EXECUTIVE SUMMARY

Lord Howe Island Critical Infrastructure Project

ENVIRONMENTAL IMPACT STATEMENT

Sustainability is our business

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Introduction

The Lord Howe Island Group was inscribed on the World Heritage List in 1982 in recognition of its unique natural and cultural heritage features. It is a remarkable example of isolated oceanic islands born of volcanic activity more than 2,000 m under the sea. It boasts spectacular topography with volcanic peaks, dense tropical forests, sheltered beaches, and a lagoon which is enclosed by the southernmost coral barrier reef in the world.

The Lord Howe Island Group is home to numerous endemic species, especially birds such as the flightless Lord Howe Woodhen (*Hypotaenidia sylvestris*), once regarded as one of the rarest birds in the world, and invertebrates such as the Lord Howe Island Phasmid (*Dryococelus australis*), the world's largest stick insect that was thought extinction until it was rediscovered on Balls Pyramid.

Lord Howe Island has unfortunately had a history of invasive or pest species, the most significant of which was the rodent infestation in the 1910s that led to the extinction of several endemic birds, invertebrate and plant species. Eradication of several pest species has been achieved, and enhanced biosecurity provides key protections from associated risks to the World Heritage values of the Island.

Lord Howe Island relies on a marine freight service to transport the goods and supplies needed by the permanent population and visitors. The current marine freight service, the *MV Island Trader*, is contracted until 2027 and will require replacement after this time.

Waste management is also a critical issue for Lord Howe Island due to isolation and sensitivity of its environment. The Island does have a waste management facility (WMF) which can collect, handle and process a variety of waste streams but has no land-fill capability. The WMF has developed in an ad-hoc manner over many years and requires urgent upgrades to modernise the facility.

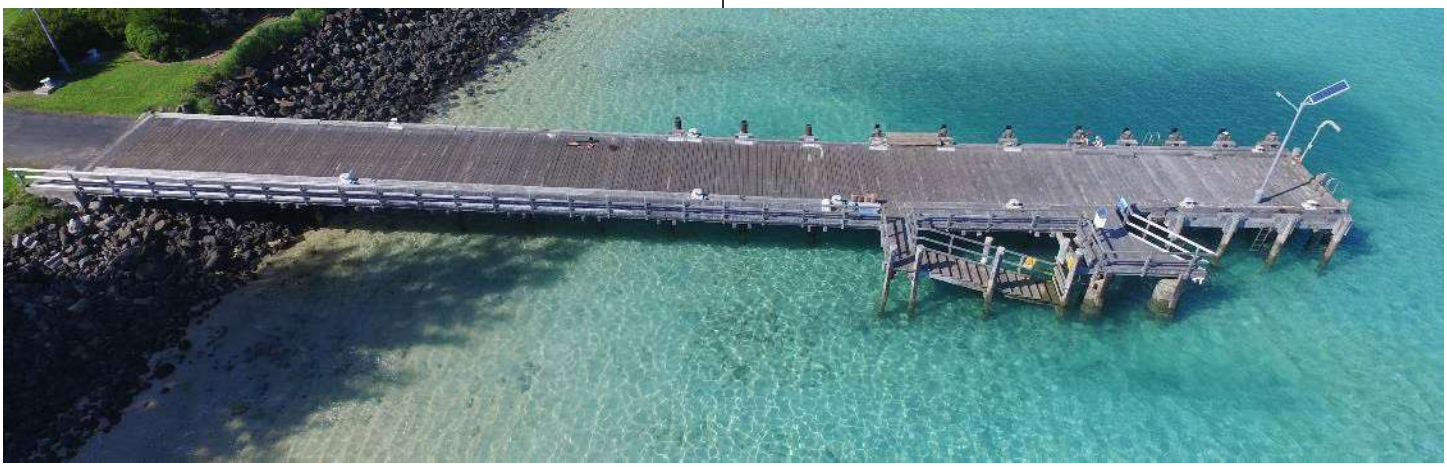
The Lord Howe Island Critical Infrastructure Program (CIP) was established by the NSW National Parks and Wildlife Service and the Lord Howe Island Board to implement improvements and upgrades to essential infrastructure to ensure the Island's future.

The Lord Howe Island CIP includes infrastructure projects that are critical to Lord Howe Island's everyday life and to support its long-term future as a sustainable tourist destination. It comprises:

- Establishing a suitable marine freight service to Lord Howe Island, to replace the existing freight transport vessel which is nearing the end of its service life;
- Design and delivery of biosecurity measures through capital works at the primary (mainland) port that services the Island and on Lord Howe Island; and
- Delivery of a fully functioning WMF on Lord Howe Island to support both day-to-day operations and the Island's tourism-led economy.

The objectives of the Lord Howe Island CIP are to:

- Maintain the tourism economy of Lord Howe Island and NSW;
- Facilitate access to the World Heritage property;
- Replace the Lord Howe Island marine freight service, which is essential to the functioning of the Island, including long-term procurement of this service;
- Upgrade the freight handling facilities on the Island and manage biosecurity risks;
- Minimise impacts on the marine environment and provide marine infrastructure that facilitate safe access for the loading and unloading of marine freight;
- Upgrade the WMF to comply with the requirements of the Environmental Protection Licence (EPL);
- Protect the unique ecological and cultural values of the Island during construction and operation; and
- Ensure the quality of life for residents and visitors to the Island is maintained.



The Project

The Project is located on Lord Howe Island, which is about 770 kilometres (km) to the northeast of Sydney, NSW, and about 570 km east from Port Macquarie, NSW.

Lord Howe Island is part of the Lord Howe Island Group, a collection of several islands, coral reefs and marine waters covering about 146,300 ha. As a World Heritage Property, the Lord Howe Island Group is a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999*.

Lord Howe Island has over 240 species of native plants, with over 50 per cent of these being endemic to the Island. Over 200 species of birds and 1,600 insect species are also found on the Island and surrounding islets.

The Lord Howe Island Marine Park comprises a variety of habitats and biological features, include estuarine ecosystems, lagoon ecosystems, fringing coral reef, intertidal and shallow subtidal ecosystems, shelf ecosystems and pelagic ecosystems. It supports over 500 species of fish and over 100 species of hard corals species.

Lord Howe Island has a permanent population of about 445. Tourism is the main industry on Lord Howe Island with over 16,000 people visiting each year, drawn to the Island's unique natural settings and outdoor activities.

The Proponent for the Project is the NSW National Parks and Wildlife Service (NPWS) (part of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW)) on behalf of the Lord Howe Island Board (LHIB).

The Project, which is the subject of this EIS, is part of the broader Lord Howe Island CIP. The Project includes the following:

- Freight handling facility which includes new and upgraded marine infrastructure (new piled vessel ramp and upgrades to the existing jetty and boat ramp), boat wash down and maintenance area, cargo loading/offloading areas, biosecurity infrastructure, adaptive reuse of the 'Old Cargo Shed' and 'Ocean View' heritage listed buildings, viewing area, picnic area, landscaping, retaining walls, amenities and vehicle and boat trailer parking;
- WMF upgrades which include new storage sheds and a materials processing facility (including for organic material), wastewater treatment plant (WWTP) and waste receival area (including for chemical and hazardous waste), hardstand and roads, office for staff, and selective dune restoration;
- Dedicated dog kennels to house biosecurity detection dogs; and
- Self-service fuel bowser along Old Lagoon Road.

The design, construction and operation of the new marine vessel, and any new or upgraded freight or biosecurity infrastructure located on the mainland do not form part of this application.

The Project Area comprises a North Zone and South Zone, which have an area of 21.11 ha and 9.9 ha, respectively.

The Project – North Zone


North Zone Artist Impression Operations

Development of the freight handling facility (North Zone) will include:

- Construction of new and upgraded marine infrastructure (e.g., new piled vessel ramp and landing facilities) and cargo interface areas for freight service operations;
- Hardstand areas to facilitate safe movement of cargo from the vessel to the Island;
- Construction of a bunded boat maintenance area;
- Construction of biosecurity infrastructure including quarantine facilities;
- Adaptive reuse of the existing 'Ocean View Boat Shed' and 'Old Cargo Shed' buildings;
- Upgraded boat ramp and car and trailer parking; and
- Construction of new public amenities, such as a new informal viewing area.

The main construction activities to be carried out in the North Zone include:

- Pile driving, installation of precast tubs (headstocks), precast planks, fender piles and over sleeves to construct the new piled vessel ramp;
- A mobile concrete batching plant;
- Site clearing works including removal of vegetation;
- Earthworks to regrade the existing hardstand laydown area and install retaining walls (any excess spoil that cannot be reused on the Island would be stockpiled and transported back to the mainland);
- Civil construction and installations, structural and building installations, electrical, water, piping, and lighting installation; and
- Delivery of materials, plant, and equipment, which would involve vessels/barges coordinated with truck movements.


No Design Elements (Indicative)
1 PUBLIC BOAT RAMP
2 UPGRADED WILSONS LANDING PICNIC AREA
3 CONTAINER STUFFING/UNSTUFFING
4 CARGO LOADING/UNLOADING AREA AND STORAGE
5 BOAT PARKING FOR TFNSW/MARINE PARKS
6 OCEAN VIEW BOATSHED ADAPTIVE REUSE
7 MARINE RESCUE SHED RETAINED
8 OLD CARGO SHED ADAPTIVE REUSE
9 INFORMAL VIEWING AREA WITH SEATING
10 UPGRADED MARINE INFRASTRUCTURE
11 EXISTING CAR AND/OR TRAILER PARKING RETAINED
12 BIOSECURITY/QUARANTINE SHED
13 AUSTRALIA POST AND STORAGE ROOMS
14 JETTY
INSET SCALE: 1:20,000
Lagoon Road
Legend
Cadastre
Temporarily Secured Area During Vessel Loading/Unloading
Project Area
Disturbance Area
Marine Parks & TFNSW
New Vessel
Proposed Piled Vessel Ramp
Proposed Hardstand
Proposed Turf Area
Coordinate System:
GDA 1994 MGA Zone 57
Date: 29/09/2025
Created By: MB/IS
Drawing Size: A3
0 20 40m
1:1,500
F3-3 Project Layout (North Zone)
LHI CIP
Environmental Impact Statement
Client: DCCEEW (NSW) on behalf of LHIB c/o APP Group
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The Project – South Zone


South Zone Artist Impression Waste Management Facility

Upgrades to the WMF (South Zone) will include:

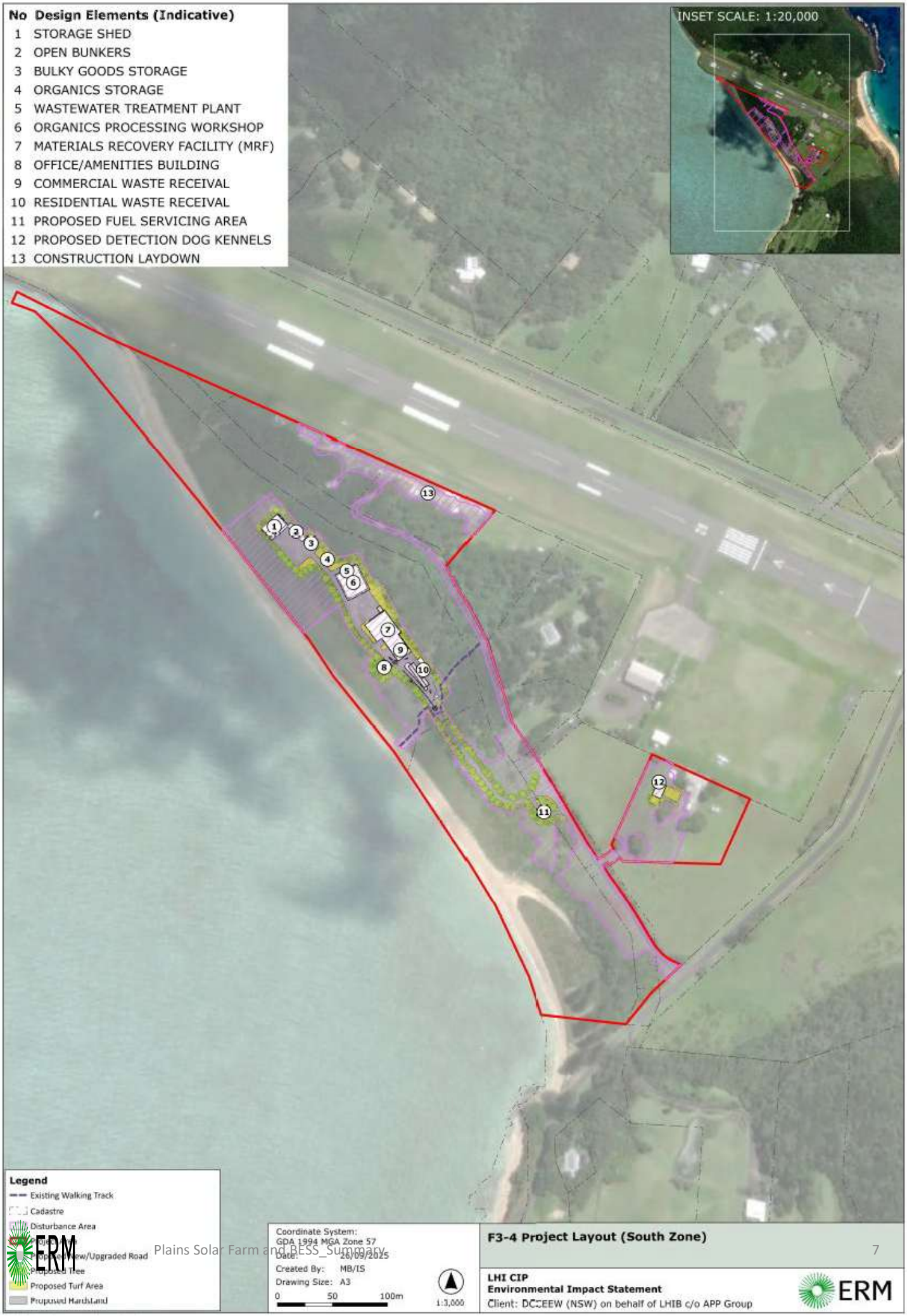
- Construction of a waste receival area/shed to facilitate community waste disposal;
- Reconfiguration of the organics processing infrastructure and provision of a dedicated facility for organics processing;
- Construction of a dedicated, temporary general waste storage area, and facilities/areas to adequately store liquid and hazardous wastes;
- Construction of a new materials recovery facility (MRF) and new working platform to provide secure, safe operating conditions;
- Perimeter fencing, security and restricted access upgrades; and
- Construction of a new WWTP.

Development of the dog kennels and fuel bowser (South Zone) will include:

- Construction of dedicated kennels to house the biosecurity detection dogs at the Bureau of Meteorology site, near the airport; and
- Construction of a self-serve fuel bowser on Old Lagoon Road near the vehicle entry to airport and WMF.

The main construction activities to be carried out in the South Zone include:

- Pre-construction coordination with the local community to minimise the amount of waste that needs to be handled and processed by the WMF during the construction phase;
- Site clearing works including the removal and disposal of contaminated material and stockpiles of legacy material;
- Civil construction and installations, structural and building installations, including electrical, water, piping, lighting installation, and processing plant installation for the new WMF; and
- Relocation of existing equipment (e.g., MRF, horizontal baler, hot-rot unit etc.) to enable the equipment to remain operational during construction of the Project.


No Design Elements (Indicative)
1 STORAGE SHED
2 OPEN BUNKERS
3 BULKY GOODS STORAGE
4 ORGANICS STORAGE
5 WASTEWATER TREATMENT PLANT
6 ORGANICS PROCESSING WORKSHOP
7 MATERIALS RECOVERY FACILITY (MRF)
8 OFFICE/AMENITIES BUILDING
9 COMMERCIAL WASTE RECEIVAL
10 RESIDENTIAL WASTE RECEIVAL
11 PROPOSED FUEL SERVICING AREA
12 PROPOSED DETECTION DOG KENNELS
13 CONSTRUCTION LAYDOWN
INSET SCALE: 1:20,000
Legend
Existing Walking Track
Cadastre
Disturbance Area
Proposed Tree
Proposed Turf Area
Coordinate System:
GDA 1994 MGA Zone 57
Date: 26/09/2025
Created By: MB/IS
Drawing Size: A3
0 50 100m
1:3,000
F3-4 Project Layout (South Zone)
LHI CIP
Environmental Impact Statement
Client: DCCEEW (NSW) on behalf of LHIB c/o APP Group
ERM

The Project

Construction and Operation

Construction phase

Construction equipment, plant and materials required for construction activities within the North Zone and South Zone would be transported via a barge/vessel that will enter the Lord Howe Island lagoon via the North Passage and dock at the existing jetty. Construction equipment, plant and materials required for the South Zone would be transported by truck to the WMF via Lagoon Road.

Material laydown and stockpiling are expected to be within the proposed disturbance area.

The peak construction workforce is estimated to be about 25 full-time employees. The Proponent has agreements in place with tourist accommodation operators on the Island to provide 20 visitor beds for 12 months to house the construction workforce.

A Construction and Environmental Management Framework will be prepared for the Project and will include several sub-plans. This will include a Biosecurity Risk Management Plan to avoid or minimise biosecurity risks during construction.

Construction works will generally be carried out :

- 7am to 6pm Monday to Friday;
- 8am to 1pm Saturdays; and
- No work on Sundays or public holidays.

Construction works that are permitted outside the above hours include:

- Works determined to comply with the relevant noise management level at the nearest sensitive receiver;
- Delivery of materials outside approved hours as required by NSW Marine Parks or other authorities for safety reasons (e.g., tides);
- Emergency situations where it is required to avoid loss of life and property and/or to prevent environmental harm; and
- Situations where agreement is reached with affected receivers.

Except for emergencies, construction works would not take place outside the hours specified above, without prior notification to residents, businesses, the Lord Howe Island Board and police.

Operational phase

The new and upgraded marine infrastructure, WMF and biosecurity infrastructure will operate continuously and in tandem and will involve:

- Cargo unloading to the cargo unstuffing facility and onward for distribution to the Island;
- Biosecurity inspection of incoming cargo, with designated quarantine room and protocols enacted as necessary to contain any identified biosecurity risks; and
- Receipt, processing, and storage of waste in a manner that minimises environmental and human health risk and facilitates the efficient movement of waste to the cargo laydown area in the North Zone for removal from the Island.

Community Engagement

Community engagement has informed and shaped the design of the Lord Howe Island CIP and will continue to do so throughout the detailed design phase.

Phase A of the community engagement commenced in May 2024, focussing on raising awareness for the Project and gathering initial feedback. Two Master Plan options were developed and released for community consultation. The options included:

- Upgrade and replace the existing jetty and associated staging areas north of Signal Point (North Zone), which are used by the MV Island Trader; or
- Construct a new jetty and staging areas for marine freight loading and unloading at the southern end of the lagoon adjacent to the WMF and airport (the South Zone).

Feedback received from the Lord Howe Island community was overwhelmingly in favour of retaining the marine freight infrastructure in the North Zone, as it is familiar, lower risk, and will result in fewer disruptions to Island operations. This was also supported by the findings of various technical investigations. Engagement outcomes for upgrades to the WMF facility showed general support; however, concerns were raised about cost, feasibility and environmental impacts.

The design for the marine infrastructure has since been focused on the North Zone, and the design of the WMF has considered feedback provided, particularly avoiding or minimising environmental impacts.

Phase B of the community engagement commenced in December 2024 through to January 2025 and focused on testing and refining the concept designs for the North Zone and South Zone.

Aside from engagement with the community and stakeholders regarding the design, formal consultation groups have been established. These include a Community Consultation Group (CCG) which was established in July 2024, and a Government Stakeholder Consultation Group (GSCG), which was established in August 2024. The GSCG has convened regularly to facilitate engagement with government stakeholders and subject matter experts.

Future community engagement will include:

- Meetings with Lord Howe Island Board, CCG and GSCG;
- Maintaining the Project website for the Project (Critical Infrastructure Program | Lord Howe Island Board);
- Project updates uploaded to Project website and EDMs issued;
- Continuation of consultation with community and regulatory stakeholders via various forums, including meetings and presentations; and
- Ongoing monitoring of email and post box for complaints and other feedback from the community.

Planning Approval Pathway

Section 5.12(4) of the *Environmental Planning and Assessment Act 1979* provides for the declaration of specified development on specified land as State significant infrastructure (SSI). The Minister for Planning can declare development to be critical SSI (CSSI) if it is considered essential to the State for economic, environmental or social reasons.

The Minister for Planning and Public Spaces has requested that the DPHI commence the CSSI declaration for the Project. The CSSI declaration process is ongoing and running in parallel with the assessment process. Any decision made by the Minister for Planning and Public Spaces on the outcome of the CSSI declaration would be made before determination of the Project.

The Project Area is zoned No 5. Special Uses, No. 7 Environment Protection and No. 9 Marine Park under Lord Howe Island Local Environment Plan 2010. The Project comprises public utility undertakings and is permissible within development consent with the applicable land use zones.

In accordance with section 5.23 of the *Environmental Planning and Assessment Act 1979*, certain approvals are not required to be obtained separately for CSSI as they are integrated into the assessment and approval process. Section 5.22 of the EP&A Act provides that EPIs, such as LEPs and certain SEPPs do not apply to CSSI.

The NSW Assessment Bilateral Agreement ('Bilateral Agreement') streamlines the assessment process for major projects that require both Australian and NSW government environmental approvals. Under the 'Bilateral Agreement', the Australian Government Minister can use the NSW process to inform the assessment of impact of any eligible action on matters of national environmental significance. It is intended that the Project will be assessed under the Bilateral Agreement.

The Project has been declared a controlled action (EPBC 2025/10188) and requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999*. The relevant controlling provisions are:

- World Heritage properties (sections 12 and 15A);
- National Heritage places (sections 15B and 15C);
- Listed threatened species and communities (sections 18 and 18A); and
- Listed migratory species (sections 20 and 20A).
- DPHI issued SEARs on 8 August 2025 which include the Minister's requirements under the NSW Bilateral Agreement.

What is the planning process?

01. Early Consultation

Prior to lodging a development application (DA) for an SSI project, the Applicant must consult with the Department. Following consultation, the Applicant must prepare a Scoping Report to request the environmental assessment requirements (SEARs) for the project.

The SEARs will identify the information that must be included in the Environmental Impact Statement (EIS) for the project and the community engagement that must be undertaken.

02. Prepare EIS

The Applicant must prepare the EIS in accordance with the SEARS.

The purpose of the EIS is to assess the economic, environmental and social impacts of the project and help the community, government agencies and the consent of authority to make informed submissions or decisions on the merits of the project.

03. Exhibit DA

All SSI DAs must be exhibited publicly for at least 28 days.

This acknowledges the importance of community participation in the SSI process and gives the community a right to have a say on these projects before a final decision is made.

04. Respond to submissions

After exhibition, the NSW Department of Planning Housing and Infrastructure (DPHI) will publish all submissions and ask the Applicant to prepare a Response to Submissions Report.

The purpose of the Response to Submissions Report is to respond to the issues raised in submissions and help the consent authority evaluate the merits of the DA.

05. Assess DA

After publishing the Response to Submissions Report, DPHI will assess the merits of the DA in accordance and prepare an Assessment Report.

This may include further community engagement, requesting additional information from the applicant, seeking advice from government agencies' and independent experts and preparing recommended conditions of consent.

06. Determine DA

The Minister of Planning or the Independent Planning Commission will be the consent authority for the DA.

The consent authority must evaluate the merits of the DA having regard to the matters in Section 5.12 (4) or Section 5.13 (4) of the EP&A Act and may approve the DA subject to modifications or conditions or can refuse it.

Heritage

The Lord Howe Island Group was listed as a UNESCO World Heritage Property in 1982 for its outstanding natural heritage significance and, in 2007, was included on the Australian National Heritage List.

The Project will not have a significant impact on the World Heritage or National Heritage values of the Lord Howe Island Group. Specifically, the Project will not result in the World Heritage or National Heritage values of the Lord Howe Island Group being lost, degraded or damaged or notably altered, modified, obscured or diminished. Importantly, the Project will deliver enhanced biosecurity that will preserve the World Heritage values.

The Cargo Shed and Ocean View Boat Shed within the North Zone have local heritage significance. Adaptative reuse is proposed for these sites to enhance the buildings and their surrounds by removing unsympathetic additions and improving landscape and public realm elements.

The archaeological potential of the foreshore and Wilsons Landing was deemed to be low to negligible. If historical archaeological remnants are present in the Project Area, they would likely not be substantial in nature and/or isolated finds and would have limited potential to provide a new understanding of the history of the area that is not available from other sources.

A jetty was first constructed in the North Zone circa 1910, and then a second and third jetty were constructed in 1956 and 1981. The second jetty was removed in 1982 and so only the third jetty remains today.

There is low potential for artefacts from the first jetty to be present in the Project Area. Any physical remains of the jetty would likely be restricted to below the current seabed level.

The Project involves piling works for the new piled vessel ramp and mooring dolphins, and these works would disturb the seabed. While the installation of piles is unlikely to directly impact any known or potential maritime archaeological relics, an unexpected finds procedure will be implemented.

Shipwrecks are recorded in the vicinity of the North Zone notably the *Jacques del Mar, La Meurthe 3, Favorite,* and *Reposado.* While the shipwrecks are close to the North Passage, there is low potential for shipwreck remains to be discovered around the existing jetty and boat ramp and, therefore, impacts to these are considered unlikely.

Terrestrial Ecology

Retaining the unique biodiversity of Lord Howe Island has been a priority for the Project. The principles of avoid and minimise have been applied to the design evolution of the Project. Large areas of native vegetation within the Project Area have been avoided and will not be directly impacted by the Project. Notably, the Project has avoided direct impacts to the 'Lagunaria Swamp Forest on Lord Howe Island' critically endangered ecological community within the South Zone.

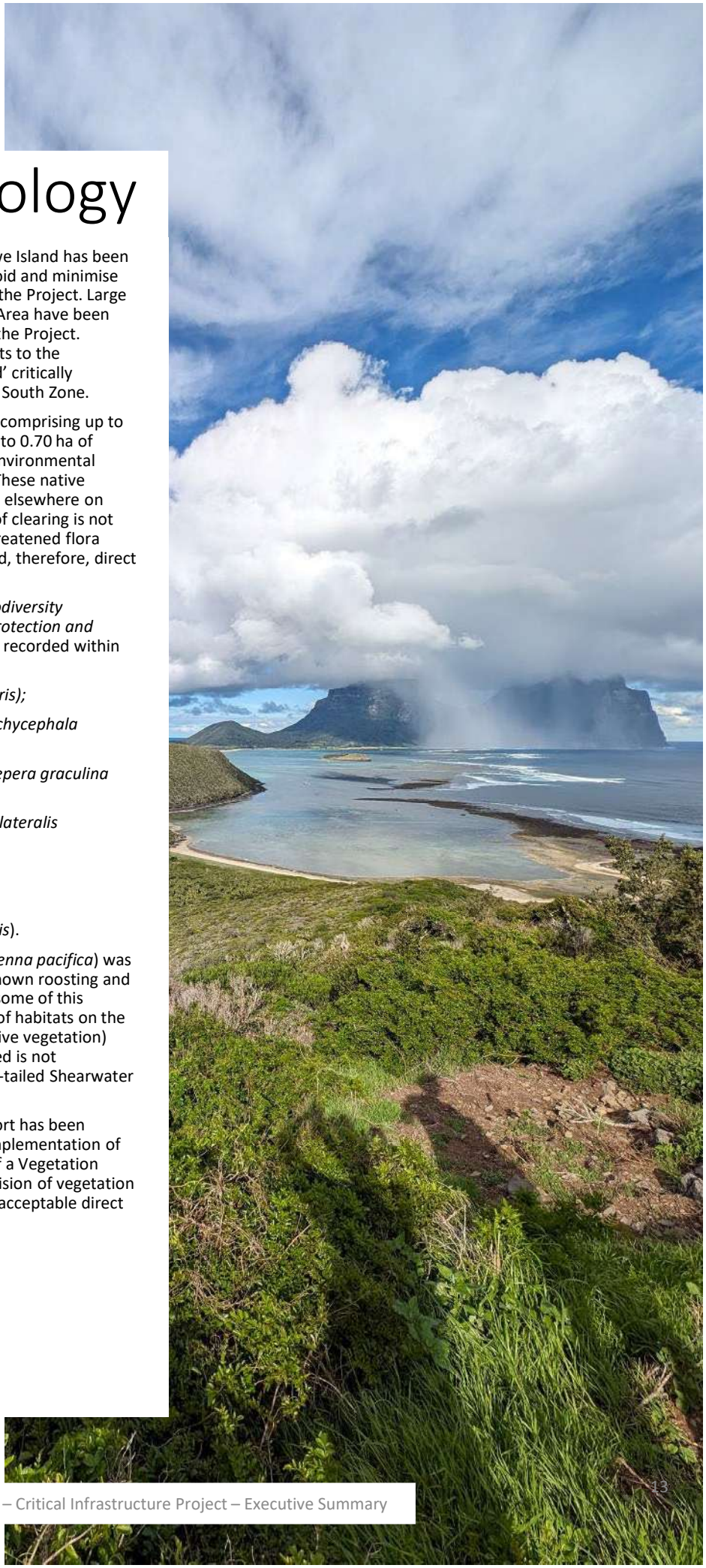
Some vegetation clearing cannot be avoided, comprising up to 0.75 ha of native vegetation. This includes up to 0.70 ha of native vegetation communities, 0.002 ha of environmental planting, and 0.005 ha of native plantations. These native vegetation communities are well represented elsewhere on Lord Howe Island and therefore the amount of clearing is not anticipated to be detrimental to these. No threatened flora species were identified in the Project Area and, therefore, direct impacts to threatened flora are not expected.

Seven threatened species listed under the *Biodiversity Conservation Act 2016* and/or *Environment Protection and Biodiversity Conservation Act 1999* have been recorded within the development footprint, including:

- Lord Howe Woodhen *(Hypotaenidia sylvestris);*
- Golden Whistler (Lord Howe Is. subsp.) *(Pachycephala pectoralis contempta);*
- Pied Currawong (Lord Howe Is. subsp.) *(Strepera graculina crissalis);*
- Silvereye (Lord Howe Is. subsp.) *(Zosterops lateralis tephropleurus);*
- White Tern *(Gygis alba);*
- Sooty Tern *(Onychoprion fuscata); and*
- Black-winged Petrel (*Pterodroma nigripennis*).

The migratory Wedge-tailed Shearwater (*Ardenna pacifica*) was recorded in the North Zone, where there is known roosting and breeding habitat. The Project would remove some of this habitat; however, this species uses a variety of habitats on the Island (i.e., cleared land, exotic grassland, native vegetation) and, as such, the area of habitat to be removed is not anticipated to significantly impact the Wedge-tailed Shearwater (*Ardenna pacifica*).

A Biodiversity Development Assessment Report has been prepared to support the EIS. Subject to the implementation of mitigation measures, including preparation of a Vegetation Management Plan by an ecologist and supervision of vegetation clearing, the Project does not result in any unacceptable direct or indirect impacts on biodiversity.



Marine Ecology

The aquatic biodiversity of the Lord Howe Island Group was one of the key considerations for its listing as a World Heritage property. The unique features and aquatic biodiversity of the Lord Howe Island Group led to NSW declaring (in 1999) a 460 km^2 area of marine waters surrounding the Island as the Lord Howe Island Marine Park, known as the Lord Howe Island Marine Park. It is one of only six marine parks in NSW declared under the *Marine Estate Management Act 2014*. The Lord Howe Island Marine Park supports over 100 species of Scleractinian (i.e., hard) corals species and over 500 species of fish.

Impacts to aquatic biodiversity during construction may include:

- Direct impact to benthic habitat where piles are installed, however, the area for this was determined to comprise '*unvegetated substrates and lagoon floor – macroalgae / rubble*';
- Vessel groundings;
- Disturbance of the seafloor (e.g., from piling, vessel propellers), which can liberate sediments that may contain toxicants and nutrients;
- Risk of spills to the marine environment, including hydrocarbons and vessel discharges (e.g., sullage), which can lead to direct impacts on marine flora and fauna (e.g., toxicity, smothering), and indirect impacts (e.g., promoting eutrophication);
- Land-based runoff from construction areas, which can transport pollutants and sediment to the lagoon via surface flow or groundwater; and
- Underwater noise (as discussed below).

An Underwater Noise Assessment was undertaken to assess the potential for underwater noise impacts on marine fauna. Underwater noise will be generated from piling and vessel activities.

Cetaceans (e.g., whales dolphins), reptiles (e.g., turtles), pinnipeds (e.g., seals) can experience impacts from underwater noise including organ damage, fatality, and behavioural responses.

The Project will directly impact threatened and protected species due primarily to underwater noise from piling activities. This concerns threatened and protected fish species that have limited home ranges (e.g., McCulloch's Anemone Fish [*Amphiprion mccullochi*]). While residual impacts to some fish species are considered moderate, long-term effects to fish populations are not anticipated.

Impacts to threatened or protected marine reptiles, cetaceans, pinnipeds and other conservation significant species are expected to be negligible. Mitigation and management measures to minimise impacts of underwater noise on air-breathing marine species (e.g., whales, dolphins, turtles, seals) will be implemented. Avoidance of noise generating activities during critical ecological periods for these key species will further reduce the risk.

Underwater noise from vessel operations during construction is expected to be temporary and significantly below impact

Climate Change and Sustainability

Lord Howe Island has a temperate subtropical climate characterised by high humidity year-round, strong seasonal winds, and frequent rainfall. Lord Howe Island has experienced several significant weather events linked to cyclonic activity.

Heat stress has increased in recent years and caused coral bleaching events (2019 and 2024), which have affected susceptible coral species across the lagoon.

An analysis of climate data and climate change projections indicates that the key physical hazards that pose a material risk to the Project are extreme heat, tropical cyclones, water stress and drought. Other physical hazards assessed include bushfires, coastal flooding, extreme rainfall and associated rainfall flooding.

Climate change projections that are relevant to Lord Howe Island and the Project, include an:

- Increase in extreme heat by 2050, including more frequent and severe heatwaves;
- Increase in the severity of tropical cyclones, with wind speed projected to increase by at least 10% by 2050, meaning a category 1 (winds up to 125 km/h) cyclone today would be a category 2 (126-164 km/h) cyclonic event in 2050; and
- Increase in consecutive dry days with associated water stress / drought conditions projected to increase marginally by 2030 and 2050.

These factors can impact people and infrastructure associated with the Project and, as such, have been considered in the Project design.

The key sustainability impacts associated with the Project are:

- Project works may require vegetation disturbance, which, while limited in scale, has heightened significance given the Island's World Heritage values;
- Diesel consumption remains a significant source of emissions;
- Exposure to increasing climate change as discussed above; and
- Temporary construction noise and dust impacts for residents and visitors.

Sustainability initiatives will be implemented to improve resource efficiency, reduce operational costs and carbon emissions, and nature positive revegetation and offsets.

The Infrastructure Sustainability (IS) Essentials rating has been selected for the Project, which balanced sustainability outcomes with the Project scale and objectives. This rating provides verified sustainability performance assurance that is accessible, scalable, and cost-effective for smaller scale infrastructure projects which aim to deliver social, cultural, environmental, and economic outcomes. A target rating of 'Bronze' under the IS Design and As-built rating tool, with a score of 20 to 39.9 points, and a stretch target for 'Silver' rating (i.e. 40 to 59.9 points) has been adopted for this Project.

Flooding, Hydrology and Water Quality

Flooding

Floods can be hazardous to people, including loss of life, and infrastructure. A flood hazard assessment was undertaken to consider the combined flood velocity and flood depth as well as other factors such as site isolation, warning time, and the rate that flood waters rise.

The Lord Howe Island Flood Management Plan shows the North Zone is in the Pinetrees to Steven's Reserve (PTSR) catchment area and the South Zone in the Airport catchment area.

Baseline and developed scenario flood models were run for 20% annual exceedance probability (AEP), 5% AEP, 1% AEP, and probable maximum flood (PMF) design flood events for both the North Zone and South Zone. Climate change and sea level rise were also considered.

Flood behaviour in the developed scenario for the North Zone was largely consistent with baseline conditions, with negligible flooding in all events up to and including the PMF. Minor ponding on the uphill side of the unstuffing/stuffing shed is predicted; however, this can be managed through stormwater works and grading design.

Flood behaviour in the developed scenario for the South Zone was largely consistent with baseline conditions, with negligible flooding at the WMF and fuel bowser site in all events up to and including the PMF. Flood depths at the dog kennel site remain at <20 mm in the 1% AEP, and 0.4 m to 0.5 m in the PMF event, with up to 3 m/s flood velocity, resulting in a H2 flood hazard.

While the dog kennels are outside the 1% AEP flood extent, based on current design floor levels the dog kennels would experience 0.215 m of flood depths in the PMF event. Given the dog kennels are not significantly isolated in a PMF event, this allows for 'shelter in place' as an emergency option.

Standard stormwater management measures will be adopted to address local overland flows, where required.

Hydrology

The Project may impact local hydrological processes primarily due to increased runoff volumes and peak flows due to increased impervious surfaces, removal of vegetation and compaction of soils. Flow paths from external catchments are expected to be diverted from the Project Area to minimise erosion and sediment transport. Stockpiles may cause turbidity downstream and obstruct overland flow if not appropriately managed. Any additional treated flows would be directed to the lagoon and would not have a detrimental impact.

Construction activities are unlikely to impact groundwater levels, as the depth of excavations are several metres above the depth at which groundwater is likely to be encountered. Groundwater is also unlikely to be extracted and used during construction.

Potential surface water and groundwater impacts during construction are considered minor and manageable with soil and water management and mitigation measures.

Water quality

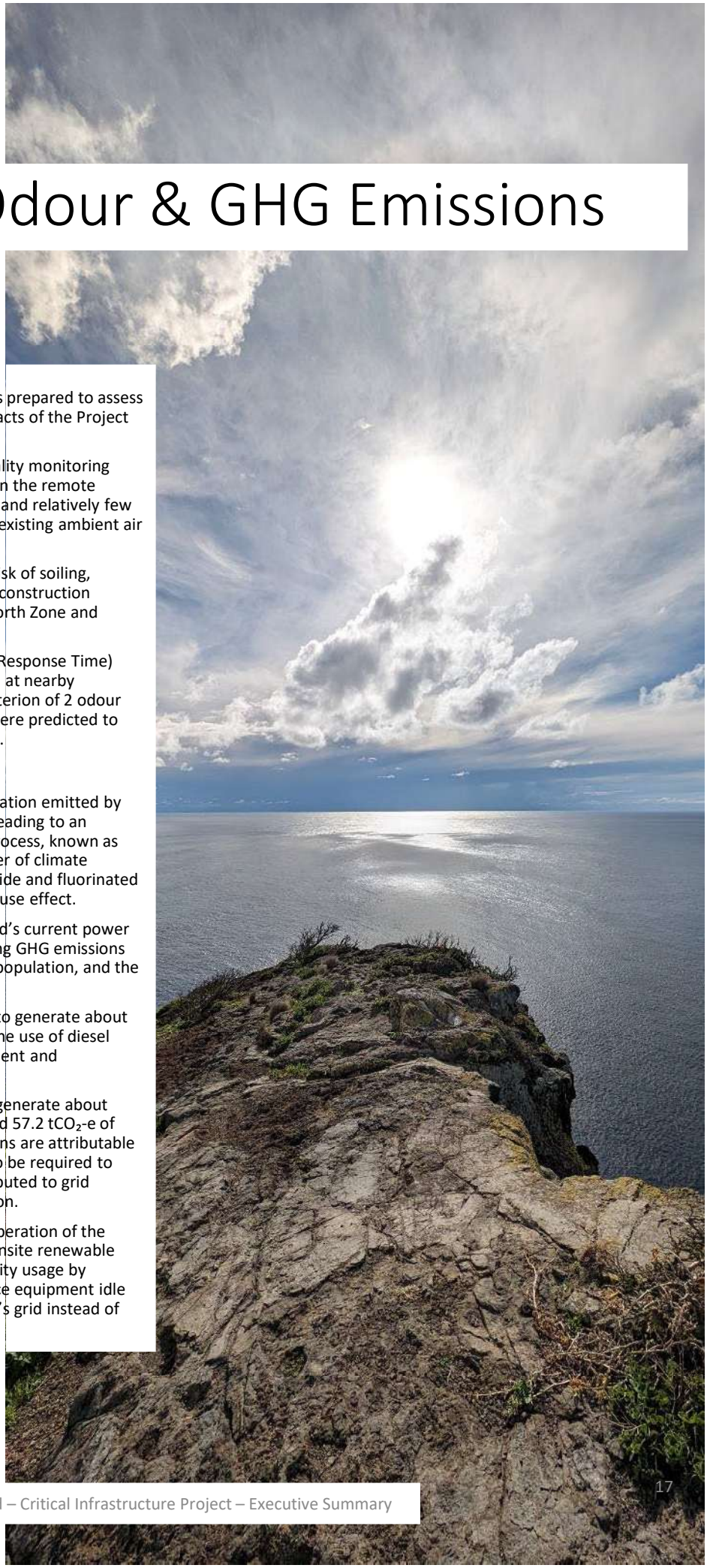
Construction activities that may lead to water quality impacts from erosion and sedimentation are earthworks and excavation. Appropriate erosion and sediment control will be implemented to avoid or minimise potential impacts. Should impacts result, they are expected to be limited both spatially and temporally.

Other impacts to surface water quality that may result during construction are associated with gross pollutants, and accidental spills of hydrocarbons, chemicals and other hazardous substances. Water quality impacts during construction are expected to be low and manageable with implementation of mitigation measures.

The new Project buildings will include roof gutters to capture stormwater and direct it to rainwater tanks for reuse. Stormwater management such as swales, detention basins, gross pollutant traps and landscaping will further reduce outlet flow rates and minimise potential impacts to water quality.

The new WWTP will include new wastewater reception mechanisms, fully automated feeding system, advanced filtration for biosolids and a direct discharge system into a dedicated biosolids bunker.

Air Quality, Odour & GHG Emissions



Air quality and odour

An Air Quality Impact Assessment (AQIA) was prepared to assess the potential dust, odour and air quality impacts of the Project during construction and operation.

There is no publicly available ambient air quality monitoring data for Lord Howe Island. However, based on the remote location and the absence of heavy industries and relatively few fugitive emissions sources on the Island, the existing ambient air quality is likely to be very good.

The dust risk assessment demonstrates the risk of soiling, human health and ecological impacts during construction activities is 'negligible' to 'low' in both the North Zone and South Zone.

Odour concentrations (99th percentile, Nose Response Time) during operation of the WMF were predicted at nearby representative sensitive receptors, with a criterion of 2 odour units (OU) adopted. No sensitive receptors were predicted to exceed 0.5 OU, well below the 2 OU criterion.

Greenhouse gas (GHG) emissions

GHG emissions absorb outgoing infrared radiation emitted by the Earth's surface and convert it into heat, leading to an increase in atmospheric temperature. This process, known as the greenhouse effect, is a fundamental driver of climate change. Carbon dioxide, methane, nitrous oxide and fluorinated gases are mainly responsible for the greenhouse effect.

Approximately two-thirds of Lord Howe Island's current power supply is generated from solar energy. Existing GHG emissions are influenced by the Island's small size and population, and the lack of heavy-emitting industries.

During construction, the Project is expected to generate about 4,307.4 tCO_2-e of emissions, primarily from the use of diesel required for construction machinery, equipment and generators.

During operation, the Project is expected to generate about 243.9 tCO_2-e of direct emissions (Scope 1) and 57.2 tCO_2-e of indirect emissions (Scope 2). Scope 1 emissions are attributable to onsite diesel generators which are likely to be required to power the WMF. Scope 2 emissions are attributed to grid electricity exported to support WMF operation.

Initiatives to reduce GHG emissions during operation of the Project will be considered and may include onsite renewable energy from solar panels, minimising electricity usage by implementing automated systems that reduce equipment idle time, and sourcing electricity from the Island's grid instead of relying on diesel generators.

Hazards and Risks

Biosecurity

Lord Howe Island is vulnerable to invasive species. Biosecurity has been a key issue on Lord Howe Island since its colonisation, particularly due to its dependence on regular sea freight.

Biosecurity on Lord Howe Island is primarily managed by the Lord Howe Island Board. Several other parties have critical responsibilities including the marine freight vessel operator, the aviation service operators, contracted stevedores, suppliers and Lord Howe Island residents. Lord Howe Island Board and contractors undertake inspections with biosecurity detection dogs at mainland departure and island arrival points.

During construction of the Project, the increased movement of supplies, equipment, machinery and personnel to the Island via vessel or aircraft, increases biosecurity risk and, therefore, must be managed.

Biosecurity screening on the mainland is critical and will act as the first 'layer' of inspection and treatment to remove biosecurity risk material before departure. The mainland facility used by the contractor will need to be bio-secure and have appropriate treatments and packaging standards for materials and equipment being transported to the Island.

Operation of the new marine freight vessel will also be managed to avoid or minimise biosecurity risk.

Aviation

The Project is in proximity to the Lord Howe Island airport which accommodates regular aviation services by regional aircraft. The use of temporary, mobile cranes during construction may intrude into protected airspace depending on the position and height of the cranes. These cranes could infringe on the airport's Obstacle Limitation Surface and, if so, would require approval from the airport operator, the Lord Howe Island Board. The Project does not interfere with other aviation safeguard 'surfaces'.

Dangerous and hazardous goods

A Risk Screening Analysis (RSA) was prepared to review the types and proposed quantities of dangerous goods to be stored in the Project Area, and to determine whether the development is hazardous and would require a Preliminary Hazard Analysis.

The self-service fuel bowser will include the storage of up to 16,000 L of fuel, comprising 8,000 L of unleaded petrol and 8,000 L of diesel, while the WMF will store up to 1,250 kg of solid chemicals. Based on these quantities, no State Environmental Planning Policy 33 thresholds will be exceeded for the storage of dangerous goods and, therefore, no further assessment is required.

Soils and contamination

The potential for contamination at the North Zone is considered low; however, an area of environmental interest was identified, associated with the potential for buried wastes associated with the demolition of former structures and subsequent use of the area for trailer boat storage. Sampling undertaken at this area determined that health criteria for recreational open space land use were not exceeded. The ecological criteria for heavy metals (e.g., chromium, nickel and arsenic) were exceeded in one sample; however, the exceedance is considered low risk and there is a low likelihood of leachability.

Site contamination has been identified within the South Zone. The risk to receptors is considered low and manageable using standard site operation and construction practices.

The Detailed Site Investigation of the South Zone found:

- Asbestos fines and bonded asbestos were recorded at three test pits within the South Zone;
- Concentrations of all other contaminants of potential concern were less than the adopted assessment criteria;
- Exceedance of ecological criteria for metals (e.g., zinc, copper and nickel) were recorded in soil, groundwater and surface water samples likely from the existing WMF operations;
- Exceedance of ecological criteria for Per- and Polyfluoroalkyl substances (PFAS) likely due to historical use of PFAS containing fire-fighting foam as part of aerodrome activity and not attributable to the WMF;
- Exceedance of 99% default guideline value for arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury in groundwater samples; and
- Perfluorooctane sulfonate (PFOS) concentrations in groundwater exceeded the adopted 99% marine species protection criteria in all groundwater and surface water samples.

There are no acid sulfate soils mapped within the development footprint and no surface or subsurface indicators of acid sulfate soils. Based on the colour, geologic origins and laboratory results, there is a low probability of the occurrence of potential acid sulfate soils.

Soils collected in the South Zone are not saline; however, soils in the North Zone at depths greater than 6 m below ground level had elevated salinity, likely associated with the groundwater impacted by sea water in the intertidal zone.

Transport and traffic

Lagoon Road is the primary vehicular route connecting the northern and southern parts of the Island and providing access to key infrastructure such as the jetty and airport.

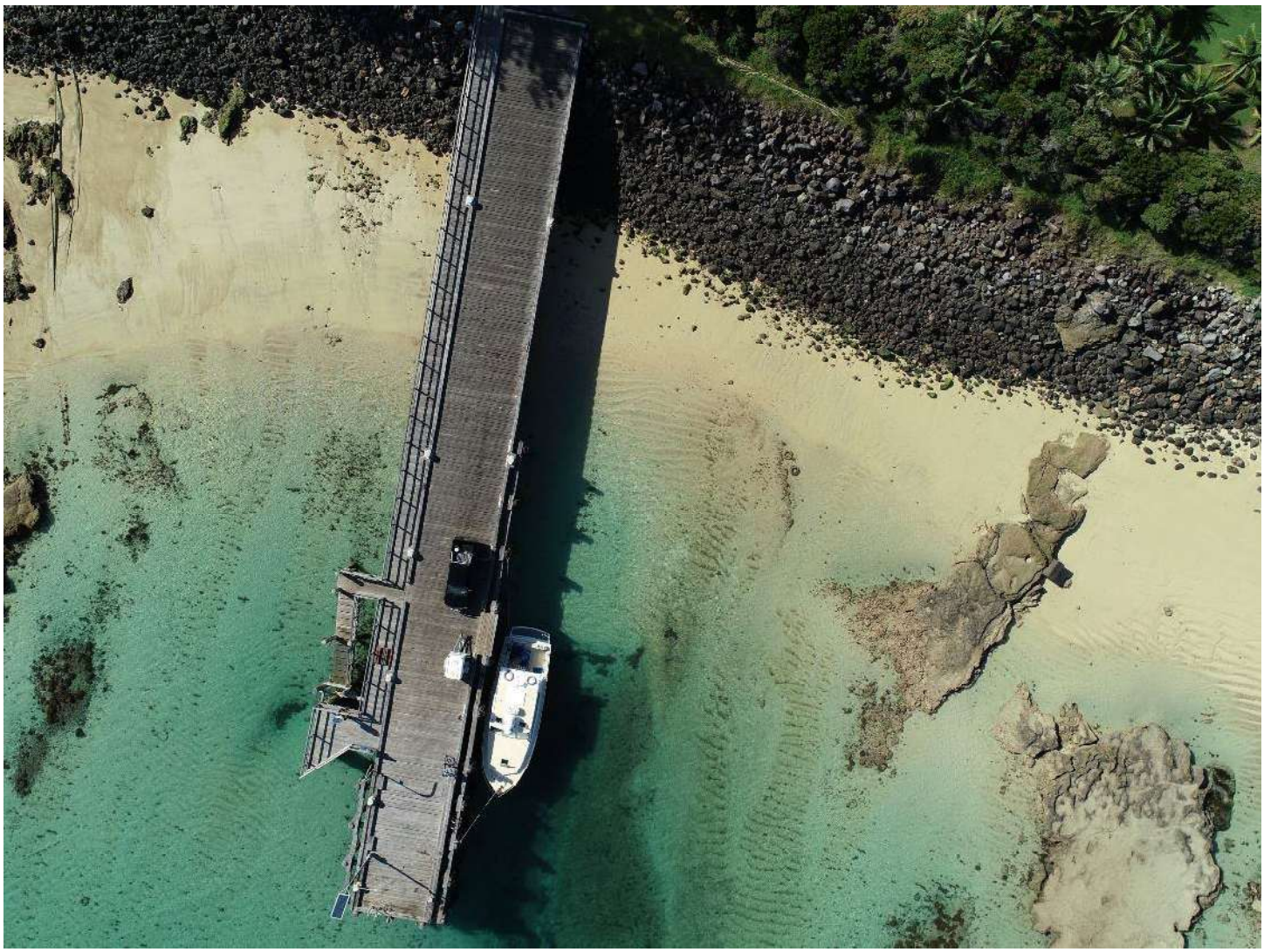
Lagoon Road typically has a sealed width of 5 to 6.5 m allowing for two-way traffic. The road network is largely confined to the main settlement area in the central low-lying region, with access to other parts of the Island constrained by steep topography.

Daily traffic volumes are relatively low. A 25 km/h speed limit is enforced across Lord Howe Island due to its small population, narrow road corridors, and the need to protect local wildlife. Walking and cycling are the most common modes of transport that share the Island's road with vehicles.

Plant and equipment will initially be transported to the North Zone via vessel/barge. From there, plant and equipment will be transported to the respective construction zones by truck, using Lagoon Road for access to the South Zone.

Peak traffic volumes will occur during peak construction (months 6-19) when construction works are occurring concurrently in the North Zone and South Zone. Most of the workforce is expected to travel to the construction sites via private vehicle, shuttle bus, bicycle or by walking.

Potential safety of pedestrians, cyclists and other road users can be adequately managed with standard traffic management controls. The Project will not adversely impact access to private properties for residents and businesses during construction.



Amenity Impacts

Noise and vibration

Existing noise sources on Lord Howe Island include environmental noise, road traffic noise, noise from the operation of the existing WMF, and activities associated with freight and passenger transport. There are no heavy industries on Lord Howe Island and background noise is largely influenced by environmental sources.

Noise generating construction activities include mobile concrete batching, site clearing works, earthworks, civil construction and installations. Construction will occur only during the standard daytime hours as specified in the Interim Construction Noise Guideline (i.e., 7am to 6pm Monday to Friday; 8am to 1pm Saturday; no work on Sundays or public holidays).

Noise modelling indicates that the Interim Construction Noise Guideline 'noise affected management level' will be exceeded at residential receivers R1, R2, R3, R2 and R5 for activities at the North Zone and South Zone. Noise mitigation measures will be implemented during construction to manage and reduce these impacts.

Construction traffic volumes are low and are unlikely to exceed the criteria in the Road Noise Policy. The Project does not result in any vibration impacts as there are no vibration sensitive receivers within 50 m.

The operational noise sources for the Project comprises noise from the use of equipment and noise breakout through open roller doors etc. from Project buildings. Project Noise Trigger Levels were established in accordance with Noise Policy for Industry. The Project will comply with the Project Noise Trigger Levels, including sleep disturbance levels, at all identified sensitive receivers.

Visual impacts

A Landscape Character and Visual Impact Assessment was prepared to assess potential impacts of the Project on the existing landscape, visual amenity and World Heritage status of Lord Howe Island.

Eight Landscape Character Zones (LCZs) were identified on Lord Howe Island. The Project has the potential to have a moderate to high-moderate impacts on the LCZs, largely due to the sensitivity and significance of the landscape to the World Heritage values of the Island.

Detailed assessment was undertaken of the views from highly sensitive viewpoints surrounding the North Zone and South Zone, such as public open space and recreational locations, and residential areas that could potentially be impacted by the Project.

Of the viewpoints assessed, nine had a 'high-moderate' potential visual impact and four had a 'moderate' potential visual impact. The resulting visual impact ratings indicate that further mitigation measures may need to be considered during the detailed design to reduce the visual impacts.

Design strategies will be implemented to minimise visual impacts by ensuring the design of new buildings are sympathetic and compatible with the surrounding landscape and the built environment in terms of their built form, colours and materials. Existing native vegetation is a key element of the landscape and provides visual screening to developed areas and where possible existing vegetation should be retained and embellished to provide additional visual screening to developed areas.

Social and economic impacts

Tourism is the largest industry on Lord Howe Island, comprising tourist accommodation, dining, sightseeing and scenic tours, and associated recreational activities (e.g., scuba diving, snorkelling).

At the 2021 Census, Lord Howe Island had a population of 445. Of these, 64.6% were in the labour force, with 98% of this labour force both living and working on Lord Howe Island. The workforce on Lord Howe Island is supplemented by off island seasonal and contract workers, when required.

The Project will require a workforce of up to 25 full time equivalent workers during peak construction. Where skills and capabilities align with Project needs, local workforce participation is supported.

Rental accommodation on the Island is scarce and lease transfer and sale is governed by the *Lord Howe Island Act 1953*. Tourist accommodation is limited to 400 tourist bed licences. During peak tourism periods on Lord Howe Island, prices for goods and services increase when the demand exceeds the supply. Due to the cap on available accommodation bed licences, tourism operators account for this in the commercial models.

The Proponent has entered agreements with tourist accommodation providers and secured accommodation for 20 workers (5 % of available licences) to accommodate the construction workforce for the construction. This would benefit the local economy outside peak periods while the potential impact during peak periods would be minor.

Ongoing operation of the Project infrastructure will be facilitated by the existing workforce residing on Lord Howe Island. Operation of the infrastructure may increase the level of employment but no change to the permanent population on Lord Howe Island is expected. Overall, the upgraded infrastructure will increase the level of economic activity on Lord Howe Island and contribute to local businesses by safeguarding its World Heritage status and continued appeal as a tourism destination.

Conclusion

The Proponent has adopted an ongoing, iterative approach to the design with the objective to develop an efficient Project that avoids or minimises social and environmental impacts and, specifically, impacts to native vegetation, the marine environment and the natural and cultural values of Lord Howe Island as a World Heritage property.

The Project layout has been optimised to maximise the use of existing disturbed areas and to avoid and/or minimise impacts to identified biodiversity and heritage values, soil and water resources, and nearby sensitive receivers. Where potential impacts could not be avoided, design principles have been applied to reduce impacts to the greatest extent possible and mitigation measures are proposed to manage any residual impacts.

The Project is consistent with the strategic context and statutory requirements. The community and key stakeholders have been engaged in the design and development of the Project including NSW and Australian Government agencies, the local community, tourism operators and local businesses.

The Project will deliver several positive benefits including facilitating the continued operation of the marine freight service to the Island, modernising the WMF, and increasing biosecurity screening, while preserving the World Heritage values of Lord Howe Island.

The Project will not result in significant adverse impacts on the environment or the community, and any impacts will be significantly outweighed by the strategic and economic benefits that the Project will deliver for Lord Howe Island. Any residual environmental or social impacts identified in the EIS will be managed through the mitigation and management measures outlined in the EIS. It is considered that this Project is consistent with the objects of the EP&A Act and is in the public interest.