including agency advice
- supplementary submissions received following the EIS.

I am satisfied that the requirements of the SDPWO Act have been complied with and that sufficient information has been provided to enable the necessary evaluation of potential impacts, and inform the development of mitigation strategies and conditions of approval.

The environmental assessment commenced with the declaration of this project as a coordinated project in May 2015 and has involved a comprehensive body of work by the proponent. More detailed work will occur in the detailed design phase of the project.

I have assessed and considered the potential impacts identified in the EIS documentation and all submissions. I consider that the mitigation measures and commitments proposed by the proponent together with the conditions and recommendations stated in this report would result in acceptable outcomes.

Based on the information provided by the proponent and outlined in this evaluation report, I conclude that the project would promote economic growth, provide local employment opportunities and generate a net increase in visitor numbers to the region.

The project has the potential to generate economic benefits throughout the region and state including the employment of 300 people on average during construction, 300 people on average during operation on the island and a capital expenditure of $583M.

Accordingly, I recommend that the Lindeman Great Barrier Reef resort project proceed subject to the conditions in Appendices 1 and 2 and the recommendations in Appendix 4. In addition, I require the proponent's commitments to be fully implemented as presented in the EIS documentation and summarised in Appendix 6 of this report.

To proceed further, the proponent will be required to initially obtain the following key approvals:

- EPBC Act approval
- relevant development approvals under the planning act
- relevant environmental authorities under the EP Act.

Subsequent works approvals will be required for project construction and operation.

Copies of this report will be issued to:

- DEE
- DSDMIP
- MRC
- DES

A copy of this report will also be available on the DSDMIP website at www.statedevelopment.qld.gov.au/lindeman

If there are any inconsistencies between the project (as described in the EIS documentation) and the conditions in this report, the conditions shall prevail. The proponent must implement all the conditions of this report.

This report will lapse on 26 March 2022.

Appendix 1. Imposed conditions

This appendix includes conditions imposed by the Coordinator-General under section 54B of the SDPWO Act.

All of the conditions imposed in this appendix take effect from the date of this Coordinator-General's report.

In accordance with section 54D of the SDPWO Act, these conditions apply to anyone who undertakes the project, such as the proponent and an agent, contractor, subcontractor or licensee of the proponent.

These conditions do not relieve the proponent of the obligation to obtain all approvals and licences from all relevant authorities required under any other Act.

In accordance with section 54B(4) of the SDPWO Act, I have nominated several entities to have jurisdiction for the conditions in this schedule.

Schedule 1. Social Impact Assessment

Condition 1: Community, stakeholder engagement and update of impact mitigation strategies

The purpose of this condition is to ensure that community and stakeholder interests in the project are clearly identified and effectively managed. This condition also ensures that impact mitigation strategies are updated and adapted in response to stakeholder feedback.

(a) Submit, at least 3 months prior to commencement of the construction phase of the project, a community and stakeholder engagement plan (CSEP) to the Coordinator General for approval.

(b) The plan must include the following:

- (i) a summary profile of the local community, focusing on potentially affected stakeholder groups
- (ii) an analysis of key stakeholders and stakeholder issues
- (iii) engagement schedules and action plans
- (iv) communication activities and tools
- (v) roles and responsibilities for engagement
- (vi) an appropriately-scaled complaints management process
- (vii) objectives and key performance indicators
- (viii) monitoring and reporting requirements
- (ix) processes for incorporating stakeholder feedback into the further development of project-specific impact mitigation strategies
- (x) processes for providing timely notification to local job seekers and industry service providers regarding potential project opportunities.

(c) The CSEP is to be made publicly available by the proponent on its website within one month of its approval by the Coordinator-General.

(d) The CSEP is to be reviewed and, if necessary, updated annually during the construction and for the first two years of operation of the project.

(e) The CSEP is to be implemented throughout construction and during the first two years of operation of the project.

Schedule 2. Information required to support an ERA 63 application

Condition 1. Project specific information requirements for ERA 63 – Sewage Treatment

The proponent must provide the administering authority, the Department of Environment and Science (DES), with the information requested in this condition, as per the *Environment Protection Act 1994* (EP Act) ERA 63 Sewage Treatment, to allow an environmental authority application for the activity of sewage treatment to be fully assessed and appropriate conditions prepared.

This condition should be read in conjunction with any relevant guideline or checklists published by DES to ensure that all application requirements are met.

Information required is as follows:

(a) Provide detailed information regarding the status of the existing sewage collection, treatment and disposal systems, including current:
   (xi) sewage treatment
   (xii) effluent quality
   (xiii) effluent disposal
   (xiv) effluent volumes for each type of reuse
   (xv) locations and surface areas of any irrigation areas
   (xvi) locations, volumes and descriptions of wet weather storages

(b) Provide detailed information on the proposed demolition of the existing STP and associated infrastructure, including information on:
   (i) management of any residual regulated waste (such as screenings, grits, biosolids and sludges)
   (ii) measures to protect environmental values and human health during demolition.

(c) Include detailed information and MEDLI modelling for the proposed sewage collection, treatment and disposal systems for the proposed 300 equivalent persons (EP) construction accommodation camp. Information required includes a detailed description of the proposed:
   (i) sewage treatment
   (ii) effluent quality
   (iii) effluent disposal
   (iv) effluent volumes for each type of reuse
   (v) locations and surface areas of irrigation areas
   (vi) locations, volumes and descriptions of wet weather storages
   (vii) MEDLI modelling.

(d) For the approximate 1500 EP resort sewage treatment plant, detail of:
   (i) impacts and management of noise arising from this plant, including information on ambient background noise.
   (ii) the contribution of the sewage treatment plant to cumulative noise impacts arising from the project.

(e) For the approximate 1500 EP resort sewage treatment plant revised MEDLI modelling which includes permissible and accurate model inputs of storage leakage and

reuse/recycling of wastewater to ensure adequate wet weather wastewater storage is provided for and to ensure overtopping is accurately calculated and appropriate for this sensitive location.

(f) Submit revised MEDLI modelling to DES for review prior to making the ERA 63 application, including the MEDLI scenario file (*.med) or the MEDLI output file (*.medr) in their original formats, prior to their being included in an ERA 63 application.

(g) Provide updated MEDLI modelling and supporting information which address the following inputs and assumptions:

(i) The expected/designed average nutrient (total nitrogen and total phosphorous) and total dissolved solid concentrations to be used in the MEDLI simulation.

(ii) Seasonal variation in the generation of reusable water, to more accurately assess the hydraulic balance using MEDLI.

(iii) Sewage treatment for this project must assume no leakage of wastewater to groundwater from the wet weather storage(s). MEDLI modelling must be rerun to reflect this assumption. Current modelling assumes a high rate of storage leakage from the wastewater storage to groundwater, however, high rates of leakage to groundwater are unacceptable at this sensitive location.

(iv) Sewage treatment for this project must assume no evaporative loss or rain gain to the proposed closed tanks for wet weather storage. The existing approach that includes substantial losses from a closed tank must be corrected.

(v) Corrected levels of proposed water reuse or recycling within the resort, including seasonal variation in proposed water reuse. Current MEDLI modelling does not indicate the volume of Class A+ recycled water that will be reused, although it is likely that a certain volume will be recycled within the resort, for example for toilet flushing, wash-downs, landscape irrigation.

(vi) Recalculation of wet season usage of wastewater for landscape and golf course irrigation, when golf course and landscape irrigation may not be required or desirable following periods of adequate rainfall for golf course and landscaping maintenance. Current MEDLI modelling does not account for potentially lower wet season usage of wastewater for landscape and golf course irrigation. Modelling should be rerun to mimic actual irrigation practices. Golf courses are typically irrigated ‘as required’ and are unlikely to be irrigated 5 mm/day as currently modelled. This rate should be adjusted to reflect likely seasonal irrigation rates and this change to the modelling may also require recalculation of required irrigation areas and wastewater storage volumes necessary to achieve sustainable land disposal of wastewater.

(vii) Recalculation of wet weather wastewater volume storage requirements.

(viii) Recalculation of overtopping from wet weather storages when irrigation and reuse are not possible due to wet weather or saturated soil condition to ensure overtopping does not result in environmental harm. Current MEDLI modelling indicates no overtopping from any wet weather storages, which is unlikely, particularly during extreme weather events. Further details are also required regarding:

(A) the location overtopping discharges

(B) estimated nutrient loads with overtopping over time

(C) the appropriateness of the above locations and nutrient loads to ensure the protection of environmental values and compliance with relevant environmental objectives.

(ix) The inclusion of site specific soil parameters in the MEDLI modelling. This modelling input may require soil sampling and analysis, if this has not already been completed.

(h) For the pool desalination plant, specify the quantities of permeate that are proposed to be treated via the sewage treatment plant. The treatment of this water via the sewage treatment plant may be appropriate if this permeate represents a relatively small percentage of the total volume treated. However, given that typical permeates from a RO process may have comparatively high sodium adsorption ratio (SAR) and sodium concentrations, this information will need to be provided for assessment of the suitability of the proposed treatment of this permeate.

(i) Submit management plans relevant to sewage treatment, including:

(i) an irrigation management plan, including details of wet weather water management options and contingencies for potential breakdowns of irrigation hardware.

(ii) a stormwater management plan, including measures to minimise stormwater infiltration into the sewage collection system.

The entity with jurisdiction for this condition is the Department of Environment and Science.

Appendix 2. Stated conditions

This appendix contains conditions stated by the Coordinator-General under section 39(1)(a) of the SDPWO Act.

Schedule 1. Variation approval

This Schedule includes the Coordinator-General's stated conditions for a Variation Approval varying the Mackay Regional Planning Scheme 2017 under the *Planning Act 2016*, stated under section 39 of the *State Development and Public Works Organisation Act 1971*.

The entity with jurisdiction for conditions in this schedule is the Mackay Regional Council.

Condition 1. Development generally

(a) The Resort Complex and other approved structures and facilities shall generally comply with the Indicative Masterplan (Maps 2 – 6) included in the Plan of Development (HRP15078) dated 7 November 2017 and any subsequent changes arising from the Office of Coordinator-General conditions of approval.

(b) The total number of accommodation units shall not exceed the parameters outlined in the Table 3-1 - Lindeman Great Barrier Reef Resort Code – Development Parameters of the Plan of Development (HRP15078) dated 7 November 2017. This includes the listed building heights and gross floor area.

(c) Permanent accommodation is not permitted on-site other than for staff employed at the Resort Complex.

Condition 2. Built form

(a) The visual amenity and natural environment of Lindeman Island must be protected by ensuring that all buildings and structure are constructed in compliance the development controls outlined in the Plan of Development.

Condition 3. Services

(a) All physical infrastructure required for essential services to the development must be provided and maintained at no cost to Mackay Regional Council.

(b) All development must be connected to a reticulated water supply system and provided with a supply of potable water in accordance with applicable health and safety standards and water standards for fire fighting purposes.

(c) All development must be connected to a reticulated sewerage system and sewage is treated and disposed of in accordance with applicable environmental standards.

(d) All development must be provided with refuse collection facilities appropriate to service the development.

(e) A system of constructed vehicular carriageways, cycle paths and pedestrian paths (generally shared) must be provided to all premises with adequate access including access for service vehicles and emergency vehicles.

Condition 4. Stormwater

(a) Stormwater systems must be designed to comply with the Queensland Urban Drainage Manual and the Mackay Regional Council's planning scheme and policies, and to:

  (i) where practicable, make use of stormwater for recycling and water conservation

  (ii) make use of drainage corridors for improved recreational values and open space or landscape area

(iii) avoid local flooding or increased risk to public safety

(iv) maintain existing runoff conditions and peak flow rates within existing drainage paths.

(b) The quality of stormwater from the Lindeman Island development site must be managed to avoid any contamination of groundwater or surface waters. Stormwater systems must be designed to:

(i) Achieve the requirements the State Planning Policy, the Queensland Urban Drainage Manual and Mackay Regional Council's planning scheme and policies; and

(ii) maintain environmental values specified in the Environmental Protection (Water) Policy 2009

(c) Stormwater treatment systems must be constructed and maintained so that runoff from all hardstand areas is treated prior to discharge into waterways, where practicable.

Condition 5. Water quality monitoring

(a) The proponent must develop and implement a Stormwater and Water Management Plan, an Irrigation Management Plan and Golf Course Management Plan to ensure that the stormwater and treated effluent discharges from the development do not significantly affect the environmental values of adjacent receiving water bodies.

(b) The proponent must prepare a Recycled Water Management Plan which demonstrates how compliance with the standards for A+ recycled water specified in the Public Health Regulation 2005, will be achieved and monitored.

(c) The Management Plans required in (a) and (b) above must be prepared and implemented for all stages of the development.

Condition 6. Management plans

(a) The proponent must prepare and implement all the management plans listed in Schedule 1 of the Plan of Development. The plans must be completed and implemented as relevant to the various elements of the development.

Schedule 2. Preliminary approval for Operational Work – tidal works (prescribed tidal works) within a coastal management district

This Schedule includes the Coordinator-General's stated conditions for Preliminary Approval for Tidal Works under the *Planning Act 2016*, stated under section 39 of the *State Development and Public Works Organisation Act 1971*. The entity with jurisdiction for conditions in this schedule is the Mackay Regional Council.

Condition Number	Condition ID	Condition
1.	SARA model condition V3.0 (AD01)	The development must be carried out generally in accordance with the following plans: 1. Lindeman Island Development 5 Star Resort – Site Sections Study, prepared by DBI, dated January 2018, drawing number L-SK-1.1 revision E. 2. Lindeman Island Development 5 Star Resort – Jetty/Pontoon Study, prepared by DBI, dated January 2018, drawing number L-SK-1.2 revision C. **Timing: For the duration of works**
2.	SARA model condition V3.0 (AD02)	The development must be carried out generally in accordance with the Lindeman Island Environmental Impact Statement prepared by White Horse Australia Lindeman Pty Ltd dated June 2017 and as updated by the Revised Draft Environmental Impact Statement dated 7 November 2017, in particular: • Chapter 4 - Project Description of the EIS dated June 2017 and as updated by Section 2.0 – Project Changes of the Revised EIS dated 7 November 2017 • Chapter 28 – Environmental Management Plan and as updated by conditions of approval issued by the Coordinator-General • Appendix C – Masterplan Concept DBI Design of the EIS dated June 2017 and as updated by the Revised Masterplan included in Appendix A of the Revised EIS dated 7 November 2017 and any conditions of approval issued by issued by the Coordinator-General **Timing: For the duration of works.**

LEGEND

- B — PERPETUAL LEASE
- E — UNALLOCATED STATE LAND
- F — AREA TO REMAIN AS BEACH PROTECTION RESERVE
- GEO-REFERENCE EXTENT OF PROPOSED REVETMENT WALL AND NEW PONTOON

NOTE : THERE IS NO INTENTION FOR STRUCTURES TO EXTEND BEYOND THE TOE OF THE ROCKWALL. THE STRUCTURE WILL HAVE NO ATTACHMENTS TO LAND SEAWARD OF THE TOE OF THE REVETMENT WALL.

LEGEND

- PROPERTY BOUNDARY
- FUTURE PROPOSED BOUNDARY (INDICATIVE ONLY)
- H.A.T (ON EXISTING PROFILE)
- H.A.T (+0.8 FOR STATE DEFINED REAR 2100 SEA LEVEL + STORM SURGE)
- EXISTING BUILDING EXTENT / SITE COVER
- PROPOSED BUILDING EXTENT
- EXISTING REVETMENT WALL EXTENT
- NOMINALLY PROPOSED REVETMENT WALL EXTENT (RAISED & STRENGTHENED TO 5.6M A.H.D) & ROCK GROYNE
- A — EXISTING WATER CRAFT HIRE FACILITIES
- B — NOMINALLY PROPOSED WATER CRAFT HIRE FACILITIES WITH ACCESS RAMP
- C — NOMINALLY PROPOSED BEACH ACCESS STEPS

Figure 7.1 **Drawing number L-SK-1.1 revision E**

LINDEMAN ISLAND DEVELOPMENT | **5 STAR RESORT - SITE SECTIONS STUDY**

JANUARY 2018 | 155020 | L - SK-1.1 | E

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1:1500 @ A3

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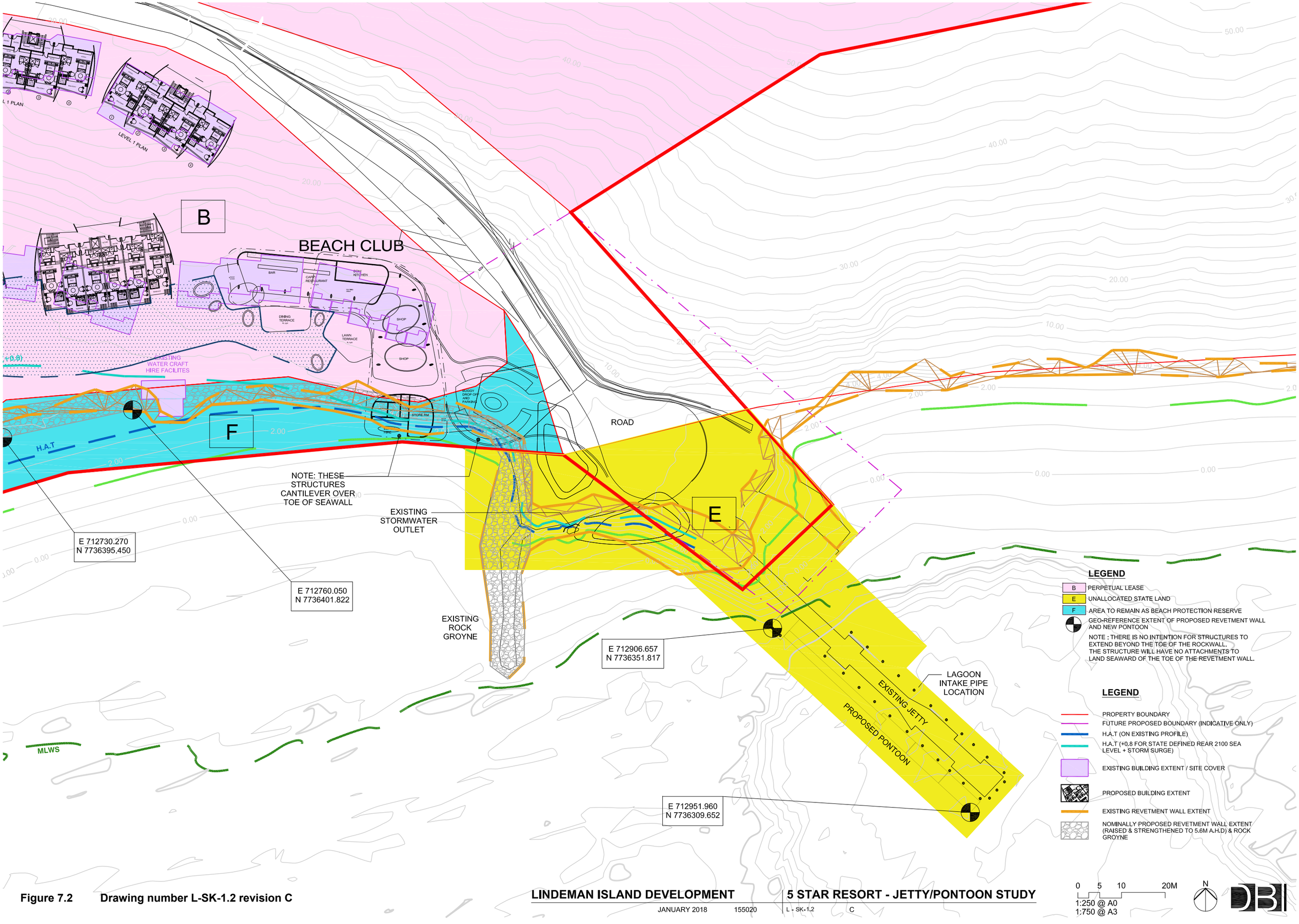

Figure 7.2 **Drawing number L-SK-1.2 revision C**

LINDEMAN ISLAND DEVELOPMENT | **5 STAR RESORT - JETTY/PONTOON STUDY**

JANUARY 2018 155020 L - SK-1.2 C

Schedule 3. Operational work for clearing of native vegetation

This Schedule includes the Coordinator-General's stated conditions for clearing of native vegetation under the *Planning Act 2016*, stated under section 39 of the *State Development and Public Works Organisation Act 1971*.

These conditions must be adopted by the assessment manager in approving any application for operational work clearing of native vegetation for a relevant purpose (under s22A of the *Vegetation Management Act 1999*) – being a project declared to be a coordinated project under the *State Development and Public Works Organisation Act 1971*.

Depending on the timing of the vegetation clearing application and its relationship with other development applications, the assessment manager with jurisdiction for this approval would be either SARA - DSDMIP, DNRME or MRC.

Condition 1. Clearing of native vegetation

The development must be carried out generally in accordance with:

(a) "Appendix H– Updated Vegetation Mapping-Revised Draft EIS Final for Issue 7.11.17, including: White Horse Australia Lindeman Island Resort Development: Response to EIS Comments RE 8.3.2 and TEC Impacts, Cardno, Figure 1, Revision 1, dated 26/10/2017

(b) White Horse Australia Lindeman Island Resort Development: Response to EIS Comments RE8.12.13a Impacts, Cardno, Figure 2, Revision 1, dated 09/10/2017

(c) White Horse Australia Lindeman Island Resort Development Pty Ltd Lindeman Great Barrier Reef Resort Project: Vegetation Management Map, Cardno, Figure 3, Revision 1, dated 01/11/2017.

Appendix 3. Recommended conditions for the Commonwealth Environment Minister

In accordance with clause 21 of the Bilateral agreement between the Commonwealth Government and the State of Queensland, this section recommends conditions for consideration by the Commonwealth Minister for the Environment and Energy in making a decision on the proposed action under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Schedule 1. Great Barrier Reef World Heritage property and National Heritage place

Part A. Part A Net Benefit for the Great Barrier Reef

Condition 1. Water quality monitoring.

The outcome sought by this condition is to ensure that the operations of the resort do not significantly affect the environmental values of receiving waters.

(a) The proponent must develop and implement a water quality monitoring program (WQMP) designed in accordance with relevant guidelines including the *Queensland Water Quality Guidelines* (DERM 2009), the *Urban Stormwater Quality Planning Guidelines 2010* (DERM), the State Planning Policy for Healthy Waters 2010 (DERM) and the *Water Quality Guidelines for the Great Barrier Reef Marine Park* (GBRMPA 2009).

(b) The WQMP must include:

  (i) A description of current water quality in the receiving environment, based on 12 months of baseline monitoring

  (ii) Details of monitoring to be implemented including the location of monitoring sites, parameters to be monitored and the frequency of monitoring

  (iii) Trigger points for additional management actions which would be undertaken if monitoring results detect that resort operations are negatively impacting environmental values of receiving waters. The additional measures may include management actions for the resort site and/or the provision of environmental offsets.

(c) The approval holder must submit the WQMP to the Minister for the Minister's written approval prior to the commencement of construction.

Schedule 2. Threatened species and ecological communities

Part A. Management of Threatened Ecological Communities

Condition 2. Vegetation Management Plan

The outcome sought by this condition is to ensure that the Threatened Ecological Communities (Broad-leaved Tea Tree Woodland and Coastal Vine Thicket communities) within and adjacent to the project area are protected from indirect impacts, including edge effects.

The person taking the action must submit a Vegetation Management Plan (VMP) for the Minister's approval, which includes measures to mitigate impacts to terrestrial TECs from construction and operation of the resort, before the commencement of the action. The person taking the action must not commence the action unless the Minister has approved the VMP.

The VMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines, and include at least the following:

(a) Measures to ensure that the TEC's are clearly identified and protected during construction activities

(b) Details of how the trimming the Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland adjacent to the airstrip will be managed for the life of the project, including measures to ensure that adjacent vegetation is protected from weeds, pathogens and edge effects

(c) Measures to ensure that appropriate fire regimes are maintained in both the Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland and Littoral Rainforest and Coastal Vine Thickets of Eastern Australia

(d) The VMP should include details of specific monitoring requirements that consider aspects of the TECs which are likely to respond to change resulting from the project. This should include specific monitoring parameters such as:

  (i) Presence and abundance of weeds

  (ii) General health of vegetation

  (iii) Recruitment of native species

  (iv) Changes to vegetation structure and species composition

  (v) Evidence of fire

  (vi) Impacts from introduced fauna

  (vii) Human disturbance

(e) The VMP should details:

  (i) Adequate early warning triggers and impact thresholds to detect impacts on TEC's

  (ii) Corrective actions to address any identified impacts on TEC's

  (iii) Timeframes for implementation of corrective actions

(f) A report of VMP findings, including all monitoring results and interpretations, must be prepared annually and made available on request.

(g) The approval holder must submit the VMP to the Minister for the Minister's written approval prior to the commencement of construction.

Schedule 3. Great Barrier Reef World Heritage – impacts to visual amenity

Part A. Protection of visual amenity

Condition 3. Precinct development plans

The outcome sought by this condition is to minimise the impacts of the project on visual amenity within the Great Barrier Reef World Heritage Area. The person taking the action must prepare detailed precinct development plans for each of the Resort and Village Precinct, Tourist Villa Precinct, Services and Access Precinct and Environment and Open Space Precinct which must:

(a) Be based on the information presented in the Revised Draft Environmental Impact Statement – Lindeman Great Barrier Reef Resort Project dated 7 November 2017 and in particular the Indicative Masterplan (Map 2, DBI Design 2017).

(b) Be designed in accordance with the Plan of Development – Lindeman Great Barrier Reef Resort Project dated 7 November 2017 and prepared by Cardno (Reference HRP15078).

(c) Include detail of how the approved action avoids, mitigates and manages the visual impacts of the approved action on the World Heritage values of the Great Barrier Reef World Heritage Area.

(d) Contain the following information:

(i) Details of building materials to be used for all structures

(ii) Colours proposed for all structures

(iii) Detailed lighting plan, including internal and external lighting; and

(iv) Timeframes for implementation of the four precinct development plans.

The person taking the action must submit all final precinct development plans for the Minister's approval before the commencement of the action. The person taking the action must not commence the action unless the Minister has approved the final precinct development plans.

Appendix 4. Coordinator-General recommendations

While the following recommendations guide assessment managers in assessing the development applications, they do not limit their ability to seek additional information nor power to impose conditions on any development approval required for the project.

Schedule 1. *Nature Conservation Act 1992*

The following are general recommendations for the Department of Environment and Science's consideration under the *Nature Conservation 1992.*

Recommendation 1. Species Management Programs

The outcome sought by this recommendation is the development Species Management Programs (SMPs) to assess the impacts of the project on animal breeding places. Animal breeding places include obvious structures such as bird nests and tree hollows, turtle nest, as well as more cryptic places such as amphibian or reptile habitat where breeding takes place.

(a) SMPs must be prepared and submitted to DES as per the requirements of the NC Act and DES's information sheet for approval prior to construction.

Recommendation 2. Protected plants

The outcome sought by this recommendation is to determine the impacts of the project on any identified endangered, vulnerable or near threatened plants (EVNT plants) in the project footprint

(a) compliance with the requirements of the NC Act and the protected plant framework.

(b) Prior to any clearing, the proponent must check the flora survey trigger map

Where required, flora surveys must be carried out by a suitably qualified person in accordance with the Flora survey guidelines – protected plants.

Schedule 2. *Transport Infrastructure Act 1994*

This schedule is relevant to applications for which the *Transport Infrastructure Act 1994* is applicable, which is administered by the Department of Transport and Main Roads (DTMR).

Recommendation 3. Road impact assessment

(a) In consultation with the DTMR and the relevant LGA, the proponent must prepare a road impact assessment (RIA) to assess the impacts of the project on the safety, efficiency and condition of state-controlled and local roads. The RIA must:

  (i) be developed in accordance with the DTMR Guidelines for Assessment of Road impacts of Development (GARID) and/or as required by the relevant LGA. The RIA must include a completed DTMR 'Transport Generation proforma' (available from Transport System Management Branch, Brisbane) detailing project-related traffic and transport generation information or as otherwise agreed in writing with DTMR and the relevant LGA.

  (ii) use DTMR's Pavement Impact Assessment tools or such other method or tools as agreed in writing with DTMR and/or the relevant LGA

  (iii) clearly indicate where detailed estimates are not available and document the assumptions and methodologies that have been previously agreed in writing with DTMR and relevant LGA, prior to RIA finalisation.

  (iv) detail the final impact mitigation proposals, including contributions to road works/maintenance and summarising key road-use management strategies

(v) be approved in writing by DTMR and/or the relevant LGA no later than six (6) months prior to the commencement of significant construction works, or as otherwise agreed between the proponent, DTMR and/or the relevant LGA.

Recommendation 4. Road-use management plan

(a) In consultation with the DTMR and the relevant LGA, the proponent must prepare or update the road use management plan (RMP) that must:

(i) be developed in accordance with DTMR's Guideline to Preparing a Road-use Management Plan (available from TMR District Offices or Transport System Management Branch, Brisbane) and/or as required by the relevant LGA, with a view to also optimising project logistics and minimising road-based trips on all state-controlled and local roads

(ii) include a table (available from TMR District Offices or Transport System Management Branch, Brisbane) listing RMP commitments and provide confirmation that all works and road-use management strategies have been designed and will be undertaken in accordance with all relevant TMR standards, manuals and practices53 and/or as required by the relevant LGA

(iii) be approved in writing by DTMR and the relevant LGA no later than six (6) months prior to the commencement of significant construction works, or as otherwise agreed between the proponent, DTMR and the relevant LGA.

Recommendation 5. Approvals, permits and standards and road works

(a) Prior to the commencement of significant project-related construction works, the proponent must:

(i) Upgrade any necessary intersection/accesses and undertake any other required works in State-controlled and/or LGA road reserves, in accordance with the current DTMR and/or LGA road planning and design policies, principles and manuals, unless otherwise agreed in writing with the DTMR.

(ii) Prior to undertaking any of these works obtain the relevant licences and permits, for example, under the Transport Infrastructure Act 1994 (Qld) for works and project facilities/infrastructure within the state-controlled road corridor.

Recommendation 6. State-controlled road access

(a) The proponent must undertake any required works and other impact mitigation strategies as required by the RIA and RMP, in accordance with the latest relevant DTMR and LGA policies and standards at the time of approval or agreement, unless otherwise agreed to in writing by DTMR and/or the relevant LGA.

Recommendation 7. Infrastructure agreements

(a) To formalise arrangements about transport infrastructure works, contributions and road-use management strategies detailed and required under the approved RIA and RMP, the proponent may enter into an infrastructure agreement with DTMR and/or the relevant LGA.

(b) The infrastructure agreement/s must identify all required works and contributions, and incorporate the following:

(i) project-specific works and contributions required to upgrade impacted road infrastructure and vehicular access to project sites as a result of the proponent's use of state-controlled and local roads by project traffic

(ii) project-specific contributions towards the cost of maintenance and rehabilitation to mitigate road or pavement impacts on state-controlled and local road infrastructure

(iii) infrastructure works and contributions associated with shared (cumulative) use of state-controlled and local road infrastructure by other projects subject to any EIS

(iv) performance criteria that detail protocols for consultation about reviewing and updating of project-related traffic assessments and impact mitigation measures that

are based on actual traffic volume and impacts, should previously advised project details, traffic volumes and/or impacts change.

(v) the proponent's undertaking to fulfil all commitments as detailed in the 'Table for listing RMP commitments'.

(c) Any infrastructure agreement between the proponent, DTMR and the relevant LGA should be concluded three (3) months prior to commencement of project construction, or as otherwise agreed in writing between the proponent, DTMR and the relevant LGA.

Recommendation 8. Permits, approvals and traffic management plans

(a) To ensure efficient processing of the project's required transport-related permits and approvals, the proponent must, no later than three (3) months, or such other period agreed in writing with DTMR and/or the relevant LGA, prior to the commencement of significant construction works or project-related traffic:

(i) Submit detailed drawings of any works required to mitigate the impacts of project-related traffic for DTMR and the relevant LGA review and approval.

(ii) Obtain all relevant licences and permits required under the Transport Infrastructure Act 1994 for works within the state-controlled road corridor (section 33 for road works approval, section 62 for approval of location of vehicular accesses to state roads and section 50 for any structures or activities to be located or carried out in a state-controlled road corridor).

(iii) Prepare a heavy vehicle haulage management plan for any excess mass or over-dimensional loads for all phases of the project in consultation with DTMR's Heavy Vehicles Road Operation Program Office, the Queensland Police Service and the relevant LGA.

(iv) Prepare Traffic Management Plan/s (TMP) in accordance with DTMR's Guide to preparing a Traffic Management Plan (available from TMR District Offices of Transport System Management Branch, Brisbane) and/or as required by the relevant LGA. A TMP must be prepared and implemented during the construction and commissioning of each site where road works are to be undertaken, including site access points, road intersections or other works undertaken in the State-controlled road corridor.

Recommendation 9. Completing required roadworks before commencement of significant project traffic

(a) Prior to the commencement of any significant project-related construction traffic, the proponent must complete the required works/make contributions towards works as required, unless otherwise agreed in writing with DTMR.

(b) The proponent must:

(i) construct any required road works before commencement of significant project-related construction traffic

(ii) prior to undertaking any works, obtain the relevant licences and permits under the Transport Infrastructure Act 1994 for works within the state-controlled road corridor. As required above, any required plans, permits and TMPs must be approved by DTMR three months prior to commencement of project construction traffic

(iii) implement the approved Traffic Management Plan for the works during construction and commissioning of the above-mentioned intersection upgrade.

Schedule 3. *Land Act 1994*

This schedule is relevant to applications for land tenure under the *Land Act 1994*, administered by the Department of Natural Resources, Mines and Energy (DNRME).

Recommendation 10. Land tenure strategy

The outcome sought by this recommendation is to ensure a land tenure strategy is prepared in consultation with DNRM prior to project construction, including information on:

(a) current land tenure of all lands affected by the project during construction and operation, including access arrangements

(b) proposed final land tenure arrangements of all lands affected by and ancillary to the project

(c) proposed mitigation strategies to address all identified impacts to State land, including state leasehold land, reserves, roads and unallocated state land.

Appendix 5. Draft Plan of Development

Plan of Development

Lindeman Great Barrier Reef Resort Project

HRP15078

Prepared for

White Horse Australia Lindeman Pty Ltd

7 November 2017

Cardno

Contact Information

Cardno (Qld) Pty Ltd
ABN 57 051 074 992

Level 11
515 St Paul's Terrace
Fortitude Valley QLD 4006
Australia

www.cardno.com
Phone +61 7 3369 9822
Fax +61 7 3369 9722

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Author(s):

Catherine Fleming
Senior Planner

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Approved By:

David Perkins
Senior Principal

Date Approved 7/11/2017

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
1	30.10.17	Draft Report for Client and Mackay Regional Council Review	Catherine Fleming	David Perkins
2	7.11.17	Updates following meeting with Mackay Regional Council	Catherine Fleming	David Perkins

Contents

Tables

Figures

1 Introduction

1.1 Application

The Lindeman Great Barrier Reef Resort Project - Plan of Development ('Lindeman Plan of Development') applies to land identified as 'Plan of Development Area' on **Map 1 – Precinct Plan**.

The Lindeman Island Plan of Development contains additional planning provisions to those set out in the Mackay Region Planning Scheme 2017 Version 1.1 ('the planning scheme') which vary the effect of the planning scheme. Where conflict occurs with the requirements of the planning scheme, the Lindeman Plan of Development prevails.

The Lindeman Plan of Development should be read in conjunction with the Commonwealth and State Government approvals issued for the project.

1.2 Relationship to the Planning Act 2016

The Lindeman Plan of Development functions as part of the variation approval pursuant to section 43(3)(c) of the *Planning Act 2016*. This approval varies the effect of the planning scheme by:

(a) categorising development as assessable or accepted development;

(b) specifying the categories of assessment required for different types of assessable development; and

(c) setting out the matters (the assessment benchmarks) that an assessment manager must assess assessable development against, including a code which forms part of the common material against which subsequent development applications within the Plan of Development Area will be assessed.

1.3 Structure

The Lindeman Plan of Development includes:-

(a) Supporting maps:

  (i) Map 1 – Precinct Plan;

  (ii) Map 2 – Indicative Masterplan;

  (iii) Map 3 – Indicative Masterplan – Beach Resort;

  (iv) Map 4 – Indicative Masterplan - Spa Resort;

  (v) Map 5 – Indicative Masterplan – Tourist Villa Precinct;

  (vi) Map 6 – Indicative Masterplan – Village and Eco Resort;

(b) Tables of assessment; and

(c) the Lindeman Great Barrier Reef Resort Code (the 'Lindeman Resort Code') which forms part of the common material against which subsequent development applications within the Lindeman Plan of Development Area will be assessed.

2 Tables of Assessment and Assessment Criteria

The tables of assessment categories and assessment benchmarks detailed in the following sub-sections apply to land within the Plan of Development Area identified on **Map 1 – Precinct Plan**.

The definitions referred to in the following tables are those included in Schedule 24 of the *Planning Regulation 2017*. Resort complex is defined in this schedule as:

Use	*Definition*
Resort complex	*Means the use of premises for—* *(a) tourist and visitor accommodation that includes integrated leisure facilities; or* *Examples of integrated leisure facilities— bars, meeting and function facilities, restaurants, sporting and fitness facilities* *(b) staff accommodation that is ancillary to the use in paragraph (a); or* *(c) transport facilities for the premises, including, for example, a ferry terminal or air service.*

The Lindeman Plan of Development does not vary the effect of the *Planning Act 2016* and the *Planning Regulation 2017* in any way, including in relation to tidal works, prescribed tidal works or native vegetation clearing.

2.1 Material Change of Use Tables of Development

The following tables replace the material change of use and overlay levels of assessment contained in the Mackay Region Planning Scheme.

Table 2-1. Material Change of Use – Precinct 1 - Resort and Village Precinct.

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Resort complex:		
Resort complex	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code

[1] These uses are defined by Schedule 24 of the *Planning Regulation 2017*.

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
The following uses to the extent that they are not part of the Resort complex:		
Child care centre	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Environment facility	Accepted development	
	All circumstances	No Assessment benchmarks apply
Food and drink outlet	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Health care service	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Indoor sport and recreation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Major sport, recreation and entertainment facility	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Nature-based tourism	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Nightclub entertainment facility	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Office	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Outdoor sport and recreation	Accepted development	
	All circumstances	No assessment benchmarks apply
Park	Accepted development	

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	All circumstances	No assessment benchmarks apply
Place of worship	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Rooming accommodation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Shop	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Shopping centre	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Short-term accommodation	Accepted development subject to requirements	

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Telecommunications facility	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Theatre	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Tourist attraction	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Utility installation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	

Use[1]	Categories of development and assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Code assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the "Categories of development and Assessment" column. Any other undefined use.		Lindeman Great Barrier Reef Resort Code

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

Table 2-2. Material Change of Use – Precinct 2 – Tourist Villa Precinct.

Use[2]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Resort complex:		
Resort complex	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
The following uses to the extent that they are not part of the Resort complex:		
Dwelling house	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Indoor sport and recreation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Multiple dwelling (Note: by virtue of 89 villas being located on the one lot)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	

[2] These uses are defined by Schedule 24 of the *Planning Regulation 2017*.

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Outdoor sport and recreation	Accepted development	
	All circumstances	No assessment benchmarks apply
Park	Accepted development	
	All circumstances	No assessment benchmarks apply
Short-term accommodation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Utility installation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Code assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the "Categories of development and Assessment" column. Any other undefined use.		Lindeman Great Barrier Reef Resort Code

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

Table 2-3. Material Change of Use – Precinct 3 – Service Infrastructure and Access Precinct.

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Resort complex:		
Resort complex	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
The following uses to the extent that they are not part of the Resort complex:		
Air service	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Educational establishment	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Emergency services	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	

[3] These uses are defined by Schedule 24 of the *Planning Regulation 2017*.

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Environment facility	Accepted development	
	All circumstances	No Assessment benchmarks apply
Extractive industry	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Food and drink outlet	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Health care service	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
High impact industry (where for a sewage treatment plant and waste disposal facility)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Low impact industry (including repairing and servicing vehicles; dangerous goods storage including fuel for generators)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Medium impact industry (including vehicle depot and storage yard for electric buggies and resort vehicles)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Minor electricity infrastructure (associated with solar/diesel energy production)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Port service (excluding storing, servicing, maintaining or repairing vessels)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Renewable energy facility	Accepted development subject to requirements	

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Shop	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Substation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Telecommunications facility	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Transport depot (including aircraft hangars)	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Utility installation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Code assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the "Categories of development and Assessment" column. Any other undefined use.		Lindeman Great Barrier Reef Resort Code

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

Table 2-4. Material Change of Use – Precinct 4 – Environment and Open Space Precinct.

Use[4]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Environment facility	Accepted development	
	All circumstances	No Assessment benchmarks apply
Nature-based tourism	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Outdoor sport and recreation	Accepted development	
	All circumstances	No Assessment benchmarks apply
Park	Accepted development	
	All circumstances	No Assessment benchmarks apply
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Utility installation	Accepted development subject to requirements	
	If complying with all requirements for accepted development	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code

[4] These uses are defined by Schedule 24 of the *Planning Regulation 2017*.

Use[1]	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
Code assessment		
Any other use not listed in this table. Any use listed in this table and not meeting the criteria in the "Categories of development and Assessment" column. Any other undefined use.		Lindeman Great Barrier Reef Resort Code

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

2.2 Categories of development Assessment – Reconfiguring a lot

The following table identifies the categories of development and Assessment for reconfiguring a lot where involving the creation of leases greater than 10 years.

Table 2-5. Reconfiguring a lot (where involving the creation of leases greater than 10 years).

Precinct	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
All precincts	Accepted development	
	If: • Schedule 6, Part 4, Item 21 of the Regulation; or • the reconfiguration is for the purposes of a utility installation or other municipal facility undertaken by or on behalf of Mackay Regional Council	No assessment benchmarks apply
	Code assessment	
	If not accepted development	Lindeman Great Barrier Reef Resort Code

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

2.3 Categories of development Assessment – Building work

The following table identifies the categories of development and assessment for building work made assessable against the Lindeman Plan of Development.

Table 2-6. Building Work made assessable against the Lindeman Plan of Development.

Precinct	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
All precincts	Accepted development	
	If: • Complying with the maximum height in storeys nominated in **Table 3-1. Lindeman Great Barrier Reef Resort Code – Development Parameters**.	No assessment benchmarks apply
	Code assessment	
	If not accepted development	Lindeman Great Barrier Reef Resort Code

2.4 Categories of development Assessment – Operational work

The following table identifies the categories of development and assessment for operational work.

Table 2-7. Operational work.

Use	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
All precincts	Accepted development	
	Operational works for placing an On-Premises Sign	No Assessment benchmarks apply
	Accepted development subject to requirements	
	Operational work involving excavation or filling of land if: (a) extraction of material to increase the size of Gap Creek Dam; (b) extraction of material from the quarry located in the	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development

Use	Categories of development and Assessment	Assessment benchmarks for Assessable development and requirements for accepted development
	Services Infrastructure and Access Precinct; (c) required to provide suitable foundations for buildings, structures, acessways and other infrastructure.	
	Operational work involving vegetation clearing if in accordance with: (a) the approved **Indicative Masterplan** (refer to **Map 2**); and (b) the **Vegetation Management Plan**.	Lindeman Great Barrier Reef Resort Code – all acceptable outcomes relevant to the development
	Code assessment	
	If not accepted development subject to requirements	Lindeman Great Barrier Reef Resort Code
Accepted development		
Any other operational work not listed in this table, or less than the thresholds identified in the categories of development and assessment column.		

Editor's note – The above categories of development and assessment apply unless otherwise prescribed in the Planning Regulation 2017.

3 Lindeman Great Barrier Reef Resort Code

3.1 Application

This code applies to assessing development in Lindeman Great Barrier Reef Resort – Precinct Plan.

3.2 Purpose

(1) The purpose of the Lindeman Great Barrier Reef Resort Code is to provide for the Lindeman Great Barrier Reef Resort development as approved in accordance with the Environmental Impact Statement prepared under the *State Development and Public Works Organisation Act 1971* and *Environment Protection and Biodiversity Conservation Act 1999*.

(2) The purpose of the code is to also provide for tourist and environmental facilities at Lindeman Island that enable visitors to experience the region's outstanding landscape and areas of ecological significance in a resort setting that achieves international standards in environmental sustainability and resort design.

(3) The purpose of the code will be achieved through the following overall outcomes:

(a) Uses:

a. The predominant form of development is tourist accommodation incorporating leisure facilities (e.g. bars, meeting and function facilities, restaurants, sporting and fitness facilities), staff accommodation, infrastructure, transport and environmental facilities;

b. Development is to be established in four precincts:

i. Resort and Village Precinct;

ii. Tourist Villa Precinct;

iii. Service Infrastructure and Access Precinct; and

iv. Environmental and Open Space Precinct.

The overall outcomes applicable to each precinct are described in sub-sections 3.2.1 to 3.2.4.

(b) Infrastructure:

a. Development is serviced by on-site water supply, sewage treatment, energy and telecommunication facilities that is commensurate with the intended scale of the resort;

b. Development provides safe and efficient access to Lindeman Island by sea and air; through the existing barge landing facility, upgraded jetty and upgraded airstrip;

c. Infrastructure is designed to promote environmental sustainability and minimise on and off-site environmental impacts;

d. Infrastructure provides for connectivity throughout the resort precincts for pedestrians, cyclists, electric golf carts and service vehicles.

(c) Built form and visual impacts:

a. Buildings integrate with the landscape setting in terms of scale, bulk, materials and height;

b. Building colours match and blend with the existing natural landscape palette;

c. Development provides high quality tourist resort design outcomes that are responsive to the island's tropical climate;

d. Development ensures that building design is responsive to the effects of climate change, including sea level rise and storm surge impacts;

(d) Natural hazards:

a. Development minimises the risk and exposure of people and buildings to natural hazards including bushfires, cyclones, flooding and storm tide inundation;

(e) Environment and sustainability:

a. Development maintains and enhances the ecological integrity of environmentally significant features on the site, including avoiding impacts on the Littoral rainforests and coastal vine thickets of eastern Australia;

b. Development maintains the ecological integrity of the adjoining Lindeman Island National Park and the Great Barrier Reef Marine Park;

c. Development responds to site contours and physical attributes of the land;

d. Development improves stormwater quality through the use of water sensitive urban design measures including grassed swales, vegetated buffer strips, rainwater tanks and gross pollutant traps;

e. The resort retains and enhances native vegetation, including the use of endemic plant species in new landscaping; and

f. Best practice environmentally sensitive design outcomes are incorporated into development design including solar orientation, passive ventilation, roof water harvesting, energy efficiency, solar energy generation and storage.

3.2.1 Resort and Village Precinct

The overall outcomes of the Resort and Village Precinct are to:-

(a) Provide integrated tourism resort accommodation and a village precinct within a high quality built environment incorporating:

a. Beach Resort - redevelopment of the existing resort to achieve a new 5 star Beach Resort with 136 suites, conference centre, beach club, lagoon and a central facilities building with restaurants, bars and lounges;

b. Spa Resort - a new 6 star Spa Resort with 59 villas, central facilities, entry lounge, spa, sea view restaurant, pool and a signature rock bar providing spectacular alfresco dining close to the sea;

c. Eco Resort - a new 5 star Eco Resort consisting of 14 villas, 20 village accommodation apartments and 7 hilltop villas;

d. Village - a central activity node comprising restaurants, bar, night club, conference facility buildings, arrival centre, shops, sport and recreation centre and staff village; and

e. National Park and Great Barrier Reef Education Centre – provide for the establishment of a an Environment Facility to show case the natural and cultural heritage values of the island;

(b) Promote a low-rise built form with the following maximum height limits:

a. Beach Resort – provide for a maximum building height of four storeys;

b. Spa Resort - provide for a maximum building height of two storeys;

c. Eco Resort – provide for a maximum building height of two storeys;

d. Village – provide for a maximum building height of two storeys, except for Staff Accommodation with a maximum building height of three storeys.

(c) Protect the Littoral rainforests and coastal vine thickets of eastern Australia ecological community by avoiding vegetation disturbance and ensuring adequate setback distances to this community.

3.2.2 Tourist Villa Precinct

The overall outcomes of the Tourist Villa Precinct are to:-

(a) Provide accommodation in the form of up to 89 resort villas as indicated on **Map 2 – Indicative Masterplan** located to the east of the air strip;

(b) Promote a low-rise visually unobtrusive built form with a maximum height of two storeys with colours drawn from the surrounding landscape;

(c) Provide access via narrow electric golf cart tracks generally following the natural contours to minimise site and environmental impacts;

(d) Protect the Littoral rainforests and coastal vine thickets of eastern Australia ecological community by avoiding vegetation disturbance and ensuring adequate setback distances to this community.

3.2.3 Service Infrastructure and Access Precinct

The overall outcomes of the Service Infrastructure and Access Precinct are to:-

(a) Provide on-site physical infrastructure (energy, water treatment, sewage treatment and waste management facilities) in accordance with the needs of the development and operated in a way that minimises on and off site environmental impacts;

(b) Provide safe and efficient access to the island by sea for staff, visitors and goods, including an upgraded jetty and existing barge landing/ handling area; and

(c) Provide safe and efficient access to the island by air through upgrading the existing airstrip, the provision of an airport lounge and hangars for private aircraft.

3.2.4 Environment and Open Space Precinct

The overall outcomes of the Environment and Open Space Precinct are to:-

(a) Protect the ecological values and ecological function of the Environment and Open Space Precinct;

(b) Provide for consistent uses such as the recreation and open space facilities, including parks, tennis courts and the extension and upgrade of the existing golf course;

(c) Provide for the extension of Gap Creek Dam to increase the reliability of this water resource for the resort;

(d) Provide for the management of the Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland, including undertaking essential vegetation clearing and trimming to ensure that the airstrip meets aviation transitional safety surfaces;

(e) Provide for the irrigation of the golf course using Class A+ recycled water in such a way that protects water quality of Gap Creek Dam and adjacent marine waters;

(f) Rehabilitate previously degraded areas using endemic native vegetation and remove pest plant species; and

(g) Provide environmental and cultural education opportunities, including passive recreational walking trails for nature appreciation within the precinct in a manner that ensures the ecological significance of the area is not negatively impacted.

3.3 Assessment Benchmarks

This section provides a Code for the Plan of Development area as indicated on **Map 1 – Precinct Plan**.

The code provides alternative Performance Outcomes and Acceptable Outcomes to the use and overlay codes identified in the Mackay Region Planning Scheme.

The purpose of this code is to ensure that development in the Plan of Development area is consistent with the Purpose and Overall Outcomes of this Plan of Development.

Performance outcomes	Acceptable Outcomes
Uses	
PO1 The Lindeman Great Barrier Reef Resort accommodates sustainable tourist and visitor accommodation, leisure facilities (e.g. bars, meeting and function facilities, restaurants, sporting and fitness facilities), staff accommodation, infrastructure, transport facilities and environmental uses.	**AO1.1** The Resort and Village Precinct provides for resort accommodation and a village node within a high quality built environment generally in accordance with **Maps 2 – 6**, comprising: (a) Beach Resort - redevelopment of the existing resort to achieve a new 5 star Beach Resort with 136 suites, conference centre, beach club, lagoon and a central facilities building with restaurants, bars and lounges; (b) Spa Resort - a new 6 star Spa Resort with 59 villas, central facilities, entry lounge, spa, sea view restaurant, pool and a signature rock bar providing spectacular alfresco dining close to the sea; (c) Eco Resort - a new 5 star Eco Resort consisting of 14 villas, 20 village accommodation apartments and 7 hilltop villas; (d) Village - a central activity node comprising restaurants, bar, night club, conference facility buildings, arrival centre, shops, sport and recreation centre and staff village; and (e) National Park and Great Barrier Reef Education Centre – provide for the establishment of an Environment Facility to show case the natural and cultural heritage values of the island. **AO1.2** The Tourist Villa Precinct provides for the establishment of a maximum of 89 detached villas. **AO1.3** The Service Infrastructure and Access Precinct provides for on-site physical infrastructure in accordance with the needs of the development. **AO1.4** The Environment and Open Space precinct provides for consistent uses such as recreation and open space facilities, parks, tennis courts, environment facilities,

Performance outcomes	Acceptable Outcomes
	conservation and the extension and upgrade of the existing golf course.
PO2 Development is to be carried out in accordance with conditions of approval imposed by the Coordinator-General for the Lindeman Great Barrier Reef Resort, including: (a) Conditions of approval; (b) applicable Management Plans (refer to **Schedule 1**); and (c) Proponent Commitments.	No acceptable outcome prescribed.
Infrastructure	
PO3 Development is serviced by all essential infrastructure, through connection to appropriate on-site systems.	**AO3.1** Water from Gap Creek Dam is treated using membrane microfiltration to produce potable water in accordance with the Australian Drinking Water Guidelines and the *Drinking Water Quality Management Plan* prepared for the resort. **AO3.2** Waste water treatment facilities are designed and constructed to achieve Class A+ standards. Treated water is disposed of on the golf course in accordance with the *Golf Course Management Plan* and *Irrigation Management Plan* to ensure the protection of environmental values and the quality of Gap Creek Dam. **AO3.3** Site based stormwater management systems are provided in accordance with the *Stormwater Management Plan* prepared for the resort, incorporating water sensitive urban design and utilising water harvesting to: (a) ensure there are no adverse upstream or downstream impacts; (b) optimise the prevention of pollutant mobilisation and transportation; (c) minimise the production of runoff; (d) promote natural drainage to surface and groundwater; (e) allow the capture and reuse of water where appropriate; and (f) minimise erosion and sedimentation. **AO3.4** Roof and ground mounted solar panels and associated batteries are installed, to reduce reliance on the use of diesel generators.

Performance outcomes	Acceptable Outcomes
	AO3.5 Development is connected to telecommunications infrastructure installed in accordance with the standards of the relevant telecommunications provider. **AO3.6** Waste collection, loading docks and service vehicle storage areas are: (a) separated from guest accommodation; (b) screened from view from common areas; and (c) designed to accommodate the relevant design vehicle. **AO3.7** Development incorporates measures to avoid, reduce, and recycle waste in accordance with the *Waste Management Plan* prepared for the resort.
Built Form and Visual Impacts	
PO4 Building location, scale, design and appearance integrates with surrounding natural landscapes, is not visually obtrusive and does not exceed the island's carrying capacity.	**AO4.1** Development is located generally in accordance with the Indicative Masterplan for the resort as identified in **Map 2 – Indicative Masterplan**. **AO4.2** Development does not exceed the maximum building height, maximum number of suites, units or villas and gross floor area numbers identified in **Table 3-1 – Lindeman Great Barrier Reef Resort Code - Development Parameters**. **AO4.3** The design of buildings incorporates the following elements: (a) articulated facades and balconies, rather than a continuous line in one plane; (b) deep overhangs to increase shadowing and reduce building size and mass; (c) variation in building alignment; (d) variation in the horizontal roof line; (e) variation in materials, colours and/or textures; (f) landscaping to ensure effective visual screening. **AO4.4** The design of earthworks and infrastructure includes: (a) visually exposed retaining walls to be gabion walls using natural site rocks with screening shrubs and vines; and (b) irregular native planting along both sides of each roadway and golf cart paths at average spacing of no greater than 10 metres,

specified and maintained so as to achieve 5 metres height within 5 years.

AO4.5

Built form exhibits colours from the natural landscape palette as indicated in **Figure 3-1** (e.g. marine, dark, medium and light non-reflective shades).

Figure 3-1. Colour palette for resort buildings.

AO4.6

Non-reflective materials and finishes are in keeping with the visual character of Lindeman Island as shown in **Figure 3-2**, including:

(a) recycled timber,
(b) natural stone,
(c) timber or fibre cement weatherboards,
(d) rendered or painted brickwork,
(e) face brick; and
(f) pre-finished metal sheeting.

Figure 3-2. Non-reflective materials and finishes.

AO4.7

Central facility buildings are designed to be iconic and incorporate architectural elements of outstanding design intent.

Performance outcomes	Acceptable Outcomes
	AO4.8 External building service elements, such as air conditioners, are appropriate located and adequately screened from view.
PO5 Passive thermal design principles are incorporated into building design to improve climatic responsiveness, thermal comfort and optimise the energy efficiency of heating, ventilation and air-conditioning systems.	**AO5.1** Building designs incorporate the following design elements: (a) orientation to optimise passive solar design and natural lighting; (b) eaves, window hoods, verandahs, screens, awnings or other external shading devices to all glazed areas; and (c) provision for natural cross ventilation.
PO6 Development incorporates high quality landscape design, commensurate with natural and architectural settings.	**AO6.1** Landscaping incorporates predominantly endemic species and is designed to: (a) create an attractive visual addition to a building or place; (b) soften the built form; (c) provide a space for on-site recreation; and (d) mitigate bushfire hazards. **AO6.2** Water elements are used to provide interest, recreational opportunities and a refreshing ambience to the tropical island setting. Pool areas will be carefully integrated into the design and will range from large lagoon resort pools to more intimate and private plunge pools or water features. **AO6.3** Shade trees are provided throughout the development to cast shade onto buildings, recreation areas and pathways.

Performance outcomes	Acceptable Outcomes
PO7 Lighting, other than an aid to navigation, for marine facilities is installed in a way to ensure security and safety without causing significant adverse effects on the amenity or environmental values of the resort's setting.	**AO7.1** Lighting, other than aids to navigation, is hooded and directed downwards. **AO7.2** Outdoor lighting complies with the requirements of *AS4282 – Control of the Obtrusive Effects of Outdoor Lighting* in order to restrict light spill. **AO7.3** Movement sensitive and/or timer-controlled lighting is provided along pathways. **AO7.4** Timers, motion-sensors and wall card slots are used throughout buildings to reduce unnecessary light spillage.
Natural Hazards	
PO8 Development in or adjacent areas subject to bushfire hazard is located and designed to minimise the risk of harm to people and property.	**AO8.1** The siting and design of buildings and structures complies with an approved *Bushfire Management Plan* prepared in accordance with the Coordinator General's conditions. **AO8.2** Road and lot layouts facilitate easy and safe movement in the event of encroaching fire and provide for alternative safe access or safe refuge if one direction is blocked in the event of fire.
PO9 Buildings and infrastructure are designed to improve resilience to impacts associated with climate change, including storm surge, coastal erosion, sea level rise and flooding.	**AO9.1** Buildings have finished floor levels above AHD levels that comprise the projected ARI 100 storm surge level for 2100 accounting for projected sea level rise. **AO9.2** Buildings and/or structures constructed within erosion prone areas, including potential erosion prone areas associated with projected sea level rise, are built with foundations designed to withstand erosion. **AO9.3** Essential coastal infrastructure within the coastal hazard zone is designed to adapt to the effects of 0.8 metres of sea level rise by 2100. **AO9.4** No buildings are located within the area affected by a Dam Failure Event and the existing earth bund downstream of Gap Creek Dam is to be raised through earthworks by 500 mm.

Performance outcomes	Acceptable Outcomes
PO10 Minimise risk to staff and visitors associated with cyclones.	**AO10.1** Cyclone shelters are provided within the resort with such shelters to be designed and constructed in accordance with the *Design Guidelines for Queensland Public Cyclone Shelters* and *Evacuation and Emergency Management and Response Plan*.
Environment and sustainability	
PO11 Development protects the sensitive ecological communities that occur on the site.	**AO11.1** Development is setback a minimum of five metres from *Coastal Vine Thickets of Eastern Australia* vegetation community. **AO11.2** The Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland ecological community is protected and restored, except where essential clearing and trimming is required adjacent to the airstrip to maintain aviation transitional safety surfaces. **AO11.3** Development is undertaken in accordance with the following approved Management Plans: *(a) Biosecurity Management Plan;* *(b) Fauna Management Plan; and* *(c) Vegetation Management Plan.*
PO12 Areas are managed to enhance the ecological values of the land.	**AO12.1** Land subject to an existing perpetual lease is restored and rehabilitated in accordance with the *Vegetation Management Plan*.
PO13 Stormwater quality is improved through the incorporation of water sensitive urban design principles and on-site stormwater harvesting.	**AO13.1** Development is undertaken in accordance with the *Stormwater Management Plan* prepared for the resort.
PO14 The design, construction and operation of the resort seeks to promote ecological sustainability.	**AO14.1** Buildings and infrastructure are designed to harvest rainfall (e.g. rainwater tanks) and reduce water consumption through the installation of water efficient devices and fittings. **AO14.2** Buildings and infrastructure are designed to reduce energy consumption through the installation of energy efficient fixtures and devices (e.g. LED lighting).

Performance outcomes	Acceptable Outcomes
Site Sensitive Design of Roads and Infrastructure	
PO15 The potential for roads, cuttings and infrastructure to create visual scarring is limited by the appropriate placement and design of roads and infrastructure.	**AO15.1** Roads and internal access corridors are located generally in accordance with **Map 2 – Indicative Master Plan**. **AO15.2** The alignment of roads is selected to avoid linear hillside scaring. **AO15.3** Road cuttings on hillsides minimise vegetation clearing and earthworks footprint by dark-coloured retaining walls with planted terraces, soil nailing or gabion supports, instead of vegetated cut batters. **AO15.4** During construction, the area of bare earth exposed at any one time, and the period of exposure, is limited.
Accessibility	
PO15 The resort provides a high level of accessibility for pedestrians, cyclists, electric buggies and service vehicles.	**AO16.1** Development is provided with a system of constructed vehicular carriageways, cycle paths and pedestrian paths that achieve a high level of permeability and connectivity provided generally in accordance with **Map 2 – Indicative Master Plan**. **AO16.2** Traffic signs and pavement markings are provided and/or modified in accordance with *Australian Standard AO1742.1 "Manual of Uniform Traffic Control Devices"* and the Manual of Uniform Traffic Control Devices – Queensland.
Operational Works - Filling and Excavation	
PO17 Filling, excavation and the construction of retaining walls are undertaken to ensure slope and structural stability, minimise erosion and minimise impacts on visual amenity.	**AO18.1** Works associated with excavation, filling and/or the construction of retaining walls are undertaken in accordance with the *Australian Standard AO3798-2007 Guidelines on Earthworks for Commercial and Residential Developments*. **AO18.2** Earthworks are undertaken to provide for the development of areas located generally in accordance with **Map 2 – Indicative Masterplan**. **AO18.3** Excavation, filling and/or the construction of retaining walls does not: (a) adversely impact upon the stability of land or existing buildings or structures;

Performance outcomes	Acceptable Outcomes
	(b) increased, concentrate or divert stormwater into an adjoining site; (c) adversely affect the visual character of the locality and areas of high scenic amenity and visibility. **AO18.4** Development that has the potential to involve: (a) disturbance of the existing ground surface including that which arises from clearing, levelling, shaping, installation of services, filling or excavation; or (b) changes in the velocity of runoff flowing overland or entering directly or indirectly into any waters; complies with: *(a)* an approved *Erosion and Sediment Control Plan* prepared by a Registered Professional Engineer Queensland and *Dust Management Plan*.
PO19 Natural or built environments and human health are not harmed by the production of acid sulfate soils by: (a) avoiding disturbance to areas of acid sulfate soils that would produce or contribute to acidic leachate; (b) treating and managing the disturbance of acid sulfate soils to minimise the generation of acidic leachate within manageable levels; (c) treating and managing surface and groundwater flows from areas of acid sulfate soils to minimise environmental harm.	**AO19.1** No potential or actual acid sulfate soils are disturbed by the development. OR **AO19.2** Where soil is disturbed in areas that host potential or actual acid sulfate soils, impacts are appropriately managed in accordance with an approved *Acid Sulfate Soil Management Plan* prepared by a Registered Professional Engineer Queensland using levels of testing commensurate with the level of risk.
Operational Works - Vegetation Clearing	
PO20 Development minimises vegetation clearing to protect the visual integrity, ecological features, biological processes and habitat values of the natural environment.	**AO20.1** Vegetation clearing is undertaken in accordance with the *Vegetation Management Plan* prepared for the resort.
Operational Works - Advertising devices / On-premises Signs	
PO21 Advertising devices and/or On-premises Signs are designed and constructed in a manner that complements building design and is in keeping with the natural and cultural setting of Lindeman Island.	**AO21.1** Advertising devices/on-premises signs are designed, constructed and sited in a manner that: (a) results in a size, appearance or level of illumination that does not adversely impact on: a. the visual amenity and character of the resort or its natural landscape setting;

Performance outcomes	Acceptable Outcomes
	b. the operations of the airstrip; (b) is constructed of durable materials.
Reconfiguring a Lot	
PO22 Lots are located, designed, oriented, sized and dimensioned to be suitable for their intended purpose and avoid detrimental impacts on other existing and planned development, having regard to factors including but not limited to the need for all development within the Plan of Development area to operate as a resort complex managed by one entity: (a) accommodation of buildings, structures and on-site facilities; (b) environmentally significant areas; (c) landscaping and open space; (d) set back of buildings for natural light, ventilation and visual amenity; (e) vehicular access, manoeuvring and parking; (f) non-vehicular access; (g) topography and geophysical conditions; and (h) provision of appropriate utility services.	No acceptable outcome.
PO23 Lot reconfiguration is not undertaken in association with any aspect of development that is inconsistent with or not contemplated within the Plan of Development.	No acceptable outcome.

3.3.1 Resort and Village Precinct

Performance outcomes	Acceptable outcomes
PO1 Development in the Resort and Village Precinct incorporates the provision of high quality, architecturally designed buildings, which are configured in a manner that positively contributes to: (a) ecological sustainability; (b) climatic responsiveness; (c) energy and resource efficiency; (d) the character of the surrounding area; (e) the protection of the amenity of adjoining or surrounding uses; and (f) integration with the island's natural and visual setting.	No acceptable outcome.

3.3.2 Tourist Villa Precinct

Performance Outcomes	Acceptable Outcomes
PO1 Development in the Tourist Villa Precinct incorporates the provision of high quality, architecturally designed buildings.	**AO1.1** The design of Tourist Villas exhibits the following design elements: (a) roofs that display pale/dull colours and finishes (not reflective white or silver); (b) articulated facades and balconies, with deep overhangs shading large picture windows; (c) buildings that are cantilevered (slabs limited to a maximum of 50% of building footprint), or built on pier footings to minimise earthworks and vegetation removal. **AO1.2** Building designs that have the potential to impact on a natural setting (refer to **Figure 3-3**) are avoided and instead development incorporates measures to minimise the visual impacts on the natural setting (refer to **Figure 3-4**). **AO1.3** Villa locations are managed by a building envelope plan that appropriately limits the footprint of each individual villa. **AO1.4** Villas are limited to a maximum height of two storeys with a maximum gross floor area of 200m^2 per villa.

Figure 3-3. Built form treatments to be avoided.

BUILT FORM TREATMENTS TO AVOID IN ORDER TO MINIMIZE VISUAL IMPACTS ON A NATURAL SETTING

A LIMITED OVER HANGS AND SHADOWING INCREASES POTENTIAL REFLECTIVITY

B STANDARD GLAZING AND REDUCED SHADOWING INCREASES POTENTIAL REFLECTIVITY

C HIGH ROOF PITCHES IN A SITE CONTRASTING COLOUR, INCREASES A BUILT FORM'S VISUAL PRESENCE

D THE USE OF COLOURS THAT CONTRAST TO THE SITE'S NATURAL PALETTE, VISUALLY INCREASES A BUILDING'S PRESENCE

Figure 3-4. Built form treatments to be incorporated into the villa design.

REFERENCE IMAGERY : EXAMPLES OF APPROPRIATE TYPOLOGIES

METHODOLOGIES USED TO NEGATE VISUAL IMPACTS

NOTE: THE BASIC FORMS OF 2 TOURIST VILLAS DEPICTED IN FIGURES 3 & 4 ARE THE SAME. ONLY THE TREATMENTS AND LANDSCAPE COLOUR APPLICATIONS DIFFER

E ADDITIONAL PLANTINGS OF ENDEMIC TREES IMPROVES VISUAL INTEGRATION

F USE OF RECESSED DARK GLAZING WITH REDUCED REFLECTIVITY MINIMIZES VISUAL IMPACTS

G EXTENDED OVERHANGS AND FACADE ARTICULATION INCREASES SHADOWING AND VISUALLY REDUCES BUILDING MASS

H REDUCED ROOF MASS MINIMIZES VISUAL IMPACTS BY USING FLAT OR LOW PITCHED OPEN GABLES

I COLOURS SELECTED FROM THE NATURAL LANDSCAPE PALETTE - REFER COLOUR SELECTION METHODOLOGY OUTLINED IN FIGURES 1-4

3.3.3 Service and Access Precinct

Performance Criteria	Acceptable Solutions
Land Use	
PO1 The nature, scale and location of infrastructure and transport services supports the functioning of the Lindeman Island Resort.	**AO1.1** The Service and Access Precinct contains the uses and facilities identified for the precinct on **Map 2 – Indicative masterplan**.
Amenity	
PO2 Development does not generate unreasonable levels of noise, odour, dust, air emission, light or vibration impacts that affect adjoining or nearby site containing a sensitive land use.	**AO2.1** Development is designed, constructed and operated in compliance with environmental authorities issued by the Department of Environment and Heritage Protection.
Jetty and Barge Landing Area	
PO3 The barge landing area and upgraded jetty is structurally sound and safe for use, having regard to: (a) relevant engineering standards; (b) the impact of flooding, tidal influences and hydrodynamic changes; (c) intended working loads; and (d) slip and trip hazards.	**AO3.1** The design, construction and operation of the jetty and barge landing area complies with the: *(a) Marine Execution Plan;* *(b) Aids to Navigation Management Plan;* *(c) Vessel-sourced Pollution Prevention Management Plan;* *(d) Marine Pest Management Plan;* *(e) Resort Tours Management Plan;* *(f) Spill Management Plan; and* *(g) Vessel Traffic Management Plan.*
PO4 Buildings, works and marine facilities are designed and constructed in a way to ensure the work does not adversely affect the water quality of the marine environment as a result of: (a) release into the tidal water of materials used in the construction of the work; or (b) disturbance to the sediment on the bed and banks of the tidal water; or (c) exposure to acid sulfate soils.	**AO4.1** Development is designed, constructed and operated in accordance with: *(a) Acid Sulfate Soils Management Plan;* *(b) Biosecurity Management Plan;* *(c) Erosion and Sediment Control Plan;* *(d) Marine Pest Management Plan.*

Performance Criteria	Acceptable Solutions
Airstrip	
PO5 The visual and environmental impact of the runway is mitigated.	**AO5.1** Earthworks, outside of the landing surface and aircraft and vehicle manoeuvring areas, are shaped to create surface variations with a natural appearance. **AO5.2** The Broad Leaf Tea-tree (*Melaleuca viridiflora*) Woodlands in High Rainfall Coastal North Queensland ecological community is protected and restored, except where essential clearing and trimming is required adjacent to the airstrip to maintain aviation transitional surfaces.

3.3.4 Environment and Open Space Precinct

Performance outcomes	Acceptable outcomes
Ecological Protection	
PO1 Any development within the Environment and Open Space Precinct must not detrimentally impact on the National Park or adjacent marine environment.	**AO1.1** The Environment and Open Space Precinct provides for: (a) recreational opportunities such as golf course, tennis courts and parks; (b) protection of environmentally sensitive areas and/or culturally significant places; (c) educational opportunities associated with the recreation and/or conservation values of the island; (d) irrigation management for the sewage treatment plant in accordance with the *Irrigation Management Plan*; (e) water storage and supply to the resort in accordance with the *Water Contingency Action Plan*; and (f) protection of water quality in Gap Creek Dam in accordance with *Drinking Water Quality Management Plan* and *Stormwater Management Plan*. **AO1.2** Fairways will be integrated with adjacent native vegetation by informal edges of local native plant species. **AO1.3** Existing native vegetation will be retained where possible and supplemented with additional native vegetation in accordance with the *Vegetation Management Plan*.

Table 3-1. Lindeman Great Barrier Reef Resort Code – Development Parameters.

Column 1 Aspect of Development	Column 2 Maximum Height (Refer to notes 1, 2 and 3)	Column 3 Maximum No. of suites, units, villas	Column 4 Approximate Maximum Aggregate GFA (m^2)
Resort and Village Precinct			
Five Star Beach Resort (including Central Facilities, Pool Bar, Hilltop Suites and Pool Suites)	4 storeys	136 suites	11,626m^2
Six Star Spa Resort (including Central Facilities, Villas) Day Spa	2 storeys	59 villas	9,200m^2 1,190m^2
Five Star Eco Resort Central Facility	2 storeys	Villas (14); Apartments (20); Hilltop villas (7)	6,120m^2 350m^2
Village (including Airport Lounge, Conference Centre, Retail, Maintenance, Sport Centre and Open Space and recreation*) (Note: 100m^2 may occur as part of the Environment and Open Space Precinct)	2 storeys	-	8,583m^2
Rock Bar	1 storey	-	20m^2
Chapel	1 storey	-	140m^2
Staff Accommodation	3 storeys	-	10,051m^2
Tourist Villa Precinct			
Resort villas	2 storeys	89 villas	17,800m^2
Service Infrastructure and Access Precinct			
Hangars	1 storey	-	5,304m^2
National Park and Great Barrier Visitor and Education Centre	1 storey	-	200m^2
Retail/Beach Club	1 storey	-	200m^2
Maintenance	1 storey	-	3,381m^2
Environment and Open Space Precinct			
Open space and recreation* (Note: 100m^2 may occur as part of the Resort and Village Precinct)	1 storey	Nil	100m^2
Totals	-	**325**	**74,265m^2**

Notes:

1. Maximum building heights specified in the Lindeman Plan of Development are determined by the number of storeys and are not calculated by other means such as metres above natural ground level. A storey is defined under Schedule 24 of the *Planning Regulation 2017*:
   (a) means a space within a building between 2 floor levels, or a floor level and a ceiling or roof, other than—
   (i) a space containing only a lift shaft, stairway or meter room; or
   (ii) a space containing only a bathroom, shower room, laundry, toilet or other sanitary compartment; or
   (iii) a space containing only a combination of the things stated in subparagraph (i) or (ii); or
   (iv) a basement with a ceiling that is not more than 1m above ground level; and
   (b) includes—
   (i) a mezzanine; and
   (ii) a roofed structured that is on, or part of, a rooftop, if the structure does not only accommodate building plant and equipment.

2. With regard to 1(a) an understorey created by the cantilevering of buildings due to site topography, does not constitute a storey, provided that the space is not enclosed.

3. With regard to 1(b)(ii) a roofed structure does not include an open framed structure used for shading such as a pergola, vergola, retractable canvases, shade sails or a frame covered in a water permeable material, provided that it is no greater than 10m^2.

Schedule 1: Management Plans

The proponent has committed to preparing the following management plans for the project:

- Acid Sulfate Soils Management Plan
- Asbestos Management Plan
- Biosecurity Management Plan
- Bushfire Management Plan
- Construction Environmental Management Plan
- Contractor Wellbeing Plan
- Cultural Heritage Management Plan
- Drinking Water Quality Management Plan
- Dust Management Plan
- Emergency Response Plan
- Environmental, Health and Safety Management Plan
- Erosion and Sediment Control Plan
- Evacuation and Emergency Management and Response Plan
- Fauna Management Plan
- Golf Course Management Plan
- Irrigation Management Plan
- Marine Execution Plan, Aids to Navigation Management Plan and Vessel-sourced Pollution Prevention Management Plan
- Marine Pest Management Plan
- Natural Disaster Strategy
- Noise and Vibration Management Strategy
- Odour Management Plan
- Onsite Health Management Plan
- Pest Management Plan
- Pool Management Plan
- Resort Tours Management Plan
- Risk and Hazard Management Plan
- Spill Management Plan
- Stormwater and Water Management Plan
- Traffic Management Plan
- Vessel Traffic Management Plan
- Waste Management Plan
- Water Contingency Action Plan

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LEGEND

- Resort and Village Precinct
- Tourist Villa Precinct
- Service Infrastructure and Access Precinct
- Environment and Open Space Precinct

Protected Vegetation Communities

- Coastal Vine Thicket
- Broad Leaf Tea-Tree

Other

- Site Boundary

N W E S

0 75 150 225 300 375

1:7,500 (metres)

original map compiled on A3 size

DRAWING TITLE	Proposed Precinct Plan_v1.ai
DRAWING DATE	30 October 2017
DRAWING VERSION	2.0
COORDINATE SYSTEM	Unprojected Geographics
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HH-15078

DATA SOURCE

Basemap: DN Masterplan, Date: 31/10/2017

Lindeman Great Barrier Reef Resort & Spa

PLAN OF DEVELOPMENT

Map 1

Proposed Precinct Plan

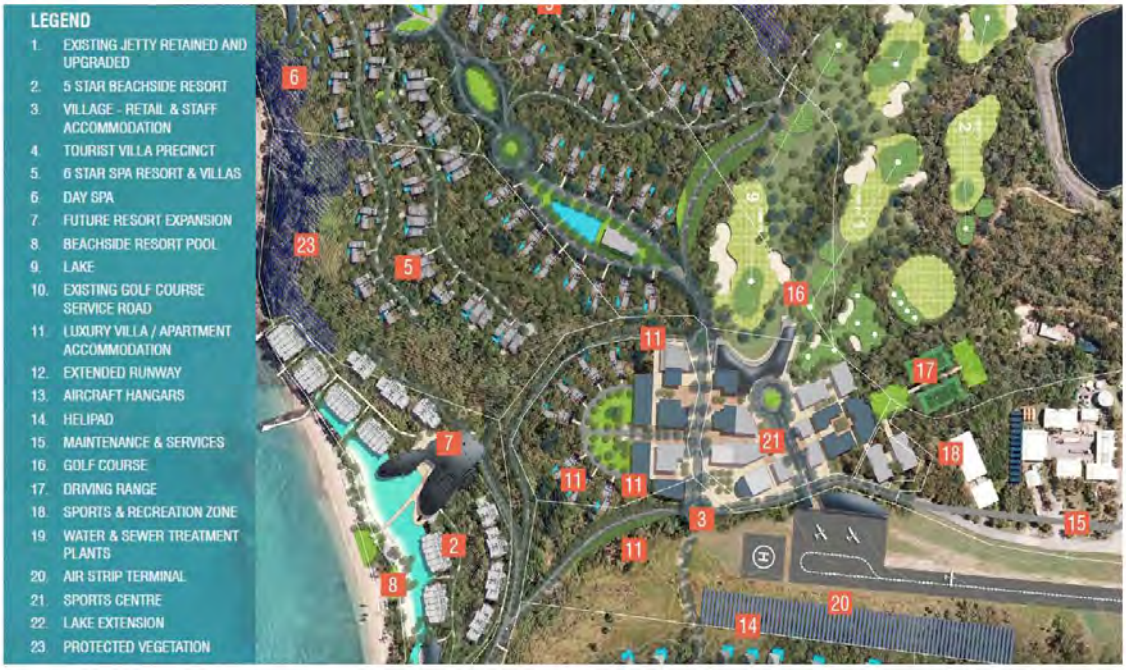

LEGEND
1 EXISTING JETTY (RETAINED AND UPGRADED)
2 5 STAR BEACHSIDE RESORT
3 VILLAGE - RETAIL & STAFF ACCOMMODATION
4 TOURIST VILLA PRECINCT
5 5 STAR SPA RESORT & VILLAS
6 DAY SPA
7 RESORT INFORMATION
8 BEACHSIDE RESORT POOL
9 LAKE
10 EXISTING GOLF CLOSE
11 LUXURY VILLA - APARTMENT ACCOMMODATION
12 EXPANSION RUNWAY
13 AIRCRAFT HANGARS
14 HELIPAD
15 MAINTENANCE & SERVICES
16 GOLF COURSE
17 DRIVING RANGE
18 SPORTS & RECREATION ZONE
19 WATER & SEWER TREATMENT PLANT
20 AIR STRIP TERMINAL
21 SPORTS CENTRE
22 LAKE EXTENSION
23 PROTECTED VEGETATION
PROTECTED VEGETATION (CONSERVATION)
PROTECTED VEGETATION (MELALEUCA THICKENED)
PROTECTED VEGETATION (MIXED RAINFOREST)
Coral Sea
0 25 50 100 200m
Proposed Masterplan
Map 2
Indicative Masterplan - Overall
(DBI Design, 2017)

Map 3 – Indicative Masterplan - Beach Resort

Map 4 – Indicative Masterplan - Spa Resort.

Map 5 - Indicative Masterplan - Tourist Villa Precinct

Map 6 - Indicative Masterplan – Village and Eco Resort



Appendix 6. Proponent commitments

This appendix includes commitments or management measures described in the EIS (including the revised draft EIS). I expect the proponent to implement all commitments, management measures and corrective actions listed below and detailed in the EIS.

Commitment number	Proponent Commitment
	Sustainability
1.	Reduce greenhouse gas emissions by using a solar-diesel hybrid system for energy production.
2.	Improve stormwater quality through the use of grassed swales, vegetated buffer strips, rainwater tanks and gross pollutant traps.
3.	Reduce water consumption through the installation of a wide range of water efficiency measures.
4.	Implement a waste management plan based on the hierarchy of avoid, reduce and recycle.
5.	Provide opportunities to inform and educate tourists regarding the Great Barrier Reef's unique World Heritage Values and establish a National Park and Great Barrier Reef Education Centre.
	Terrestrial Ecology
6.	Site works are to limit the vegetation clearing and minimise the disturbance footprint.
7.	Landscaping plans prepared for the site are to include endemic and use non-invasive species with revegetation of previously disturbed areas.
8.	No clearing or disturbance to critically endangered littoral rainforest and coastal vine thickets of eastern Australia community.
9.	Any clearing of Broad Leaf Melaleuca community will be limited to those areas required to achieve obstacle limitation surfaces for the runway strip.
10.	Significant microhabitat features such as large hollow logs to be retained where possible during clearing for use in rehabilitation areas.
11.	Implement a Pest Management Plan to prevent the introduction and management of existing pest species. The Pest Management Plan will include strategies to appropriately manage pests and prevent pest infestations, within occupied environments such as, resort and staff accommodation facilities, other common areas and waste storage/handling areas.
12.	Prepare a biosecurity management plan.

	Marine Ecology
13.	Ensure construction and operation of the resort protects fish, marine turtles, marine mammals and marine birds.
14.	Ensure construction and operation of the resort protects terrestrial and marine water quality through the preparation and implementation of an Erosion and Sediment Control Plan; Construction Environmental Management Plan; Stormwater and Water Management Plan; Spill Management Plan; Golf Course and Irrigation Management Plan.
15.	Contain jetty upgrades works within the footprint of the existing structure.
16.	Ensure the installation of moorings is consistent with permit requirements and the GBRMPA and Queensland Government policy on Moorings in the Great Barrier Reef.
17.	Install appropriate signage regarding responsible fishing and legal catch sizes.
18.	Designate ‘go slow' zones to minimise potential for boat strikes.
19.	Implement light management strategies to prevent light spill to the coastal and marine environment.
20.	Prepare and implement a Fauna Management Plan which complies with turtle friendly guideline.
21.	Prepare and implement a Stranding Response Strategy in consultation with QPWS.
22.	Prepare and implement a Resort Tours Management Plan.
23.	Prepare and implement a Marine Pest Management Plan.
24.	Establish an underwater snorkel/SCUBA trail to restrict spatial scale of potential disturbance.
25.	Ensure that no refuelling, vessel maintenance or pump out of waste waters occurs at marine facilities at the resort.
26.	Prepare and implement a Marine Execution Plan, Aids to Navigation Management Plan and Vessel-sourced Pollution Prevention Management Plan as required by regulatory authorities.
	Coastal Processes
27.	Buildings and infrastructure are designed to improve resilience to impacts associated with storm surge, coastal erosion and sea level rise.
28.	Ensure construction activities protects the physical integrity of the beach and intertidal zone.

	Scenic Amenity
29.	Promote a built-form that integrates with and is subordinate to the natural environment in terms of scale, bulk, materials, and colour.
30.	Retention of existing trees in selected locations and additional screen planting of trees to visually integrate the villas in their landscape settings.
31.	Use of dark subdued colours and tones especially of upper stories and pale dull roofs to enhance visual integration.
32.	The impact of visually exposed retaining walls is to be mitigated (for example through use of gabion walls using rocks with screening shrubs and vines).
33.	Road alignment will avoid linear scarring slopes perpendicular to contours and within view of sensitive receptors.
34.	Lighting in all precincts will be downward-directed with minimal glare spillage with no flood-lighting of trees or external walls above the surrounding vegetation screening height.
35.	Lighting of rooms associated with decks and large picture windows in the eco-tourism villas will be fitted with dimmers and timers.
	Cultural Heritage
36.	Prepare and implement a Cultural Heritage Management Plan.
37.	Protect Aboriginal and Torres Strait Islander and Non- Aboriginal and Torres Strait Islander cultural heritage uncovered through any construction activities through the Incidental Finds Procedure.
38.	Cultural heritage induction to be incorporated into the contractor/employee manual and induction.
39.	Record airstrip values prior to construction.
	Site Contamination
40.	Hazardous materials shall be stored in accordance with regulatory requirements with an adequately bunded containment area, with incompatible substances stored separately.
41.	Emergency procedures concerned with spillage events and containment measures shall be displayed in a prominent position within the site working area.
42.	Demolition or disturbance of buildings with asbestos shall be undertaken in accordance with an Asbestos Management Plan which also details appropriate public health mitigation measures.
43.	Specific Site Induction training shall include instructions on correct procedures for storage, handling and/or disposal of dangerous and hazardous substances.
44.	Spill kits shall be maintained on site for the clean-up of chemical or fuel spills.

45.	Any accidental spills of hazardous materials would be cleaned immediately, and appropriately disposed of.
	Water Resources
46.	Excavation of areas less than 5 metres AHD during construction or operation is to be undertaken in accordance with the Acid Sulfate Soils Management Plan that complies with the requirements of the Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines.
47.	Erosion and sedimentation control measures to be implemented prior to commencement and during earthworks/construction in accordance with an Erosion and Sediment Control Plan.
48.	Ensure the sustainable design and management of the golf course through the preparation and implementation of a Golf Course and Irrigation Management Plan.
49.	Ensure the water quality of receiving environments is protected and enhanced through the preparation and implementation of a Stormwater and Water Management Plan.
50.	Ensure the sewage treatment plant is managed in accordance with the conditions of an environmental authority.
51.	Raise and maintain the existing earth bund near the dam to protect against dam crest failure.
52.	Ensure the floor levels of all buildings used to house critical infrastructure and hazardous materials are located above the flood levels affected by the Dam Failure and predicted impacts associated with sea level rise.
53.	Prepare and implement a Water Contingency Action Plan to unexpected failure of the main water supply to the resort or low dam levels.
54.	Enlarge the dam catchment area to increase inflows.
55.	Water efficient fittings and appliances will be installed and used throughout the resort.
56.	Staff training will include awareness of environmental issues including water conservation measures.
57.	Recycled water will be used for toilet flushing (communal areas and resort units), laundry, irrigation and wash-down.
58.	A Recycled Water Management Plan will be prepared and implemented.
59.	Visitor information will include awareness of environmental issues including water conservation measures.
60.	Undertake water quality monitoring at the Dam and Water Treatment Plant to ensure that water drinking water meets required regulatory requirements.
61.	Undertake monitoring of dam levels with the Water Contingency Action Plan to be initiated when dam levels fall below 30 per cent.
62.	Undertake regular water quality monitoring at the sewage treatment plant to ensure suitability for irrigation and re-use.

63.	Undertake regular sampling of rainwater tank water when used for swimming pool top up and/or alternative water supply.
64.	Daily inspection of erosion and sediment control devices, and compliance with an approved ESCP to ensure they are in place and working efficiently.
65.	Establish a seawater baseline water quality monitoring program.
	Air Quality
66.	Prepare a Dust Management Plan to minimise dust generation during construction through use of the water sprays on exposed areas of ground, limiting vehicle speeds, avoid undertaking clearing during periods of high wind and covering any stockpiles.
67.	Construction equipment to be maintained in good repair, including exhaust systems and emission control devices.
68.	Controlled burns to be undertaken during suitable weather conditions to avoid disturbance to staff and residents.
69.	All plant and equipment associated with diesel power generation is maintained in accordance with environmental best practice to ensure emissions are minimised and the potential for adverse air quality impacts is negligible.
70.	Toilet facilities and sewage treatment facilities to be established prior to major construction works commencing on site.
71.	Prepare and implement an Odour Management Plan.
72.	Wastes to be collected in appropriate bins and removed from the island on regular basis to avoid odour generation, particularly in the summer months.
73.	Operate and maintain the sewage treatment plant (and associated inlet works, sludge press and collection facilities) in accordance with manufacturer specifications to minimise odour generation.
74.	Putrescible waste is proposed to be collected daily from the villas, hotels and other facilities and transferred to a purpose built storage facility located within the services area of the resort. Transfer of the stored waste is expected to occur at least weekly with waste loaded into an enclosed truck and shipped to the mainland for ultimate disposal at a designated landfill.
	Noise and Vibration
75.	Prepare and implement a Noise and Vibration Management Strategy based on Australian Standard AS2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites.
76.	Mitigate noise impacts on marine species associated with jetty upgrades.
77.	Minimise aircraft noise intrusion and allow no night flights accept for emergencies.
78.	Install and maintain noise barriers around diesel generators.

79.	Minimise impact of boats docking at jetty, barge and moorings with operations primarily during daytime hours.
80.	Install and maintain adequate noise screening/enclosure for water pump.
81.	Minimise impact of vehicular traffic by restricting truck movements during daytime and evening periods.
82.	Maintain plant and equipment in to ensure good operating condition.
	Social and Economic
83.	Ensure a safe work environment for all workers in accordance with the *Work Health and Safety Act 2011,* regulations and codes of practice.
84.	Prepare an Environmental, Health and Safety Management Plan. This will include a mosquito management plan.
85.	All construction workers must wear required Personal Protective Equipment.
86.	All staff are to undergo Emergency Response Training which includes first aid training, evacuation and emergency response training and basic fire training in accordance with an Emergency Response Plan.
87.	The resort construction and operations will seek to use local products and suppliers where possible.
88.	Maximise employment opportunities for local skilled workers, young trainees and apprentices, Aboriginal and Torres Strait Islanders (for example Aboriginal and Torres Strait Islander rangers program) and mature age trainees and apprentices;
89.	An Onsite Health Management Plan will be prepared in consultation with local health, emergency response agencies, the Mackay Hospital and Health Service, Queensland Health, and other relevant agencies to determine most efficient treatment of sick or injured workers; most efficient route for transporting sick or injured workers (Proserpine or Mackay); protocols for managing high risk outbreaks - for example Measles, Chicken Pox, Influenza, Legionnaires; most appropriate approach for managing First Aid.
90.	Promote staff wellbeing by implementing a Contractor Wellbeing Plan for FIFO workers, including providing easy access to mental health practitioner/counsellor; develop and alcohol and drugs policy and consider different roster styles;
91.	Restrict truck movements for potentially dangerous loads on the Island to daylight hours due to high level of licensed venues, nightclubs, and pubs frequented by tourists unfamiliar with the area.
92.	All food provided on site to the construction workers will comply with the *Food Act2006.*
93.	Develop safety plans for transport companies including policies to limit the transport of large, non-standard loads and equipment to off-peak periods
	Waste Management

94.	Ensure resort waste is managed in accordance with the principles of avoidance, reduction, re-use and recycling.
95.	Provide education/awareness training and information to staff and guests regarding relevant aspects of the Waste Management Plan.
96.	Selection of materials for building construction shall seek to maximise the use of renewable or recyclable components.
97.	Purchasing policies shall be implemented to focus on selection of materials and resources with less packaging.
98.	Re-use existing building and other materials on-site where possible.
99.	Ensure separate bins are provided for glass, cardboard/paper and general waste to encourage recycling. All employees and contractors will be trained in the correct waste disposal procedures and encouraged to recycle.
100.	Organic waste derived from vegetation clearing/management is to be composted onsite and reused as mulch.
101.	Wastes unable to reused or recycled (except for organic wastes) must be disposed of at an approved Council landfill on the mainland via a marine vessel which is not carrying passengers (for hygienic reasons).
102.	All wastes shall be collected and stored on-site in central facilities and in a way that promotes recycling.
	Traffic and Transport
103.	Minimise impact of construction traffic and parking on the mainland through the preparation and implementation of a Traffic Management Plan.
104.	Ensure the safety of construction vehicles and pedestrians on the Island through the preparation and implementation of a Traffic Management Plan.
105.	Ensure the safety of staff and resort guests through ensuring all vehicles are appropriately services and lighting provided in key locations.
106.	Ensure the safety and efficiency of aircraft movement through compliance with CASA requirements.
107.	Ensure the safety and efficiency of marine vessels through the preparation and implementation of a Vessel Traffic Management Plan.
108.	Prepare a Pavement Impact Assessment.
	Hazard and Risk
109.	Prepare and implement an Evacuation and Emergency Management and Response Plan and Natural Disaster Strategy will be developed in consultation with Local Disaster Management Groups to respond to emergencies, building fires, bushfires, cyclones, flooding, release of hazardous materials and landslides.

110.	Prepare a Bushfire Management Plan in consultation with QPWS.
111.	Prepare a Risk and Hazard Management Plan.
112.	All construction and operational staff are trained on site evacuation and emergency response procedures.
113.	Mitigate the potential impacts associated with heatwaves through the preparation and implementation of an Environmental, Health and Safety Management Plan for the construction and operational phase of the project.
114.	Prevent drownings or human injury associated with swimming lagoons, pool and the sea by educating guests and staff on potential risks and the provision of life saving devices and trained staff.
115.	Prepare a Pool Management Plan to ensure the operational management and water quality of all swimming pools.
	National Park
116.	Work collaboratively with DNPSR and QPWS to manage bushfire risk on Lindeman Island and upgrade walking trails.
117.	Undertake site restoration requirements in accordance with legislation and lease requirements.
118.	Prepare a fire strategy in consultation with the QPWS Regional Fire Coordinator.
119.	Prepare a mitigation strategy for increased visitor use of the National Park in consultation with QPWS.
	Approvals and Permits
120.	Ensure site works and resort operation complies at all times with regulatory and permit requirements.

Appendix 7. Statement of Outstanding Universal Value

Part A. Brief synthesis

As the world's most extensive coral reef ecosystem, the Great Barrier Reef is a globally outstanding and significant entity. Practically the entire ecosystem was inscribed as World Heritage in 1981, covering an area of 348,000 square kilometres and extending across a contiguous latitudinal range of 14° (10°S to 24°S). The Great Barrier Reef (hereafter referred to as GBR) includes extensive cross-shelf diversity, stretching from the low water mark along the mainland coast up to 250 kilometres offshore. This wide depth range includes vast shallow inshore areas, mid-shelf and outer reefs, and beyond the continental shelf to oceanic waters over 2,000 metres deep.

Within the GBR there are some 2,500 individual reefs of varying sizes and shapes, and over 900 islands, ranging from small sandy cays and larger vegetated cays, to large rugged continental islands rising, in one instance, over 1,100 metres above sea level. Collectively these landscapes and seascapes provide some of the most spectacular maritime scenery in the world.

The latitudinal and cross-shelf diversity, combined with diversity through the depths of the water column, encompasses a globally unique array of ecological communities, habitats and species. This diversity of species and habitats, and their interconnectivity, make the GBR one of the richest and most complex natural ecosystems on earth. There are over 1,500 species of fish, about 400 species of coral, 4,000 species of mollusc, and some 240 species of birds, plus a great diversity of sponges, anemones, marine worms, crustaceans, and other species. No other World Heritage property contains such biodiversity. This diversity, especially the endemic species, means the GBR is of enormous scientific and intrinsic importance, and it also contains a significant number of threatened species. At time of inscription, the IUCN evaluation stated "…if only one coral reef site in the world were to be chosen for the World Heritage List, the Great Barrier Reef is the site to be chosen".

Criterion (vii): The GBR is of superlative natural beauty above and below the water, and provides some of the most spectacular scenery on earth. It is one of a few living structures visible from space, appearing as a complex string of reefal structures along Australia's northeast coast.

From the air, the vast mosaic patterns of reefs, islands and coral cays produce an unparalleled aerial panorama of seascapes comprising diverse shapes and sizes. The Whitsunday Islands provide a magnificent vista of green vegetated islands and spectacular sandy beaches spread over azure waters. This contrasts with the vast mangrove forests in Hinchinbrook Channel, and the rugged vegetated mountains and lush rainforest gullies that are periodically cloud-covered on Hinchinbrook Island.

On many of the cays there are spectacular and globally important breeding colonies of seabirds and marine turtles, and Raine Island is the world's largest green turtle breeding area. On some continental islands, large aggregations of over-wintering butterflies periodically occur.

Beneath the ocean surface, there is an abundance and diversity of shapes, sizes and colours; for example, spectacular coral assemblages of hard and soft corals, and thousands of species of reef fish provide a myriad of brilliant colours, shapes and sizes. The internationally renowned Cod Hole near Lizard Island is one of many significant tourist attractions. Other superlative natural phenomena include the annual coral spawning, migrating whales, nesting turtles, and significant spawning aggregations of many fish species.

Criterion (viii): The GBR, extending 2,000 kilometres along Queensland's coast, is a globally outstanding example of an ecosystem that has evolved over millennia. The area has been exposed and flooded by at least four glacial and interglacial cycles, and over the past 15,000 years reefs have grown on the continental shelf.

During glacial periods, sea levels dropped, exposing the reefs as flat-topped hills of eroded limestone. Large rivers meandered between these hills and the coastline extended further east.

During interglacial periods, rising sea levels caused the formation of continental islands, coral cays and new phases of coral growth. This environmental history can be seen in cores of old massive corals.

Today the GBR forms the world's largest coral reef ecosystem, ranging from inshore fringing reefs to mid-shelf reefs, and exposed outer reefs, including examples of all stages of reef development. The processes of geological and geomorphological evolution are well represented, linking continental islands, coral cays and reefs. The varied seascapes and landscapes that occur today have been moulded by changing climates and sea levels, and the erosive power of wind and water, over long-time periods.

One-third of the GBR lies beyond the seaward edge of the shallower reefs; this area comprises continental slope and deep oceanic waters and abyssal plains.

Criterion (ix): The globally significant diversity of reef and island morphologies reflects ongoing geomorphic, oceanographic and environmental processes. The complex cross-shelf, longshore and vertical connectivity is influenced by dynamic oceanic currents and ongoing ecological processes such as upwellings, larval dispersal and migration.

Ongoing erosion and accretion of coral reefs, sand banks and coral cays combine with similar processes along the coast and around continental islands. Extensive beds of Halimeda algae represent active calcification and accretion over thousands of years.

Biologically the unique diversity of the GBR reflects the maturity of an ecosystem that has evolved over millennia; evidence exists for the evolution of hard corals and other fauna. Globally significant marine faunal groups include over 4,000 species of molluscs, over 1,500 species of fish, plus a great diversity of sponges, anemones, marine worms, crustaceans, and many others. The establishment of vegetation on the cays and continental islands exemplifies the important role of birds, such as the Pied Imperial Pigeon, in processes such as seed dispersal and plant colonisation.

Human interaction with the natural environment is illustrated by strong ongoing links between Aboriginal and Torres Strait Islanders and their sea-country, and includes numerous shell deposits (middens) and fish traps, plus the application of story places and marine totems.

Criterion (x): The enormous size and diversity of the GBR means it is one of the richest and most complex natural ecosystems on earth, and one of the most significant for biodiversity conservation. The amazing diversity supports tens of thousands of marine and terrestrial species, many of which are of global conservation significance.

As the world's most complex expanse of coral reefs, the reefs contain some 400 species of corals in 60 genera. There are also large ecologically important inter-reefal areas. The shallower marine areas support half the world's diversity of mangroves and many seagrass species. The waters also provide major feeding grounds for one of the world's largest populations of the threatened dugong. At least 30 species of whales and dolphins occur here, and it is a significant area for humpback whale calving.

Six of the world's seven species of marine turtle occur in the GBR. As well as the world's largest green turtle breeding site at Raine Island, the GBR also includes many regionally important marine turtle rookeries.

Some 242 species of birds have been recorded in the GBR. Twenty-two seabird species breed on cays and some continental islands, and some of these breeding sites are globally significant; other seabird species also utilize the area. The continental islands support thousands of plant species, while the coral cays also have their own distinct flora and fauna.

Part B. Integrity

The ecological integrity of the GBR is enhanced by the unparalleled size and current good state of conservation across the property. At the time of inscription, it was felt that to include virtually the entire Great Barrier Reef within the property was the only way to ensure the integrity of the coral reef ecosystems in all their diversity.

A number of natural pressures occur, including cyclones, crown-of-thorns starfish outbreaks, and sudden large influxes of freshwater from extreme weather events. As well there is a range of human uses such as tourism, shipping and coastal developments including ports. There are also some disturbances facing the GBR that are legacies of past actions prior to the inscription of the property on the World Heritage list.

At the scale of the GBR ecosystem, most habitats or species groups have the capacity to recover from disturbance or withstand ongoing pressures. The property is largely intact and includes the fullest possible representation of marine ecological, physical and chemical processes from the coast to the deep abyssal waters enabling the key interdependent elements to exist in their natural relationships.

Some of the key ecological, physical and chemical processes that are essential for the long-term conservation of the marine and island ecosystems and their associated biodiversity occur outside the boundaries of the property and thus effective conservation programs are essential across the adjoining catchments, marine and coastal zones.

Part C. Protection and management requirements

The GBR covers approximately 348,000 square kilometres. Most of the property lies within the GBR Marine Park: at 344,400 square kilometres, this Federal Marine Park comprises approximately 99 per cent of the property. The GBR Marine Park's legal jurisdiction ends at low water mark along the mainland (with the exception of port areas) and around islands (with the exception of 70 Commonwealth managed islands which are part of the Marine Park). In addition the GBR also includes over 900 islands within the jurisdiction of Queensland, about half of which are declared as 'national parks', and the internal waters of Queensland that occur within the World Heritage boundary (including a number of long-established port areas).

The World Heritage property is and has always been managed as a multiple-use area. Uses include a range of commercial and recreational activities. The management of such a large and iconic world heritage property is made more complex due to the overlapping State and Federal jurisdictions. The Great Barrier Reef Marine Park Authority, an independent Australian Government agency, is responsible for protection and management of the GBR Marine Park. The *Great Barrier Reef Marine Park Act 1975* was amended in 2007 and 2008, and now provides for "the long term protection and conservation ... of the Great Barrier Reef Region" with specific mention of meeting "... Australia's responsibilities under the World Heritage Convention".

Queensland is responsible for management of the Great Barrier Reef Coast Marine Park, established under the Marine Parks Act 2004 (Qld). This is contiguous with the GBR Marine

Park and covers the area between low and high water marks and many of the waters within the jurisdictional limits of Queensland. Queensland is also responsible for management of most of the islands.

The overlapping jurisdictional arrangements mean that the importance of complementary legislation and complementary management of islands and the surrounding waters is well recognised by both governments. Strong cooperative partnerships and formal agreements exist between the Australian Government and the Queensland Government. In addition, strong relationships have been built between governments and commercial and recreational industries, research institutions and universities. Collectively this provides a comprehensive management influence over a much wider context than just the marine areas and islands.

Development and land use activities in coastal and water catchments adjacent to the property also have a fundamental and critical influence on the values within the property. The Queensland Government is responsible for natural resource management and land use planning for the islands, coast and hinterland adjacent to the GBR. Other Queensland and Federal legislation also protects the property's Outstanding Universal Value addressing such matters as water quality, shipping management, sea dumping, fisheries management and environmental protection.

The Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides an overarching mechanism for protecting the World Heritage values from inappropriate development, including actions taken inside or outside which could impact on its heritage values. This requires any development proposals to undergo rigorous environmental impact assessment processes, often including public consultation, after which the Federal Minister may decide, to approve, reject or approve under conditions designed to mitigate any significant impacts. A recent amendment to the EPBC Act makes the GBR Marine Park an additional 'trigger' for a matter of National Environmental Significance which provides additional protection for the values within the GBR.

The GBR Marine Park and the adjoining GBR Coast Marine Park are zoned to allow for a wide range of reasonable uses while ensuring overall protection, with conservation being the primary aim. The zoning spectrum provides for increasing levels of protection for the 'core conservation areas' which comprise the 115,000 square kilometres of 'no-take' and 'no-entry' zones within the GBR.

While the Zoning Plan is the 'cornerstone' of management and provides a spatial basis for determining where many activities can occur, zoning is only one of many spatial management tools and policies applied to collectively protect the GBR. Some activities are better managed using other spatial and temporal management tools like Plans of Management, Special Management Areas, Agreements with Traditional Owners and permits (often tied to specific zones or smaller areas within zones, but providing a detailed level of management not possible by zoning alone). These statutory instruments also protect the Outstanding Universal Value of the property.

Many Aboriginal and Torres Strait Island peoples undertake traditional use of marine resource activities to provide traditional food, practice their living maritime culture, and to educate younger generations about traditional and cultural rules and protocols. In the GBR these activities are managed under both Federal and Queensland legislation and policies including Traditional Use of Marine Resource Agreements (TUMRAs) and Indigenous Land Use Agreements (ILUAs). These currently cover some 30 per cent of the GBR inshore area, and support Traditional Owners to maintain cultural connections with their sea country.

Similarly, non-statutory tools like site management and Industry Codes of Practice contribute to the protection of World Heritage values. Some spatial management tools are not permanently in place nor appear as part of the zoning, yet achieve effective protection for elements of biodiversity (for example the temporal closures that are legislated across the GBR prohibit all reef fishing during specific moon phases when reef fish are spawning).

Other key initiatives providing increased protection for the GBR include the comprehensive Great Barrier Reef Outlook Report (and its resulting 5-yearly reporting process); the Reef Water Quality Protection Plan; the GBR Climate Change Action Plan; and the Reef Guardian Stewardship Programs which involve building relationships and working closely with those who use and rely on the GBR or its catchment for their recreation or their business.

The 2009 Outlook Report identified the long-term challenges facing the GBR; these are dominated by climate change over the next few decades. The extent and persistence of damage to the GBR ecosystem will depend to a large degree on the amount of change in the world's climate and on the resilience of the GBR ecosystem to such change. This report also identified continued declining water quality from land-based sources, loss of coastal habitats from coastal development, and some impacts from fishing, illegal fishing and poaching as the other priority issues requiring management attention for the long-term protection of the GBR.

Emerging issues since the 2009 Outlook Report include proposed port expansions, increases in shipping activity, coastal development and intensification and changes in land use within the GBR catchment; population growth; the impacts from marine debris; illegal activities; and extreme weather events including floods and cyclones.

Further building the resilience of the GBR by improving water quality, reducing the loss of coastal habitats and increasing knowledge about fishing and its effects and encouraging modified practices, will give the GBR its best chance of adapting to and recovering from the threats ahead, including the impacts of a changing climate.

Appendix 8. Australian world heritage management principles

1 General principles

1.01 The primary purpose of management of natural heritage and cultural heritage of a declared World Heritage property must be, in accordance with Australia's obligations under the World Heritage Convention, to identify, protect, conserve, present, transmit to future generations and, if appropriate, rehabilitate the World Heritage values of the property.

1.02 The management should provide for public consultation on decisions and actions that may have a significant impact on the property.

1.03 The management should make special provision, if appropriate, for the involvement in managing the property of people who:

(a) have a particular interest in the property; and

(b) may be affected by the management of the property.

1.04 The management should provide for continuing community and technical input in managing the property.

2 Management planning

2.01 At least 1 management plan should be prepared for each declared World Heritage property.

2.02 A management plan for a declared World Heritage property should:

(c) state the World Heritage values of the property for which it is prepared; and

(d) include adequate processes for public consultation on proposed elements of the plan; and

(e) state what must be done to ensure that the World Heritage values of the property are identified, conserved, protected, presented, transmitted to future generations and, if appropriate, rehabilitated; and

(f) state mechanisms to deal with the impacts of actions that individually or cumulatively degrade, or threaten to degrade, the World Heritage values of the property; and

(g) provide that management actions for values, that are not World Heritage values, are consistent with the management of the World Heritage values of the property; and

(h) promote the integration of Commonwealth, State or Territory and local government responsibilities for the property; and

(i) provide for continuing monitoring and reporting on the state of the World Heritage values of the property; and

(j) be reviewed at intervals of not more than 7 years.

3 Environmental impact assessment and approval

3.01 This principle applies to the assessment of an action that is likely to have a significant impact on the World Heritage values of a property (whether the action is to occur inside the property or not).

3.02 Before the action is taken, the likely impact of the action on the World Heritage values of the property should be assessed under a statutory environmental impact assessment and approval process.

3.03 The assessment process should:

(k) identify the World Heritage values of the property that are likely to be affected by the action; and

(l) examine how the World Heritage values of the property might be affected; and

(m) provide for adequate opportunity for public consultation.

3.04 An action should not be approved if it would be inconsistent with the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.

3.05 Approval of the action should be subject to conditions that are necessary to ensure protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.

3.06 The action should be monitored by the authority responsible for giving the approval (or another appropriate authority) and, if necessary, enforcement action should be taken to ensure compliance with the conditions of the approval

Appendix 9. Conservation advices and threat abatement plans

The following threat abatement plans and recovery plans relate to matters of national environmental significance as discussed in Section 7 of this report.

Schedule 1. Conservation Advices

Part A. Approved conservation advice for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community

The following are actions that can be carried out to stop the decline or support the recovery of the ecological community. The regional priority recovery and threat abatement actions required for this ecological community are identified below.

Regional Priority Actions

(a) Identify known sites of high conservation priority and implement conservation mechanisms, such as covenants or inclusion in reserve tenure.

Habitat Loss, Disturbance and Modification

(a) Protect areas of native vegetation, which contain remnants of the listed ecological community.

(b) Manage any changes to hydrology which may result in increased run off or sediment or changes to the water table levels.

(c) Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the ecological community.

(d) Repair, expand and connect existing remnants of the listed ecological community through appropriate rainforest rehabilitation methods.

(e) Maintain and monitor rehabilitated remnants of the listed ecological community.

(f) Undertake appropriate collection and storage of seed of component species for future planting.

(g) Develop and implement a management plan for the control of transformer weeds in the local region.

Invasive Weeds

(h) Develop a management plan or for the control and, as appropriate, eradication of feral deer, such as Rusa, Sambar and Hog Deer.

Trampling, Browsing and Grazing

(i) Develop and implement a suitable fire management strategy for the ecological community.

Fire

(j) Provide maps of known occurrences of the ecological community to local and state rural fire services and seed inclusion of mitigative measures in bush fire risk management plan(s), risk register and/or operation maps.

(k) Raise awareness of the ecological community within the local community.

Conservation Information

(l) The local priority recovery and threat abatement actions for this ecological community are identified below:

(i) Local Priority Actions

(A) Monitor known sites to identify key threats or progress of recovery.

(ii) Habitat Loss, Disturbance and Modification

(A) Modify access routes to prevent vehicular and pedestrian access

Part B. Approved conservation advice for Broad Leafe Tea-tree (Melaleuca viridiflora) Woodlands in High Rainfall Coastal North Queensland

Threats

The landscape within which the ecological community occurs is subject to a range of landuses including grazing and state forests. Some areas are subject to small-scale clearing for hobby-farms and fire breaks.

The key threats impacting upon the ecological community are clearing and fragmentation; weed invasion; inappropriate grazing regimes; forestry practices; inappropriate fire regimes; and illegal wildlife harvesting. Many of the threats to the ecological community also have adverse impacts on threatened species associated with the ecological community.

The main potential threats to the ecological community relate to myrtle rust and changes in hydrological regimes.

Research Priorities

Research priorities that would inform future regional and local priority actions include:

(a) Undertake surveys across the range of the ecological community to:

(i) identify sites of high conservation priority and to gain a better understanding of its variation and dynamics in floristics, particularly for understorey species.

(ii) locate additional remnants and identify threatened species that may require specific conservation measures.

(b) Support and enhance existing programs for the production of mapping of pre-1750 extent and current remnants.

(c) Determine optimal management regimes for high quality remnants and support and enhance existing weed management programs.

(d) Support ongoing research aimed at managing major weeds such as snakeweed (*Stachytarpheta jamaicensis*), *Stylosanthes scabra*, rat's tail (*Sporobolus jaquemontii*), sensitive weed (*Mimosa pudica*), urena burr (*Urena lobata*), Chinese burr (*Triumfetta rhomboidea*), spiny sida (*Sida spinosa*), thatch grass (*Hyparrhenia rufa*), Guinea grass (*Megathyrsus maximus*) and *Sida rhombifolia*.

(e) Assess the vulnerability of the ecological community to climate change.

(f) Undertake experimental trials to identify optimal disturbance regimes for promoting biodiversity within remnants. For instance, to determine management prescriptions for ecological burning or sustainable grazing regimes that maintain plant diversity and faunal habitat quality.

(g) Investigate the potential and efficacy of DNA-based or other approaches for the identification of individual plants and/or populations of *Dendrobium canaliculatum* (tea tree orchid), *Dischidia nummularia* (button orchid) and *Myrmecodia becarrii* (ant plant) to

provide a means for detecting and prosecuting illegal collection from the wild (see for example Palsboll et al., 2006).

Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland.

Habitat Loss, Disturbance and Modification

(h) Ensure that remnants that are of particularly high quality or important in a landscape context (for example as wildlife corridors or linkages) are considered for inclusion in reserve tenure or conserved via incentive-based schemes for landholders.

(i) Avoid any changes to hydrology that may result in changes to the natural hydrological regime, including drainage and increase or decrease in run-off, salinity, or pollution.

(j) Monitor known remnants to identify key threats.

(k) Manage threats to remnants of the ecological community.

(l) Monitor the progress of recovery, through improved mapping, estimates of extent and condition assessments of the ecological community, and effective adaptive management actions.

(m) Develop and implement best practice standards for management of remnants on private and public lands.

(n) Liaise with local councils and State authorities to ensure new development, road widening, maintenance activities or other activities involving substrate or vegetation disturbance in areas where the ecological community occurs do not adversely impact on known remnants.

(o) Liaise with planning authorities to ensure that planning takes the protection of remnants into account, with due regard to principles for long-term conservation. This may particularly apply where the ecological community occurs in or near to peri-urban or urban centres.

Invasive Species

(p) Manage sites to prevent introduction or further spread of new invasive exotic weeds, and targeted control of existing key weeds which threaten the ecological community, using appropriate methods.

(q) Manage forestry practices to minimise potential invasion of remnants from neighbouring plantations.

(r) Ensure chemicals or other mechanisms used to manage weeds do not have significant adverse non-target impacts on remnants of the ecological community.

(s) Control invasive animals (such as goats, pigs and feral horses) to manage threats, especially to threatened species, and high quality sites through coordinated landscape-scale control programs.

Trampling, Browsing or Grazing

(t) Ensure that livestock grazing uses an appropriate management regime and density that does not detrimentally affect remnants of the ecological community.

(u) Manage known sites on private property to ensure that total grazing pressure is appropriate to maintain and enhance native biodiversity.

(v) Dot not place artificial watering or feeding points within patches of the ecological community.

Fire

(w) Develop and implement a suitable fire management strategy for the ecological community, which includes information for landholders on how to implement appropriate fire management actions.

(x) Identify appropriate intensity and interval of fire to promote vegetation regeneration.

(y) Where appropriate provide maps of known occurrences to local and state Rural Fire Services and seek inclusion of mitigative measures in bush fire risk management plan(s), risk register and/or operation maps.

(z) Negotiate appropriate standing procedures with local fire brigades.

Diseases, Fungi and Parasites

(aa) Develop and implement suitable hygiene protocols to protect sites from potential outbreaks of myrtle rust (Uredo rangelii).

Conservation Information

(bb) Raise public awareness about the Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland ecological community.

(cc) Establish and/or maintain liaisons with private landholders and land managers of land on which remnants occur.

This list does not necessarily encompass all actions that may be of benefit to Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland, but highlights those that are considered to be of highest priority at the time of preparing the Conservation Advice.

Part C. Approved conservation advice for Australian Painted Snipe (*Rostratula* Australis) – 2013

The Australian painted snipe is listed as endangered has it has undergone a severe decline in excess of over 50 per cent over the last three generations associated with wetland loss and degradation.

Research Priorities:

Priority 1: Support and enhance existing programs for the Australian painted snipe that area managed by BirdLife Australia.

Priority 2: Continue to monitor the species to more precisely assess population size, distribution and the relative impacts of threatening processes.

Priority 3: Identify and describe the ecological and hydrological character of sites that are suitable for the Australian painted snipe, particularly those known to be used by the species for breeding.

Priority 4: Investigate potential food resources for the species and monitor changes to the abundance and diversity of these resources (for example invertebrates).

Priority 5: Directly monitor the breeding and non-breeding behaviour of the Australian painted snipe with the use of radio transmitters and/or tagging methods.

Regional priority actions:

Action 1: Management actions to prevent habitat loss, disturbance and modification

Action 2: Management actions to prevent occurrence of invasive weeds

Action 3: Management actions to prevent livestock trampling, browsing or grazing

Action 4: Control numbers of feral animals

Action 5: Develop and implement fire management strategy for the habitat of the snipe

Action 6: Raise awareness of the Australian painted snipe within the local community, encourage surveys, engage with landholders, facilitate the exchange of information regarding sightings, research and management approaches

Part D. Approved conservation advice for Numenius madagascariensis – eastern curlew

Conservation Actions

There should not be a recovery plan for this species, as approved conservation advice provides sufficient direction to implement priority actions and mitigate against key threats. Significant management and research is being undertaken at international, state and local levels.

An International Single Species Action Plan will be developed and implemented across the East Asian – Australasian Flyway. Additionally, BirdLife Australia coordinates Australia's national shorebird monitoring program, Shorebirds 2020. This volunteer-based program conducts national shorebird surveys twice per year.

Primary Conservation Objectives

International objectives

(a) Achieve a stable or increasing population.

(b) Maintain and enhance important habitat.

(c) Reduce disturbance at key roosting and feeding sites.

Australian objectives

(d) Achieve a stable or increasing population.

(e) Maintain and enhance important habitat.

(f) Reduce disturbance at key roosting and feeding sites.

(g) Raise awareness of eastern curlew within the local community.

Conservation and Management Actions

Work with governments along the East Asian – Australasian Flyway to prevent destruction of key migratory staging sites.

(h) Develop and implement an International Single Species Action Plan for eastern curlew with all range states.

(i) Support initiatives to improve habitat management at key sites.

(j) Maintain and improve protection of roosting and feeding sites in Australia.

(k) Incorporate requirements for eastern curlews into coastal planning and management.

(l) Manage important sites to identify, control and reduce the spread of invasive species.

(m) Manage disturbance at important sites when eastern curlews are present – for example discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary site closures.

(n) Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Monitoring priorities

(o) Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia

Information and research priorities

(p) More precisely assess eastern curlew life history, population size, distribution and ecological requirements particularly across northern Australia.

(q) Improve knowledge about dependence of eastern curlew on key migratory staging sites, and wintering sites to the north of Australia.

(r) Improve knowledge about threatening processes including the impacts of disturbance and hunting.

Recommendations

(s) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by including in the list in the Critically Endangered category: Numenius madagascariensis

(t) The Committee recommends that there should not be a recovery plan for this species

Schedule 2. Treat abatement plans

Part A. Threat abatement plan for disease in natural ecosystems casued by Phytophthora cinnamomic

The Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi came into force on 31 January 2014. This national threat abatement plan (TAP) has been developed to address the key threatening process 'Dieback caused by the root-rot fungus *Phytophthora cinnamomi*, which is listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

This TAP is considered to be a feasible, effective and efficient approach to abating the threat to Australia's biodiversity from disease caused by P. cinnamomi. The goal of this TAP is to identify and protect environmental assets—threatened species and ecological communities listed under the EPBC Act and other matters of national environmental significance—from the impacts of *P. cinnamomi*.

This plan also integrates:

(a) strategies to prevent *P. cinnamomi* spreading into areas that are free of disease

(b) strategies to reduce the impacts in infested areas

(c) recovery actions for the conservation of biodiversity assets currently being affected.

This plan should be read in conjunction with the document, Background: Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (Department of the Environment, 2014). The background document provides information on the scope of the problem; the characteristics, biology and distribution of the pathogen; impacts on the environment and management practices.

The Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* is a variation of the 2001 plan (the Threat abatement plan for dieback caused by the root-rot fungus Phytophthora cinnamomi) which was reviewed in 2005.

Acronyms and abbreviations

Acronym	Definition
AADT	Annual Average Daily Traffic
ACH Act	*Aboriginal Cultural Heritage Act 2003* (Qld)
AEIS	Additional information to the environmental impact statement
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ANR	Aircraft Noise Reduction
ANZECC	Australian and New Zealand Environment Conservation Council
AS/NZS	Australian Standard/New Zealand Standard
CAMBA	China–Australia Migratory Bird Agreement
CASA	Civil Aviation Safety Authority
CBD	Convention on Biological Diversity
CEMP	construction environment management plan
CHMP	cultural heritage management plan
CIS	community investment strategy
CITES	Convention on International Trade in Endangered Species
CPM Act	*Coastal Protection and Management Act 1995*
CSEP	community and stakeholder engagement plan
DEE	Commonwealth Department of the Environment and Energy
DEHP	the former Department of Environment and Heritage Protection
DES	Department of Environment and Science
DEM	Digital Elevation Model
DIDO	'drive-in, drive-out'
DNRME	Department of Natural Resources, Mines and Energy
DSDMIP	Department of State Development, Manufacturing, Infrastructure and Planning
DTMR	Department of Transport and Main Roads (Qld)
EA	environmental authority
EERP	Evacuation and Emergency Response Plan
EIS	environmental impact statement
EMP	environmental management plan
EMR	Environmental Management Register
EP	equivalent persons
EP Act	*Environmental Protection Act 1994* (Qld)
EPAW	erosion-prone areas widths
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
EPP	Environmental Protection Policy (water, air, waste, noise)
EPP (Air)	Environmental Protection (Air) Policy 2008
EPP (Noise)	Environmental Protection (Noise) Policy 2008

Acronym	Definition
EPP (Water)	Environmental Protection (Water) Policy 2009
ERA	environmentally relevant activity
ESA	environmentally sensitive area
FEIS	final environmental impact statement
FIFO	fly-in fly-out
FTE	full-time equivalent
GARID	Guidelines for Assessment of Road Impacts of Developments
GBRCMP	Great Barrier Reef Coastal Management Plan
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GBRMPZ	Great Barrier Reef Marine Park Zoning Plan 2003
GBRWHA	Great Barrier Reef World Heritage Area
GRP	Gross regional product
GSP	Gross state product
IAS	initial advice statement
JAMBA	Japan–Australia Migratory Bird Agreement
MEDLI	Model for Effluent Disposal to Land using Irrigation
mg/L	milligrams per litre of liquid/gaseous liquid
MIWRP	Mackay, Isaac and Whitsunday Regional Plan
ML	megalitres
MNES	matters of national environmental significance
MRC	Mackay Regional Council
MSES	matters of state environmental significance
MSQ	Maritime Safety Queensland
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NC Act	*Nature Conservation Act 1992* (Qld)
NDS	Natural Disaster Strategy
NEPC	National Environmental Protection Council
NEPM	national environment protection measure
NT agreement	native title agreement
NPV	net present value
OUV	Outstanding Universal Value
Planning act	*Planning Act 2016*
PMST	protected matters search tool
PoD	Plan of Development
QH	Queensland Health
QPWS	Queensland Parks and Wildlife Service
QWQG	*Queensland Water Quality Guidelines*
RE	regional ecosystem

Acronym	Definition
RIA	road impact assessment
RMP	road-use management plan
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
RWMP	Recycled Water Management Plan
SDAP	State Development Assessment Provisions
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SDPWO Regulation	State Development and Public Works Organisation Regulation (Qld)
SIA	social impact assessment
SIAU	Social Impact Assessment Unit
SIMP	social impact management plan
SLA	statistical local area
SPP	state planning policy
TAP	threat abatement plan
TDS	total dissolved solids
TEC	threatened ecological community
TMP	traffic management plan
TOR	terms of reference
TSP	total suspended particles
USL	Unallocated State Land
VM Act	*Vegetation Management Act 1999* (Qld)
VMP	Vegetation Management Plan
VTS	vessel traffic service
WMP	waste management plan
WPA	Whale Protection Area
WPM	Whitsunday Plan of Management
WQIP	Whitsundays Water Quality Improvement Plan 2014-2021
WQMP	Water Quality Monitoring Program
WRP	water resource plan
WSUD	Water Sensitive Urban Design

Glossary

Term	Definition
assessment manager	For an application for a development approval, means the assessment manager under the *Planning Act 2016* (Qld).
bilateral agreement	The agreement between the Australian and Queensland governments that accredits the State of Queensland's EIS process. It allows the Commonwealth Minister for the Environment and Energy to rely on specified environmental impact assessment processes of the state of Queensland in assessing actions under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).
construction areas	The construction worksites, construction car parks, and any areas licensed for construction or on which construction works are carried out.
controlled action	A proposed action that is likely to have a significant impact on a matter of national environmental significance; the environment of Commonwealth land (even if taken outside Commonwealth land); or the environment anywhere in the world (if the action is undertaken by the Commonwealth). Controlled actions must be approved under the controlling provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).
controlling provision	The matters of national environmental significance, under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth), that the proposed action may have a significant impact on.
coordinated project	A project declared as a ' coordinated project' under section 26 of the SDPWO Act. Formerly referred to as a 'significant project'.
Coordinator-General	The corporation sole constituted under section 8A of the *State Development and Public Works Organisation Act 1938* and preserved, continued in existence and constituted under section 8 of the SDPWO Act.
environment	As defined in Schedule 2 of the SDPWO Act, includes: a) ecosystems and their constituent parts, including people and communities b) all natural and physical resources c) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).
environmentally relevant activity (ERA)	An activity that has the potential to release contaminants into the environment. Environmentally relevant activities are defined in Part 3, section 18 of the *Environmental Protection Act 1994* (Qld).
gross regional product	A measurement of the market value of all final goods and services produced within a regionally defined area over a given period of time.

gross state product	A measurement of the economic output of a state, for the purpose of this evaluation report, Queensland.
highest astronomical tide	The highest water level that can occur due to the effects of the astronomical tide in isolation from meteorological effects.
imposed condition	A condition imposed by the Queensland Coordinator-General under section 54B of the SDPWO Act. The Coordinator-General may nominate an entity that is to have jurisdiction for the condition.
initial advice statement (IAS)	A scoping document, prepared by a proponent, that the Coordinator-General considers in declaring a coordinated project under Part 4 of the SDPWO Act. An IAS provides information about: • the proposed development • the current environment in the vicinity of the proposed project location • the anticipated effects of the proposed development on the existing environment • possible measures to mitigate adverse effects.
matters of national environmental significance	The matters of national environmental significance protected under the *Environment Protection and Biodiversity Conservation Act 1999*. The eight matters are: a) world heritage properties b) national heritage places c) wetlands of international importance (listed under the Ramsar Convention) d) listed threatened species and ecological communities e) migratory species protected under international agreements f) Commonwealth marine areas g) the Great Barrier Reef Marine Park h) nuclear actions (including uranium mines).
nominated entity (for an imposed condition for undertaking a project)	An entity nominated for the condition, under section 54B(3) of the SDPWO Act.
perpetual lease	a lease held by the leaseholder in perpetuity and issued for a specific purpose
properly made submission (for an EIS or a proposed change to a project)	Defined under Schedule 2 of the SDPWO Act as a submission that: a) is made to the Coordinator-General in writing b) is received on or before the last day of the submission period c) is signed by each person who made the submission d) states the name and address of each person who made the submission e) states the grounds of the submission and the facts and circumstances relied on in support of the grounds.

proponent	The entity or person who proposes a coordinated project. It includes a person who, under an agreement or other arrangement with the person who is the existing proponent of the project, later proposes the project.
Significant project	A project declared (prior to 21 December 2012) as a 'significant project' under section 26 of the SDPWO Act. Projects declared after 21 December 2012 are referred to as ‘coordinated projects’.
stated condition	Conditions stated (but not enforced by) the Coordinator-General under sections 39, 45, 47C, 49, 49B and 49E of the SDPWO Act. The Coordinator-General may state conditions that must be attached to a: • development approval under the *Planning Act 2016* • proposed mining lease under the *Mineral Resources Act 1989* • draft environmental authority (mining lease) under Chapter 5 of the *Environmental Protection Act 1994* (EPA) • proposed petroleum lease, pipeline licence or petroleum facility licence under the *Petroleum and Gas (Production and Safety) Act 2004* • non-code compliant environmental authority (petroleum activities) under Chapter 4A of the EPA.
term lease	terms leases are issued for a term and expire at the end of the last day of the lease term. Landholders can apply to renew their lease once 80% of the term of the lease has elapsed.
variation approval	A local categorising instrument under section 43 of the *Planning Act 2016* that: a) categorises development as prohibited, assessable or accepted development; b) specifies the categories of assessment required for different types of assessable development; c) sets out the matters (the assessment benchmarks) that an assessment manager must assess assessable development against.
works	Defined under the SDPWO Act as the whole and every part of any work, project, service, utility, undertaking or function that: d) the Crown, the Coordinator-General or other person or body who represents the Crown, or any local body is or may be authorised under any Act to undertake, or e) is or has been (before or after the date of commencement of this Act) undertaken by the Crown, the Coordinator-General or other person or body who represents the Crown, or any local body under any Act, or f) is included or is proposed to be included by the Coordinator-General as works in a program of works, or that is classified by the holder of the office of Coordinator-General as works.

The Coordinator-General
PO Box 15517, City East Qld 4002
tel 13 QGOV (13 74 68)
fax +61 7 3452 7486
info@dsd.qld.gov.au

www.statedevelopment.qld.gov.au