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VERSION CONTROL: 29/06/2017

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28 Environmental Management Plan

28.1 Introduction

This preliminary Environmental Management Plan (EMP) has been prepared on behalf of White Horse Australia Lindeman Pty Ltd to protect the environmental, social and cultural heritage values of the island and surrounds which could potentially be affected by the project, during both the construction and operation phases. Potential environmental issues requiring attention have been identified during the impact assessment process. The purpose of the EMP is to detail the strategies, actions and responsibilities to be carried out during project implementation to mitigate potential adverse impacts. The EMP elements and mitigation strategies are based on **Chapters 8 - 27** of EIS and include the recommendations of specialist reports provided as appendices to the EIS.

The objectives of the EMP are to:

- (a) Demonstrate compliance with relevant legislative obligations;
- (b) Provide evidence to stakeholders and the community that construction and operation of the project will be managed to minimise environmental, cultural and social impacts;
- (c) Implement commitments made by the proponent to ensure the effective management of environmental impacts (refer to **Appendix D – Proponent Policies and Commitments**);
- (d) Provide practical and achievable commitments to ensure that the project will mitigate any residual impacts on identified values, including World Heritage Values;
- (e) Provide an integrated plan for monitoring, assessing and controlling potential impacts once the project has been approved and all permits and conditions granted; and
- (f) Provide a mechanism to assist managers and construction crews to comply with current legislation during construction and operational phases.

The EMP will serve to implement the commitments made by the proponent and ensure the effective management of environmental impacts of the project.

Addendum: This EIS was initially prepared assuming that the safe harbour was to be part of the Lindeman Great Barrier Reef Resort Project. With the commencement of the Great Barrier Reef Marine Park Authority's (GBRMPA) Dredging Coral Reef Habitat Policy (2016), further impacts on Great Barrier Reef coral reef habitats from yet more bleaching, and the recent impacts from Tropical Cyclone Debbie, the proponent no longer seeks assessment and approval to construct a safe harbour at Lindeman Island. Instead the proponent seeks assessment and 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. Accordingly, remaining references to, and images of, a safe harbour on various figures and maps in the EIS are no longer current.

28.2 Scope

The EMP applies to land and marine based construction and operational activities required to achieve the protection of environmental values and compliance with legislative standards. It establishes the framework, including environmental protection objectives, standards, measurable indicators and management strategies to ensure that environmental values are protected during each stage of the project. This is also achieved by specifying monitoring, reporting and auditing requirements, with nominated responsibilities and timing, to ensure that the commitments are met. The EMP also identifies corrective actions if monitoring indicates that the requirements have not been met.

Table 28-1. Environmental Management Plan - structure.

Structure	Description
Element	Aspect of construction or operation that requires management.
Objective	The operational policy or management objectives that applies to the element.
Potential Impacts	Potential impacts on the element from construction and operation activities.
Performance Indicators	Measurable performance criteria or outcomes for each element.
Management Measures	The strategies, tasks or actions to be implemented to achieve the performance criteria.
Monitoring	The monitoring requirements to measure actual success in meeting the objective, performance criteria or management strategies.
Reporting	Format, timing and responsibility for reporting and auditing of monitoring results
Responsibilities	Nomination of responsibilities for management noting that a number of parties will be involved in the construction and operation of the Project.
Timing	When certain actions should be undertaken

Elements

The EMP identifies 13 elements that require specific strategies in the EMP due to assessment of the value or potential risk based on **Chapters 8 – 27** of the EIS:

- (a) Terrestrial Ecology;
- (b) Marine Ecology;
- (c) Coastal Processes;
- (d) Scenic Amenity;
- (e) Cultural Heritage;
- (f) Site Contamination;
- (g) Water Resources;

- (h) Air Quality;
- (i) Noise and Vibration;
- (j) Social and Economic;
- (k) Waste Management;
- (l) Transport and Traffic; and
- (m) Hazard and Risk.

Objectives and Performance Criteria

All parties are required to undertake their work in accordance with all relevant Acts, Policies and Regulations. These include, but are not limited to the following:

Commonwealth Legislation

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.
- *Great Barrier Reef Marine Park Act 1975 (GBRMP Act)*
- *Native Title Act 1993*

State Legislation

- *Environmental Protection Act 1994 (EP Act)*
- *Coastal Protection and Management Act 1995 (Coastal Act)*
- *Fisheries Act 1994*
- *Land Act 1994*
- *Marine Parks Act 2004*
- *Nature Conservation Act 1992 (NC Act)*
- *Queensland Heritage Act 1992*
- *State Development and Public Works Organisation Act 1971 (SDPWO Act)*
- *Transport Infrastructure Act 1994 (TI Act)*
- *Transport Operations (Marine Pollution) Act 1995*
- *Transport Operations (Marine Safety) Act 1994*
- *Vegetation Management Act 1999 (VM Act)*
- *Waste Reduction and Recycling Act 2011*
- *Water Act 2000*
- *Work Health and Safety Act 2011*

Monitoring

Monitoring for the EMP is to be carried out by the Environmental Manager or nominated representative during the construction and operational phases to ensure that activities are undertaken in accordance with the objectives of the EMP and to ensure that required outcomes are being achieved. All auditing will be undertaken by a competent person and documented to communicate the results of the audit to the Construction Manager and/or the Resort Manager and the Proponent.

Reporting and Corrective Action

A record of all near misses, incidents and complaints received and corrective actions still be maintained and kept on site. The Environmental Manager in consultation with the Construction and/or Resort Manager shall review all incidents and complaints, report to the Proponent and assess or direct a response as appropriate.

Responsibilities

The EMP will be updated accordingly to reflect the responsibilities of these roles which are described below.

Table 28-2. Environmental Management Plan - Responsibilities.

Role	Responsibilities
White Horse Australia Lindeman Pty Ltd (the Proponent)	The proponent will be responsible for the overall management of the construction and operation of the project. The proponent will communicate any responsibilities under the EMP to subcontractors, or others as relevant, via contractual agreements. The proponent will employ an Environmental Manager for both the construction and operational phases of the project and will work with Traditional Owners to implement the Cultural Heritage Management Plan.
Environmental Manager	<p>The Environmental Manager will be responsible for ensuring the proponent, its contractors and employees are aware of their responsibilities under the EMP and any approval and permit conditions. The Environmental Manager will:</p> <ul style="list-style-type: none"> • Prepare relevant plans, procedures and policies to assist the Proponent to comply with its obligations; • Manage the implementation of the pest species management plans, maintenance of the conservation areas, stormwater and wastewater infrastructure, and implementation of the waste management programs for the project; • Develop and run awareness training sessions and visitor inductions; and • Conduct regular audits, oversee the monitoring programs, and prepare internal and external compliance reports. <p>The Environmental Manager will have appropriate environmental qualifications and experience.</p>
Construction Manager	The Construction Manager will be responsible for ensuring that the construction teams are adequately resourced to enable all personnel to carry out their duties in an environmentally responsible manner. The Construction Manager may assign supervisors to comply with the requirements of this EMP as their representative. The Construction Manager will report to the Environmental Manager on environmental, social and heritage performance and incidents, throughout the construction phase and is responsible for developing detailed construction plans, including the Construction EMP, development approvals and contract conditions.
Resort Manager	The Resort Manager is the principal operational manager for the three resorts, villas and all infrastructure. It is the responsibility of the Resort Manager to ensure that staff are adequately resourced to enable all personnel to carry out their duties in an environmentally responsible manner and comply with the Operations EMP. The Resort Manager may assign supervisors (e.g. golf course or hotels) to implement the Operations EMP. The Resort Manager will report to the Proponent's Environmental Manager on environmental social and heritage performance and incidents, throughout the operations.

28.3 Review

The preliminary EMP is a high level document that will be reviewed regularly and revised in consultation with the approval authorities to reflect approval conditions, changing legislative requirements and any changes to roles and responsibilities associated with the Project. Revisions will include, but not be limited to:

- Inclusion of relevant conditions of approval;
- Inclusion of recommendations from environmental specialists, government officers, contractors and conservation groups as part of the EIS, or other formal, processes;
- Inclusion of improvement measures determined as implementing the EMP, in line with the continual improvement philosophy;
- Updating of organisational structures as the Project moves through the construction and operational stages, with associated allocation of roles and responsibilities in line with the organisational structure;
- Inclusion of relevant approval conditions arising from the approval and subsequent permits, authorities and/or licences;
- Review of EMP at the end of the construction phase; and
- Inclusion of any site-specific elements relevant to new developments as they occur during the life of the Project.

Additional revisions will occur on an as-needs basis, including revisions to address items identified during incident investigations, inspections or audits.

28.4 Sub-Plans

The final EMP will be supported by a number of sub-plans as outlined in **Table 28-3**.

Table 28-3. Environmental Management Plan - Sub-Plans.

	Construction Sub-Plans	Operation Sub-Plans
Terrestrial Ecology	<ul style="list-style-type: none"> • Pest Management 	<ul style="list-style-type: none"> • Bushfire Management • Environmental Offset Management Plan • Pest Management
Marine Ecology	<ul style="list-style-type: none"> • Marine Execution Plan, Aids to Navigation, Vessel-Sourced Pollution Prevention Management Plan • Spill Management Plan 	<ul style="list-style-type: none"> • Vessel Traffic Management Plan, Marine Execution Plan, Aids to Navigation, Vessel-Sourced Pollution Prevention Management Plan • Spill Management Plan • Stormwater Management Plan • Resort Tours Management Plan
Cultural Heritage	<ul style="list-style-type: none"> • Cultural Heritage Management Plan 	<ul style="list-style-type: none"> • Cultural Heritage Management Plan

	Construction Sub-Plans	Operation Sub-Plans
Site Contamination	<ul style="list-style-type: none"> Asbestos Management Plan Acid Sulfate Soils Management Plan 	<ul style="list-style-type: none"> Acid Sulfate Soils Management Plan
Water Resources	<ul style="list-style-type: none"> Acid Sulfate Soils Management Plan Erosion and Sediment Control Plan 	<ul style="list-style-type: none"> Irrigation Management Plan Stormwater Management Plan Golf Course Management Plan Drinking Water Quality Management Plan Water Contingency Action Plan Evacuation and Emergency Management and Response Plan (which address potential for dam failure event)
Social and Economic	<ul style="list-style-type: none"> Evacuation and Emergency Response Plan On-Site Health Management Plan Contractor Wellbeing Plan 	<ul style="list-style-type: none"> Environmental, Health and Safety Management Plan
Waste	<ul style="list-style-type: none"> Waste Management Plan 	<ul style="list-style-type: none"> Waste Management Plan
Transport and Traffic	<ul style="list-style-type: none"> Traffic Management Plan 	<ul style="list-style-type: none"> Traffic Management Plan
Hazard and Risk	<ul style="list-style-type: none"> Evacuation and Emergency Management and Response Plan Natural Disaster Strategy Bushfire Management Plan 	<ul style="list-style-type: none"> Evacuation and Emergency Management and Response Plan Natural Disaster Strategy Bushfire Management Plan

28.5 Preliminary Environmental Management Plan

28.5.1 Terrestrial Ecology

Objective	Avoid and minimise impacts on significant flora and fauna to support healthy and resilient ecosystems and ensure the sustainable, long-term conservation of biodiversity.
Potential Impacts	<ul style="list-style-type: none"> Reduction in the spatial extent and ecological integrity of the critically endangered littoral rainforest and coastal vine thickets of eastern Australia community; Reduction in the spatial extent and ecological integrity of the Broad leaf tea-tree (<i>Melaleuca viridiflora</i>) woodlands in high rainfall coastal north Queensland endangered ecological community; Reduction in spatial extent and ecological values of significant flora and fauna habitat areas and habitat connectivity; Loss of riparian habitat values and biodiversity associated with watercourses and wetlands; and Increase in pest species abundance/distribution and subsequent decrease in native flora and fauna species diversity.
Performance Indicators	<ul style="list-style-type: none"> Compliance with all relevant statutory and approval requirements; No clearing or disturbance to critically endangered littoral rainforest and coastal vine thickets of eastern Australia community; Clearing of Broad Leaf Melaleuca community limited to those areas required to achieve obstacle limitation surfaces for the runway strip; and Prevention of the introduction of pest species.

Management Measures:			
Tasks	Action	Timing	Responsibility
Protected vegetation communities and Vegetation to be retained are clearly delineated on-site.	<ul style="list-style-type: none"> All protected areas including the Broad Leaf Melaleuca and Littoral rainforest and coastal vine thicket community and associated buffer areas will be clearly identified on the ground by the Environmental Manager prior to the commencement of any site works The clearing contractor shall meet with the Construction Manager and Environmental Manager is to identify all areas to be protected and cleared on construction plans and in the field prior to the commencement of any vegetation clearance 	Prior to Construction	Proponent
Minimise disturbance footprint.	<ul style="list-style-type: none"> Site planning is to, where possible restrict disturbance footprint on areas of existing clearing and disturbance Proposed resort infrastructure primarily located in existing perpetual lease tenure or disturbed areas of existing short-term lease area; Avoidance of areas supporting potential roosting habitat for Coastal Sheathail Bat (e.g. 	Prior to Construction	Proponent

Management Measures:

Tasks	Action	Timing	Responsibility
	rocky outcrops and crevices in the littoral rainforest and coastal vine thicket community). <ul style="list-style-type: none"> No clearance of Littoral rainforest and coastal vine thicket community; Existing runway strip disturbance footprint and degraded areas of Broad leaf tea-tree to be utilised to the full extent possible; Existing wetland habitat associated with Gap Creek dam to be retained. 		
Cleared non-native (exotic and pest species) vegetation shall be removed from the site and appropriately disposed of at a suitable waste disposal facility.	<ul style="list-style-type: none"> Ensure that all non-native vegetation is removed and appropriately disposed offsite to minimise the risk of exotic vegetation dispersal and regeneration. Weeds and non-native vegetation are not to be reused onsite. Stockpiled, weed infested vegetation shall not be mulched for re-use on site, nor disposed of at a green waste recycling facility, as these practices facilitate the re-establishment and spread of weed species. No burning of vegetation is to be undertaken onsite. 	Prior to and during vegetation clearing works.	Contractor
Use of endemic species in landscaping.	<ul style="list-style-type: none"> Landscaping plans prepared for the site are to include endemic and use non-invasive species only. 	Prior to Construction	Proponent
Employees are to be informed of site management practices.	<ul style="list-style-type: none"> Contractor induction programs to include education and awareness component for significant biodiversity matters 	During Construction	Environmental Manager
Provision of buffer zones to retained and/or protected vegetation.	<ul style="list-style-type: none"> Buffer zones have been included in design to avoid direct impacts and allow for pest and fire management 	During Construction	Environmental Manager
Fauna management measures are used during vegetation clearing.	<ul style="list-style-type: none"> Clearing of habitats to occur in a sequentially where possible, to allow fauna to move away from clearing areas. Excavations to include safe egress points and to be checked regularly for trapped individuals A licensed fauna spotter catcher is to be on-site during all vegetation clearing 	During Construction	Environmental Manager
Retention of site habitat features or collection for reuse in landscaping.	<ul style="list-style-type: none"> Significant microhabitat features such as large hollow logs to be retained where possible during clearing for use in rehabilitation areas; Rehabilitation of degraded grasslands area to the east of the airstrip. 	During Construction	Environmental Manager
Environmental Offsets are to be provided where there are residual impacts to the vegetation communities.	<ul style="list-style-type: none"> Broad leaf tea-tree (<i>Melaleuca viridiflora</i>) woodlands community - Environmental offset to be provided for residual impacts associated with the airstrip. Native grassland community, regional ecosystem 8.12.13 (of concern status) (in addition to general requirements) - Environmental offset to be provided in accordance with the Queensland Environmental Offsets Framework. Approved disturbance footprint clearly marked to prevent unauthorised clearing; 	During Construction	Environmental Manager

Management Measures:			
Tasks	Action	Timing	Responsibility
Manage pest plant and animal species.	Implementation of <i>Pest Management Plan</i> , including requirements to ensure: <ul style="list-style-type: none"> nursery stock is free from affected plants and accredited with Plant Health Assurance Certificates for myrtle rust under the ICA-42 Operational Procedure; construction vehicles are thoroughly cleaned before being transported to the island to prevent the introduction of weed seed and spreading of weeds during construction; removal of declared weed species; implementation of a Black Rat eradication program; rehabilitation of all disturbed areas with local native plants; and control of pest species as per the applicable legislative requirements; design structures and landscaping limit increases in mosquito activity (e.g. limit pooling of water and inclusion of screens). Subject to an aquatic species survey, the dam should be stocked with a mosquito predator species such as Pacific Blue-eye (<i>Pseudomugil signifer</i>); and measures to prevent the introduction of pest animals are documented such as prevention and limitation of nesting and roosting opportunities in structures, management of waste, etc. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Manage bushfire impact on native vegetation.	<ul style="list-style-type: none"> Preparation and implementation of Bushfire Management Plan addressing both the construction and operational phases of the project. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Educational Signage and material is provided to guests.	<ul style="list-style-type: none"> Educational information and signage for visitors and guests regarding environmentally sensitive areas and management practices undertaken by the resort 		
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.2 Marine Ecology

Objective	To minimise impacts on marine environment arising from the construction and operation of the Lindeman Great Barrier Reef Resort Project.
Potential Impacts	<ul style="list-style-type: none"> Degradation or contamination of water quality from hydrocarbons, acid sulfate soils, nutrients and waste; Introduction of marine pests that can result in the loss of biodiversity; and Impacts on intertidal and coral communities associated with trampling.
Performance Indicators	<ul style="list-style-type: none"> Compliance with all relevant statutory and approval requirements; No disturbance to coral communities; No introduction of marine pest species; and No adverse impact on water quality.

Management Measures:			
Tasks	Action	Timing	Responsibility
Minimise potential impacts associated with the upgrade of the existing jetty and mooring construction.	<ul style="list-style-type: none"> Undertake piling within footprint of existing jetty structure. Contain jetty upgrades works within the footprint of the existing structure. Ensure the installation of moorings is consistent with permit requirements and the GBRMPA and Queensland Government policy on Moorings in the Great Barrier Reef. 	During Construction	Proponent
Minimise impacts on fish, marine turtles, marine mammals and marine birds.	<ul style="list-style-type: none"> Contractor and visitor education on legal catches and responsible fishing; Install appropriate signage regarding responsible fishing and legal catch sizes; Designate 'go slow' zones to minimise potential for boat strikes; Implement light management strategies to prevent light spill to the coastal and marine environment; Resort Tours Management Plan prepared and actioned as part of the EMP. 	Prior to Construction, During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Protect marine water quality.	<ul style="list-style-type: none"> Construction and 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; Preparation and implementation of a <i>Stormwater Management Plan</i>; Preparation and implementation of a <i>Spill Management Plan</i> prepared in accordance with State Planning Policy requirements and to the satisfaction of DEHP; Maintain a register of Material Safety Data Sheets relating to all hazardous substances on 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)

Management Measures:

Tasks	Action	Timing	Responsibility
	board maintained and audited; <ul style="list-style-type: none"> Fuel, oil and chemical storage and handling is undertaken in accordance with AS1940, including a minimised volume stored in a secure area; Waste material contained within the designed maintenance area and disposed of in designated bins to prevent contamination of water and soil; Standard practice procedure such as compliance with Australia's mandatory ballast water management requirements; and Golf course operations and maintenance including fertiliser application in accordance with Irrigation Management Plan. 		
Management of activities to restrict introduction of marine pest species.	Preparation and implementation of a Marine Pest Management Plan to ensure: <ul style="list-style-type: none"> Compliance with Australia's mandatory ballast water management requirements; Regular inspections and cleaning of niche areas of commercial vessels are undertaken before travelling to and from the jetty, barge landing point and moorings; and Trigger and inform emergency response on detection of a marine pest species in the jetty/barge landing precinct. 	Prior to Construction , During Construction and Operation	Proponent (Prior Construction) Environmental Manager (Construction) Resort Manager (Operation)
Ensure boating activities are managed to ensure the protection of surrounding coral communities.	<ul style="list-style-type: none"> Preparation and implementation of a <i>Marine Execution Plan, Aids to Navigation Management Plan</i> and <i>Vessel-sourced Pollution Prevention Management Plan</i> as required by regulatory authorities, including: <ul style="list-style-type: none"> Solid waste removed from vessels and disposed of at an approved facility near the jetty; Prohibition of refueling or vessel maintenance facilities; Prohibition of live-aboards and emptying of waste-water or bilges; Maintaining moorings or reef protection markers (no anchoring areas); and Installation of appropriate signage regarding anchoring areas and no go areas. 	Prior to Construction , During Construction and Operation	Proponent (Prior Construction) Environmental Manager (Construction) Resort Manager (Operation)
Provide opportunities to contribute to the improvement in the condition of the Great Barrier Reef.	<ul style="list-style-type: none"> Establish a National Park and Great Barrier Reef Education Centre to contribute to furthering the understanding of the reef; and Establish an underwater snorkel/SCUBA trail to restrict spatial scale of potential disturbance. 	During Operation	Proponent (Prior Construction) Environmental Manager (Construction) Resort Manager (Operation)

Management Measures:			
Tasks	Action	Timing	Responsibility
Monitoring	<p>Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP. Specific monitoring measures include:</p> <ul style="list-style-type: none"> Dugong, cetacean and turtle monitoring - monitor boat speeds and incidence of injury/fatalities resulting from on-going resort activities; Marine pest monitoring - Trigger and inform emergency response on detection of a marine pest species in the jetty/barge landing precinct. 		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.3 Coastal Processes

Objective	Avoid or minimise any impacts on coastal processes.
Potential Impacts	<ul style="list-style-type: none"> Disturbance to the dune system, beach and intertidal zone. Inundation associated with sea level rise.
Performance Indicators	<ul style="list-style-type: none"> Maintain integrity of the beach and intertidal zone. Buildings and infrastructure are resilient to sea level rise associated with climate change. Compliance with all relevant statutory and approval requirements.

Management Measures:			
Tasks	Action	Timing	Responsibility
Protect the physical integrity of the beach and intertidal zone.	<ul style="list-style-type: none"> Limit construction activities that may result in coastal erosion. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Improve resilience to impacts associated storm surge, coastal erosion and sea level rise associated with climate change.	<ul style="list-style-type: none"> Buildings and infrastructure in the Beach Resort precinct to comply with minimum floor levels. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
	<ul style="list-style-type: none"> Undertake regular assessment and maintenance of revetment works to ensure satisfactory performance. 	During Operation	Environmental Manager (Construction) Resort Manager (Operation)
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. 		

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none">• Maintain records of all monitoring and corrective actions undertaken.• Make all records available for inspection by relevant authorities upon request.		

28.5.4 Scenic Amenity

Objective	Protect the World Heritage scenic values of Lindeman Island.
Potential Impacts	<ul style="list-style-type: none"> Visual intrusion and excessing lighting; Noticeable changes to landform for new airstrip; Visual scarring associated with roads and buggy tracks.
Performance Indicators	<ul style="list-style-type: none"> Avoid or minimise disturbance to areas of landscape sensitivity through the retention of screening vegetation, revegetation and landscape planting and design controls. Maintain compliance with all relevant statutory and approval requirements

Management Measures:				
Tasks	Action	Timing	Responsibility	
Minimise visual impacts associated with airstrip.	<ul style="list-style-type: none"> Earthworks associated with airstrip are shaped and revegetated with appropriate native shrubs 2-3 metres in height or as necessary to maintain required clearance zones. 	During Construction	Environmental Manager (Construction)	
Minimise visual impact of the Eco Resort, Spa Resort and Tourist Villa Precinct.	<ul style="list-style-type: none"> Building height mainly restricted to 8.5 metres or up to 10 metres for two-storey villas above steep slopes or split level buildings; Retention of existing trees in selected locations and additional screen planting of trees to visually integrate the villas in their landscape settings; Reduced footprint areas with smaller pavilion like structures preferred; Reduced roof mass by low pitched open gables; Articulated facades, balconies and deep overhangs to increase overshadowing and reduce apparent building size and mass; Use of dark subdued colours and tones especially of upper stories and pale dull roofs to enhance visual integration; Variation in building alignment and location and additional revegetation and rehabilitation using endemic species to reduce the potential stacking of villas visible from offshore; Buildings will be partly suspended or cantilevered to extend out from the scarp in order to minimise earthworks; 	Prior to Construction	Proponent	

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> Outer walls of villa swimming pools on hillsides facing the ocean will incorporate some texture and shadow effects; Central facilities building will have an organic form responding to the unique location upon the headland. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
	<ul style="list-style-type: none"> The impact of visually exposed retaining walls is to be mitigated (e.g. through use of gabion walls using rocks with screening shrubs and vines); and Establish and maintain irregular native vegetation planting along both sides of each roadway and buggy path at an average space of no greater than 10 metres and maintained so as to achieve a 5 metre height within 5 years. 		
Minimise visual impact of the Beach Resort.	<ul style="list-style-type: none"> Organic building forms which are sympathetic to the natural island setting; Variation in building alignment with some in a staggered line parallel to Home Beach; Variation in height generally (2 to 3 storeys) scale and groups of buildings; Articulated facades and balconies, deep overhangs to shade large picture windows, variation in their front alignment to further avoid the appearance of a wall or uniform built form; Generally subdued colours and tones to enhance visual integration with the Home Beach setting and forested backdrop of Mt Oldfield and Gap Peak; and Tropical and sub-tropical design features in the buildings and landscape to reinforce the sense of place and relaxed resort theme. 	Prior to Construction	Proponent
	<ul style="list-style-type: none"> Establish and maintain landscaped vegetation buffer to screen apartments from the service road 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Minimise visual impact of the Golf Course.	<ul style="list-style-type: none"> Fairways to be integrated with adjacent native vegetation. 	Prior to Construction	Proponent
	<ul style="list-style-type: none"> Existing native vegetation will be retained where possible and supplemented with additional native vegetation. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Minimise visual impact of the Village Precinct.	<ul style="list-style-type: none"> Vegetation will be retained and supplementary native vegetation planted along the plateau above Home Beach. 	During Construction and	Environmental Manager (Construction)

Management Measures:

Tasks	Action	Timing	Responsibility
		Operation	Resort Manager (Operation)
Minimise the visual impact of roads and infrastructure.	<ul style="list-style-type: none"> Road alignment will avoid linear scarring slopes perpendicular to contours and within view of sensitive receptors; Road cuttings on slopes in areas of Low or Very Low Visual Absorption Capacity will minimise vegetation clearing and earthworks footprint by retaining walls (e.g. gabion walls using site rock); During construction the area of bare earth exposed at any one time will be limited; and Photovoltaic solar panels will have low reflectivity to reduce potential glare. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Minimise the impact of lighting.	<ul style="list-style-type: none"> Lighting in all precincts will be downward-directed with minimal glare spillage with no flood-lighting of trees or external walls above the surrounding vegetation screening height; and Lighting of rooms associated with decks and large picture windows in the eco-tourism villas will be fitted with dimmers and timers. 	Prior to Construction and Operation	Proponent Resort Manager (Operation)
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP. Monitoring of visual impacts undertaken of photo location points identified in Chapter 11 – Scenic Values to determine the extent of vegetation screening and growth. Replace lost vegetation with advanced stock if required.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

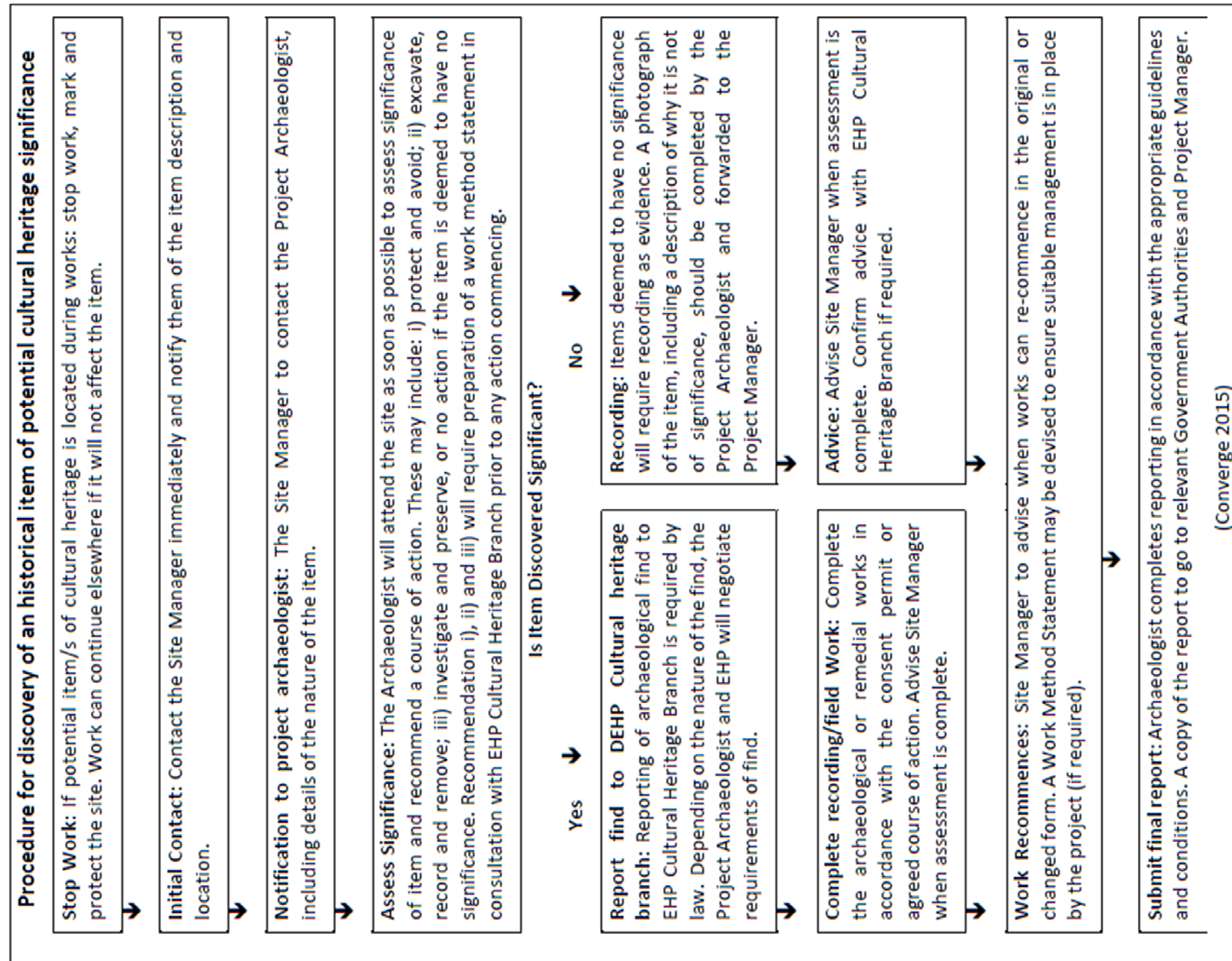
28.5.5 Cultural Heritage (Indigenous and Non-Indigenous)

Objective	Protect the Indigenous and non-Indigenous cultural heritage values of the site.
Potential Impacts	<ul style="list-style-type: none"> Disturbance or damage to cultural heritage sites or archaeological material.
Performance Indicators	<ul style="list-style-type: none"> Compliance with all relevant statutory and approval requirements, including the general duty of care provisions under the <i>Aboriginal Cultural Heritage Act 2003</i>; No impact to unidentified cultural heritage material/sites found during development of the project.

Management Measures:

Tasks	Action	Timing	Responsibility
Prepare and implement a Cultural Heritage Management Plan.	<ul style="list-style-type: none"> Prepare a Cultural Heritage Management Plan in accordance with the requirements of Part 7 of the <i>Aboriginal Cultural Heritage Act 2003</i>. The Cultural Heritage Management Plan will incorporate the Indigenous heritage values listed in the <i>Great Barrier Reef Region Strategic Assessment 2014</i>. 	Prior to Construction	Proponent
Protect Indigenous and Non-Indigenous cultural heritage uncovered through any construction activities.	<ul style="list-style-type: none"> Cultural Heritage Sites or archaeological material uncovered during the project should be managed in accordance with the Incidental Finds Procedure (refer to Figure 28-1). 	During Construction	Contractor
Construction workers are informed of the need to protect cultural heritage.	<ul style="list-style-type: none"> Cultural heritage induction to be incorporated into the contractor/employee manual and induction. Cultural awareness training for all construction personnel to meet duty of care requirements under the <i>Aboriginal Cultural Heritage Act 2003</i> 	Prior to and during Construction	Contractor
Record airstrip values prior to construction.	<ul style="list-style-type: none"> Heritage recording compliant with the Draft EPA Guidelines for Archival Recording to be undertaken for Site 1 - Airstrips. The recording is to include aerial photographs or up to date satellite imagery of the airstrips in their current form. 	Prior to Construction	Proponent
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

Figure 28-1. Incidental Finds Procedure.



28.5.6 Site Contamination

Objective	Protect the physical and chemical properties of the environment from contamination.
Potential Impacts	<ul style="list-style-type: none"> • Soil or groundwater contamination • Impact on human and ecosystem health • Hazardous material interaction • Additional soil disposal requirements • Degradation or contamination of sensitive receptors (groundwater, surface water and ocean) • Marine and freshwater impacts
Performance Indicators	<ul style="list-style-type: none"> • Compliance with all relevant statutory and approval requirements including the <i>Environmental Protection Act 1994</i> • No adverse impacts to the site and receiving environment associated with the handling, storage and/or disposal of hazardous materials.

Management Measures:

Tasks	Action	Timing	Responsibility
Hazardous materials shall be stored in an adequately bunded containment area, with incompatible substances stored separately.	<ul style="list-style-type: none"> • Regular inspections of tanks, bunds and storage areas to ensure integrity; • Contaminated spoil will shipped to the mainland and be disposed at an appropriately licensed landfill; • All equipment is operated and maintained in accordance with manufacturer's specification; • Compliance with storage and transport requirements for hazardous substances including: <ul style="list-style-type: none"> ○ Provision of readily available Material Safety Data Sheets (MSDS) for all products; ○ Chemicals, fuels and oils will be kept in double skinned tanks (self-bunding) or bunded areas complying with AS1940; ○ Hazardous and contaminating materials will not be stored in the main dam catchment area; ○ Waste products, (e.g oil/water separator waste, sludges and residues) will be contained within weatherproofed, sealed and bunded areas; ○ Transport of hazardous materials will be conducted using best-practice 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)

Management Measures:

Tasks	Action	Timing	Responsibility
	<p>methods for vessel management and site management to minimise the risk of contaminant spillage; and</p> <ul style="list-style-type: none"> There will be no refueling or/and vessel maintenance facilities at the resort including the jetty, barge landing area or moorings. Live-aboards will not be allowed nor emptying of waste-water or bilges in the marine environment. 		
Appropriate management and reporting of spills in accordance with regulatory requirements.	<ul style="list-style-type: none"> Emergency procedures concerned with spillage events and containment measures shall be displayed in a prominent position within the site working area. Specific Site Induction training shall include instructions on correct procedures for storage, handling and/or disposal of dangerous and hazardous substances. Spill kits shall be maintained on site for the clean-up of chemical or fuel spills. Any accidental spills of hazardous materials should be cleaned immediately, and appropriately disposed of. 	During construction	Contractor
Identification and removal of asbestos to minimise environmental harm.	<ul style="list-style-type: none"> Demolition or disturbance of buildings with asbestos shall be undertaken in accordance with an <i>Asbestos Management Plan</i> that includes: <ul style="list-style-type: none"> Requirements for Asbestos identification, sampling and removal e.g. Asbestos inspectors shall be trained, licensed and competent; Emergency Response Procedures; Regular condition assessments of Asbestos Containing Materials (ACM); Maintenance of an Asbestos Register; and ACM waste disposal shall require supervision and shall be conducted at an appropriately licensed landfill site on the mainland. 	During Construction	Construction Manager (Construction)
Monitoring	<p>Daily site monitoring shall include inspection of storage and containment areas and spill response equipment.</p> <p>Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.</p>		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager (during construction) and Resort Manager (during operation stage). Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.7 Water Resources

Objective/s	Protect and enhance the water quality of sensitive receptors including ephemeral streams, Gap Creek Dam and the Great Barrier Reef Marine Park; and Ensure the sustainable and efficient use of water resources.
Potential Impacts	<ul style="list-style-type: none"> Contamination of surface and groundwater, including coastal and marine waters; and Over-exploitation of water resources; and Flooding.
Performance Indicators	<ul style="list-style-type: none"> No release of sediments and other contaminants into receiving waters. Compliance with all statutory and approval requirements in particular the defined Water Quality Objectives for the island.

Management Measures:			
Tasks	Action	Timing	Responsibility
Treatment of acid sulfate soils to ensure they are adequately neutralised.	<ul style="list-style-type: none"> Excavation of areas less than 5 metres AHD during construction or operation is to be undertaken in accordance with the Acid Sulfate Soils Management Plan that complies with the requirements of the <i>Queensland Acid Sulfate Soil Technical Manual Soil Management Guidelines</i>. 	During Construction During Construction and Operation	Environmental Manager (Construction) Resort operator
Erosion and sedimentation control measures to be implemented prior to commencement and during earthworks/construction.	<ul style="list-style-type: none"> Prepare and implement an Erosion and Sediment Control Plan (ESCP) that is: <ul style="list-style-type: none"> Consistent with current best management practice guidelines such as the IECA Best Practice Erosion and Sediment Control; Prescribes non-structural controls where applicable, such as minimising the extent and duration of soil exposure, diversion of upstream catchments around disturbed areas, staging the works, identifying areas for protection and delaying clearing until construction works are imminent; Includes a maintenance schedule for ensuring ESC and stormwater infrastructure is maintained in effective working order; Includes an adaptive management program to identify and rectify non compliances and deficiencies in environmental performance; Includes contingency management measure for the site, for example to 	Prior to and during Construction	Environmental Manager (Construction)

Management Measures:

Tasks	Action	Timing	Responsibility
	<p>ensure ESC measures are effective at all times, particularly just prior to, during and after wet weather;</p> <ul style="list-style-type: none"> Detail the types, location, sequence and timing of measures and actions to effectively minimise erosion, manage flows and capture sediment; Consistent with current best management practice standards, taking into account all environmental constraints including erosion hazard, season, climate, soil and proximity to waterways; Includes an effective monitoring and assessment program to identify, measure, record and report on the effectiveness of ESCs and the lawfulness of releases; and Prepared by a suitably qualified and experienced professional. 		
Ensure the sustainable design and management of the golf course.	<ul style="list-style-type: none"> Preparation and implementation of <i>Golf Course and Irrigation Management Plan</i> to limit fertiliser and pesticide application and ensure irrigation is managed in an environmentally sustainable manner aimed at protecting the receiving environment. If necessary fertiliser and pesticides are not to be applied during the wet season months of January to March and a buffer of at least 20 metres to all waterways is to be maintained. Organic pesticide alternatives should be used if possible. The areas for irrigation are located outside of the Gap Creek Dam catchment area and drainage channels. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Ensure the water quality of receiving environments (including coastal and marine waters) is protected and enhanced.	<ul style="list-style-type: none"> Preparation and implementation of a <i>Stormwater Management Plan</i> incorporating: <ul style="list-style-type: none"> Stormwater Treatment Devices – install and maintain stormwater treatment devices including rainwater harvesting tanks, revegetation/buffer areas, vegetated swales, bio-retention gardens and basins; constructed wetlands; litter banks; proprietary treatment devices; Landscaping - Use of pesticides, herbicides or fertilisers throughout the development is to be avoided except where undertaken in accordance with the Golf Course and Irrigation Management Plan. Appropriate landscaping will be used to minimise their requirements. Landscape maintenance measures will include collection of all garden litter for composting in controlled areas. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Ensure waste water is appropriately treated and disposed.	<ul style="list-style-type: none"> Operate and maintain wastewater treatment plant in accordance with conditions of an environmental authority for its operation with all critical infrastructure to be bundled. In the event discharge is required to Gap Creek but unavailable during extreme wet weather events, options for discharge will be explored in consultation 	Design, During Construction and	Environmental Manager (Construction) Resort Manager

Management Measures:

Tasks	Action	Timing	Responsibility
	with the regulator and may include additional irrigation of nominated areas;	Operation	(Operation)
Minimise impact of flooding and impacts associated with climate change.	<ul style="list-style-type: none"> Dam failure - Raise and maintain the existing earth bund by 500 mm to protect against dam crest failure and develop and maintain an Emergency Management Plan which addresses procedures and contact numbers in the event of a dam failure; Stormwater Drainage Works – undertake stormwater drainage works to convey runoff through the resort area to the southern coastline; Climate change – Ensure the floor levels of all buildings used to house critical infrastructure and hazardous materials are located above the flood levels affected by the Dam Failure and predicted impacts associated with sea level rise. 	Design, During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Ensure the appropriate storage of hazardous materials and waste to prevent contamination of water resources.	<ul style="list-style-type: none"> All potentially hazardous materials, refueling areas and waste (e.g. waste oils, batteries, fuels and chemical wastes etc.) shall be stored in separate containers located within a bunded and roofed hardstand area above the levels affected by a Proposed Dam Failure during a Flood Event. A spill response procedure shall be established and implemented. 	Design, During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Ensure a sustainable supply of water.	<ul style="list-style-type: none"> Prepare and implement a Water Contingency Action Plan to unexpected failure of the main water supply to the resort or low dam levels. The plan will address the following: <ul style="list-style-type: none"> The location and extent of damage or failure; Local conditions such as flooding, climate, bushfire, acts of terror; The expected timing for repair/recommissioning of relevant infrastructure; The existing and projected occupancy of the resort and associated water demands; and Alternative water supply options (e.g. rainwater tanks/barge from mainland). Enlarge dam catchment area to increase inflows; Water efficient fittings and appliances will be installed and used throughout the resort; Water saving showers to be installed in preference to baths and spas; Staff training programs will be run to encourage efficient use of water; A 10kL rainwater tank will be installed at each villa to be connected to a minimum roof area of 100m². The rainwater tank will be used for pool top up and toilet flushing; A 500kL rainwater tank (total combined size) for resort pool top up will be connected to 3500m² of roof area; A 350kL rainwater tank will be connected to a minimum of 6300m² roof area 	Design, Construction and Operation	Environmental Manager (Construction)

Management Measures:

Tasks	Action	Timing	Responsibility
	<p>surrounding the Water Treatment Plant. This will be used as a first preference for water for the WTP;</p> <ul style="list-style-type: none"> Recycled water will be used for toilet flushing (communal areas and resort units), laundry, irrigation and washdown; and Backflow recycling tanks will be used for all pools. 		
	<ul style="list-style-type: none"> Visitor information will include awareness of environmental issues including water conservation measures. 	Operation	Resort Manager (Operation)

Monitoring	<ul style="list-style-type: none"> Undertake water quality testing is to be conducted at least once a month during construction (as determined by a rainfall event) and then every year at locations indicated in Figure 17-3. Stormwater Management Plan. Ensure water quality meets the following water quality objectives: <ul style="list-style-type: none"> 75% reduction in Total Suspended Solids (TSS); 60% reduction in Total Phosphorus (TP); 35% reduction in Total Nitrogen (TN); and 90% reduction in Gross Pollutants (>5mm). Undertake water quality monitoring at the dam and at the Water Treatment Plant to ensure water drinking quality meets required regulatory requirements; Undertake monitoring of dam levels with Water Contingency Action Plan to be initiated when dam levels fall below 30%; Undertake regular water quality monitoring at the STP to ensure suitability for irrigation and re-use. Daily inspection of erosion and sediment control devices, and compliance with an approved ESCP to ensure they are in place and working efficiently; Daily inspection of soil stockpiles to ensure they are in the designated areas and no sediment loss occurs from these areas; Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP. 		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.8 Air Quality

Objective	Protect the environmental values of air for health and wellbeing and ecosystem function.
Potential Impacts	<ul style="list-style-type: none"> Dust generation and impact on visibility, vegetation and marine ecology (e.g. reduced photosynthesis) Carbon monoxide (CO), nitrogen dioxide (NO₂) and particulate emissions associated with diesel generators. Odour generation associated with sewage treatment; and Odour emissions originating from the storage and transfer of solid waste.
Performance Indicators	<ul style="list-style-type: none"> Compliance with all relevant statutory and approval requirements, including compliance with the <i>Environmental Protection (Air) Policy 1997</i>. No emissions causing, or likely to cause, an environment nuisance including odour dust, smoke and fume emissions.

Management Measures:				
Tasks	Action	Timing	Responsibility	
Minimise dust generation during construction.	<ul style="list-style-type: none"> Regular use of water sprays on exposed areas of ground including any internal roadways to ensure soil moisture remains sufficient to suppress visible dust production; Adoption of Erosion Control and Sediment Control Measures; Limit vehicle speeds on site and/or use of gravel on heavily trafficked haul routes; Avoid undertaking clearing or soil stripping works during periods of high wind; and Any spoil stockpiles or exposed slope batters that are required to be in place for a long term to be covered, stabilised or moistened as required (through seeding with local stock, applying water, covering stockpiles with hessian or tarpaulins, etc.) to prevent generation of dust. 	During Construction	Environmental Manager (Construction)	
Protect air quality.	<ul style="list-style-type: none"> Construction equipment to be maintained in good repair, including exhaust systems and emission control devices. Service records and machinery prestart records are to be maintained; Controlled burns to be undertaken during suitable weather conditions to avoid disturbance to staff and residents; All plant and equipment associated with diesel power generation is maintained in accordance with environmental best practice to ensure emissions are minimised and the potential for adverse air quality impacts is negligible. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)	
Minimise odour generation during	<ul style="list-style-type: none"> Toilet facilities and sewage treatment facilities to be established prior to major 	During	Environmental	

Management Measures:

Tasks	Action	Timing	Responsibility
construction.	construction works commencing on-site; and <ul style="list-style-type: none"> Wastes to be collected in appropriate bins and removed from the island as required to avoid odour generation, particularly in the summer months. 	Construction	Manager (Construction)
Minimise odour generation during operation.	<ul style="list-style-type: none"> Operate and maintain the sewage treatment plant (and associated inlet works, sludge press and collection facilities) in accordance with manufacturer specifications to minimise odour generation; and Putrescible waste is proposed to be collected daily from the villas, hotels and other facilities and transferred to a purpose built storage facility located within the services area of the resort. Transfer of the stored waste is expected to occur at least weekly with waste loaded into an enclosed truck and shipped to the mainland for ultimate disposal at a designated landfill. 	During Operation	Resort Manager (Operation)
Monitoring	Daily visual inspections of worksite to identify dust emissions past the site boundaries originating from construction works. Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.9 Noise and Vibration

Objective	Development is planned, designed and constructed to protect the environmental values of the acoustic environment and ensure no adverse impacts on sensitive receptors.
Potential Impacts	<ul style="list-style-type: none"> Construction noise and vibration may impact on construction workers; Aircraft noise may cause sleep disturbance at night and result in high levels of aircraft noise during the day; Excessive truck noise from deliveries and refuse collection; Excessive noise at sensitive receivers from diesel generators; Excessive noise from boats at nearby sensitive receivers; and Excessive plant noise at nearby sensitive receivers associated with water pump.
Performance Indicators	<ul style="list-style-type: none"> Maintain compliance with all relevant statutory and approval requirements; Limit physiological impact to marine megafauna as a result of sound and vibrations generated during dredging and construction activities; No noise complaints are received.

Management Measures:

Tasks	Action	Timing	Responsibility
Mitigate noise impacts during construction.	<ul style="list-style-type: none"> Prepare and implement a Noise and Vibration Management Strategy based on <i>Australian Standard AS2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites</i>; All equipment and machinery to be maintained in good operating condition and be fitted with appropriate noise attenuation devices. Wherever practicable machines will be switched off when not in use; All generators, compressors and welders to be checked during daily prestart to ensure they produce minimal noise; Maintain awareness of construction workers in relation to minimising noise and vibration impacts from equipment operation; Manage staging to locate construction as far from operational areas as possible Do not carry out construction outside of standard hours while adjacent resorts are operational; and Maintain buffer distances between plant equipment and sensitive receptors. 	During Construction	Construction Manager (Construction)
Mitigate noise impacts on marine species associated with the jetty	<ul style="list-style-type: none"> The construction Contractor is to minimise the sound generation of equipment (thrusters and auxiliary plant) by switching them off when not used (e.g. avoid 	Design, Construction	Construction Manager

Management Measures:			
Tasks	Action	Timing	Responsibility
upgrades.	<ul style="list-style-type: none"> running on standby mode). In the event that any sound- or noise-related incident takes place, the incident will be investigated and discussed to further improve awareness. 	and Operation	(Construction) Resort Manager (Operation)
Minimise aircraft noise intrusion.	<ul style="list-style-type: none"> Provide adequate building construction to accommodation (resort hotels and staff accommodation) in accordance with AS2021 and building construction requirements contained in QDC MP4.4. Schedule 1 of QDC MP4.4 provides generic building construction requirements for minimum transport noise reduction (transport noise reduction in dB (A)) required for habitable rooms ranging from 40 dB(A) (Category 4) to 25 dB(A) (Category 1)); and No night flights allowed except for emergencies. 	Design, Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Minimise impact of diesel generators.	<ul style="list-style-type: none"> Install and maintain a barrier or enclosures around the generators and ensure the total emitted plant sound power level does not exceed 83 dB(A) during the day and 81 dB(A) at night. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Minimise impact of boats docking at jetty, barge landing area and moorings.	<ul style="list-style-type: none"> Noise emissions from use of boats should not exceed a sound pressure level of 78 dB(A) @ 5 metres and operation be limited to the daytime (7am to 6pm) and evening (6pm to 10pm) period only. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Minimise water pump noise.	<ul style="list-style-type: none"> Install and maintain adequate noise screening/enclosure for water pump. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Minimise impact of vehicular traffic.	<ul style="list-style-type: none"> Truck movement operations operate during the daytime (7am to 6pm) and evening (6pm to 10pm) periods only. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Maintain plant and equipment.	<ul style="list-style-type: none"> All equipment and machinery to be maintained in good operating condition and be fitted with appropriate noise attenuation devices. Wherever practicable machines will be switched off when not in use; 	During Construction and Operation	Construction Manager (Construction) Resort Manager

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> All generators, compressors and welders to be checked during daily prestart to ensure they produce minimal noise; and Maintain awareness of staff in relation to minimising noise and vibration impacts from equipment operation. 		(Operation)
Monitoring	<ul style="list-style-type: none"> Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP. Undertake pre-construction noise monitoring at a number of locations to determine baseline noise levels. During construction weekly noise monitoring will be carried out at the baseline locations. Monthly noise monitoring reports will be prepared detailing all of the monitoring results and any exceedances of project criteria. This information should then be used to inform the construction team on whether compliance is being achieved and whether the proposed noise mitigation strategies need to be altered to accommodate exceedances. In addition, it is proposed that additional noise monitoring may be carried out as part of a complaint management strategy if required. 		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.10 Social and Economic

Objective	Avoid or mitigate adverse social and economic impacts arising from the project.
Potential Impacts	<ul style="list-style-type: none"> Influx of temporary contract workers requiring accommodation; Anti-social behaviour (alcohol, drugs, risky behaviour); Worker injuries or accidents; Workers experiencing social isolation; and Communicable disease outbreak.
Performance Indicators	<ul style="list-style-type: none"> Safety and wellbeing of workers and resort guests; Enhance local and regional benefits associated with the project; and Compliance with all relevant statutory and approval requirements.

Management Measures:

Tasks	Action	Timing	Responsibility
Ensure workplace health and safety.	<ul style="list-style-type: none"> Ensure a safe work environment for all workers in accordance with the <i>Work Health and Safety Act 2011</i>, regulations and codes of practice; An <i>Environmental, Health and Safety Management Plan</i> will be prepared and implemented for the operational phase of the project; All workers entering construction sites must wear Personal Protective Equipment; All staff are to undergo Emergency Response Training which includes first aid training, evacuation and emergency response training and basic fire training in accordance with an <i>Emergency Response Plan</i>; Investigate the need to employ a Nurse Practitioner during peak periods; Develop safety plans for transport companies including policies to limit the transport of large, non-standard loads and equipment to off-peak periods; and Restrict truck movements for potentially dangerous loads on the island to daylight hours due to high level of licensed venues, nightclubs, and pubs frequented by tourists unfamiliar with the area. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Adopt emergency health care procedures.	<ul style="list-style-type: none"> An <i>Onsite Health Management Plan</i> will be prepared in consultation with local health, emergency response and other relevant agencies to determine: 	During Construction and	Construction Manager (Construction)

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> most efficient treatment of sick or injured workers; most efficient route for transporting sick or injured workers (Proserpine or Mackay); protocols for managing high risk outbreaks - e.g. Measles, Chicken Pox, Influenza, Legionnaires; most appropriate approach for managing First Aid. 	Operation	Resort Manager (Operation)
Promote staff wellbeing.	<ul style="list-style-type: none"> Implement a <i>Contractor Wellbeing Plan</i> for FIFO workers, including providing easy access to mental health practitioner/counsellor; Develop an alcohol and drugs policy that is enforced on site; and Consider different roster types e.g. 14 days on 14 days off, as discussed in FIFO studies and with unions, and consider flexibility to choose rosters depending on personal situation (where practical). 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Enhance local economic benefits associated with the project.	<ul style="list-style-type: none"> Maximise employment opportunities for local skilled workers, young trainees and apprentices, Aboriginal and Torres Strait Islanders (e.g. Indigenous rangers program) and mature age trainees and apprentices; Provision of on-site accommodation and periodic rosters for all workers; Chartered transport for DIDO/FIFO workers to reduce impact on parking facilities available at Shute Harbour; and Use of local products and suppliers where possible. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.11 Waste Management

Objective	Manage waste in accordance with the principles of avoidance, reduction, reuse, recycle and appropriate disposal.
Potential Impacts	<ul style="list-style-type: none"> Contamination of air, soil or water; Spill or leakage of hazardous materials; Odour generation; Pest species attraction.
Performance Indicators	<ul style="list-style-type: none"> No waste of any type is to be released from the site in an uncontrolled manner. No complaints received in regard to site and offsite contamination due to waste. No persons are exposed to hazardous wastes.

Management Measures:

Tasks	Action	Timing	Responsibility
Ensure waste is managed in accordance with the principles of avoidance, reduction, re-use and recycling.	<p>Prepare and implement a <i>Waste Management Plan</i> addresses the following:</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> Selection of materials for building construction shall seek to maximise the use of renewable or recyclable components, subject to compliance with the relevant building standards specified in the Building Code of Australia and relevant Australian Standards; Purchasing policies shall be implemented to focus on selection of materials and resources with less packaging; Contracts for builders and suppliers shall include an environmental performance component; <p><u>Reduction, Re-use and Recycling</u></p> <ul style="list-style-type: none"> Re-use existing building and other materials on-site where possible; Ensure separate bins are provided for glass, cardboard/paper and general waste to encourage recycling. All employees and contractors will be trained in the correct waste disposal procedures and encouraged to recycle; Organic waste derived from vegetation clearing/management is to be composted on-site and reused as mulch; <p><u>Disposal:</u></p> <ul style="list-style-type: none"> Wastes unable to be reused or recycled (except for organic wastes) must be disposed 	<p>Prior to construction</p> <p>During Construction and Operation</p>	<p>Proponent</p> <p>Construction Manager (Construction) Resort Manager (Operation)</p>

Management Measures:

Tasks	Action	Timing	Responsibility
	<p>of at an approved Council landfill on the mainland via a marine vessel which is not carrying passengers (for hygienic reasons);</p> <ul style="list-style-type: none"> Regulated wastes will be stored in appropriately sealed and labelled containers and will be transported by a licensed waste contractor; All vessels are to be equipped with hydrocarbon spill kits and have a <i>Spill Management Plan</i> specific to the cargo. <p>Provide education/awareness training and information to staff and guests regarding relevant aspects of the Waste Management Plan.</p>		
Maintain site in a clean and tidy state at all times.	All wastes shall be collected and stored on-site in central facilities and in a way that promotes recycling.		
Monitoring	<p>Daily inspections of construction areas shall be undertaken during construction works to identify waste management issues and results recorded in an appropriate site inspection register / checklist. Records will be kept for:</p> <ul style="list-style-type: none"> general waste records; trackable wastes in accordance with the Environmental Protection Regulations; and incidents and complaints. <p>Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.</p>		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.12 Traffic and Transport

Objective	Maintain the safety and efficiency of all modes of transport required for the construction and operation of the project.
Potential Impacts	<ul style="list-style-type: none"> • Adverse impacts associated with construction traffic on mainland; • Marine vessel accidents; • Vehicle incidents/accidents.
Performance Indicators	<ul style="list-style-type: none"> • Compliance with all relevant statutory and approval requirements • Any complaints are responded to within one working day. • No road safety incidents relating to construction traffic.

Management Measures:

Tasks	Action	Timing	Responsibility
Minimise impact of construction traffic and parking on the mainland.	Prepare and implement <i>Traffic Management Plan</i> (Mainland) that addresses the following: <ul style="list-style-type: none"> • Construction workers operating vehicles will be trained and licensed to ensure all vehicles are driven safely; • Avoid truck haulage tasks during peak traffic periods and during school drop-off and pick-up times; • Minimise congestion effects by staging construction work; and • Provision of buses for the transportation of construction workforce to reduce impact on parking facilities at Shute Harbour. 	During Construction	Proponent and Construction Manager (Construction)
Ensure the safety of construction vehicles and pedestrians on the island.	Prepare and implement <i>Traffic Management Plan</i> (Island) that addresses the following: <ul style="list-style-type: none"> • Speed control signage will be used to control the risk to other workers; • All vehicles will be appropriately serviced and fitted with radios for two-way communication; • Access tracks and roads will be watered in dry periods to reduce dust generation and improve visibility; • Lighting towers will be provided in key locations to ensure night operating and driving conditions are safe; and • Heavy or hazardous vehicle movements are limited to daytime hours. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)

Management Measures:

Tasks	Action	Timing	Responsibility
Ensure the safety of staff and resort guests.	<ul style="list-style-type: none"> All buggies and service vehicles will be appropriately serviced and maintained; and Sensitive lighting will be provided in key locations to ensure night operating and driving conditions are safe. 	During Operation	Resort Manager (Operation)
Ensure the safety and efficiency of aircraft movements.	<ul style="list-style-type: none"> Construction of Airstrip and associated Obstacle Limitation Surfaces complies with CASA requirements for Code 1B Aircraft; Provide adequate building construction to accommodation in accordance with AS 2021; Maintenance of airstrip minimises adverse impacts on adjacent Broad Leaf Melaleuca Community; Operation of airstrip ensures that all planes take-off and land in a southerly direction; Provision of emergency firefighting and spill clean-up facilities; Obstacle Limitation Surfaces shall be maintained around the airstrip; Aircraft maintenance schedules are up to date and maintained; All personnel are trained in the <i>Emergency Response Plan</i>; Fauna friendly fencing allowing egress of fauna but preventing ingress; and Supervision of airstrip area. 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)
Ensure the safety and efficiency of marine vessels.	<ul style="list-style-type: none"> Dangerous goods and wastes associated with the demolition phase will be transported in accordance with regulatory requirements including <i>Environment Protection (Waste Management) Regulation 2000</i> and Australian codes depending on volumes; A <i>Vessel Traffic Management Plan</i> will be developed addressing moorings; barge movements; delivery of materials (types, quantities, source, time of deliveries); Installation of vessel navigation aids as defined by Maritime Safety Queensland; Ships are not to release ballast water or waste (sewage, domestic garbage or oil); All vessels are to be equipped with hydrocarbon and spill management plans specific to the cargo; Boats are only to land and moor in designated areas; Designation of 'go slow' zones; Generate and implement boat recovery procedures; Emergency spill clean-up facilities provided; No storage of hazardous material in the jetty precinct; No refueling facilities at the resort; 	During Construction and Operation	Environmental Manager (Construction) Resort Manager (Operation)

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> Regular inspections of vessel to prevent drips, leaks or failures; Sympathetic lighting strategies included in the design of resort and marina infrastructure; Provision of a <i>Spill Management Plan</i> with spill kits to be made available and provision of a SDS register shall be provided relating to all hazardous substances on board; and Sympathetic underwater noise strategies included in the design of resort and marina infrastructure. 		
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		

28.5.13 Hazard and Risk

Objective	Avoid, minimise or mitigate the adverse impacts arising from natural hazards or the release of hazardous material.
Potential Impacts	<p>Impact on human health, the environment and resort infrastructure associated with:</p> <ul style="list-style-type: none"> Flooding associated with wet weather, dam failure or storm tide inundation; Bushfires; Damage to property associated with cyclones; Damage associated with landslip; and Release of hazardous materials.
Performance Indicators	<ul style="list-style-type: none"> No loss of life; All Staff Trained in Evacuation and Emergency Management Procedures; Resilience of buildings and structures following severe storm event.

Management Measures:

Tasks	Action	Timing	Responsibility
All construction and permanent staff are aware of site evacuation and emergency response procedures.	<ul style="list-style-type: none"> An <i>Evacuation and Emergency Management and Response Plan</i> and <i>Natural Disaster Strategy</i> will be developed in consultation with Local Disaster Management Groups to respond to emergencies, building fires, bushfires, cyclones, flooding, release of hazardous materials and landslides, incorporating: <ul style="list-style-type: none"> Site induction for all construction and operational personnel including emergency response actions including first aid, muster points and evacuation plans; Additional training for personnel with specific emergency response accountabilities (e.g. first aid and fire response teams). 	Prior to Construction, During Construction and Operation	Proponent (Prior to Construction), Construction Manager (Construction) Resort Manager (Operation)
Mitigate the potential impacts associated with flooding.	<ul style="list-style-type: none"> Exclude flood waters entering the resort area by elevating the existing earth bund near the existing golf course by 500 mm to divert the flow to the western coastline; Develop and maintain an Emergency Management Plan which addresses procedures and contact numbers in the event of a dam failure. Detention storage provided to contain peak flows including bio-retention basins and additional storage; Minimum floor levels to be set based on results of the Coastal Hazard Assessment; 	Prior to Construction	Proponent

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> Floor levels of buildings at the Beach Resort shall take account of storm tide inundation potential and sea level rise due to climate change; Breakwater shall be designed to an appropriate level in line with Australian Engineering Standards 		
Minimise the impact of bushfires.	<ul style="list-style-type: none"> A <i>Bushfire Management Plan</i> shall be prepared in accordance with State Planning Policy and in consultation with the Department of National Parks, Sport and Racing; All habitable buildings constructed within the designated Bushfire Hazard Area will need to be designed and constructed in accordance with <i>AS3959 (2009) – Construction of Buildings in Bushfire Prone Areas and the Building Code of Australia</i>; Implement and maintain Asset Protection Zones; The site will have a fire truck or suitably equipped water truck or trailer that can support fire response requirements, along with appropriately trained staff; Firefighting equipment must be checked and maintained at all times; All buildings will be fitted with approved and certified fire detection (smoke detectors) and sprinkler systems; Firefighting equipment (hand held extinguishers and fire hoses) will be installed at strategic points at the development; All firefighting facilities and equipment will be serviced, maintained and inspected by a certified body; and Fire drills will be undertaken on a regular basis where necessary by construction personnel. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Mitigate the potential impacts of cyclones and earthquakes.	<ul style="list-style-type: none"> The Central Facility Buildings have been designed to act as a shelter during cyclones and provide necessary food and medical supplies; and Buildings designed to withstand earthquakes and tsunamis. 	Design	Proponent
	<ul style="list-style-type: none"> Implementation of evacuation plans to ensure all people can be safely evacuated in the event of a severe cyclone or earthquake. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Mitigate the potential impacts associated with heatwaves.	<ul style="list-style-type: none"> An <i>Environmental, Health and Safety Management Plan</i> will be prepared and implemented for the construction and operational phase of the project; Provision of a cooler environment for staff away from the sun and from other sources of heat (e.g. machinery); and 	During Construction and Operation	Construction Manager (Construction) Resort Manager

Management Measures:

Tasks	Action	Timing	Responsibility
	<ul style="list-style-type: none"> Guidance on heat stress, heat exhaustion and heat stroke management strategies. 		(Operation)
Mitigate potential impacts associated with landslide.	<p>Site specific assessment will be undertaken prior to construction works to determine the effects of the following:</p> <ul style="list-style-type: none"> Check slope and rock stability caused by altering the existing terrain; Slope stability suitability in areas up and down slope of the proposed development areas; Assessment of individual lots, road alignments and other infrastructure for the proposed development; and Geotechnical investigations to determine the stability, integrity and construction details of the dam. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Mitigate potential water accidents.	<ul style="list-style-type: none"> Prevent drownings or human injury associated with swimming lagoons, pool and the sea by educating guests and staff on potential risks and the provision of life saving devices and trained staff. 	During Construction and Operation	Construction Manager (Construction) Resort Manager (Operation)
Monitoring	Works are to be audited by suitably qualified Environmental Officer (or similar) on a regular basis against the provisions of this Element of the EMP.		
Reporting	<ul style="list-style-type: none"> Monthly environmental report to be submitted to the Proponent by Environmental Manager during construction and Resort Manager during operation stage. Any non-compliance with the actions of this EMP shall be documented as a corrective action. Maintain records of all monitoring and corrective actions undertaken. Make all records available for inspection by relevant authorities upon request. 		