

Revised Draft Environmental Impact Statement

Lindeman Great Barrier Reef Resort
Project

HRP15078



Prepared for
White Horse Australia Lindeman Pty Ltd

7 November 2017

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1 Introduction

The Lindeman Great Barrier Reef Resort Draft Environmental Impact Statement (Draft EIS) was publicly notified from 22 July 2017 to 4 September 2017. A total of 51 submissions were received on the Draft EIS, with eight of the submissions received after the submission period ended, including 16 private, 17 organisations and the remaining 18 local, state and commonwealth advisory agencies.

In a letter dated 18 October 2017, the Coordinator-General advised that in accordance with section 34A of the *State Development and Public Works Organisation Act 1971* (SDPWO Act), additional information about the environmental effects of the project and other matters relevant to the project is required to complete evaluation of the project on the following topics:

- Proposed Project Changes;
- Project Approvals;
- Water and wastewater management;
- Assessment of potential impacts to the marine values;
- Proposed jetty upgrade and coastal works; and
- State Development Assessment Provisions.

The following sections of this report addresses each of these matters and provides the “Revised EIS” for the project.

2 Project Changes

2.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General.

1) *Proposed project changes*

Your correspondence of 13 September 2017 and 3 October 2017 indicate proposed changes to the project in response to submissions on the draft EIS.

a) *Please confirm the project description for the project. Any changes made to the project description should be identified in a tabulated form that clearly defines the changes to the project.*

b) *To clearly understand the project (as described in section 4 of the draft EIS) please identify the required changes to:*

I) infrastructure requirements

II) design concept

III) master plan

IV) workforce and employment

V) project construction

VI) project operation, including staging of the development

c) *Components of the assessment of potential impacts presented in the draft EIS would change as a result of the revised project, accordingly for each matter (i.e. chapter of the draft EIS: chapter 7 to chapter 27) either:*

I) confirm that the assessment of potential impacts is appropriate for each chapter with information to demonstrate this position; or

II) update the assessment of potential impacts to reflect the changes to the project. For example, the economic impact assessment, or assessment for the Outstanding Universal Values of the Great Barrier Reef World Heritage Area.

2.2 Project Description

During the public notification period a number of submitters raised concerns regarding the proposed revocation of 37 hectares of National Park land to facilitate aspects of the resort redevelopment. This issue was raised by members of the community, as well as a submission made by the Department of National Parks, Sport and Recreation (DNPSR). As a consequence of these submissions the proponent no longer proposes to seek to revoke National Park land, necessitating a number of minor changes to the project description and masterplan layout (refer to **Appendix A – Revised Masterplan and Tenure Mapping**).

The key changes are:

- Glamping facilities no longer proposed in National Park;
- Tourist villas are to be removed from western precinct (on current National Park term lease) and added to eastern precinct so that the overall number of villas at 89 remains consistent with advertised version. The western precinct is now proposed to remain as a golf course consistent with the current use;
- Eco resort (41 villas) removed from western precinct (on current National Park term lease). The lost 41 villas will be replaced by:
 - In the area to the north of the 6 star Spa Resort - 14 villas;
 - In the village area - accommodation apartments (20) and hilltop villas (7).

As such the project description now comprises:

- Beach Resort - redevelopment of the existing resort to achieve a new 5 star Beach Resort with 136 suites, conference centre, beach club, lagoon and a central facilities building with restaurants, bars and lounges;
- 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;
- Tourist Villas - a new tourist villa precinct accommodating 89 villas located to the north-east of the existing resort;
- 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 scope of the project also includes the rearrangement of lease boundaries, changes to the terms of some existing leases, new leases and amendments to the existing National Park boundaries to allow for the creation of a more uniform boundary between the resort and National Park and provide for improved environmental management.

The following table provides the updated development schedule.

Table 2-1. Development Schedule (DBI).

Column 1 Aspect of Development	Maximum Height	Maximum No. of suites, units, villas	Approximate Maximum Aggregate GFA (m ²)
Resort and Village Precinct			
Five Star Beach Resort (including Central Facilities, Pool Bar, Hilltop Suites and Pool Suites)	4 storeys	136 suites	11,626m ²
Six Star Spa Resort (including Central Facilities, Villas) Day Spa	2 storeys	59 villas	9,200m ² 1,190m ²
Five Star Eco Resort	2 storeys	Villas (14); Apartments (20); Hilltop villas (7)	6,120m ²
Central Facility			350m ²
Village (including Airport Lounge, Conference Centre, Retail, Maintenance, Sport Centre and Open Space and recreation*) (Note: 100m ² may occur as part of the Environment and Open Space Precinct)	2 storeys	-	8,583m ²
Rock Bar	1 storey	-	20m ²
Chapel	1 storey	-	140m ²
Staff Accommodation	3 storeys	-	10,051m ²
Tourist Villa Precinct			
Resort villas	2 storeys	89 villas	17,800m ²
Service Infrastructure and Access Precinct			
Hangars	1 storey	-	5,304m ²
National Park and Great Barrier Visitor and Education Centre	1 storey	-	200m ²
Retail/Beach Club	1 storey	-	200m ²
Maintenance	1 storey	-	3,381m ²
Environment and Open Space Precinct			
Open space and recreation* (Note: 100m ² may occur as part of the Resort and Village Precinct)	1 storey	Nil	100m ²
Totals	-	325	74,265m²

2.3 Infrastructure Requirements

No change is proposed to the infrastructure requirements for the project arising from the project change, with site population levels to remain in the same order as presented in the Draft EIS.

2.4 Design Concept

The key changes presented in the Design Concept from the publically notified version are:

- Glamping facilities no longer proposed in National Park;
- Tourist villas are to be removed from western precinct (on current National Park term lease) and added to eastern precinct so that the overall number of villas at 89 remains consistent with advertised version. The western precinct is now proposed to remain as a golf course consistent with the current use;
- Eco resort (41 villas) removed from western precinct (on current National Park term lease). The “lost” 41 villas will be replaced by:
 - In the area to the north of the 6 star Spa Resort - 14 villas;
 - In the village area - accommodation apartments (20) and hilltop villas (7).

2.5 Master Plan

The updated masterplan is included in **Appendix A – Revised Masterplan and Tenure Mapping**.

2.6 Workforce and Employment

While the resort footprint will be smaller, the overall gross floor area and number of units/villas will be similar. As such no change is proposed to the construction and operation workforce numbers provided in the Draft EIS.

2.6.1 Construction

During the three year construction period, employment on the island is expected to average 300 full time equivalent (FTE) persons. The construction stage is expected to generate total employment of 1,750 (FTE) person years in the Mackay Region (averaging 490 FTE jobs over the three and a half year construction period). In Queensland, total employment generated is expected to total 2,660 FTE person years (averaging 740 FTE jobs over the three and a half year construction period). Employment numbers have been expressed in FTE terms which is a widely-used comparative measure of employment where an FTE of 1.0 is equivalent to a full-time worker. It allows comparison across different industry sectors, where differing proportions of full-time, part-time and casual workers may exist.

The expected annual employment generation represents 0.4% of the projected 2018 labour market for the Mackay Region and 5.1% of the current number of unemployed persons in these areas. Accordingly, unlike the situation experienced during the recent mining boom, the proposed construction project is not likely to place an undue strain on the Mackay Region’s labour market. No significant impact upon wage levels in the Mackay Region is expected to result due to the significant spare capacity that exists within the region’s labour market.

The proposed construction project is not expected to have an adverse impact upon the local or regional housing market. With all of the temporary construction workers proposed to be housed on the island, demand for mainland accommodation is expected to be derived from a small proportion of workers likely to relocate

their families to the region and from indirect employment resulting from the project. The local and regional housing markets are in a weakened state and have sufficient capacity to absorb any resulting demand for housing in the local area.

2.6.2 Operation

During operations, employment on the island is expected to average 300 FTE persons. The operational stage is expected to generate total employment of 800 (FTE) persons in the Mackay Region in gross terms and 560 FTE persons in net terms. In Queensland, total employment generated is expected to total 1,050 FTE persons in gross terms and 680 FTE persons in net terms.

The expected operational employment generation represents 0.5% of the projected 2023 labour market for the Mackay Region in gross terms and 0.4% in net terms. It also represents 8.3% of the current number of unemployed persons in these areas in gross terms and 5.8% in net terms. Accordingly, unlike the situation experienced during the recent mining boom, operation of the proposed resort is not likely to place an undue strain on the Mackay Region's labour market and no significant impact upon wage levels in the Mackay Region is expected due to the significant spare capacity in the region's labour market. Traditionally, the Whitsundays tourist facilities have been largely staffed by the itinerant backpacker market that visits the state's tourism hotspots during peak tourist periods. During the recent GFC-induced downturn in tourism, lower levels of backpackers have been attracted to the Whitsundays (and other tourist destinations) due to the lower levels of work opportunities. Accordingly, the proposed Resort is likely to stimulate this backpacker segment of the tourism market.

Operation of the proposed resort is not expected to have an adverse impact upon the local or regional housing market. With all of the operational staff planned to be housed on the island, demand for mainland accommodation is expected to be derived from a small proportion of workers who may relocate their families to the Region and from indirect employment resulting from the project. As explained above, the local and regional housing markets are in a weakened state and have sufficient capacity to absorb any resulting demand for housing in the local area.

2.6.3 Workforce Accommodation and Transport

The on-site construction workforce is expected to be accommodated on the island in the Staff Accommodation Buildings proposed to be constructed in the Village Precinct. The workforce will be managed by using the local and regional workforce, with a proportion to be FIFO. The local construction workforce is proposed to be transported to and from the island between work period breaks by ferry from Shute Harbour and are expected to be drawn from Airlie Beach, Jubilee Pocket, Cannonvale and Proserpine. Local workers would commute from their hometown to Shute Harbour for fast ferry across to the island. The locals would have a shortened time on the island, being 5 days on and 2 days off (weekends). Regional workers or Fly-in Fly out (FIFO) workers would fly into Proserpine or Hamilton Island airport from a range of centres. It is anticipated some companies may elect to arrange their own chartered flights, or come to a commercial agreement. From Proserpine airport there would be buses to Shute Harbour, where they would then fast ferry across to the island. The percentage of these workers would likely be 30% of total workers. A FIFO roster system similar to the resource sector would work best for these types of workers (3 weeks on, 1 week off) ensuring that the changeover occur so that work is continuous. It is envisaged that a management system is utilised to manage the FIFO rosters, such as SKILLED.

It would be anticipated that local companies may charter a bus depending on the number of workers, to help avoid parking problems at Shute Harbour. Locals that reside closer to Shute Harbour (Cannonvale,

Proserpine, Airlie, Jubilee Pocket) may either drive themselves or be dropped off at Shute Harbour, with this estimated to be 70% of total workers.

2.7 Project Construction

The project construction staging has been updated to reflect the change to the project description as outlined below.

2.7.1 Proposed construction staging and schedule of works

The construction period would involve a period of approximately three years commencing mid-2018. The Beach Resort is due for completion mid-2020, Spa Resort early 2021, Eco Resort in mid-2021, and the remaining facilities progressively completed through 2021. The resorts will be opened at the same time in mid to late 2021. Due to the size and magnitude of the overall project, the proponent's construction work strategy is to break the project into four stages (refer to updated **Table 2-2** and following **Map**):

- Stage 1 – Civil Works, Construction Camp, Demolition and Infrastructure;
- Stage 2 – Jetty upgrades, Beach Resort, Beach Resort Central Facilities, Arrival and Departure Facilities, Airstrip Runway and Facilities, Village, Sports Centre, Education Centre and Facilities, Staff Accommodation, Golf Course and Fixtures, Fittings and Equipment, Luxury Villas (7) and Apartments;
- Stage 3 – Spa Resort and facilities including Rock Bar and Day Spa, Facilities and Fixtures, Fittings and Equipment and Luxury Villas (14); and
- Stage 4 – Villa Construction.

The following schedule is proposed:

- The “finishes crew” would work on Stage 1 while the “structure crew” works on Stage 2. Once the finishes are completed in Stage 1 this crew would move onto Stage 2 to complete these works;
- Separate crews would work on the jetty and airport precinct as this type of construction worker experience would differ to the hotel precincts;
- An accommodation camp will be established on site in the vicinity of existing accommodation area for the anticipated construction crew. The majority of the workforce will live in a “fly-in”/“fly-out” regime with some workers commuting to the Airlie Beach area;
- Existing buildings will be demolished down to the foundations to enable the new structure for the Beach Resort to be constructed;
- Appropriate demolished material will be recycled to use as a road base and pathways on site for the new resort layouts; and
- The resorts would open at same time in late 2022/early 2023.



LEGEND

Proposed Site Boundary

Construction Staging

Stage 1

- Civil Works
- Construction Camp
- Demolition
- Infrastructure

Stage 2

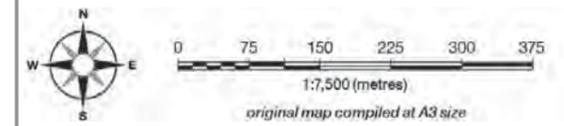
- Jetty Upgrades
- Beach Resort
- Beach Resort Central Facilities
- Arrival and Departure Facilities
- Airstrip Runway and Facilities
- Village, Sports Centre, Education Centre and Facilities
- Staff Accommodation
- Golf Course and Fixtures
- Fittings and Equipment
- Luxury Villas (7) and Apartments

Stage 3

- Spa Resort and Facilities including Rock Bar and Day Spa, Facilities and Fixtures, Fittings and Equipment and Luxury Villas (14)

Stage 4

- Villa Construction



DRAWING TITLE	Map 4-2: Construction Staging and Quarry Location
DRAWING DATE	26 October 2017
DRAWING VERSION	3.0
COORDINATE SYSTEM	Unprojected Geographics
MAP PRODUCED BY	Cardno QLD Pty Ltd
JOB NUMBER	HRP15078
DATA SOURCE	Basemap: DBI Masterplan; Date: 24/10/2017.

2.7.2 Sequencing and staging of activities

Due to the size and magnitude of the overall project, the proponent's strategy is to undertake construction work in four (4) stages (refer **Table 4-4**). Eastview Australia Pty Ltd will undertake the Project Manager role to ensure the successful delivery of the project.

Table 2-2. Proposed Schedule.

DESCRIPTION	DURATION	START	FINISH
LINDEMAN ISLAND	1536 d	Wed 1/16/19	Fri 3/31/23
Stage 1	594 d	Wed 1/16/19	Mon 8/31/20
Construction Camp	136 d	Wed 1/16/19	Fri 5/31/19
Civil Works	594 d	Wed 1/16/19	Mon 8/31/20
Demolition	230 d	Sat 6/1/19	Thu 1/16/20
Stage 2	730 d	Tue 9/1/20	Wed 8/31/22
Jetty	180 d	Tue 9/1/20	Sat 2/27/21
Arrival and Departure Lounge - Marine	183 d	Tue 9/1/20	Tue 3/2/21
Airstrip and Facilities	730 d	Tue 9/1/20	Wed 8/31/22
Island Village	685 d	Tue 9/1/20	Sun 7/17/22
Sports Centre and Facilities	639 d	Tue 9/1/20	Wed 6/1/22
Staff Accomodation	730 d	Tue 9/1/20	Wed 8/31/22
Golf Course	642 d	Tue 9/1/20	Sat 6/4/22
Five Star Beach Resort, Luxury Villas (14) & Apartments	502 d	Tue 9/1/20	Sat 1/15/22
Central Facilities Five Star Beach Resort	502 d	Tue 9/1/20	Sat 1/15/22
FF& E Fitout	120 d	Sun 1/16/22	Sun 5/15/22
Stage 3	560 d	Sat 9/18/21	Fri 3/31/23
Six Star Spa Resort & Luxury Villas (14)	500 d	Sat 9/18/21	Mon 1/30/23
Facilities including Rock Bar and Day Spa	500 d	Sat 9/18/21	Mon 1/30/23
FF& E Fitout	60 d	Tue 1/31/23	Fri 3/31/23
Stage 4	227 d	Sun 1/16/22	Tue 8/30/22
Villa Construction& Eco Tourism Facilities	227 d	Sun 1/16/22	Tue 8/30/22

2.8 Project Operation

No change is proposed to the operation of the resort as included in the text provided in the Draft EIS.

2.9 Tenure

As a consequence of the public notification submissions, the proponent no longer seeks to revoke National Park land. An updated proposed tenure plan is included in **Appendix A**.

2.10 Components of the assessment in other Chapters

The following table provides an update of the chapters in the draft EIS to:

EIS Chapter	Description	Changes
1	Introduction	Project description has been updated. Refer to section 2.2 .
2	Project Proponent	No change to this section required.
3	Site Description	No change to this section required.
4	Project Description	Project description and masterplan has been updated. Refer to section 2.2 .
5	Project Alternatives	No change to this section required.
6	Tenure	Tenure strategy has changed to align with new project description. Refer to section 2.9 with updated tenure plan included in Appendix A .
7	Land Use	Project description and masterplan has been updated. Refer to section 2.2
8	Coastal	Assessment of potential impacts in this chapter is appropriate as development in the erosion prone area has not substantially changed as a consequence of the updated project description.
9	Marine Ecology	Assessment of potential impacts in this chapter is appropriate as development/activities in the marine environment has not substantially changed as a consequence of the updated project description.
10	Flora and Fauna	Assessment of potential impacts in this chapter is appropriate as flora/fauna impacts has not substantially changed as a consequence of the updated project description. Minor mapping changes have been made to reflect the new site layout – refer to Appendix H – updated vegetation mapping.
11	Scenic Values	Assessment of potential impacts in this chapter is appropriate as visual impacts have not substantially changed as a consequence of the updated project description.
12	Cultural Heritage	Assessment of potential impacts in this chapter is appropriate as cultural heritage impacts has not substantially changed as a consequence of the updated project description.
13	Air Quality	Assessment of potential impacts in this chapter is appropriate as air quality impacts has not substantially changed as a consequence of the updated project description.

EIS Chapter	Description	Changes
14	Social	Assessment of potential impacts in this chapter is appropriate as social impacts has not substantially changed as a consequence of the updated project description.
15	Economic	Assessment of potential impacts in this chapter is appropriate as economic impacts has not substantially changed as a consequence of the updated project description with overall site numbers in terms of staff and resort accommodation remaining at a similar level.
16	Noise and Vibration	Assessment of potential impacts in this chapter is appropriate as noise and vibration has not substantially changed as a consequence of the updated project description.
17	Water Quality	Assessment of potential impacts in this chapter is appropriate as water quality impacts has not substantially changed as a consequence of the updated project description.
18	Water Resources	Assessment of potential impacts in this chapter is appropriate as water impacts has not substantially changed as a consequence of the updated project description.
19	Flooding	Assessment of potential impacts in this chapter is appropriate as flooding impacts has not substantially changed as a consequence of the updated project description.
20	Biosecurity	Assessment of potential impacts in this chapter is appropriate as biosecurity impacts has not substantially changed as a consequence of the updated project description.
21	Bushfire Assessment	Assessment of potential impacts in this chapter is appropriate as bushfire impacts has not substantially changed as a consequence of the updated project description.
22	Waste Management	Assessment of potential impacts in this chapter is appropriate as waste management strategies have not substantially changed as a consequence of the updated project description.
23	Site Contamination	Assessment of potential impacts in this chapter is appropriate as soil contamination variables have not substantially changed as a consequence of the updated project description.
24	Infrastructure	Assessment of potential impacts in this chapter is appropriate as infrastructure will be designed, constructed and operated in accordance with the required environmental authorities issued by the Department of Environment and Heritage Protection.
25	Transport	Assessment of potential impacts in this chapter is appropriate as transport patterns have not substantially

EIS Chapter	Description	Changes
		changed as a consequence of the updated project description.
26	Matters of National Environmental Significance	Assessment of potential impacts in this chapter is appropriate as impacts on matters of national environmental significance has not substantially changed as a consequence of the updated project description.
27	Risk and Hazard	Assessment of potential impacts in this chapter is appropriate as risks and hazards have not substantially changed as a consequence of the updated project description. Refer to Cyclone Shelter information in Appendix I .
28	Environmental Management Plan	Updated proponent commitments are included in Appendix J .
29	Conclusion	Assessment of potential impacts in this chapter is appropriate as they have not substantially changed as a consequence of the updated project description.
30	References	No changes required.

3 Project Approvals

3.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General:

2) *Project approvals*

- a) *Provide a clear statement on whether a complete set of development permit conditions (under the Planning Act 2016) is sought to be stated within the Coordinator-General's Evaluation Report (CGER) for the project.*

3.2 Plan of Development

A complete set of development permit conditions under the *Planning Act 2016* is sought as part of the Coordinator-General's Evaluation Report. To facilitate this approach, a Draft Plan of Development has been prepared for review by Mackay Regional Council and the Coordinator-General detailing the proposed content of a variation approval under section 43 of the *Planning Act 2016*.

The Plan of Development provides:

- A Precinct Plan which divides the site into four precincts, including:
 - Resort and Village Precinct;
 - Tourist Villa Precinct;
 - Service Infrastructure and Access Precinct; and
 - Environment and Open Space Precinct.
- Tables of assessment which categorises development as being assessable or accepted development; and
- The Lindeman Great Barrier Reef Resort Code (the 'Lindeman Resort Code') which forms part of the common material against which subsequent development applications within the Lindeman Plan of Development Area will be assessed.

The proponent met with Mackay Regional Council on 3 November 2017 to discuss the Draft Plan of Development. Minor updates to this Plan of Development have been made as a consequence of this meeting.

Refer to **Appendix B – Plan of Development**.

4 Water and wastewater management

4.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General:

3) *Water and wastewater management*

A number of agencies raised issues with public health and environmental concerns associated with the proposed management of water and wastewater for the project.

- a) *Further information is required to demonstrate that the golf course (and other disposal areas) has sufficient capacity to accommodate the volume of treated sewage effluent likely to be generated by the project. Clarification of how overflows will be stored, managed and ultimately disposed of is also required.*
- b) *To demonstrate that the risks of irrigated effluent on water quality can be effectively managed, further information is required in relation to the proposed approach to the monitoring of wastewater prior to discharge, including the management response should water quality parameters fail to meet expected standards. The monitoring framework should address both public health and environmental concerns.*

4.2 Capacity of Disposal Areas

Application rates will be based on MEDLI modelling which considers local climate conditions, soil and vegetation types, irrigation water quality, land area and wet weather storage availability

Recycled water will be discharged to land via irrigation of the golf course and landscaped areas across the development. The estimated total annual volume for discharge via irrigation is approximately 67 ML. This is based on the results of Modelling of Effluent Disposal via Land Irrigation (MEDLI) modelling.

MEDLI modelling identified, based on a 50 year modelling period, and adopting a range of conservative assumptions relating to per person water use and resort occupancy rates, no recycled water is required to be discharged to the ocean via Gap Creek downstream of the dam wall under normal operating conditions.

The capacity of the disposal areas will be further addressed in the ERA 63 application which will also address risk, control measures, maintenance of plant equipment etc. Any such approval will include requirements that must be met i.e. the design and operation of the STP and wet weather storage will ensure there are no long term effects on the receiving environment and all environmental values and objectives are met. This will include an STP design that ensures Class A+ quality with nutrient removal and a wet weather storage designed to minimise the discharge to the surface water environment. However, in the event that this is required, the water quality will be monitored to ensure suitability.

In terms of storage, the intent would be for the treated effluent to be pumped into the sealed storage tank so that water can be tested prior to disposal.

The areas proposed to be irrigated have been updated to reflect the new development layout and remove disposal areas from the catchment which flows into Gap Creek Dam (refer to **Appendix C – Updated Irrigation Management Plan**). These areas add up to around 11.88 hectares which is the required area to dispose of the treated effluent.

4.3 Monitoring Wastewater Prior to Discharge

The wastewater treatment plant will be designed, constructed, operated and maintained to produce a consistent Class A+ recycled water. The recycled water will be monitored to ensure the required water quality prior to irrigation. The monitoring of recycled water quality will be done in accordance to the Department of Energy and Water Supply (DEWS) guidelines. The monitoring timeframes and reporting schedules will be included within the Recycled Water Management Plan (RWMP) and the Treatment Plant Management Plan. The monitoring will include both biological and operational quality. This will include all relevant details required under DEWS' Public reporting guideline for recycled water scheme (2011).

Irrigation of that small part of the golf course within the dam catchment area with recycled water will only be adopted if testing of water quality and soil conditions indicates that this would be acceptable.

A Golf Course and Irrigation Management Plan will also be developed that details mitigation measures to minimise the risk of algal blooms. Measures may include, but not be limited to; water quality monitoring, controls relating to timing and quantity of irrigation, restrictions on pesticide and fertiliser use, development and maintenance of a vegetation buffer and wet weather storage.

Given only part of the irrigated catchment flows into Gap Creek Dam and due to the extensive nature of the irrigation management measures proposed and the level of treatment (i.e Class A+ with nutrient removal), the risk of algal bloom is low. Algal blooms also require stable water conditions such as low flows and long retention times etc. This can also be addressed in a Dam Management/Operation Plan.

Management strategies will be developed and implemented to monitor the performance of the wastewater collection, treatment and re-use infrastructure. Prior to operation, a monitoring program of the receiving environment will be implemented to establish background data. Regular sampling and monitoring of the receiving environment will be carried out during the operation of the collection, treatment and re-use scheme and compared to the initial background data to monitor environmental impacts. In the event a negative impact is observed, actions will be taken to minimise the impact and avoid further impacts. Actions may include ceasing of irrigation within a nominated area, or increasing storage capacities within the collection system, or at the treatment plant.

The RWMP will be subject to annual audits as required, these audits will be undertaken by an independent third party, in addition to the regular monitoring and plant audits by the field operation staff.

5 Assessment of potential impacts to marine values

5.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General:

4) *Assessment of potential impacts to marine values*

*Multiple agency submissions raised concerns around **potential indirect impacts on the marine environment related to the proposed jetty as well as recreational and boating activities.***

- a) *Further information should be provided in relation to the potential impact of **recreational and boating activities on the marine environment** (including the marine park) adjacent to the resort and the proposed **measures to avoid, mitigate or manage potential impacts**. For example, if the intention is to provide “environmentally friendly moorings” as a primary mitigation measure the basic design should be described to demonstrate their effectiveness.*
- b) *A full description of marine works proposed as part of the jetty upgrade should be provided. The information should include details of any demolition or construction works, potential noise and water quality impacts due to these works and appropriate mitigation strategies.*

5.2 Marine recreational and boating activities

Impacts of recreational and boating activities were addressed in **Chapter 9 – Marine Ecology** of the Draft EIS. Please also refer to the following updated text.

Recreational activities would include a mixture of non-motorised and motorised craft. Commercial boating would include barge and ferry traffic to and from the island.

5.2.1 Recreational Activities

Marine recreational activities associated with the proposed resort are expected to comprise of:

- snorkelling;
- diving;
- boat tours;
- fishing;
- kayaking;
- windsurfing;
- jet skis;
- one or two person off-the-beach sailing catamarans; and
- one or two water-sports powerboats for tube rides and parasailing.

The motorised craft would be accessed via the jetty, with other activities would be accessed from the proposed water craft hire facility building located adjacent to Home Beach near the proposed Beach Club (refer to **Figure 1**).

The marine recreational activities would be essentially confined to the sheltered waters adjacent to the resort and in areas indicated in the Whitsundays Plan of Management as being suitable for motorised water sports (refer to **Figure 2**). Approval of these activities would be subject to a separate GBRMPA permit, noting that the proponent has an existing GBRMPA Permit G13/35494.2 which provides approval for the use of kayaks (11), windsurfers (29) and catamarans (9) in accordance with the permit conditions.

5.2.2 Commercial Activities

Barge Traffic (from Chapter 25 of Draft EIS, Transport)

There is currently no regular barge services to the island. During construction it is estimated that four barge trips per week day would be required for civil and building works. The length of the largest barge would be 40 m. The existing concrete barge ramp will be utilised during the island's major civil and building works. Four barge trips per week day are expected during the period of major construction activity. Regular barge trips will be required for the resort's provisioning and servicing following completion of the construction phase. One barge per day is expected to be required for supplies to the island including return trip waste removal as required.

Ferry Traffic (from Chapter 25 of Draft EIS, Transport)

The proposal provides for an estimated population of 858 visitors and staff per day, including 300 staff. Regular ferry service requirements are essential for the successful operation of the resort. It has been estimated that 25 percent of hotel, villa and apartment occupants would arrive/depart by plane, with all staff to arrive by ferry. The remaining 75 percent of resort guests (and 100 percent of staff) would depart by ferry from the Port of Airlie Marina or Shute Harbour as would day visitors and commuting staff. Based on the above, it has been estimated that the average daily passenger arrivals/departures by ferry would be approximately 257 people (42 staff per day and 215 visitors per day assuming a three day average occupancy). It is envisaged that this level of passenger demand would be serviced by extending the current Cruise Whitsundays Ferry services to include Lindeman Island. The length of the largest ferry would be 40 m.

Figure 1. Proposed Water Craft Hire Facility – Area B.

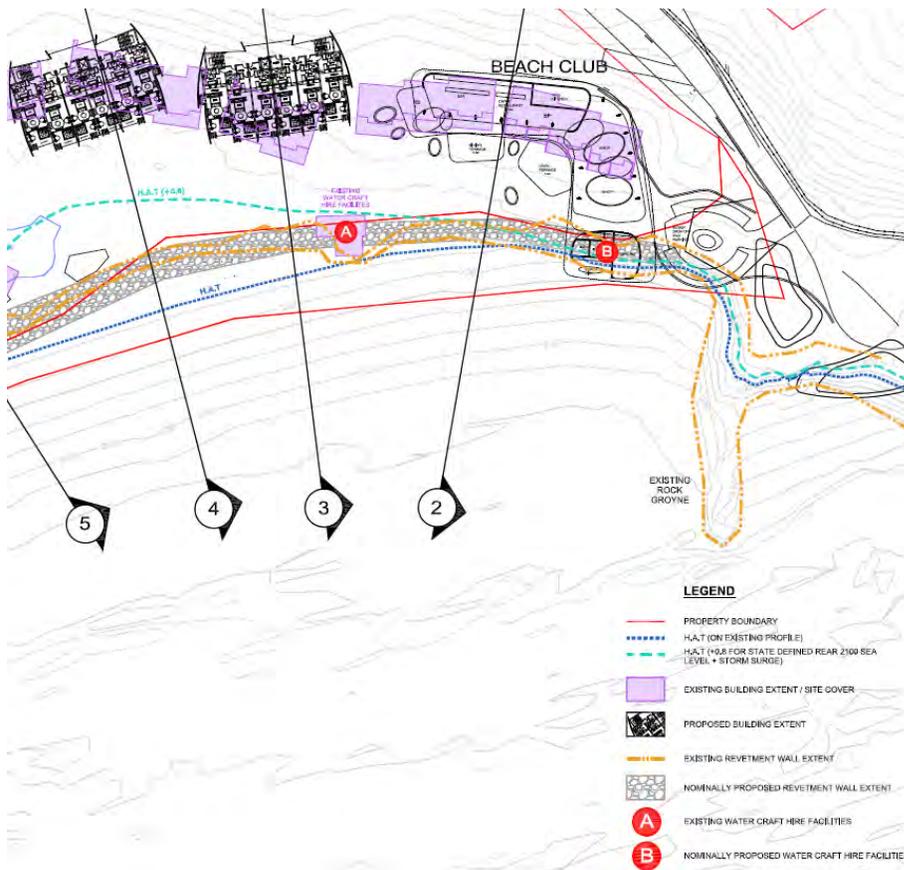


Figure 2. Extract from Whitsundays Plan of Management – Motorised Water Sports Area (GBRMPA, September 2017).



5.2.3 Potential impacts, mitigation and management

As indicated in Chapter 26 of the Draft EIS, operation of the resorts marine recreational activities and commercial water transport activities has the potential to cause direct and indirect impacts on marine ecosystems, not only through loss and/or gain of habitat, but also through:

- Degradation or Contamination of Water Quality from Hydrocarbons, Nutrients and Waste;
- Introduction of Marine Pests;
- Increased Reef Visitation;
- Boat wash; and
- Noise, potentially affecting turtles and other marine fauna.

5.2.3.1 Degradation or Contamination of Water Quality

Hydrocarbon spills, pollutants, nutrients and other waste associated with marine recreational activities or commercial boating have the potential to contribute to the degradation of water quality and may pose a direct hazard to sensitive marine habitats.

Mitigation and Management

Best-practice vessel management and site management will be used to minimise the risk of contaminant spillage. There will no emptying of bilges within the fringing reef of Lindeman Island. The EMPs will be the means of establishing and maintaining personnel awareness of the importance of good spill prevention and response management practices. Resort vessels are to provide sufficient spill response materials and locate those in close proximity to storage of hydrocarbons and chemicals as well as operational areas. During ongoing operations there would be sufficient oil absorptive and/or containment booms on available.

5.2.3.2 Introduction of Marine Pests

There would be increased vessel traffic to the island and these activities would have potential to increase the risk of introductions of marine pests. The resort will not service international routes although occasional yachts may visit, but there would be regular local vessel movement to and from the island.

Mitigation and Management

The risk of local vessel traffic introducing marine pests or disease to local habitats is manageable with regular vigilance and suitable pest removal strategies in place.

5.2.3.3 Increased Reef Visitation

There would be increased reef utilisation (e.g. powered and non-powered boating, fishing, snorkelling, swimming and diving) and these activities would have potential to physically damage sensitive biota (particularly corals) through trampling or from contact with powered or non-powered vessels or anchors.

Mitigation and Management

The impact of potential damage to sensitive habitats, particularly coral, from reef visitation would be managed through education of clients and staff on best practice vessel and snorkelling operating procedures.

A Resort Watercraft and Reef Viewing Management Plan would be prepared as part of the Environmental Management Plan that would include the following:

- Clear communication to skippers about berthing or approved anchor locations/areas and no-go areas, including clear indication of these areas on-board resort vessels as well as visible signage. Anchoring would not be permitted on the fringing reef of Lindeman Island;
- Regulation of operators of watercraft, swimmers or snorkelers (also see below) through signage and other awareness programs to manage visitor impacts. This would include demarcated areas for launching and retrieval of water craft and usage areas so as to avoid sensitive areas where coral cover was greater than 10%. This would also include referring to tidal state so that recreational catamaran and kayaks only operated over the fringing reef if there was sufficient water level for avoiding damage to the isolated corals on the reef flat;
- Fishing locations will be managed as part of the EMP and will not include the fringing reef of Lindeman Island;
- A proposed underwater snorkel/SCUBA trail would restrict areas of access. If an underwater trail public education concept is adopted, the EMP would include education material such as surface water signage to guide snorkelers and SCUBA divers and manage their behaviour on and accessing coral reef communities;
- Integrated management of visitor activities, boating use and nature interpretation will aim to ensure that increased levels of reef visitation and appreciation will not be associated with increased impacts;
- Education of all watercraft users as to how to operate their vessel and manage their behaviour in the vicinity of marine turtles or marine mammals so that disturbance to these fauna is minimised. This would include details of minimum approach distances according to standard guidelines.

5.2.3.4 Boat Wash

Vessel wash has been put forward as one of many factors contributing to erosion of natural foreshore areas, which are vulnerable to short duration erosion events and longer term recession or accretion (AECOM 2010). In addition, mass transport of beach sediment in the direction of wave propagation occurs due to the wave orbital motion and the surface rollers in the breaker zone. The run-up height is higher for long-period boat-generated waves (e.g. larger vessels) than for natural wind waves with the same height. Thus, the swash zone of beaches has potential to become wider and higher due to waves from large vessels and biota on low-profile rock or coral reef platforms has potential to be physically damaged. This gives rise to a tendency of steepening of the cross-shore beach profile and sediment accumulation in the run-up zone. Profile steepening can be counteracted by natural waves to some degree.

Turbidity can be generated by large vessels' waves (which can also be a train of up to a dozen waves) but studies have shown that turbidity generally returns to ambient conditions quickly (within seconds or minutes) after the cessation of waves. During each event where vessel-generated waves increases turbidity, suspended sediment in the water column is likely to be transported long-shore according to tidal movement. Although there would be very little long-shore transport within each wave event, the effect would be incremental over time, so that sediment could be moved throughout the nearshore reef at Lindeman Island in front of the existing resort. Marine plants and coral require light to grow and survive and turbidity (suspended sediment) in the water column reduces light availability and causes a reduction in

photosynthesis of these biota living in subtidal habitats. Suspended sediment can also lead to smothering and burial of biota from sedimentation. During the period of increased turbidity following vessel-generated waves there would potentially be localised reductions in light available to coral, seagrass and macroalgae (i.e. marine plants living in the water).

Mitigation and Management

As the size and period of vessel wash is related to the speed at which vessels travel, slow vessel speed is a mitigation control that would be incorporated into the EMP. All powered watercraft would abide by the following rules:

- There will be a designated 'no wash zone' within 500 m of the jetty (that includes the existing deep channel) and signage controlling vessel speeds to 4 kts and keeping boat wash at negligible levels;
- All powered vessel would exit and enter the resort via the existing deep channel which would be demarcated;
- Designated 'no wash zones' would minimise potential for marine vessel strikes to marine turtles or mammals, however, any boat strikes or strandings would be reported to management and relevant agencies.

5.2.3.5 Noise and Lighting

Project activities are considered unlikely to generate noise of an intensity or duration that may result in physiological impacts on species. However, vessel noise has the potential to modify species behaviour and result in avoidance of the resort area by marine turtles and marine mammals.

Mitigation and Management

The observation that the sound generated by project activities could deter fauna away from the vicinity is considered advantageous to marine turtles and marine mammals as this would further mitigate the potential for physical harm to this fauna that could potentially occur from vessel strike (see above). Notwithstanding this, management measures will be applied to further reduce underwater noise impacts to sensitive marine species. The Construction EMP will include procedures to reduce physiological impact to marine megafauna as a result of sound and vibrations generated during construction activities. The construction contractor is to ensure that all equipment is maintained in good operating condition (balancing, greasing, etc.) and have proper sound control systems in place. The construction contractor would apply sound minimisation tools, where appropriate and practical.

Underwater noise resulting from ongoing operations of the resort would be substantially less than during construction and would not affect values of the GBRWHA. Further, the 'no wash zones' within 500 m of the jetty (above) would minimise sound from vessels operating close to the resort.

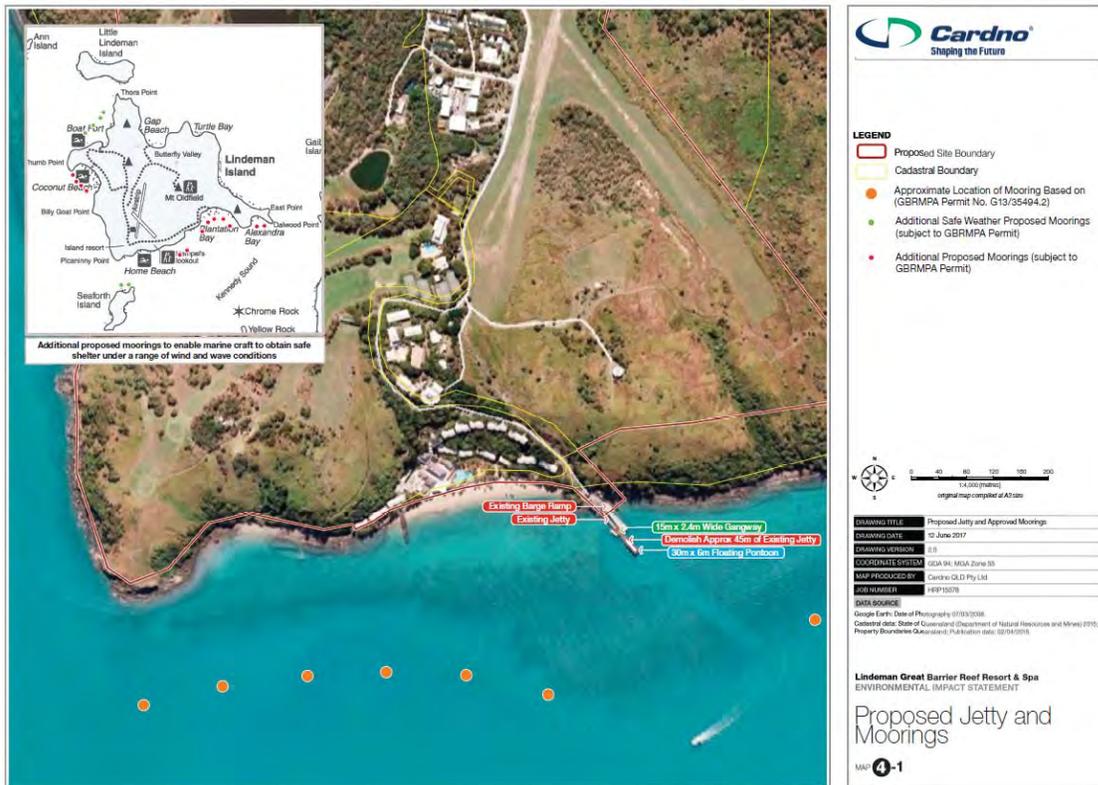
5.2.4 Additional Moorings

As a safe harbour is no longer proposed, the proponent plans to upgrade the existing jetty and increase the number of moorings around the island. The seven approved moorings will be constructed in accordance with the approved plans or more recent requirements. The additional proposed moorings located around the island would be subject to an additional permit from GBRMPA (refer to **Figure 3**).

Moorings would be appropriately designed to accommodate the maximum load requirements (vessel sizes) and for minimising the risk of environmental damage, and design drawings would be approved or certified by a Registered Professional Engineer of Queensland. The precise mooring locations and designs within the setting 1 area would be take into account 'best-practice' guidelines as given in *GBRMPA's 'Policy on Moorings in the Great Barrier Reef'* and the 'Supporting information to the Policy on moorings in the Great Barrier Reef'.

An application to GBRMPA for moorings would be submitted following approval of the EIS along with appropriate supporting documentation.

Figure 3. Proposed additional moorings locations.



Potential Impacts

It is anticipated that the additional moorings would be located on soft sediment and at a sufficient distance beyond the reef edge to avoid potential harm to coral from the mooring structure and attachments and vessels. In this respect, there would be no potential for impact to sensitive benthic marine biota from the mooring block or chain during swing. The only risk to the environment would be from physical damage to nearby coral reef if moorings were to drag from their original position or a vessel runs aground because the mooring does not have the structural capacity to safely restrain the vessel. Given the negligible potential for the moorings to impact sensitive habitats and biota, specific mooring designs are not provided here. These will be prepared in consultation with GBRMPA once the maximum size of vessels using the moorings is determined.

Proposed Measures

The following measures are proposed to avoid, mitigate or manage potential impacts. Moorings would be designed:

- To ensure that the structural capacity can withstand the vessel parameters of the largest vessel likely to use the moorings;
- To ensure that the structural capacity can withstand the maximum operating conditions (wind and weather) when attached to the intended vessels;
- With an adequate response plan for extreme weather conditions;
- To a design standard approved or certified by a Registered Professional Engineer of Queensland; and
- And for proposed new moorings, in accordance with consultation with GBRMPA regarding siting in relation to nearby sensitive areas.

5.3 Marine Works proposed as part of Jetty Upgrade

The upgrade to the existing jetty will be undertaken within the same area as the existing structure, with no additional piling required for the floating pontoon component. The proposed construction is detailed in an installation guide provided by Superior Jetties (refer to **Appendix D**). The existing pylons will be reused with a new proposed pontoon located to the west of the existing jetty. All necessary services e.g. power and will be installed on the pontoon. All work will be subject to a Construction Environmental Management Plan to ensure no adverse impact on the marine environment.

Figure 4. Proposed jetty design (based on Superior Jetties design).



Time on site will be kept to a minimum as the construction of the pontoon will be done offsite in a factory.

6 Proposed Jetty Upgrade and Coastal Works

6.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General:

5) Proposed jetty upgrade and coastal works

Where a preliminary approval for prescribed tidal works and work within a coastal management district is sought, the footprint of the works must be defined.

Provide georeferenced plan-view drawings of the proposed tidal works (jetty, sea water intake pipe and any other tidal works).

6.2 Coastal Works

Tidal works is defined in the *Coastal Protection and Management Act 1995* and include jetties, pontoons, boat ramps, seawalls, pipelines and bridges. The jetty, rock groynes, revetment walls, beach hire facilities, lagoon and parts of the resort are partially located within an erosion prone area. These aspects of the development are coastal dependent development (which must be located in tidal waters or access tidal water) or which cannot feasibly be located elsewhere. Tidal work will be designed and located in accordance with the *Guideline: Building and engineering standards for tidal works, Department of Environment and Heritage Protection, 2017*.

Preliminary approval for operational work is sought for the following:

- Jetty upgrade – refer to **section 5** marine works;
- Sea water intake pipe – this intake pipe will be located on the existing jetty and will be used for top up and maintenance of the lagoon;
- Strengthening and raising of the revetment walls - existing rock groynes which will remain, and the revetment wall is proposed to be strengthened, extended and heightened to 5.6m AHD to minimise wave overtopping;
- Lagoon work; and
- Work associated with the location of the existing hire craft facilities.

Appendix E provides the plans which detail the location of the proposed tidal works required as part of the proposal.

7 State Development Assessment Provisions

7.1 Introduction

This section of the report provides a response to the following matter raised in the correspondence dated 18 October 2017 from the Coordinator-General:

6) State Development Assessment Provisions

The State Development Assessment Provisions (SDAP) were revised in August 2017 following the commencement of the Planning Act (3rd July 2017).

a) Identify which of the state codes in the SDAP apply to development applications for the project.

b) As per the draft EIS, it is requested that a response be provided to each of the relevant provisions of the applicable state codes in the SDAP.

7.2 SDAP

The State has prepared updated State Development Assessment Provisions (version 2.1 which commenced on 11 August 2017) for which they require a response to a number of codes (some of which require detailed information) including:

- State code 1: Development in a state-controlled road environment
- State code 6: Protection of state transport networks
- State code 7: Maritime safety
- State code 8: Coastal development and tidal works
- State code 16: Native vegetation clearing
- State code 22: Environmentally relevant activities

Appendix F provides an updated response to each of these State Codes.

8 Responses to Submissions

Appendix G provides the table of responses to the issues raised during public notification. The key changes arising from these submissions are addressed in **section 2** of this Revised EIS.