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

0 10 20 40M

1:500 @ A0
1:1500 @ A3

N

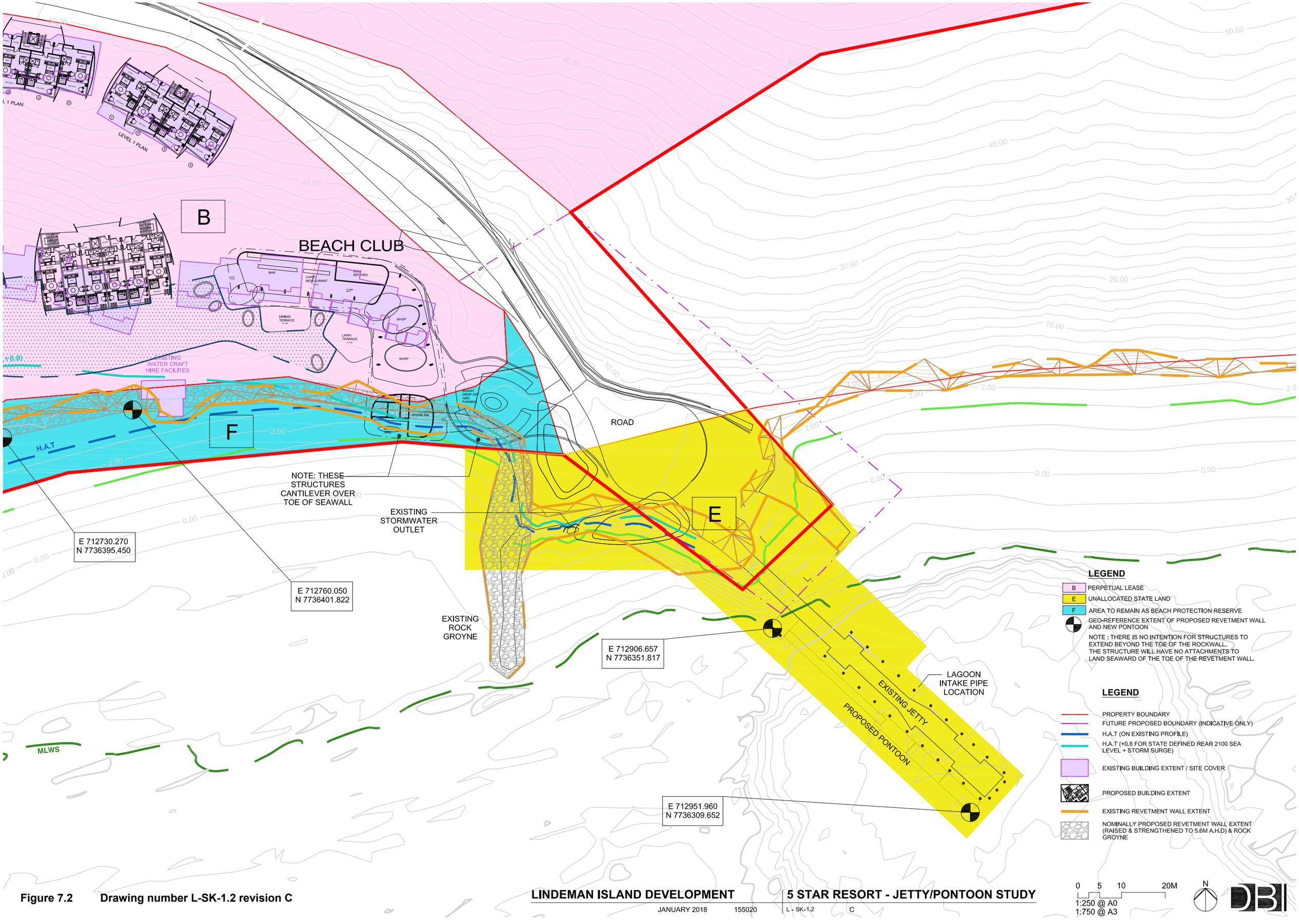

Figure 7.2 **Drawing number L-SK-1.2 revision C**

LINDEMAN ISLAND DEVELOPMENT | **5 STAR RESORT - JETTY/PONTOON STUDY**

JANUARY 2018 155020 L - SK-1.2 C