



Lord Howe Island Critical Infrastructure Project

Technical Paper - Sustainability

Prepared for: APP Corporation Pty Ltd
30 September 2025

SMEC INTERNAL REF. 30013573A_EN_R003



SMEC simplifies the complex. We unlock the potential of our people to look at infrastructure differently, creating better outcomes for the future.



engineering
positive
change

Document Control

Document Type	Technical Paper - Sustainability
Project Title	Lord Howe Island Critical Infrastructure Project
Project Number	30013573A_EN_R003
File Location	\\filer.nasuni.local\SMECANZ\Projects\300135\30013573 - Lord Howe Island\100 Stage B - Investigations-Approvals\22_EIS Specialist Studies\R003 Sustainability\Final
Revision Number	0

Revision History

Revision No.	Date	Prepared By	Reviewed By	Approved for Issue By
A	22/08/2025	Lachlan Beckworth Neda Nematollahi Saeid Charani	Hugh Selby	Logan Roy
B	19/09/2025	Saeid Charani	Hugh Selby Charles McLean	Charles McLean
0	30/09/2025	Saeid Charani	Charles McLean	Charles McLean

Issue Register

Distribution List	Date Issued	Number of Copies
APP Corporation Pty Ltd	30/09/2025	01

SMEC Company Details

Approved by	Gary Bendell
Address	Level 6 / 480 St Pauls Terrace, Fortitude Valley, QLD, 4006
Phone	+61 7 3029 6934
Email	Gary.Bendell@smec.com
Website	www.smec.com

The information within this document is and shall remain the property of:

APP Corporation Pty Ltd

SMEC Australia Pty Ltd

Important Notice

This report is confidential and is provided solely for the purposes of providing an assessment of the sustainability measures for the Critical Infrastructure Project at Lord Howe Island. This report is provided pursuant to a Consultancy Agreement between SMEC Australia Pty Limited (“SMEC”) and APP Corporation Pty Ltd, under which SMEC undertook to perform a specific and limited task for APP Corporation Pty Ltd. This report is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

This report must be read as a whole. The executive summary is not a substitute for this. Any subsequent report must be read in conjunction with this report.

The report supersedes all previous draft or interim reports, whether written or presented orally, before the date of this report. This report has not and will not be updated for events or transactions occurring after the date of the report or any other matters which might have a material effect on its contents, or which come to light after the date of the report. SMEC is not obliged to inform you of any such event, transaction or matter nor to update the report for anything that occurs, or of which SMEC becomes aware, after the date of this report.

Unless expressly agreed otherwise in writing, SMEC does not accept a duty of care or any other legal responsibility whatsoever in relation to this report, or any related enquiries, advice or other work, nor does SMEC make any representation in connection with this report, to any person other than APP Corporation Pty Ltd. Any other person who receives a draft or a copy of this report (or any part of it) or discusses it (or any part of it) or any related matter with SMEC, does so on the basis that he or she acknowledges and accepts that he or she may not rely on this report nor on any related information or advice given by SMEC for any purpose whatsoever.

Contents

Executive Summary	
Glossary	
1. Introduction	1
1.1 The Project	1
1.2 Project Location	1
1.3 Purpose of this Report	5
1.3.1 Assessment Guidelines and Requirements	5
2. Project Description	6
2.1 Project Overview	6
2.2 Freight Handling Facility	9
2.2.1 Marine Infrastructure	9
2.2.2 Land based Infrastructure	9
2.2.3 Landscaping and Public Domain Works	10
2.3 Waste Management Facility	11
2.3.1 Dog Kennels and Fuel Bowser	11
2.4 Construction Sites	12
2.5 Operation	12
2.5.1 Freight Handling Facility	12
2.5.2 Waste Management Facility	12
3. Methodology	14
4. Legislation, Policy and Guidelines	15
4.1 International Frameworks	15
4.2 National Legislation and Policy	15
4.3 NSW State Legislation & Strategy	16
4.4 Local and Regional Frameworks	17
4.5 Sustainability Tools and Rating Schemes	18
5. Existing Conditions	19
5.1 Water	19
5.2 Energy	19
5.2.1 Primary Generation, Distribution and Backup Power Supply	19
5.2.2 Hybrid Renewable Energy	19
5.2.3 Fuel Use	20
5.3 Transport	20
5.4 Waste Management	20
5.4.1 Waste Disposal	20
5.4.2 Reduce, Reuse, and Recycle	21
5.4.3 Wastewater	21
5.5 Infrastructure Decarbonisation	21
6. Proposed Sustainability Pathway	22
6.1 Infrastructure Sustainability (IS) Rating Scheme	22
6.2 IS Essentials	23
6.2.1 IS Essentials Themes, Categories and Credits	23
6.2.2 IS Rating Process	25
7. Preliminary Materiality Assessment	27
7.1 Inputs	27
7.2 Results	32
8. Current Sustainability Performance	34
9. Key Sustainability Impacts and Mitigation Measures	36
10. Recommendations	37
10.1 Recommended Pathway and Target	37
10.2 Incorporating Sustainability in Design	37
10.3 Sustainability Initiatives to Ensure Effective and Efficient Use of Resources	37

11. References	39
----------------------	----

Appendices

No table of contents entries found.

Figures

Figure 1 Regional Location Map	2
Figure 2 Project Area North Zone.....	3
Figure 3 Project Area South Zone	4
Figure 4 Project Layout (North Zone)	7
Figure 5 Project Layout (South Zone)	8
Figure 6 IS rating tool products across the infrastructure lifecycle	23
Figure 7 IS rating process (Source: IS Essentials Draft Technical Manual, Rev A).	26
Figure 8 Rating award levels.	26

Tables

Table 1 SEARs requirements.....	5
Table 2 International Frameworks	15
Table 3 National Legislation and Policy	15
Table 4 NSW Key Legislative, Policy and Guidelines	16
Table 5 Key Local and Regional Legislative, Policy and Guidelines	17
Table 6 Relevant Sustainability Tools and Rating Schemes	18
Table 7 Potential sustainability pathways	22
Table 8 IS Essentials credits capital band screening.....	23
Table 9 IS Essentials themes, categories and credits	24
Table 10 Materiality assessment inputs.....	27
Table 11 Preliminary IS Essentials scorecard	32
Table 12 Current sustainability performance	34

Executive Summary

This Technical Paper – Sustainability supports the Environmental Impact Statement for the Lord Howe Island (LHI) Critical Infrastructure Project (the Project). It documents:

- Measures to address the sustainability of the Project and, where an appropriate accredited rating tool exists, recommend an appropriate target rating for the Project.
- An assessment of the Project against current guidelines including targets and strategies to improve Government efficiency in use of water, energy, transport and decarbonising infrastructure).

The assessment involved a review of the Secretary's Environmental Assessment Requirements (SEARs), the island's existing conditions, relevant New South Wales (NSW) government policies and legislative frameworks, and design plans and reports to understand the sustainability requirements for the Project. Also, various sustainability rating approaches were reviewed to identify an appropriate rating tool for the Project. Considering the estimated capital investment and scope of the Project, IS Essential Rating (Bronze target rating with stretch target rating for Silver) was identified as an appropriate accredited rating tool. This will drive the development of the Project towards achieving sustainability outcomes, addresses key material issues and aligns with the strategic direction of the NSW government.

Following the IS Essentials framework, a preliminary sustainability materiality assessment was undertaken in a multidisciplinary workshop to identify the sustainability issues of highest priority for internal Project stakeholders. The highest impact areas identified, include:

- Urban and Landscape Design
- Stakeholder Engagement Strategy
- Climate and Natural Hazards Risks
- Ecological Protection and Enhancement
- Integrating Sustainability

Based on the initial assessment of the Project's sustainability performance at the early design stage (20% design), the Project is currently contributing to a few of the IS Essentials rating requirements.

The outcomes of this Technical Paper will better inform the sustainability expectation of the Lord Howe Island Board (LHIB) during detailed design. Ecologically Sustainable Development (ESD) principles may be incorporated into the detailed design and ongoing operation of the Project, through focused design considering environmental impacts and through a gap analysis against IS Essentials ratings as a holistic sustainability rating tool. The following actions are recommended:

- The Project target an IS Essentials Design and As-built Bronze Rating 20-39.9 points with stretch target for Silver Rating – 40-59.9 points. Key internal and external stakeholders to be engaged at detailed design to allow for strategic development of high value, whole of life sustainability initiatives to be integrated into the Project.
- The Project incorporate adaptability and resilience into the Project design to accommodate future changes and avoid the threats of environmental damage. Resource efficiency, waste minimisation, low carbon emissions, sustainable procurement, stakeholder engagement, cultural heritage protection, and implementation of polluter pay principles must be considered. Ecological impacts should be minimised while habitat connectivity be enhanced. Importantly, the ESD principles should be embedded in delivery of the Project and captured in a project Sustainability Plan, which is publicly accessible.
- Take steps to identify sustainability initiatives and integrate sustainability actions into operational requirements (where relevant), as well as ensuring the ongoing monitoring and review of water, energy and transport efficiency through design, construction and operational phases. Consideration should be given to the balance between resource efficiency, cost-effectiveness, and sustainability outcomes aligned with relevant NSW policies, guidelines and strategic frameworks.

Glossary

Term	Description
DPHI	Department of Planning, Housing and Infrastructure
ESD	Ecologically Sustainable Design
EPA	Environment Protection Authority
EPL	Environment Protection Licence
GHG	Greenhouse Gas
IS	Infrastructure Sustainability
LHI	Lord Howe Island
LHIB	Lord Howe Island Board
LoLo	Lift-on Lift-off
MRF	Material Recovery Facility
NSW DCCEEW	New South Wales Department of Climate Change, Energy, the Environment and Water
RoRo	Roll-on Roll-off
SCM	Supplementary Cementitious Materials
SEARs	Secretary's Environmental Assessment Requirements
WMF	Waste Management Facility
WWTP	Wastewater Treatment Plant

1. Introduction

The New South Wales (NSW) National Parks and Wildlife Services (NPWS) branch of Department of Climate Change, Energy, the Environment and Water ('DCCEEW' or 'Proponent'), on behalf of the Lord Howe Island Board (LHIB) proposes the construction, operation and maintenance of new marine infrastructure, cargo handling facility, biosecurity infrastructure and waste management facility (the Project) on Lord Howe Island, and associated landscape and vegetation restoration.

The Proponent seeks development consent for the Project as Critical State Significant Infrastructure (CSSI) under Division 5.2, section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project is a controlled action (2025/10188) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999) and will be assessed under the bilateral agreement between the NSW and Commonwealth Governments.

1.1 The Project

The Project is part of the broader Lord Howe Island Critical Infrastructure Program; however, the aspects being considered within this report comprise the construction, operation and maintenance of the following on Lord Howe Island:

- Freight handling facility which includes new and upgraded marine infrastructure (new piled vessel ramp and upgraded jetty and existing public 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 buildings, viewing area, picnic area, landscaping, retaining walls, amenities and vehicle and boat trailer parking;
- Waste management facility (WMF) upgrades which includes new storage sheds and materials processing facilities (including for organic material), wastewater treatment plant (WWTP) and waste receival area (including chemical and hazardous waste), hardstand and roads, staff office, and selective dune restoration at the existing WMF;
- Dedicated dog kennels to house detection dogs; and
- Self-service fuel bowser along Old Lagoon Road.

1.2 Project Location

The Project is on Lord Howe Island, which is a 1,455 hectare (ha) island located about 770 kilometres (km) to the northeast of Sydney, NSW, and about 570 km east from Port Macquarie, NSW. Port Macquarie is the nearest mainland port to Lord Howe Island and is the base for the current marine freight service. Lord Howe Island is part of the state of NSW and is regarded legally as an unincorporated area administered by the LHIB.

The location of the Project from a regional context is shown in Figure 1. The Project Area comprises the North Zone and the South Zone as shown in Figure 2 and Figure 3. The North Zone includes marine and land-based infrastructure, including a freight handling facility, a piled vessel ramp, and biosecurity infrastructure. The South Zone includes the waste management facility, dog kennels and fuel bowser.



Figure 1 Regional Location Map



Figure 2 Project Area North Zone



Figure 3 Project Area South Zone

1.3 Purpose of this Report

Secretary's Environmental Assessment Requirements (SEARs) were issued by the Department of Planning, Housing and Infrastructure (DPHI) on 14 April 2025. Supplementary SEARs were issued on 08 August 2025.

In accordance with the Project SEARs, SMEC Australia Pty Ltd (SMEC) has prepared this Technical Paper: Sustainability on behalf of the Proponent to reduce the NSW Government's operating costs and ensure the effective and efficient use of resource on the Project, including maximising the conservation of natural resources. The scope of this assessment includes:

- Measures to address the sustainability of the Project and, where an appropriate accredited rating tool exists, recommend an appropriate target rating for the Project.
- An assessment of the Project against current guidelines including targets and strategies to improve Government efficiency in use of water, energy, transport and decarbonising infrastructure.

1.3.1 Assessment Guidelines and Requirements

This Technical Paper has been prepared to inform the EIS, addressing the Sustainability SEARs (Key Issue Number 14) for the Project with the following desired performance outcome: *"The project reduces the NSW Government's operating costs and ensures the effective and efficient use of resources. Conservation of natural resources is maximised."*

Table 1 summarise the specific Sustainability SEARs for the Project.

Table 1 SEARs requirements

Requirement	Description	Section Addressed
1	Consider measures to address the sustainability of the project and, where an appropriate accredited rating tool exists, recommend an appropriate target rating for the project.	Sections 7, 8, 9 and 10
2	Consider and assess the project against current guidelines including targets and strategies to improve Government efficiency in use of water, energy, transport and decarbonising infrastructure.	Sections 4, 5, 6 and 7

This Technical Paper has considered the relevant guidelines (refer to Section 4), including [Decarbonising Infrastructure Delivery Policy \(INSW 2024\)](#), with future design stages to align with the DCCEEW Strategic Plan (2024) and its key principles.

2. Project Description

This chapter outlines the permanent infrastructure required to operate the Project, as well as the key construction elements and activities required to construct the Project. A comprehensive and detailed description of the Project is provided in the EIS, which has been relied upon for the basis of this technical assessment.

2.1 Project Overview

The indicative project layout is shown on Figures 4 and 5. The Project includes the following components:

North Zone

- Freight Handling Facility
 - New and upgraded marine infrastructure (e.g., jetty and landing facilities) and cargo interface areas for freight service operations;
 - Upgraded roads and hardstand areas to facilitate safe movement of cargo from the vessel to the Island via the freight handling facilities;
 - Biosecurity infrastructure including quarantine facilities;
 - Adaptive reuse of the existing Ocean View and Old Cargo Shed buildings;
 - Upgraded boat ramp and boat parking for recreational vessels; and
 - New public amenities (e.g., viewing area and parking).

South Zone

- Waste Management Facility
 - Relocation and reconfiguration of the organics processing infrastructure
 - Construction of a waste receival area/shed to facilitate community waste disposal;
 - Construction of a hardstand dedicated for waste storage and facilities/areas to adequately store liquid and hazardous wastes;
 - Construction of a new materials recycling facility (MRF) and new working platform to provide secure, safe operating conditions;
 - Perimeter fencing, security and restricted access upgrades; and
 - Wastewater Treatment Plant (WWTP).
- Dedicated kennel for housing detection dogs near the airport; and
- A self-service fuel bowser on Old Lagoon Road
- Detailed design, site investigations and construction of the Project, inclusive of the North Zone and South Zones, is expected to occur over a period of approximately 20 months.



Figure 4 Project Layout (North Zone)



Figure 5 Project Layout (South Zone)

2.2 Freight Handling Facility

2.2.1 Marine Infrastructure

The proposed marine infrastructure, forming part of the Freight Handling Facility (FHF), includes upgrades to the existing jetty, construction of a new piled vessel ramp adjacent to the jetty, and upgrades to the existing boat ramp at Wilsons Landing. The piled vessel ramp would facilitate the safe docking of the new marine freight vessel, safe and efficient cargo loading and unloading.

New piled vessel ramp

A new piled ramp is proposed that would accommodate the landing of the new marine freight vessel and allow for “roll-on roll-off” (RoRo) cargo handling. RoRo relies on vessels with ramps so that cargo can be driven onto and off the vessel making loading and unloading of cargo easier and faster than traditional container shipping which uses cranes to lift cargo onto and off vessels.

The new piled vessel ramp would be located on the southern side of the existing jetty to enable safe docking and efficient loading and unloading of the marine freight vessel, while allowing the existing jetty to continue being used for “lift-on lift-off” (LoLo) cargo handling.

The proposed piled vessel ramp will be supported on piles to elevate the structure above the existing beach profile, thereby minimising potential impacts on adjacent shoreline processes. The ramp will be subject to further detailed engineering design and operational assessments. At this stage, it is envisaged that the ramp would generally comprise the following key materials and supporting infrastructure:

- New piles;
- Precast concrete headstocks;
- Precast concrete planks;
- Mooring and breasting piles;
- Breasting and mooring dolphins;
- Adequate fendering system as required; and
- Upgrades to the existing rock revetment wall.

Upgrades to the existing jetty

The existing jetty would be retained to support LoLo cargo handling should this capability be required. The existing jetty would be upgraded with the addition of berthing and mooring bollards and public domain furniture. The upgrades to the existing jetty would be subject to further engineering design and operational assessments.

Boat ramp refurbishment

The existing boat ramp at Wilsons Landing is currently used by smaller recreational vessels. The existing boat ramp would be refurbished to make it suitable for larger recreational vessels up to 18 m in length. The refurbishment works would include:

- Upgrading the existing boat ramp to generally comply with the applicable codes and standards including the NSW Boat Ramp Guidelines;
- Increasing the overall dimensions of the boat ramp by approximately 8.5 m in length and 1 m in width;
- Rotating the boat ramp by approximately 9 degrees to minimise the amount of rock reef clearing required to accommodate the extended length of the ramp (some trimming of the rock reef may still be required); and
- Installing mooring infrastructure such as breasting and mooring dolphins.

2.2.2 Land based Infrastructure

New, modern freight handling and biosecurity infrastructure would be constructed near the marine infrastructure to facilitate the Island’s biosecurity and quarantine requirements to screen incoming materials.

Laydown and staging area

A new dedicated laydown area is proposed for the temporary storage, staging, and handling of cargo upon arrival to the Island and prior to its departure to the mainland. Some existing vegetation may be removed to ensure sufficient area to manoeuvre forklifts and vehicles used to load and unload the vessel.

A bunded hardstand surface and/or paved area with drainage would be provided. The laydown area would provide a structured location for organising and managing cargo and freight and would be designed to accommodate various freight types including containers, bulk goods, and bulk fuel. The laydown area would be accessed via Lagoon Road.

The perimeter of the laydown and staging area would be temporarily secured during vessel loading and unloading. At other times, the area would generally be accessible to the public.

Container unstuffing/stuffing shed

A new container unstuffing/stuffing shed is proposed to serve as a cargo and handling area for the freight vessel operators. The shed would be built on a reinforced concrete slab and would be constructed of compressed fibre cement cladding, with a profiled metal roof sheeting and high level operable glazed louvres. Roller doors would be provided to accommodate forklift access. The shed would be approximately 6.7 m high and approximately 182 m² in area.

Biosecurity and quarantine facility

A new, dedicated, biosecurity and quarantine facility is proposed to support biosecurity and quarantine operations on the Island. The facility would allow biosecurity officers to inspect freight items identified as potential threats and for routine testing. The facility would be fully sealed to contain any biosecurity materials that are detected, and would be always closed to the public.

The facility would be constructed on a reinforced concrete slab with compressed fibre cement cladding and profiled metal roof. High level operable glazed louvres may be provided. The facility would be designed to allow drive-in / reverse-out operations with roller doors to allow forklift access and operations. The facility would be approximately 50m² in area. Fencing, bunding and containment measures would also be included.

Australia Post and LHIB Storage Area

A new Australia Post facility and a storage area for LHIB would be provided. The Australia Post facility would be approximately 17m² and would be used to store uncollected mail and freight managed by Australia Post.

Ocean View Boatshed and Old Cargo shed

The existing 'Ocean View' Boatshed would be used for storage to support Marine Parks and TfNSW operations. The existing annex and above-ground water tanks would be removed from the northwestern side of the boatshed to provide space for at-grade boat parking for two vessels. The new boat parking area will be on a sealed concrete slab with a finished area of approximately 100m². A new water tank would be provided (either above ground or below ground). A new viewing deck would be constructed on the southern side of the Old Cargo Shed to provide pedestrian access to the existing jetty. TfNSW, responsible for emergency response equipment, will use the Ocean View Shed to store emergency response equipment (e.g., first aid kits, chemical spill clean-up equipment etc).

Boat trailer parking area

A new driveway and removal of a Norfolk Island pine tree would be required on the northern side of the proposed stuffing/unstuffing shed to provide public access to the boat ramp from Lagoon Road while the vessel is being loaded and unloaded. Boat trailer parking would be provided adjacent to the laydown area. Parking would be designed in accordance with AS2890.1 Off-Street Parking Facilities.

2.2.3 Landscaping and Public Domain Works

Landscaping and public domain improvements are proposed as part of the Project. Public access will be incorporated into the new/upgraded marine infrastructure including for pedestrians and vehicles. Landscaping is proposed north and south of the existing jetty.

The proposed landscaping and public domain works would include:

- Upgrade the Wilsons Landing Picnic Area including new interpretive signage and furniture;
- Retain the two existing Norfolk Island Pine trees located between the Old Cargo Shed and the Marine Rescue buildings;
- Retain the existing mooring anchor adjacent to the southern car park area;
- Bicycle parking adjacent to the southern car park area;
- Feature tree planting adjacent to the vehicle entrance from Lagoon Road;
- New screen planting in a bioswale along the Lagoon Road frontage; and
- Maintain existing access points to the beach

2.3 Waste Management Facility

The Project would include upgrades to the existing Waste Management Facility (WMF) to provide a fully functioning waste reception and processing facility to service the needs of the residents of Lord Howe Island.

The WMF would include the following:

- Waste-receival area comprising a dedicated, one-way, drive-through waste drop-off facility for commercial and residential waste with clearly demarcated areas to segregate waste types (e.g., mixed-recyclables, paper and cardboard, food and organics etc.);
- A Chemical Shed with separate storage zones for the safe containment, handling, and temporary storage of waste such as paint, used oil, batteries, domestic gas cylinders, phosphorescent and other lighting tubes and smoke detectors;
- A Materials Recovery Facility (MRF), which would include a new working platform to provide secure, safe operating conditions. The MRF equipment would consist of two balers, a wrapper, hoppers, conveyors, picking station, sorting conveyor/trommel, capture bins, glass crusher and sorter. One of the balers will be for steel and aluminium cans and other waste;
- Open bunkers and dedicated storage areas to hold baled waste material, bulky goods and organics, and waste containers and/or skips awaiting shipment. These areas will be located at the northwest end of the WMF, the furthest area from public access;
- A dedicated organics processing workshop with specialised equipment to mechanically and biologically break down organic materials and include curing and storage areas for final products. The final products will be managed for odours, leachates and quality control in accordance with the Environment Protection Licences (EPL);
- A new, dedicated WWTP, which will include settling and aeration tanks, clarifiers, disinfection equipment and sludge treatment. The WWTP will be constructed within the WMF to service the Island; and
- An office/amenities building will be located adjacent to the public limit of the WMF.

The WMF will be fully fenced and secured. Access by the public will be restricted to fixed hours of operation. The design of the facility will facilitate the processing and secure storage of waste, with hardstands constructed of permeable and impermeable surfaces such as pavers, concrete or asphalt. The public will not have access to the WMF beyond the waste-receival area unless via appointment.

2.3.1 Dog Kennels and Fuel Bowser

Detection dog kennels are proposed to house the detection dogs used for biosecurity checks at the airport (daily) and freight handling facility (fortnightly). The kennels would be constructed on an existing grass area adjacent to the BoM weather station at 16 Old Lagoon Road (Lot 219 DP45732). The facility would include kennels for up to four dogs and an outdoor and indoor training area.

The proposed fuel bowser would include a concrete hard stand area and two above ground fuel containers with a self-serve bowser with credit card facilities.

2.4 Construction Sites

Two main construction sites would be required for the Project. The North Zone construction site is where the freight handling facility would be located and includes marine and land-based infrastructure. The South Zone construction site is where the WMF, dog kennels and fuel bowser would be located. The construction sites would be located within existing operational footprints, where possible, to minimise the construction footprint and disruption to the surrounding areas.

The final construction staging, sequencing, and methodology would be determined by the contractor following determination of the application.

2.5 Operation

Upon completion of construction, the new/upgraded FHF, WMF and biosecurity infrastructure will operate continuously and in tandem to facilitate the Project and the broader Lord Howe Island Critical Infrastructure Program objectives.

Operation of the Project is likely to involve:

- Cargo unloading to the cargo unstuffing facility and for onward 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
- Receival, 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.

2.5.1 Freight Handling Facility

The vessel generally travels to the island every fortnight. The time and day that the vessel can dock is dependent on tides and weather conditions and may vary. Cargo would be transported on the vessel using 20-foot dry containers and 20-foot reefer containers, each with a maximum load of up to 6.8 tonnes.

Cargo from the vessel would be either driven off or unloaded with small and medium sized forklifts and cranes and then placed in the loading/unloading area. The cargo would then be transported by forklifts into the cargo unstuffing shed for further inspection. Once the cargo has been fully unloaded, the vessel would be loaded with cargo for transportation back to the mainland. This would include general cargo as well as waste from the WMF that requires disposal on the mainland.

Cargo that requires biosecurity inspections would be moved into the biosecurity and quarantine room for further inspection by a quarantine officer prior to release. Quarantine and monitoring procedures would be implemented in accordance with applicable national and local biosecurity regulations, strategies, and policies to minimise the risk of serious incursions that could threaten the island's biodiversity and agricultural assets.

The loading and unloading of the vessel typically take two days to complete. During this time, the freight handling facility must remain secure. Public access to the jetty and piled vessel ramp, laydown areas and buildings within the freight handling facility would be restricted at these times. Once the vessel has departed, these areas would be publicly accessible.

2.5.2 Waste Management Facility

The operation of the existing WMF is regulated under EPL No. 10466 (EPL 10466) which regulates the types of waste and the volume and mass limits that can be processed by the WMF. The WMF would be designed to accommodate a 50% increase per month in the volume of waste that can be received (compared to the average volumes of waste received between 2019 and 2022).

The hours of operation for the WMF would be between 6:30am to 3:00pm Monday to Saturday. Reception of waste (i.e., waste drop off by public) would generally occur from 7:00am to 10:00am Monday, Wednesday and Saturday during the winter months with an additional day (Friday) provided during summer for general domestic and chemical waste drop off.

Waste storage would be designed to provide one additional month of storage capacity as a contingency in the event that waste is unable to be processed during a given month. This also applies to the outcomes of some processes like recyclables and glass from the MRF (bales and maxi-bags).

The operation of the WMF would include:

- Receiving area and site office
- Material Recovery Facility
- Chemical storage
- Organics shed
- Bulky waste storage
- Wastewater Treatment Plant
- Stormwater collection
- Access and security
- Utilities and services

3. Methodology

This Technical Paper followed the following steps to assess the sustainability impacts of the Project:

- Review of relevant legislation, policies, guidelines and frameworks related to sustainability and conservation of natural resources, including energy and water efficiency, transport efficiency/mode shift policies, decarbonisation;
- Review of the Project scope and existing site conditions, including water, energy, transport, waste management and infrastructure decarbonisation;
- Identification of a sustainability pathway for the Project considering available accredited sustainability ratings;
- Preparation of a preliminary materiality assessment and identification of the most material sustainability aspects;
- Undertaking a high-level assessment of current sustainability performance of the Project;
- Identification of key sustainability impacts and potential mitigation measures; and
- Provision of recommendations on the next steps and sustainability initiatives to ensure effective and efficient use of resources.

This assessment is based on the information available at the time of reporting and is intended to provide a high-level appraisal of the Project's alignment with the Sustainability SEARs. A more detailed assessment of lifecycle impacts, particularly in relation to embodied carbon and whole-of-life resource use, would be required in the next phases of the Project to fully quantify the Project's sustainability performance. Future refinements to the design and the availability of updated data or benchmarks may also influence the outcomes of this assessment.

4. Legislation, Policy and Guidelines

A summary of key legislation and policy documents relevant to the Project are outlined in the following sections.

4.1 International Frameworks

Table 2 International Frameworks

Strategy, Policy or Plan	Summary	Relevance to the Project
Managing Natural World Heritage (UNESCO, 2012); Managing Cultural World Heritage (UNESCO, 2013)	Provides international guidance for integrating sustainability, conservation, and community involvement into World Heritage management.	The Project aligns by avoiding/minimising impacts to biodiversity, heritage, and cultural values while strengthening sustainable management.
UN Sustainable Development Goals (2015)	Global goals for sustainability. Relevant: SDG 7 (Clean Energy), SDG 11 (Sustainable Communities), SDG 12 (Responsible Consumption), SDG 13 (Climate Action).	The Project supports responsible waste management, reduced emissions, and improved sustainability outcomes for Lord Howe Island.
Paris Agreement (2015)	Global climate treaty committing Australia to reduce emissions by 43% by 2030 and achieve net zero by 2050.	The Project contributes indirectly by incorporating energy efficiency, renewable energy, and sustainable operations that help reduce emissions and support Australia's national commitments.

4.2 National Legislation and Policy

Table 3 National Legislation and Policy

Strategy, Policy or Plan	Summary	Relevance to the Project
Australian World Heritage Management Principles (EPBC Regulations, 2000)	Schedule 5 of the Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regulations). Principles for managing World Heritage properties sustainably, consistent with the World Heritage Convention.	The Project will minimise impacts to World Heritage values during construction and operation, ensuring compliance with EPBC obligations.
National Waste Policy Action Plan (2019)	Sets out circular economy principles, with goals of waste reduction, increased recycling, and responsible materials use.	The Project aligns with the National Waste Policy Action Plan (2019) by supporting circular economy principles, with waste separated at the WMF to prioritise reuse and recycling before export.
Climate Change Act 2022 (Cth)	Establishes Australia's legislated emissions reduction targets (43% by 2030, net zero by 2050). Infrastructure projects are expected to demonstrate consistency with national	The Project can incorporate low-emission design, energy-efficient systems, and support reduced transport emissions by improving

Strategy, Policy or Plan	Summary	Relevance to the Project
	decarbonisation and climate resilience pathways.	local waste handling on LHI, aligning with Australia's climate goals.
National Construction Code (NCC) – Section J (Energy Efficiency)	Establishes minimum energy efficiency requirements for new buildings, including insulation, lighting, and heating/cooling systems	Buildings must demonstrate compliance with Section J, supporting reduced operational energy use.

4.3 NSW State Legislation & Strategy

The NSW government is committed to delivering social, economic, and environmental outcomes for the community through a series of actions and objectives as set forth in various government acts, frameworks, strategies and policies. A summary of legislation and policy documents relevant to the Project are outlined below.

Table 4 NSW Key Legislative, Policy and Guidelines

Strategy, Policy or Plan	Summary	Relevance to the Project
Environmental Planning and Assessment Act 1979	Provides the statutory framework for land use planning and development assessment across NSW, encompassing environmental planning instruments, development applications, strategic planning, certification, infrastructure contributions, and environmental impact assessment. It mandates integration of environmental, social, and economic considerations into planning decisions.	The Project will be assessed under this Act, embedding sustainability into approval pathways.
Climate Change (Net Zero Future) Act 2023	Establishes legally binding targets for NSW: 50% reduction in greenhouse gas emissions by 2030, 70% by 2035, and net zero by 2050. Incorporates guiding principles for climate action, mandates resilience to climate change, and establishes an independent Net Zero Commission to monitor, review, and report progress.	The Project design and operation must contribute to emissions reductions and climate resilience.
Decarbonising Infrastructure Delivery Policy (Infrastructure NSW) 2024	Requires NSW Government infrastructure delivery agencies to consider and manage 'upfront' (embodied) carbon emissions in public infrastructure projects, specifically for building sector projects over AUD 50 million and all other infrastructure type over AUD 100 million. Includes requirements for measurement, reporting, and preference for recycled materials, establishing consistent carbon management practices from early project stages.	While the Project likely falls below the thresholds, it can still follow the same principles in a scaled manner - quantifying embodied emissions informally, adopting low-carbon materials, and documenting carbon-reduction strategies to align with best practice.
Waste Avoidance and Resource Recovery Strategy 2021	Sets waste reduction, recycling, and resource recovery targets for NSW. Infrastructure projects must incorporate construction waste minimisation, material reuse, and recycling to conserve natural resources.	The Project supports improved recycling and reuse outcomes by strengthening the Island's existing waste separation and recovery system, ensuring resources are diverted from

Strategy, Policy or Plan	Summary	Relevance to the Project
		disposal and aligned with NSW circular economy objectives.
NSW Waste Classification Guidelines (Environment Protection Authority (EPA), 2014, updated 2022)	Provide the mandatory framework under the Protection of the Environment Operations Act 1997 (POEO Act) for classifying all waste generated in NSW. Classifications determine how waste must be handled, treated, transported, and disposed of, ensuring environmental protection and consistency.	The Project must classify all waste streams in accordance with the Guidelines, ensuring safe and compliant handling of general, restricted, and hazardous wastes.
Protection of the Environment Operations Act 1997 (NSW)	Principal NSW legislation for environmental protection. Regulates pollution control, waste transport and disposal, and requires waste facilities to be licensed by the EPA.	The proposed Waste Management Facility must operate under an Environment Protection Licence (EPL) issued under this Act, ensuring compliance with statutory waste management and pollution prevention requirements.

4.4 Local and Regional Frameworks

Table 5 Key Local and Regional Legislative, Policy and Guidelines

Strategy, Policy or Plan	Summary	Relevance to the Project
Lord Howe Island Community Strategic Plan 2024–2034 (LHIB, 2024)	Long-term strategic vision based on community input, setting out priorities for environment, infrastructure, and heritage over the next 10 years. Provides guiding themes for LHI projects and partnerships.	The Project supports priority themes (including protecting culture, environment, and heritage) by delivering sustainable infrastructure to improve waste and resource management.
Operational Plan for the Lord Howe Island Marine Park (Marine Parks Authority, 2004)	Provides the framework for managing the LHI marine park, including conservation of biodiversity, ecological processes, and cultural values. Includes zoning, limits on human activities, and biosecurity measures to protect fragile marine ecosystems.	The Project will minimise impacts on the marine environment, enforce biosecurity protocols, and design infrastructure to support safe operations and avoid/minimise risks to the island's marine ecosystem.
Lord Howe Island Local Environmental Plan (2010; reviewed 2021)	Outlines planning and development controls for LHI, including zoning, dwelling limits, vegetation protection, and environmental constraints. Administered by LHIB but consistent with NSW planning policy.	The LEP restrictions do not apply to the Project. Project-specific SEARs guide the EIS. Facility design will ensure compliance with environmental and planning controls.
Strategic Plan for the Lord Howe Island Group World Heritage Property (LHIB, 2010)	Guides management of LHI's World Heritage values, including biodiversity, heritage, tourism, and marine protection. Key priorities: biodiversity conservation, cultural/environmental heritage management, sustainable visitor management.	The Project enhances biosecurity and waste management, supporting conservation of biodiversity and cultural values consistent with World Heritage obligations.
Lord Howe Island Board Waste	Established a target of 86% reduction in combustible/putrescible waste, achieved in	The Project provides the infrastructure needed to maintain

Strategy, Policy or Plan	Summary	Relevance to the Project
Minimisation and Management Strategy (1998; reviewed 2010)	2012–13 through improved recovery and sorting. Remains a guiding framework for local waste practices.	and strengthen high diversion rates, maximising reuse, recycling, and composting while reducing reliance on off-island disposal.

4.5 Sustainability Tools and Rating Schemes

Table 6 Relevant Sustainability Tools and Rating Schemes

Strategy, Policy or Plan	Summary	Relevance to the Project
Infrastructure Sustainability (IS) Rating Scheme	This is Australia's leading sustainability performance framework for infrastructure. It evaluates projects across environmental, social, economic, and governance outcomes, from design to operation. By benchmarking sustainability, it drives resource efficiency, resilience, innovation, and improved stakeholder value, supporting delivery of more sustainable, climate-resilient infrastructure assets.	The IS Rating Scheme and its principles may provide an effective framework to demonstrate the Project's commitment to - sustainability performance aligned with recognised industry benchmarks, ensuring resource efficiency, waste minimisation, and alignment with NSW and national decarbonisation goals.
National Australian Built Environment Rating System (NABERS)	National rating system measuring operational performance of buildings and facilities across energy, water, waste, and indoor environment quality. Supports continuous improvement and transparency.	Although designed primarily for building assets, applying NABERS principles (e.g., monitoring energy and waste performance) could support efficient facility operation and alignment with net zero and circular economy objectives.
Green Star Communities -Green Building Council of Australia (GBCA)	A national framework developed by the GBCA to assess the planning, design, and delivery of sustainable communities and precincts. It evaluates projects against categories such as governance, liveability, economic prosperity, environment, and innovation, and is widely recognised for shaping urban and regional development towards more resilient, inclusive, and environmentally responsible outcomes.	While primarily applied to larger urban precincts, some of Green Star Communities principles may be useful to guide integrated planning for the Project.

5. Existing Conditions

5.1 Water

The following documents were reviewed to inform the exiting conditions assessment:

- Lord Howe Island Board (2024). Community Strategic Plan 2024–2034.
- NSW DCCEE (2025). Lord Howe Island Critical Infrastructure Program – Environmental Impact Statement.
- UNESCO (1982, updated 2023). Lord Howe Island Group – Statement of Outstanding Universal Value.

LHI does not have a centralised reticulated water supply system. Potable water is obtained primarily from rainwater tanks, with rainfall collected from rooftops and stored for household and facility use, including the WMF offices.

Groundwater resources are extremely limited and highly vulnerable to over-extraction and saline intrusion, making them unsuitable as a reliable long-term supply. Small surface water catchments provide only minor supplementary sources. Overall, water security on the Island is rainfall-dependent and is managed carefully by the LHIB.

The Island’s fringing lagoon and nearshore reef ecosystems are highly sensitive to changes in water quality. Runoff, stormwater, and wastewater discharges must therefore be strictly managed to protect seagrass meadows, coral reefs, and endemic species, which form part of the Lord Howe Island World Heritage property.

5.2 Energy

The following documents were reviewed to inform the existing conditions assessment:

- Lord Howe Island Board. Electricity Generation and Management on Lord Howe Island.
- Lord Howe Island Board. Electrical Service Rules.
- NSW DCCEE (2025). Lord Howe Island Critical Infrastructure Program – Environmental Impact Statement.

5.2.1 Primary Generation, Distribution and Backup Power Supply

Electricity on the Island is provided via a centrally operated powerhouse and distributed through an underground electrical reticulation network servicing approximately 300 customers. Historically, supply relied on three 300 kW MTU Detroit Series 60 diesel generators and one 425 kW Cummins diesel backup unit. Power is distributed at 6.6 kV (originally designed for 11 kV) and stepped down by padmount substations to 415/240 volts for local supply.

Distillate fuel is delivered by marine freight and stored in bulk tanks at the powerhouse. A frequency injection control system helps manage peak loads, including hot water boosting, and is adjusted seasonally. Electricity supply and distribution are governed by the LHI Electrical Service Rules and AS/NZS 3000:2018 Wiring Rules.

Current power capacity on the island is constrained, with any significant increase in power demand likely to require substantial infrastructure upgrades.

5.2.2 Hybrid Renewable Energy

In April 2021, the LHI Renewable Energy Project was commissioned, delivering a 1.3 MWp solar photovoltaic (PV) array, 3.7 MWh battery storage system, and advanced microgrid controls. The hybrid system now supplies approximately two-thirds of the Island’s annual electricity demand, reducing reliance on diesel generation by around 67% (equivalent to ~360,000 litres of fuel savings per year).

This transition has improved energy security, reduced exposure to global fuel price fluctuations, and lowered the Island’s greenhouse gas emissions intensity. The system operates in conjunction with the existing diesel

powerhouse to provide continuous, resilient supply. Renewable energy performance is reported through the LHIB's infrastructure and sustainability monitoring processes.

5.2.3 Fuel Use

Despite renewable integration, diesel and petrol remain critical energy sources for backup power, vehicles, plant, and marine operations. Fuel is supplied to the island via a fortnightly freight vessel. A privately owned fuel bowser provides public access Monday to Friday for one hour per day. Operating times vary in line with the aircraft schedule and are currently set at 13:00–14:00 on weekdays.

5.3 Transport

The following documents were reviewed to inform the existing conditions assessment:

- NSW DCCEEW (2025). Lord Howe Island Critical Infrastructure Program – Environmental Impact Statement.
- Lord Howe Island Board (2024). Community Strategic Plan 2024–2034.

LHI is only accessible by air and by sea, with marine freight providing the Island's primary supply connection. A cargo vessel operate approximately every two weeks between Port Macquarie and LHI, and unloading/loading typically requires two days, subject to tides and weather conditions.

The current freight handling facilities at LHI are co-located with public uses, including a jetty, boat ramp and picnic areas. Road transport on the Island is limited to a small network, with Lagoon Road serving as the main link between the freight landing and other key facilities such as the Waste Management Facility. Within the settlement area, residents and visitors rely heavily on walking and cycling for local transport, reflecting the Island's small scale and limited vehicle use.

Road and marine transport are entirely dependent on imported diesel and petrol fuels (see Section 5.2.3), highlighting the Island's continued reliance on external fuel supply chains.

5.4 Waste Management

The following documents were reviewed to inform the existing conditions assessment:

- NSW DCCEEW (2025). Lord Howe Island Critical Infrastructure Program – Environmental Impact Statement.
- NSW Environment Protection Authority (EPA) (1997). Protection of the Environment Operations Act 1997.
- NSW EPA (EPL No. 10466). Environment Protection Licence – Lord Howe Island Waste Management Facility.
- Lord Howe Island Board (1998; reviewed 2010). Waste Minimisation and Management Strategy.

The LHIB manages the Waste Management Facility (WMF) under Environment Protection Licence (EPL) No. 10466, issued by the NSW EPA under the *Protection of the Environment Operations Act 1997*. The WMF receives, sorts, and processes island waste prior to backloading to the mainland.

5.4.1 Waste Disposal

The Island has no landfill capability. Waste unable to be composted or reused is shipped to the mainland for recycling, reuse or landfill disposal. At the WMF, waste is sorted into streams including:

- Compostables (food, paper, cardboard, biosolids, green waste).
- Recyclables (glass, metals, plastics, concrete, oils, paints, batteries, cartridges, tyres, whitegoods, rubble).
- Reusables (building materials, furniture, books, toys, household items).

- General waste (household refuse, nappies, treated timber, mixed residuals).
- Incineration materials (untreated timber).

5.4.2 Reduce, Reuse, and Recycle

Residents deliver waste directly to the WMF as there is no garbage collection service. Public bins support recycling and waste separation. Community participation in reuse, reduction and recycling is essential given the high costs of transport and disposal.

5.4.3 Wastewater

Wastewater on LHI is currently managed through a combination of small-scale on-site treatment systems (e.g. septic tanks and aerated treatment units) by households and businesses, along with limited processing at the WMF.

The Island's sensitive groundwater aquifers and lagoon ecosystems are particularly vulnerable to nutrient and pathogen contamination. As a result, wastewater management is regulated under Environment Protection Licence (EPL) No. 10466, issued by the NSW EPA, which requires monitoring and reporting of discharges from the WMF.

5.5 Infrastructure Decarbonisation

The following documents were reviewed to inform the existing conditions assessment:

- NSW DCCEE (2025). Lord Howe Island Critical Infrastructure Program – Environmental Impact Statement.
- Infrastructure NSW (2024). Decarbonising Infrastructure Delivery Policy.
- Infrastructure Sustainability Council of Australia (2024). IS Technical Manual.

LHI's infrastructure has historically been carbon-intensive given the remote location of the Island, relying on imported fuels, freight, and construction materials. Recent initiatives, such as the hybrid renewable energy system, have reduced operational emissions, while waste backloading minimises local impacts but still generates transport-related emissions.

Future decarbonisation efforts need to consider not only operational emissions but also embodied carbon, which refers to the greenhouse gas emissions generated during the production, transport, and disposal of construction materials. Major sources include cement and concrete, steel and aluminium, as well as the shipping of these materials to the Island. In addition, construction-phase emissions arise from on-site activities, such as the use of diesel-powered equipment and the freight task associated with importing materials and exporting waste.

Due to LHI's isolation, there are some inherent constraints, such as: shipping will likely remain necessary, the supply of non-diesel-powered plant and equipment is currently limited, the Island's power capacity is limited, and durable materials (such as concrete and aluminium) will likely continue to be required, particularly in the harsh island environment.

6. Proposed Sustainability Pathway

Table 7 provides a summary of various frameworks and accredited tools available to address sustainability, each with distinct focus areas and applicability to different project types:

Table 7 Potential sustainability pathways

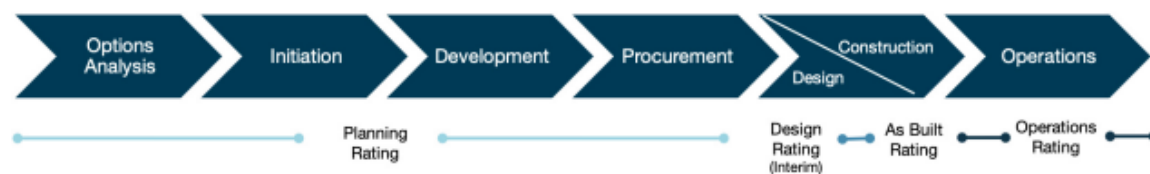
Potential sustainability pathways	Scope	Accredited	Commentary
Green Star Communities	Built environment	Yes	Focused on precinct-scale planning and design, which is less applicable to LHI given the Project's smaller, infrastructure-focused scope.
NABERS	Buildings	Yes	Best suited for buildings and operational energy/water efficiency, making it less relevant for this project, which involves infrastructure rather than standalone building assets.
ISC frameworks	Infrastructure	Yes	Best suited for various infrastructure projects, providing a holistic, accredited approach across environmental, social, cultural, and governance outcomes, which aligns with the Project's scale and objectives.
A Tailored Sustainability Framework	Flexible	No	Allows development of a Sustainability Framework and Management Plan specific to the Project needs, offering flexibility but lacking third-party assurance compared to accredited tools.

Based on the findings of this Technical Report, the available frameworks, and the Project's context and features, the ISC frameworks are best suited. Specifically, the IS Essentials rating is suggested to be the most appropriate pathway for the Project, balancing sustainability outcomes with project scale. While the latest version of ISC framework, ISv2.1, is a comprehensive rating tool applied to large, complex infrastructure projects, IS Essentials has been specifically designed for smaller-scale projects between \$5 million and \$100 million. It streamlines the number of credits while retaining alignment with the core principles of ISv2.1, making it more cost-effective and practical without compromising on rigour. A potential challenge of pursuing an ISC frameworks and IS Essentials pathway rating is the additional effort required to collect, verify, and report sustainability data, as well as a heavy stakeholder engagement. This can introduce complexity and resource demands beyond standard project procedures, requiring careful planning and integration into project delivery processes. However, this does improve the capability of design and management teams for future projects, which is ISC's intention.

The following sections provide more details on the ISC framework.

6.1 Infrastructure Sustainability (IS) Rating Scheme

The IS rating scheme is administered by Infrastructure Sustainability Council (ISC, previously known as Infrastructure Sustainability Council of Australia or ISCA). It is a comprehensive framework for assessing and rating the sustainability performance of infrastructure projects in Australia and New Zealand. The IS rating scheme is a third-party assurance framework that evaluates sustainability performance across the planning, design, construction, and operation phases of infrastructure projects. There is an IS rating tool to independently assess and reward sustainability at each stage of the infrastructure lifecycle from planning design, construction, and operations phase - refer to Figure 6.



Source: ISC ISv2.1 Technical Manual, August 2024

Figure 6 IS rating tool products across the infrastructure lifecycle

While the IS Rating Scheme provides a comprehensive framework suitable for large-scale infrastructure projects, ISC has also developed a simplified version known as IS Essentials. This pathway is specifically designed for smaller projects, providing a more accessible, cost-effective tool while maintaining alignment with the core principles of ISv2.1. This ensures that sustainability principles can be consistently applied across projects of varying scale and complexity. The IS Essentials approach is outlined in 6.26.2.

6.2 IS Essentials

An IS Essentials 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. The rating process is similar to the other rating tool versions; however, some improvements in verification and stricter evidence requirements have been introduced. Each “must” statement in a credit now requires supporting evidence.

The IS Essentials Rating tool includes the following components:

- The IS Essentials technical manual;
- The IS rating scorecard including materiality assessment calculator;
- IS materials calculator;
- IS significant decision-making register; and
- Various guidelines supporting the application of the tool.

6.2.1 IS Essentials Themes, Categories and Credits

The ISC rating tools are a scored tool wherein a project submits for points under each of the credits. Credits are areas of sustainability considerations that the Project is awarded for excelling in. Generally, each credit has three (3) levels of achievement from slightly progressing beyond current business-as-usual, to best practice and significant achievement beyond business-as-usual. Under all of the ISC rating tools there are 110 points available. There are 100 base points and 10 additional points available for innovations (under the Inn-1 credit). For IS Essentials, the total number of credits is reduced based on the capital band that the Project falls in. Table 8 outlines the number of credits applicable for each capital band.

Table 8 IS Essentials credits capital band screening

Capital Band	Permanent Credits screened in	Additional credits screened in	Total credits screened in		Elective credits screened in
			Lower limit	Upper limit	
\$5M to <\$20M	10	0 to 5	10	15	voluntary
\$20M to < \$50M	10	5 to 10	15	20	voluntary
\$50M to \$100M	10	10 to 15	20	25	voluntary

Table 9 provides a list of all credits for both Design and As Built submissions which are included in the IS Essentials framework and highlights the credits that are identified as permanent by the ISC (base credits). These credits are always included regardless of the capital band of the Project.

Table 9 IS Essentials themes, categories and credits

Theme	Category and Index	Credit	Credit Title
Governance	Place (Pla)	Pla-2	Urban and landscape design
	Leadership and management (Lea)	Lea-1	Integrating sustainability (<i>permanent credit</i>)
		Lea-2	Risks and opportunities (<i>permanent credit</i>)
		Lea-3	Knowledge sharing
	Sustainable procurement (Spr)	Spr-1	Sustainable procurement strategy (<i>permanent credit</i>)
		Spr-2	Supplier assessment and selection (<i>permanent credit</i>)
		Spr-3	Contract and supplier management
	Resilience (Res)	Res-1	Climate and natural hazards risks (<i>permanent credit</i>)
	Innovation (Inn)	Inn-1	Innovation (<i>permanent credit</i>)
Economic	Options assessment (Ecn)	Ecn-1	Options assessment and significant decisions (<i>permanent credit</i>)
Environmental	Energy and carbon (Ene)	Ene-1	Energy efficiency and carbon reductions (<i>permanent credit</i>)
		Ene-2	Renewable energy
		Ene-3	Offsetting
	Environmental impacts	Env-1	Receiving water quality
		Env-2	Noise
		Env-3	Vibration
		Env-4	Air quality
		Env-5	Light pollution
	Resource efficiency and management (Rso)	Rso-1	Resource strategy development
		Rso-2	Management of contaminated material
		Rso-3	Management of acid sulfate soil
		Rso-4	Resource recovery and management (<i>permanent credit</i>)

Theme	Category and Index	Credit	Credit Title
		Rso-6	Material lifecycle impact measurement and management (<i>permanent credit</i>)
		Rso-7	Sustainability labelled products and supply chains
	Water (Wat)	Wat-1	Avoiding water use
		Wat-2	Appropriate use of water sources
	Ecology (Eco)	Eco-1	Ecological protection and enhancement
	Stakeholder engagement (Sta)	Sta-1	Stakeholder engagement strategy
		Sta-2	Stakeholder engagement and impacts
	Legacy (Leg)	Leg-1	Leaving a lasting legacy
	Heritage (Her)	Her-1	Heritage protection and enhancement
Social	Workforce sustainability (Wfs)	Wfs-1	Job, skills and workforce planning
		Wfs-2	Workplace culture and wellbeing
		Wfs-3	Diversity and inclusion

Regardless of how many credits are screened-in, 110 points are available for award and are distributed amongst the screened-in credits. Distribution is determined by the materiality assessment (see Section 7) so that the most important sustainability topics specific to the Project are allocated more points.

6.2.2 IS Rating Process

The IS Rating process follows a structured pathway comprising registration, assessment, verification, and certification (Figure 7).

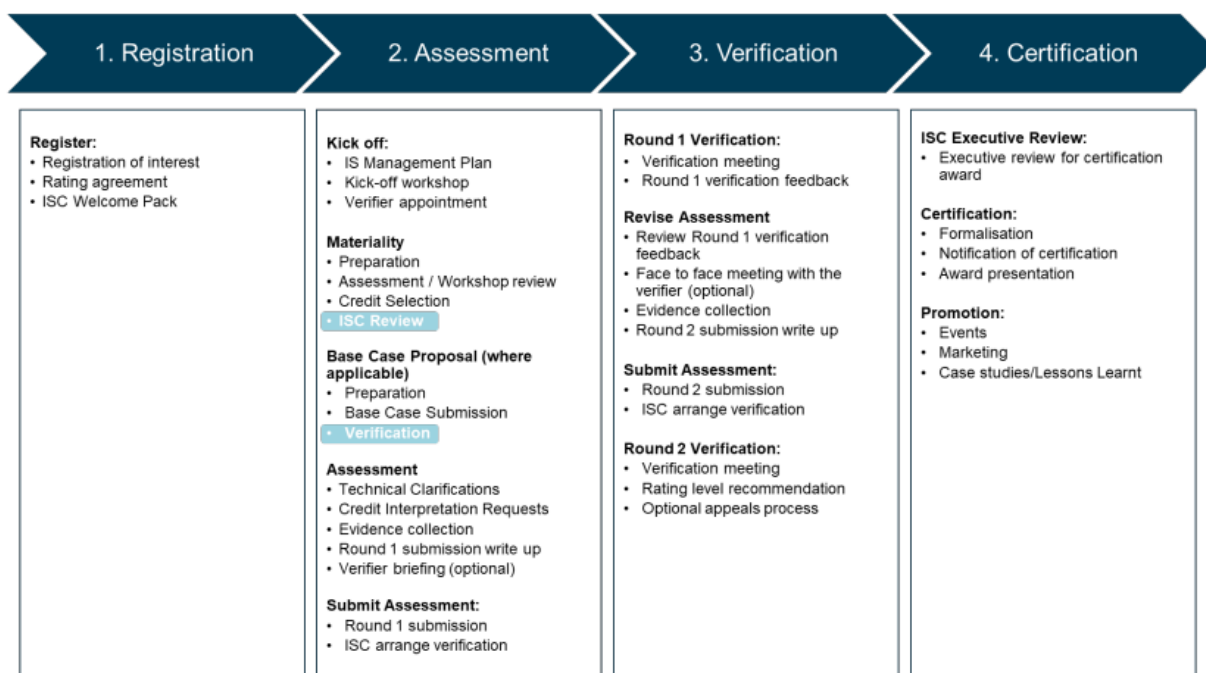


Figure 7 IS rating process (Source: IS Essentials Draft Technical Manual, Rev A).

For this Project, registration with the ISC would formalise participation in the IS Essentials scheme and provide access to guidance and verifier support. During the assessment stage, the Project's sustainability performance would be benchmarked against IS criteria, focusing on material issues most relevant to Lord Howe Island, such as resource efficiency, emissions reduction, and stakeholder engagement. Verification is then undertaken by independent verifiers to ensure credibility and transparency. Finally, ISC certification confirms the Project's achievement against the rating tool, with results published and formally recognised (Figure 8).



Figure 8 Rating award levels.

7. Preliminary Materiality Assessment

To respond to the SEAR requirements, the Project has undertaken a preliminary materiality assessment. The IS Essentials Materiality Assessment calculator which is included in the IS Essentials Scorecard was used.

7.1 Inputs

The preliminary materiality assessment for the Project was undertaken in a multidisciplinary workshop on 14 August 2025. The most current version of the IS Essentials Scorecard was used (Pilot), downloaded on 11 August 2025.

The responses in Table 10 were used as inputs into the materiality assessment calculator. Justifications for responses are given to provide value for later Project stages if/when the Project is registered.

Table 10 Materiality assessment inputs

Credit	Prompt	Response	Justification
Pla-2	Is the project a local, regional or nationally significant development?	Yes	The facility is critical infrastructure for the island, noted by the Critical State Significant Infrastructure status. The island is part of an NSW Marine Park and a World Heritage site, demonstrating state and national significance.
	Does the project or completed asset interface with residential, public use, mixed use areas, national parks, or land considered important to local indigenous communities?	Yes	The Project and completed asset will interface with public use. The island is an NSW Marine Park and a World Heritage site. There are no Indigenous communities associated with LHI.
Res-1	Is the project/ asset located in an area which is vulnerable to climate change and/or natural hazards?	Yes	Geographically vulnerable to sea level rise and extreme east coast low weather systems which are expected in climate models. Likely to depend on mainland for recovery.
	What is the asset life?	Medium (10 - 75)	WMF: 50 years as per Waste Management Facility Functional and Design Brief (SMEC, 2025 a). Marine structures: 50 years as per fixed-ramp structure in Stern Loading Vessel Piled Fixed-Ramp – Concept Design Report (SMEC, 2025 b) (SMEC, 2025 b).
	Have the community and key stakeholders expressed concerns about climate or natural hazard risks related to the project?	Yes	SEARs requirements demonstrate stakeholder (NSW Government) concern. General community sentiment for resilient infrastructure is also implicit in ‘What we heard’ Summary (NSW Government, 2025).
	What is the asset type?	Other	Most applicable drop-down option: not completely a road, rail, port, airport,

Credit	Prompt	Response	Justification
Ene-1, Ene-2, Ene-3	Does construction involve earthmoving and/or use of diesel plant and equipment (i.e. energy intensive)? Does the construction involve tunnelling?	Diesel plant and equipment	wastewater, water supply, communication or energy project. Design management input – no tunnelling necessary, only diesel plant and equipment.
	How energy intensive is the asset operation?	Medium (e.g. water treatment/supply, communications assets, significant mechanical ventilation requirements)	North Zone: has refrigeration containers. Approximately 80kVA demand designed to operate with a standalone generator. (SMEC, 2025 a). South Zone: WMF facility will operate with a 75kVA grid limit and a 100A isolator. (SMEC, 2025 a). Both combined are greater than that used for lighting, but lower than that used for a full-scale port/airport (as suggested in the calculator drop-down).
Env-1	Is there a risk of pollution to waterways from discharges (including groundwater)?	Yes	Coastline proximity and relative levels. Wastewater management on the Island is tightly regulated under NSW EPA's Environment Protection Licence (EPL 10466) due to the high vulnerability of local aquifers and lagoon ecosystems to contamination (see Section 5.4.3).
	Are the receiving waters considered ecologically sensitive?	Yes	The island is part of an NSW Marine Park and a World Heritage site.
	Are the receiving waters highly valued by stakeholders, including the local community?	Yes	The island is part of an NSW Marine Park and a World Heritage site (see Section 5.4.3).
Env-2	Does the construction/maintenance/operation involve noisy activities (piling, grinding, rock hammering, demolition, blasting, tunnelling)?	Yes	Piling is a fundamental construction methodology for the North Zone.
	How close are noise receptors?	< 10m away	Piling occurs within marine environment.
	Are project noise impacts an important issue for nearby residents, ecological receptors, or other land uses?	Yes	As part of an NSW Marine Park and World Heritage site, the island may host sensitive receptors, which requires further investigation.
Env-3	Does the construction/maintenance/operation involve piling, grinding, rock hammering,	Yes	Piling is a fundamental construction methodology for the North Zone.

Credit	Prompt	Response	Justification
	vibratory rolling, tunnelling (vibratory activities)?		
	How close are vibration receptors?	< 10m away	Piling occurs within marine environment.
	Are project vibration impacts an important issue for nearby residents, ecological receptors, or other land uses?	Yes	As part of an NSW Marine Park and World Heritage site, the island likely hosts sensitive receptors. This would need to be investigated further.
Env-4	Does the construction involve significant earthmoving, tunnelling and/or use of diesel plant and equipment (i.e. air emissions)?	No	Earthmoving is required, but is not significant on the scale of infrastructure projects – 6430m ³ of earthworks in total noted in Cargo Laydown Area drawings (SMEC, 2025 c) and Waste Management Facility drawings (SMEC, 2025 d).
	Are project air quality impacts an important issue for nearby residents, ecological receptors, or other land uses?	Yes	As part of an NSW Marine Park and World Heritage site, the island may host sensitive receptors, which requires further investigation.
Env-5	Does the construction/maintenance/operation involve nightworks which requires lighting?	Yes	Sensitive marine setting restricts night permissions. WMF expected to operate during daylight hours only. However, operational lighting provisions for dawn/dusk expected (likely operated manually).
	How close are light receptors?	< 10m away	North Zone is within marine environment.
	Are asset lighting impacts an important issue for nearby residents, ecological receptors, or other land uses?	Yes	As part of an NSW Marine Park and World Heritage site, the island may host sensitive receptors, which requires further investigation.
Rso-1	What is the project construction materials spend as a percentage of the capital value?	Medium (10 – 50%)	Conservatively assumed CAPEX and annual OPEX.
	Does the project involve significant earthworks/tunnelling or significant resource output generation?	No	Earthmoving is required, but is not significant on the scale of infrastructure projects – 6430m ³ of earthworks in total noted in Cargo Laydown Area drawings (SMEC, 2025 c) and Waste Management Facility drawings (SMEC, 2025 d). Total spoil output is 5650m ³ .
	Is resource efficiency a significant focus in the project jurisdiction or for other key stakeholders?	Yes	SEARs requirements demonstrate stakeholder (NSW Government) concern. General community sentiment for resource efficiency is also implicit in 'What we heard' Summary (NSW Government, 2025).

Credit	Prompt	Response	Justification
Rso-2	Has it been concluded that there is low or none risk of contamination on site?	Yes	North Zone: Contamination assessment for the EIS has demonstrated no contamination risk (SMEC, 2025 e). South Zone: Detailed site investigations for the EIS has demonstrated some contamination is present (asbestos, metals, microbials) however, no complete pathway is present, or levels are expected for a WMF, and risk is considered low (SMEC, 2025 f).
	Is contamination an important issue for, or risk to nearby residents or other land uses? E.g. if contaminated groundwater is migrating beyond the asset boundary	Yes	The island is part of an NSW Marine Park and a World Heritage site.
Rso-3	Has it been concluded that there is low or none risk of Acid Sulfate Soils (ASS) on site?	Yes	North Zone: Contamination assessment for the EIS have demonstrated no ASS risk (SMEC, 2025 e). South Zone: Detailed site investigations for the EIS have demonstrated no ASS risk (SMEC, 2025 f).
Rso-4	What is the project construction materials spend as a percentage of the capital value?	Medium (10 – 50%)	Conservatively assumed CAPEX and annual OPEX.
	Does the project involve significant earthworks/ tunnelling or significant resource output generation?	No	Earthmoving is required, but is not significant on the scale of infrastructure projects – 6430m ³ of earthworks in total noted in Cargo Laydown Area drawings (SMEC, 2025 c) and Waste Management Facility drawings (SMEC, 2025 d). Total spoil output is 5650m ³ .
	Is resource efficiency a significant focus in the project jurisdiction or for other key stakeholders?	No	SEARs requirements demonstrate stakeholder (NSW Government) concern. General community sentiment for resource efficiency is also implicit in 'What we heard' Summary (NSW Government, 2025).
Rso-6	What is the project construction materials spend as a percentage of the capital value?	Medium (10 – 50%)	Conservatively assumed CAPEX and annual OPEX.
	Is operational materials spend (replacement and maintenance) expected to be significant? (> 20% of construction spend)	No	Conservatively assumed.

Credit	Prompt	Response	Justification
Wat-1, Wat-2	Does the project have high water use requirements for construction activities?	No	Mainly dust suppression. Expected to be very low on the infrastructure construction water use scale.
	Does the asset operation/ maintenance have high water use requirements?	No	Expected to be used in glass wash at the MRF, but very low on the infrastructure water use scale. No irrigation included.
	Is water use and efficiency a significant focus or issue in the project jurisdiction, or for key stakeholders?	Yes	Rainwater is the only water supply for the island. Expressed explicitly in 'What we heard' Summary (NSW Government, 2025). See Section 5.1.
Eco-1	Is the construction area and contiguous areas previously disturbed?	Yes	Both zones are brownfield sites.
	What percentage of the construction area and contiguous areas is ecological habitat?	High (>30%)	The North Zone works in particular extend far into marine ecological habitat.
	Is the ecological habitat remnant native vegetation or highly valued by stakeholders?	Yes	The island is part of an NSW Marine Park and a World Heritage site.
Sta-1, Sta-2	Does the project change the socio-economic profile of the area? e.g. population dynamics, traffic flows, community severance, economic growth.	Yes, significantly	The Project improves community severance (connection to mainland) and improves public services (imports/exports and waste management).
	Is there potential for conflict to arise between the project and key stakeholders and/or the community?	Yes, but unlikely	The Project has engaged early and included local community and internal stakeholders in the concept design process.
Her-1	Have project early consultations/studies identified areas or objects of heritage value within or near the project boundary?	Yes	Two structures in the North Zone have heritage status. The Island has World Heritage Status.
	Does the project scope impact on identified areas or objects of heritage value?	Yes	The Project is reusing the two structures in the North Zone and adapting them.
	Are heritage areas/objects highly valued by stakeholders, including the local community?	Yes	World Heritage status.

7.2 Results

The IS materiality assessment calculator assigns a materiality weighting to each credit based on the answers provided:

- 0 = not material (scoped out)
- 1 = Low materiality
- 2 = Moderate materiality (default materiality)
- 3 = High materiality
- 4 = Very high materiality.

The 110 points that are available are then distributed across the scoped-in credits based on ISC's internal weighting of each credit (standard for all projects) and the materiality score.

Table 11 provides a list of the credits screened in from the preliminary materiality assessment, the materiality score, the suggested target level that could be achieved for the Project, ambitious stretch levels that could pursue even more progressive outcome, and scores for both target and stretch conditions.

Table 11 Preliminary IS Essentials scorecard

Credit	Title	Materiality Score	Target Level	Target Score	Stretch Level	Stretch Score
Pla-2	Urban and Landscape Design	4	2	5.14	3	7.72
Lea-1	Integrating Sustainability	2	2	2.92	3	4.37
Lea-2	Risks & Opportunities	2	2	1.88	3	2.83
Lea-3	Knowledge Sharing	2	Screened out			
Spr-1	Sustainable Procurement Strategy	2	1	1.11	1	1.11
Spr-2	Supplier Assessment and Selection	2	1	0.94	2	1.88
Spr-3	Contract and Supplier Management	2	Screened out			
Res-1	Climate and Natural Hazards Risks	4	2	3.77	3	5.65
Inn-1	Innovation	2	1	1.00	3	3.00
Ecn-1	Options Assessment and Significant Decisions	2	1	1.80	2	3.61
Ene-1	Energy Efficiency and Carbon Reductions	3	1	2.06	1.5	3.09
Ene-2	Renewable Energy	3	0.3	0.42	1	0.71
Ene-3	Energy Efficiency and Carbon Reductions	3	0.3	0.23	1	0.38
Env-1	Receiving Water Quality	4	1	1.35	2	2.71
Env-2	Noise	4	1	1.35	2	2.69
Env-3	Vibration	4	1	1.35	2	2.69
Env-4	Air Quality	2	Screened out			
Env-5	Light Pollution	4	1	0.92	2	1.84
Rso-1	Resource Strategy Development	3	1	1.15	2	2.31

Rso-2	Management of Contaminated Material	1	Screened out			
Rso-3	Management of Acid Sulfate Soils	1	Screened out			
Rso-4	Resource Recovery and Management	3	1	1.15	2	2.31
Rso-6	Material Life Cycle Impact Measurement & Management	2	1	1.36	1	1.63
Rso-7	Sustainability Labelled Products and Supply Chains	2	Screened out			
Wat-1	Avoiding Water Use	1	Screened out			
Wat-2	Appropriate Use of Water Sources	1	Screened out			
Eco-1	Ecological Protection and Enhancement	3	1	3.74	2	7.74
Sta-1	Stakeholder Engagement Strategy	3	2	3.86	3	5.79
Sta-2	Stakeholder Engagement and Impacts	3	1	1.93	2	3.86
Leg-1	Leaving a Lasting Legacy	2	Screened out			
Her-1	Heritage Protection and Enhancement	4	1	1.88	2	3.77
Wfs-1	Jobs, Skills and Workforce Planning	2	Screened out			
Wfs-2	Workplace Culture and Wellbeing	2	Screened out			
Wfs-3	Diversity and Inclusion	2	Screened out			
			Σ41.30 pts		Σ71.40 pts	
			Silver		Gold	

The above shows that the most important credits for the Project are:

1. Pla-2 Urban and Landscape Design
2. Sta-1 Stakeholder Engagement Strategy
3. Res-1 Climate and Natural Hazards Risks
4. Eco-1 Ecological Protection and Enhancement
5. Lea-1 Integrating Sustainability

As a sense check, the above screening in/out is consistent with what would be expected from a project in a context with sensitive ecological conditions, NSW Marine Park, world heritage status, and constrained infrastructure and resources. However, given the NSW Marine Park and world heritage site status, it is suggested that the Eco-1 credit should submit for an alternative materiality of 4. This will slightly change the above allocation.

It is important to note that while the Project includes a waste management facility, the rating scope is limited to the supporting infrastructure and does not extend to the functional operation of the facility itself. Accordingly, the Rso credits apply specifically to waste generated during construction and maintenance of the infrastructure. The Project scores moderately on these credits, as it does not generate significant waste.

8. Current Sustainability Performance

Some rating requirements are already met or have been contributed to through project efforts and 20% Concept Design documentation. While not a complete audit or gap analysis, the contributions in Table 12 are noted to highlight progress that has already been made towards the IS Essentials requirements for the project-specific credits.

The table below provides a snapshot of current sustainability contributions. As the Project progresses through design, construction, and operation, further opportunities will be considered to support the chosen sustainability pathway.

Table 12 Current sustainability performance

Credit	Title	Current Contribution
	General Rating Requirements	Preliminary materiality assessment, workshop, and MA evidence collation
Pla-2	Urban and Landscape Design	To be explored in future design, construction, and operation phases.
Lea-1	Integrating Sustainability	To be explored in future design, construction, and operation phases.
Lea-2	Risks & Opportunities	- Risk workshops - Running risk register which features Lea-2 relevant risks
Spr-1	Sustainable Procurement Strategy	To be explored in future design, construction, and operation phases.
Spr-2	Supplier Assessment and Selection	To be explored in future design, construction, and operation phases.
Res-1	Climate and Natural Hazards Risks	- Consideration of climate change in pavement design. - SEARs #3 Climate Change Risk and #7 Flooding
Inn-1	Innovation	To be explored in future design, construction, and operation phases.
Ecn-1	Options Assessment and Significant Decisions	To be explored in future design, construction, and operation phases.
Ene-1	Energy Efficiency and Carbon Reductions	To be explored in future design, construction, and operation phases.
Ene-2	Renewable Energy	Recommended solar with BESS in design
Env-1	Receiving Water Quality	Bioswales, soakage pits, and water quality devices included in design
Env-2	Noise	To be explored in future design, construction, and operation phases.
Env-3	Vibration	To be explored in future design, construction, and operation phases.
Env-5	Light Pollution	To be explored in future design, construction, and operation phases.

Rso-1	Resource Strategy Development	To be explored in future design, construction, and operation phases.
Rso-4	Resource Recovery and Management	Cut/fill balance optioneering
Rso-6	Material Life Cycle Impact Measurement & Management	To be explored in future design, construction, and operation phases.
Wat-2 ²	Appropriate Use of Water Sources	Rooftop stormwater capture included as a design requirement
Eco-1	Ecological Protection and Enhancement	- EPBC Referral documentation and preliminary studies - Inclusion of vegetation rehabilitation area in design.
Sta-1	Stakeholder Engagement Strategy	LHIB Stakeholder Engagement Strategy (SES) could be used as a foundation for project SES.
Sta-2	Stakeholder Engagement and Impacts	- Multiple early engagement invitations - Engagement workshops 'What we heard' Engagement Reports (2024 and 2025) - Preliminary definition of key stakeholder issues/opportunities - Regular community updates and continuous invitation for input.
Her-1	Heritage Protection and Enhancement	- Preliminary heritage studies - Stakeholder engagement.

² Please note that this credit is scoped-out in the preliminary materiality assessment but could be elected back into scope to capture project performance. Please be aware that this will distribute points away from other credits if elected.

9. Key Sustainability Impacts and Mitigation Measures

Based on the findings of the previous sections, this section presents a high-level assessment of key sustainability impacts associated with the Project construction, operation and cumulative impacts. It is intended to highlight key areas for consideration in design development. The sustainability impacts and mitigation measures require further and thorough assessment during the design development.

Biodiversity and Vegetation

- Project works may require localised vegetation disturbance, which, while limited in scale, has heightened significance given the Island's World Heritage values.
- *Mitigation (preliminary):* Design refinements and thorough construction planning to minimise impacts to sensitive areas, revegetation with native species, and strict erosion and sediment controls.

Greenhouse Gas (GHG) Emissions

- Diesel consumption during construction and operation remains a significant source of emissions.
- *Mitigation (preliminary):* Use low-carbon construction materials, use of fuel-efficient equipment, integration of on-site solar and battery systems, and connecting project operations to the Island's hybrid renewable energy system, as infrastructure capacity allows (see Section 5.2.2).

Climate Change and Natural Hazards

- Exposure to increasing climate change risks such as extreme temperature, heat waves, sea-level rise, flooding, and extreme rainfall and storm events.
- *Mitigation (preliminary):* Performing Climate risk assessment and incorporate adaptive design and resilience strategies.

Noise and Amenity

- Construction and freight operations may create temporary noise and dust impacts on residents and visitors.
- *Mitigation (preliminary):* Implementation of a Construction Noise and Vibration Management Plan, incorporating restricted hours, low-noise equipment, and monitoring near sensitive locations.

Cumulative Impacts

- Diesel use increases GHG emissions, contributing to climate change, while heightened climate change risks may increase maintenance demands and driving additional diesel consumption.
- *Mitigation (preliminary):* prioritising renewable energy sources and climate resilience infrastructure design.

10. Recommendations

10.1 Recommended Pathway and Target

Based on the findings of this Technical Paper, IS Essentials rating is the most applicable pathway proposed for addressing the sustainability of the Project. It is recommended that the Project target a 'Bronze' rating under the IS Essentials Design and As-built rating tool, with a score of 20 to 39.9 points, and a stretch target for 'Silver' rating (40 to 59.9 points). It is worth noting that the IS rating process involves heavy stakeholder engagement and may require sustainability requirements that are beyond standard procedures and established practices.

10.2 Incorporating Sustainability in Design

ESD principles should be incorporated into the detailed design and ongoing construction and operation of the Project through focused design considering environmental impacts and through a gap analysis against IS ratings as a holistic sustainability rating tool. Resource efficiency, climate resilience, waste minimisation, low carbon emissions, sustainable procurement, stakeholder engagement, cultural heritage protection, and implementation of polluter pay principles must be considered. Ecological impacts should be minimised while habitat connectivity be enhanced. Importantly, the ESD principles should be embedded in delivery of the Project and captured in a project Sustainability Plan, which is publicly accessible.

A more detailed assessment of lifecycle impacts, particularly in relation to embodied carbon and whole-of-life resource use, is recommended in the next phases of the Project to fully quantify the Project's sustainability performance.

10.3 Sustainability Initiatives to Ensure Effective and Efficient Use of Resources

Sustainability objectives encourage a balanced approach to designing infrastructure or assets to be resource efficient and cost-effective in construction and operation and to deliver enhanced sustainability benefits with respect to impacts on the environment and on the health and well-being of stakeholders involved. In this case, the balance should be achieved alongside providing the best possible services for LHI.

Key relevant sustainability policy drivers for the Project are reviewed in Section 4. A net zero future can be achieved through effective and efficient use of resources, and renewable energy generation.

The following are selected examples of some sustainability initiatives recommended for the Project (not an exhaustive list):

- **Energy**
 - Energy efficiency considerations throughout the design development process as well as construction and operation phases of the Project;
 - Increasing renewable energy use;
 - Energy storage system combined with on-site solar to improve climate resilience;
 - An energy metering and monitoring strategy to be considered to effectively monitor the main energy uses within the Project; and
 - The installation of LED lighting and renewable energy sources be considered for all activities needed to support construction and operation.
- **Materials**
 - Low carbon design; and

- Use of alternative sustainable materials such as recycled aggregates and increased Supplementary Cementitious Material (SCM) in concrete mix.
- **Waste**
 - Procurement for civil works and construction to include preference for locally sourced recycled content where possible;
 - Preparation of a Waste Management Plan as part of the Construction Environmental Management Plan which identifies waste quantities and types, and measures to minimise waste during construction and operation to be in place;
 - Monitoring and reporting of waste to be considered to encourage improved recycling practice and waste reduction target; and
 - The demolition and construction waste are reused or diverted to recycling rather than landfill.
- **Transport**
 - Effective transport and logistics system that reduces number of barges / vehicles needed to deliver goods and to transport workers to site;
 - Use of electric vehicles, plant and equipment;
 - Logistics management that leads to increased transport efficiency, labour productivity and cost reductions on site as well as down the supply chain; and
 - Innovations in the field of logistics planning software, use of ICT, and handling hardware and equipment.
- **Water**
 - A strong focus on the effective management of water for construction/capital works activities (e.g. rainwater harvesting, onsite reuse and recycling);
 - Metering on water monitoring systems for efficiency during construction phase; and
 - Project landscaping to incorporate native, climate resilient and low maintenance vegetation.

Improving resource efficiency would help the Project reduce operational costs, cut down carbon emissions and transition to a sustainable net zero future.

11. References

- Infrastructure Sustainability Council of Australia (2024). *IS Technical Manual (July 2024)*.
- Australian Government (2000). *Australian World Heritage Management Principles. Environment Protection and Biodiversity Conservation Regulations (Cth), Schedule 5.*
- Department of Agriculture, Water and the Environment (DAWE) (2019). *National Waste Policy Action Plan 2019.*
- Commonwealth of Australia (2022). *Climate Change Act 2022.*
- Australian Building Codes Board (ABCB) (2022). *National Construction Code, Volume One, Section J: Energy Efficiency.*
- New South Wales (1979) *Environmental Planning and Assessment Act 1979 (NSW).*
- New South Wales Government (1997). *Protection of the Environment Operations Act 1997 (NSW).*
- New South Wales Government (2023). *Climate Change (Net Zero Future) Act 2023 (NSW).*
- Infrastructure NSW (2024). *Decarbonising Infrastructure Delivery Policy.*
- NSW Environment Protection Authority (EPA) (2021). *Waste Avoidance and Resource Recovery Strategy.*
- NSW Environment Protection Authority (EPA) (2014, updated 2022). *Waste Classification Guidelines.*
- NSW Government. (2025). *Lord Howe Island Critical Infrastructure Program Community Engagement: 'What we heard' Summary.*
- SMEC. (2025 a). *Lord Howe Island (LHI) Critical Infrastructure Project (CIP): Waste Management Facility Functional and Design Brief.*
- SMEC. (2025 b). *Lord Howe Island Critical Infrastructure Program: Stern Loading Vessel Piled Fixed-Ramp – Concept Design Report.*
- SMEC. (2025 c). *Lord Howe Island Critical Infrastructure Program Cargo Laydown Area Bulk Earthworks Plan.*
- SMEC. (2025 d). *Lord Howe Island Critical Infrastructure Program Waste Management Facility Bulk Earthworks Plan.*
- SMEC. (2025 e). *Lord Howe Island Critical Infrastructure Program Northern Jetty: Contamination Assessment.*
- SMEC. (2025 f). *Lord Howe Island Critical Infrastructure Program - Waste Management Facility: Detailed Site (Contamination) Investigation.*
- Lord Howe Island Board (2024). *Community Strategic Plan 2024–2034*
- Lord Howe Island Local Environmental Plan 2010 (as amended 2021).
- Lord Howe Island Board (2010). *Strategic Plan for the Lord Howe Island Group World Heritage Property.*
- Lord Howe Island Board (1998; reviewed 2010). *Waste Minimisation and Management Strategy.*
- Lord Howe Island Board (2007). *Lord Howe Island Biodiversity Management Plan.*
- Lord Howe Island Board. *Infrastructure overview.*
- Lord Howe Island Board. *Electricity generation and management on Lord Howe Island.*
- Marine Parks Authority (2004). *Lord Howe Island Marine Park Operational Plan.*
- UNESCO (1982, updated 2023), *Lord Howe Island Group World Heritage Statement of Outstanding Universal Value.*



SMEC Brisbane

Level 6, 480 St Pauls Terrace
Fortitude Valley QLD 4006 PO Box 2211, Fortitude Valley QLD 4006

Phone: +61 7 3029 6600

Email: brisbane@smec.com

engineering positive change

SMEC simplifies the complex. We unlock the potential of our people to look at infrastructure differently, creating better outcomes for the future.

www.smec.com