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Port Spencer Grain Export Facility

Peninsula Ports

Amendment to Public Environmental Report

IW219900-0-NP-RPT-0003 | 2

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Port Spencer Grain Export Facility

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Acronyms and Abbreviations

AHD	Australian Height Datum
AQIS	Australian Quarantine Inspection Service
AS	Australian Standard
BAL	Basic Left Turn
BATEA	Best Available Technology Economically Available
BDAC	Barngarla Determination Aboriginal Corporation
BMP	Blast Management Plan
CCTV	Closed Circuit Television
CHL	Channelised Left Turm
CHR	Channelised Right Turn
CLS	Conveyor Loading System
DOG	Drive Over Grid
DPA	Development Plan Amendment
ECI	Early Contractor Involvement
EEP	Energy Efficiency Plan
EMP	Environmental Management Plan
EP NRM	Eyre Peninsula Natural Resources Management Board
EPA	Environment Protection Authority
EPBC	Environment Protection and Biodiversity Conservation
EPP	Environmental Protection Policy
FEL	Free Eyre Limited
GHG	Greenhouse Gas
GLC	Ground Level Concentration
GPV	General Purpose Vessel
ILUA	Indigenous Land Use Agreement
kT	kilotonnes
m	Metre(s)

ML	Megalitre(s)
ML/day	Megalitres per day
MW	Megawatt(s)
NGER	*National Greenhouse Energy and Reporting Act 2007*
NM	Nautical Mile
NV Act	*Native Vegetation Act 1991*
PDI Act	*Planning, Development and Infrastructure Act 2016*
PER	Public Environmental Report
QA	Quality Assurance
RPEP	Regional Plan of the Eyre Peninsula
SEB	Significant Environmental Benefit
SMS	Safety Management System
SWMP	Site Water Management Plan
T	Tonnes
TBP	Tonnes Bollard Pull
t/h	Tonnes per hour
WPMP	Weed and Pest Management Plan

Executive Summary

Summary of Project

Peninsula Ports (a subsidiary of Free Eyre Limited (FEL)) is seeking an Amendment to the Public Environmental Report (PER) for the Port Spencer export facility (the Evaluated Project). This Amendment to the PER is submitted pursuant to Section 47 of the Development Act.

The Evaluated Project comprised a deep-water marine port, capable of accommodating Panamax and Cape class vessels, suitable for export of up to 2 million tonnes of ore per annum and up to 1 million tonnes of grain. At this time, FEL was the preferred grain supplier and were involved in assessing the potential grain export demand for the project. The Proposed Amendment removes the storage and export of iron ore from the Evaluated Project and seeks to reconfigure the site for efficient grain storage, handling and export.

Transport of grain to site will generally occur during grain harvest (i.e. typically October-December with a significant peak in November). Vehicles will be mixed in size and type, however the dominant vehicle type is expected to be a B-Double and Double Road Train. The maximum vehicle to be accommodated at site is a B triple.

Grain stored on site will be in the form of:

- Approximately 800 kT of bunker storage (Approximately 9 bunkers, 40 m wide and varying from 540 to 880 m in length)
- Nominally 60 kT of silo storage to provide for blending, buffer storage, in-stream sampling and fumigation (as required). The concept layout includes four to five silos, with a top-of-silo height of approximately 30 metres.

Grain will be loaded to ships via an overland, covered conveyor. On the wharf, a conveyor and travelling ship-loader will elevate the grain and accommodate ship-loading. The ship-loader and associated infrastructure is capable of a 2000 t/h effective throughput.

Vessels calling at Port Spencer are bulk grain carriers only. No servicing or other provisioning will be provided. The port will be outside the limits of the Sir Joseph Banks Group Marine Park.

Reasons for the Amendment

Centrex Metals has made the decision to transition out of iron ore on the Eyre Peninsula, meaning the Evaluated Project will not proceed in its current form.

Peninsula Ports now owns the freehold land and is currently in discussions with the government to secure land tenure agreements over the use of the subjacent land (seabed) and coastal strip of the proposed site.

There are currently very limited domestic market opportunities for grain grown in the region and substantial freight disadvantages for accessing opportunities in other parts of the state and country.

As a result of the lack of domestic market and supply chain competition in the region, grain prices have historically been low relative to other regions in Australia, and grain is predominantly exported to international customers.

Benefits of the Project

The Proposed Amendment will provide an alternative supply chain for grain growers on the Eyre Peninsula and an opportunity for grain growers to improve their economic returns through increased competition.

The Proposed Amendment will provide three levels of economic benefits to local grain growers:

- Extra competition in the grain handling and marketing industry

- Freight savings from reduced travel and double handling
- The ability to transport directly to port.

The Proposed Amendment offers significant opportunity to contribute to agricultural development, as well as the short and long term social and economic sustainability of the region and State through direct and indirect business, infrastructure, employment and contractor opportunities.

A grain production target zone of approximately 1.6 million tonnes of grain is expected to be freight advantaged to Port Spencer by up to $10 per tonne (average $3.50 per tonne) as compared to Port Lincoln or Thevenard. Freight advantages are further enhanced if a grower is unable to deliver grain to Port Lincoln at harvest. Port Lincoln can only receive certain commodities and grades at harvest time and is limited by storage capacity. Port Spencer will ultimately have the capacity to store approximately 860,000 tonnes directly at harvest, as well as having the ability to continue shipping during harvest.

The development of Port Spencer is expected to contribute significant, reoccurring annual economic savings to grain growers in the catchment zone. Based on an assumed one million tonnes of grain exported through Port Spencer, the annual grower freight savings alone may be in the order of $3.5 -$5M p.a.

The introduction of a new grain export facility will create immediate competition for the incumbent grain terminal operator(s) and initiatives to capture supply could realise a further $10-$15/ton increase across Eyre Peninsula's growing region (subject to a large number of factors which ultimately determine the price a grower is paid). Those potential further benefits for Eyre Peninsula growers may then result in an increase in the price realised for grain of $27 - $40M p.a. assuming a 2.7 Mt harvest and competitive pressure between the supply chain operator(s) and exporters to capture supply. (These assumptions are theoretical in nature, difficult to predict and may or may not be ultimately realised).

Alignment with State and Regional Policy

This Amendment to the PER has considered policy of the updated Tumby Bay District Council Development Plan, the now-applicable Planning and Design Code, State legislative and policy needs and overall contribution of the development to South Australian government strategic development goals.

The Port site exists within two different zoning areas, which have altered since the Evaluated Project: The Coastal Conservation and Primary Production zone. The site is not located within the boundaries of any Marine Parks or aquaculture areas.

The Amended Proposal generally finds an improved level of compliance with Development Plan policy when compared to the Evaluated Project.

Significantly less built form is proposed within the Coastal Conservation Zone when compared to that proposed within the Coastal Zone for the Evaluated Project.

The impacts of the Proposed Amendment on sediment transfer patterns along the coast are to a similar degree as the Evaluated Project, however, there is some accretion and erosion anticipated in localised areas. The development is cognisant of sea level rise and does not require coastal protection measures.

By virtue of the facility exclusively supporting primary production within the region, the Proposed Amendment furthers the aims of the Primary Production Zone; a zone identified as appropriate to accommodate bulk handling facilities.

The Proposed Amendment finds synergies with the Eyre and Western Region Plan, which aims to:

- Support and develop the region's export-oriented industries, including fishing, mining and agriculture;
- Protect and develop further the region's strategic infrastructure; and
- Protect and strengthen the economic potential of the region's primary production land.

Impact Assessment and Mitigation Measures

Design principles for the Proposed Amendment are aligned with the Evaluated Project, including:

- Consideration of sustainability principles including resource and energy efficiency, through water reuse, waste management and civil construction approaches.
- Making use of existing topography and considering colour and form to ensure visual impacts are minimised to the extent practicable along the coast.

A detailed review of the Evaluated Project has been undertaken compared to the Proposed Amendment, including a comparison of impacts and risks between to two projects. A summary is provided in Sections 5 and 6.1, which indicates that while some of the impacts and risks are expected to differ (e.g. due to seasonal nature of grain delivery, increased grain storage capacity, use of Lipson Cove Road and inclusion of a causeway structure), a similar level of effect and risk profile is expected for the Proposed Amendment.

As with the Evaluated Project, management and monitoring measures to enhance potential benefits and mitigate potential negative impacts are identified.

The proposed site does not support threatened flora or fauna and the coastal dune system at Rogers Beach would be protected by a development exclusion zone. Revegetation and other environmental management measures are to be implemented to improve biodiversity values at the site.

Port infrastructure has been sited to ensure no significant impact upon the Low Open Shrubland vegetation association which represents important coastal remnant vegetation given the extent of historic vegetation clearance on Eyre Peninsula.

The Proposed Amendment would not require operational dredging and therefore many of the significant environmental marine impacts of port management would be avoided when compared to the Evaluated Project.

The Project is located on a relatively remote part of the Eyre Peninsula coastline with a small camping ground associated with the Lipson Cove beach south of the project. Based on air and noise assessments it is not anticipated that camp ground amenity would be disturbed by the development.

There would be distinct visual changes to the coastline associated with the silos, jetty infrastructure and shipping, however this is limited to direct viewing from the Gulf and has limited lines of sight from north and south of the site. As with the Evaluated Project, the Proposed Amendment would be visible from the Lipson Cove beach.

Traffic has been considered as part of the development for access to the Port and is unlikely to have significant impacts on Lincoln Highway. Road upgrade benefits are expected for Lipson Cove Road, and the intersection with Lincoln Highway would also be upgraded to allow for suitable large haul access to site. The expected traffic vehicle numbers expected to Lipson Cove Road are not expected to impact safety or level of service of the roads.

Public access to Rogers Beach, adjacent to the site's north, would be maintained, and the Port site would exclude Rogers Beach dunes and beach frontage from the operational footprint.

The Port location and design are such that identified environmental and social impacts can be managed without unacceptable risk to the community or environment and the Project is predominantly considered low risk.

Summary

Grain export capacity on Eyre Peninsula is constrained between December and April, when grain prices are at their highest (counter season for international markets). Further, a lack of grain handling competition and an inefficient supply chain, particularly with the closure of the rail lines, means there is scope to provide significant economic benefits to grain growers on Eyre Peninsula through a suitable export alternative.

The Project has received positive local government and stakeholder support, with the region keen for the employment and business development opportunities, which the project is likely to offer directly and indirectly through development of Port Spencer.

The Proposed Amendment is considered to be of significant strategic and economic value to not only Peninsula Ports, but to grain growers on Eyre Peninsula. It offers potential economic and employment opportunities to local communities as well as regional and State contractors and businesses.

The Proposed Amendment is consistent with planning and regulatory requirements and should be granted development authorisation.

Important note about your report

This document was prepared by Jacobs Group (Australia) Pty Ltd on behalf of Peninsula Ports Pty Ltd for the purposes of an Amendment to the Public Environmental Report and development assessment for Port Spencer Grain Export Facility under section 47 of the Development Act 1993.

The purpose of this Amendment to the Public Environmental Report is to describe the Proposed Port Spencer Grain Facility, its potential environmental and social effects and the environmental management framework for the project to enable an assessment by the South Australian Government in accordance with the Development Act 1993.

The Amendment to the Public Environmental Report shall be read in conjunction with the report '107661001-100-R-Rev0 Centrex Metals Ltd, Port Spencer Stage 1 Public Environmental Report' and including all appendices and the 'Port Spencer Stage 1: Response to Public Environmental Report Submissions, October 2012'.

The report is based on the data provided and collected through the associated technical studies as outlined in each case. Changes to this data and the manifestation of latent conditions may require aspects of the report to be re-evaluated. This report shall be read in full and excerpts shall not be taken in isolation or considered representative of the findings.

1. Introduction

Port Spencer (the site) was originally proposed by Centrex Metals Limited in 2011 as a deep-sea port facility for the export of iron ore from their Eyre Iron Joint Venture Project. The site was also proposed for the export of grain. At this time, Free Eyre Limited (FEL) was the preferred grain supplier and were involved in assessing the potential grain export demand for the project. The project was declared a Major Development under section 46 of the *Development Act 1993* (Development Act) and it was determined that the approvals for the development would be through a Public Environmental Report (PER) process. The Port Spencer site was owned by Centrex Metals and the Port Spencer Stage 1 Project (the Evaluated Project) successfully received provisional development authorisation to export both iron ore and grain from the site.

The site provides naturally deep water with depth to 20 metres (m) within 500 m of the shoreline, enabling Panamax or Cape class vessels with no requirement for dredging to facilitate port operations (i.e. to allow safe passage of vessels or to create a berth pocket for vessels). The landside component of the project is located on undulating terrain consisting of cleared farmland, heavily impacted by human activity and subject to existing erosion.

The provisional development authorisation granted to Centrex Metals in 2012 was extended in December 2014 currently remains active at the site. Peninsula Ports (a subsidiary of FEL) purchased the land from Centrex Metals in mid-2019. Given Peninsula Ports only intends to export grain from the site (and the subsequent changes in built form design), Peninsula Ports is seeking to amend the existing authorisation under Section 47 of the Development Act. To provide clarity, it is also sought to extend the period of the authorisation in accordance with Section 48(11)(b) of the Development Act. The amendment process is required to take account of alterations to the Evaluated Project and to update the PER due to the length of time that has passed since the PER was originally prepared.

The purpose of this PER Amendment is to request the Minister to assess the Proposed Amendment to the Evaluated Project design, and the imposed Conditions of consent and Reserved Matters. This report:

- Describes the Proposed Amendment and its effects compared to the Evaluated Project.
- States the reasons for the proposed project amendment.
- Describes the additional stakeholder engagement undertaken in relation to the Proposed Amendment.
- Describes changes to planning and environmental legislation and policies since the Evaluated Project was submitted.
- Includes relevant detail about the proposed changes and the changed environmental effects.
- Updates Evaluated Project documentation including concept layouts.

Appendix A presents a detailed comparison of how the function and layout of the site will change, and reviews the environmental effects due to the Proposed Amendment compared to the Evaluated Project. The Review of Evaluated Project is presented to align with the structure of the PER. Revised environmental assessment reports are attached as supporting documents to Appendix A.

It has been confirmed by the Commonwealth that the existing *Environment Protection and Biodiversity Conservation Act 1999 (*EPBC) approval can be transferred from Centrex to Peninsula Ports through a deed of transfer being executed by both parties and the relevant minister approving the transfer. Following such transfer, Peninsula Ports will need to comply with the conditions in that approval or seek any changes based on the Proposed Amendment.

1.1 Peninsula Ports

Peninsula Ports Pty Ltd was formed in 2019 by FEL and consists of over 475 shareholders comprising farming families and businesses. Peninsula Ports as a subsidiary to FEL, is proposing to develop and manage Port Spencer.

The initial shareholding in Peninsula Ports is solely with FEL, however the capital raising process for the project allows existing FEL shareholders to directly acquire shares in Peninsula Ports, with subsequent equity capital raising being open to non FEL shareholders as well. Debt financing will be the final element of capital raising for the project following the completion of the equity capital raising.

1.2 Overview of the Proposed Amendment

The Evaluated Project comprised a deep-water marine port, capable of accommodating Panamax and Cape class vessels, suitable for export of up to 2 million tonnes of ore per annum and up to 1 million tonnes of grain, from a single berth configuration and single ship loader. The Proposed Amendment removes the mining related component from the Evaluated Project (the receival, storage and export of iron ore) and seeks to reconfigure the site for efficient grain receival, storage, handling and export. A comparison of the key infrastructure requirements for the Evaluated Project and Proposed Amended is provided in Table 1-1 and Figure 1-1. A detailed description of the Proposed Amendment is provided in Section 4. Draft general arrangement drawings of the project are provided in section 9.

As a grain only export facility, the maximum ship size required to be accommodated at the port has reduced from Cape Class to Panamax. The expected number of ship movements will also reduce. The Evaluated Project anticipated 12 Cape Class (167,000 t) or 27 Panamax (74,000 t) ore shipments a year and 8 Panamax (62,500 t) grain shipments assuming 0.5 million tonnes of grain would initially be exported. The Amended Project anticipates up to 30 ship movements per year comprising a combination of Handysize and Panamax vessels (33,000 t average), however recently constructed and emerging Panamax vessels are becoming slightly larger due to a recent widening of the Panama Canal. The reduction in ship size (from Cape Class to Panamax) means that a straight jetty structure is now proposed rather than a straight main jetty with a berthing wharf perpendicular to the main jetty.

The emerging Panamax vessels are still much smaller than Cape Class and can also berth at the amended wharf, as they are larger mainly in beam, not length. These emerging Panamax vessels, very few of which are currently operating with grain, can be up to 90,000 t compared with the traditional Panamax of 74,000 t assumed in the Evaluated Project. The amended wharf will be capable of safely berthing these new Panamax vessels.

The removal of iron ore related infrastructure from the project allows for a significantly higher rate of grain receivals during harvest and greater on-site grain storage capability which reduces the reliance on up-country grain storage, and the resultant double handling of grain prior to export. This reconfiguration of the project will allow most grain shipments to occur during the harvest season, to deliver these logistical efficiencies for the Eyre Peninsula. The Proposed Amendment accommodates this capability through:

- Provision of dedicated truck marshalling areas at the site entry and following weighing for improved traffic management on site. This includes a marshalling area prior to the site gate (but contained within the subject land) for vehicles arriving prior to opening hours.
- An increase in sampling stations from one to eight.
- An increase in weighbridge stations from one to three on entry, and additional two on exit.
- An increase in grain n-loading points from one grain in-ground hopper to up to eight in-ground hoppers at bunkers and two at the silos.
- An increase in on-site grain storage capacity from 60 kT to approximately 860 kT (comprising at least 800kT in bunkers and up to 60kT in silo storage).

Site access for the Proposed Amendment is proposed via Lipson Cove Road rather than Swaffers Road. Lipson Cove Road has been assessed as providing safer turning conditions to and from the Lincoln Highway and minimises the risk of new roadworks into the site impacting on potential aboriginal cultural heritage areas in the vicinity of Rogers Beach.

Site entry and exit points are separated by some 760 m, minimising localised traffic impacts on Lipson Cove Road.

Table 1-1 Comparison of proposed infrastructure – Evaluated Project and Amended Project

Evaluated Project	Proposed Amendment
CAPEX: $250 million AUD	CAPEX: $150 million AUD
A 515 m long jetty with a 345 m by 55 m wharf at 90 degrees to the main jetty designed for Cape size and Panamax vessels. All vessels are berthed with the beam to the predominant swells.	Straight wharf constructed in a south-east direction from the coast, with an approximate overall length of 600 m, designed to cater to Panamax vessels, **not** Cape Class. The vessels will be berthed bow into the predominant swells rather than beam to the swells.
Jetty and T head wharf with bents at 18 m for the Jetty, and 16 m for the wharf. 2 piles per bent for the jetty and 3 piles per bent on the wharf, plus 9 no 5 pile dolphins. Total number of piles 184.	Causeway structure of approximately 230 m crest length, with a toe level of -12.5 m Chart Datum. Jetty and wharf bents of 42 m typical, with 2 piles per bent. Total number of piles 18.
Industrial ship loader, suitable for loading ore and grain material into Cape class and Panamax sized vessels with an approximate loading capacity of 5,000 ton per hour (t/h) for iron ore and 1,400 t/h for grain.	Industrial ship loader, suitable for loading grain into Panamax sized vessels with an approximate loading capacity of 2,000 t/h. No loading of ore proposed.
Haul road transport and infrastructure access corridor, 5 km in length from the Lincoln Highway and generally following the alignment of Swaffers Road.	Access corridor, approximately 5.6 km in length from the Lincoln Highway via Lipson Cove Road.
A hematite in-loading shed.	No iron ore in-loading proposed.
A hematite storage shed, with a storage capacity of up to 240,000 t and an in-loading shed, site office, site warehouse for equipment storage.	No iron ore storage proposed.
Grain storage options, being: • Grain storage shed, with a storage capacity of approximately 60,000 t; or • Three 20,000 t grain storage silos with a maximum height of 20 m; or • One bunker style grain storage area with a capacity of approximately 60,000 t.	The bulk of the storage will be in up to nine bunkers, each with the ability to be split for multiple grades of grain. Some (up to 60 kT) of silo storage will be provided for blending, buffer storage, in-stream sampling and fumigation (if required) immediately prior to export. Maximum height of the silo vessels will be approximately 35 m and maximum height of the silo facility will be approximately 45 m. Fumigation of the bunkers will also be conducted as is standard practice across the grain industry.
Grain in-loading shed, site office and warehouse for equipment storage;	Grain in-loading will primarily occur at the bunkers to accommodate concurrent loading and stacking of up to 6-8 grades of grain in a typical season (potentially more grades in weather affected seasons). In-loading method will depend on grade and volume. Options include: • Truck directly to bunker and dump to Drive Over Grid (DOG) stacker (not preferred) • Truck to in-ground road hoppers and stack via conveyor and travelling stacker (preferred).

Evaluated Project	Proposed Amendment
Site administration/office building, suitable for occupation by 20-30 personnel and associated amenities.	Site administration/office building, suitable for occupation by 20-30 personnel and associated amenities. Maintenance workshops and tarpaulin storage sheds etc. will be located close to the site administration building. The site facilities will be shared with the Barngarla Determination Aboriginal Corporation as a base for a future Aboriginal Ranger programme.
Enclosed conveyor galleries for proposed ore and grain in-loading and out-loading conveyor.	Enclosed conveyors for proposed grain conveyors, whenever practical to install and operate. Note that lengths of conveyors where a tripper is used to feed a bunker stacker or the ship loader cannot have covers. Instead, those conveyors may include a type of wind guard to reduce dust generation.
No allowance for truck marshalling.	A truck marshalling area along the western boundary to handle peak harvest projected volumes.
Sampling station and enclosure for automatic sampling of iron ore and grain for quality assurance;	Four double-sided sampling stations. A large single classification stand managing multiple samples simultaneously will be co-located with the sampling stations.
A truck weighbridge station located at the haul road entrance point on Swaffers Road at the northern side of the site.	Three truck weighbridge stations located after the sampling stations. An additional two weighbridges at the site exit.
No allowance for truck marshalling.	A truck marshalling area located after the weighbridge stations to allow for surge volumes and flexibility in managing traffic movements.
68,000 litre heavy fuel oil storage tank for generation and 10,000 litres bulk diesel fuel tank for site equipment.	Approximately 30,000 litres bulk diesel fuel tank for power generation and 10,000 litres bulk diesel fuel for site machinery and equipment.
5 MW diesel generator for on-site electricity generation.	2 x 1.5 MW diesel generators for on-site power generation
Fire service tank and pump systems.	Fire Service requirements to be determined through fire engineering study. Provision made for fire service tanks.

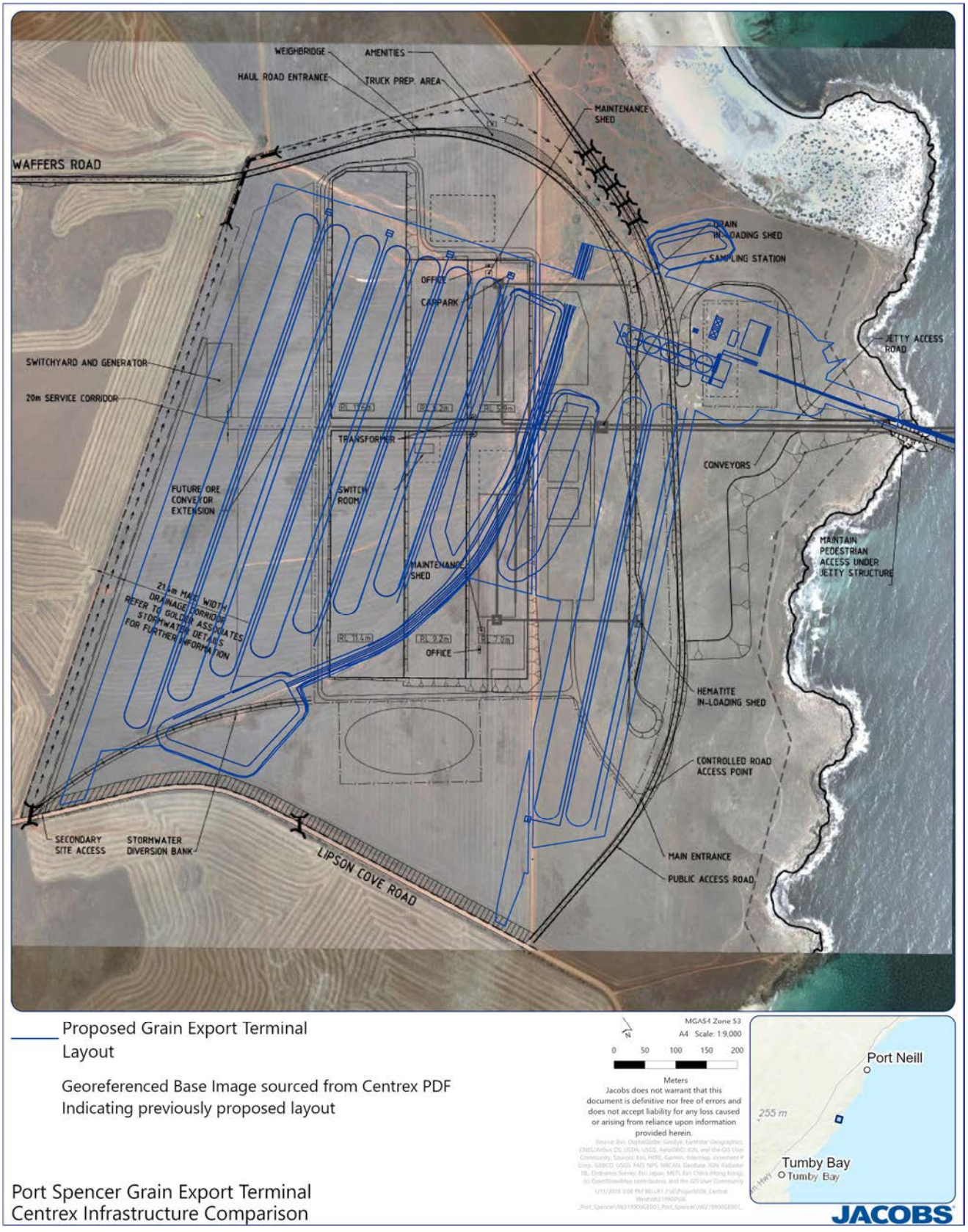

Figure 1-1 Comparison of Layout: Evaluated Project with Proposed Amendment

1.3 Why Port Spencer?

The prime driver for the Evaluated Project was to provide a route to market for iron ore, with a secondary driver of creating a new export path for grain. A detailed analysis was provided in the PER regarding the port options assessed, which showed why the Port Spencer site was preferred. Given the Proposed Amendment comprises grain only receival, storage and export, an updated analysis is provided in Table 1-2.

Table 1-2 Assessment of Existing Port Operations within South Australia

Whyalla	Port Bonython	Boston Bay, Port Lincoln	Thevenard	Port Pirie	Port Adelaide	Cape Hardy (Not Built))	Lucky Bay	Wallaroo
Criteria: Panamax Class Vessel capability								
Not suitable Water depth at wharf is less than 11m	**Suitable** Port for exclusive export of oil and gas	**Suitable**	**Not suitable** Water depth at wharf is less than 10m	**Not suitable** Water depth at wharf is less than 10m	**Suitable**	**Suitable**	**Not suitable** Reliant on trans-shipment	**Not suitable** Water depth at wharf is less than 10m
Criteria: Proximity to grain production and targets*								
Unlikely to be suitable Approximately 210 km to Port Spencer and removed from core crop production area.	**Unlikely to be suitable** Approximately 240 km to Port Spencer and removed from core crop production area.	**Suitable** Majority of grain harvested in Eyre Peninsula is exported from Boston Bay.	**Potentially suitable** Adjacent western-most extent of crop production. Approximately 400 km to Port Spencer. Currently the second largest grain export port on the Eyre Peninsula	**Unlikely to be suitable** Approximately 370 km to Port Spencer and well removed from core crop production area.	**Not suitable** Approximately 600 km to Port Spencer and well removed from crop production area.	**Suitable** Not constructed. If commenced, unlikely to be constructed prior to 2021 harvest season	**Marginal** Approximately 120 km to Port Spencer and adjacent eastern-most extent of crop production area. Does not hold freight advantage over a significant portion of grain production region.	**Unlikely to be suitable** Approximately 480 km to Port Spencer and well removed from core crop production area.
Criteria: Environmental impact								
Unlikely to be suitable Significant distances for road transport contributing to increased greenhouse gas emissions and operating costs	**Unlikely to be suitable** Giant cuttlefish breeding ground is a significant concern. Whilst this species was rejected for EPBC listing in 2011, there is significant public pressure for	**Suitable**	**Unlikely to be suitable** Significant wharf and jetty upgrade works would be required, along with approximately 15km of dredging to achieve required channel depth.	**Unlikely to be suitable** Significant wharf and jetty works required in addition to 17km of dredging. Contaminated soils are known to exist in the port landside areas and	**Unlikely to be suitable** Significant distances for road transport contributing to increased greenhouse gas emissions and operating costs	**Suitable** Impact of the proposed development, if relocated to Cape Hardy, would have a similar profile, noting that the proposed causeway shown in the Cape Hardy public	**Suitable**	**Unlikely to be suitable** Significant upgrades of the wharf infrastructure, combined with approximately 8km of dredging from 8.4m to 15m. Significant distances for road

Whyalla	Port Bonython	Boston Bay, Port Lincoln	Thevenard	Port Pirie	Port Adelaide	Cape Hardy (Not Built))	Lucky Bay	Wallaroo
	protection and an ongoing campaign to achieve listing under the EPBC. Significant distances for road transport contributing to increased greenhouse gas emissions and operating costs		Significant distances for road transport contributing to increased greenhouse gas emissions and operating costs	remediation and disposal of lead contamination is considered likely. Significant distances for road transport contributing to increased greenhouse gas emissions and operating costs		documents is approximately 400m long including the material offload facility.		transport contributing to increased greenhouse gas emissions and operating costs
Criteria: Economic impact								
Unlikely to be suitable Current wharf does not cater to grain export, wharf and landside infrastructure highly developed and privately owned; little opportunity for grain development and high CAPEX. High road transport costs	**Not suitable** High road transport costs Port for exclusive export of oil and gas. Large distance to appropriate depth of water and limited availability of suitable landside areas require high CAPEX.	**Not Suitable** Boston Bay Port is leased by Flinders Ports, with the materials handling and grain aggregation infrastructure owned by Viterra. There are not any viable options for large scale grain storage within Port Lincoln and access o berth slots is limited by current shipping schedules. With closure of Eyre Peninsula rail line, costs of transporting	**Not suitable** Lack of available water depth would result in very significant CAPEX through wharf upgrades and a significant dredging campaign. Ownership of the shiploader, conveyors and landside materials handling infrastructure by Viterra limits access for third parties. High road transport costs	**Not suitable** Significant capital investment of wharf and shiploader infrastructure, limited available land at port and concerns over lead contamination. This is in addition to approximately 17km of dredging to achieve required channel depth. High road transport costs	**Not suitable** High road transport costs	**Not Suitable** The proponents of the Cape Hardy development are a private entity. Peninsula Ports (through Free Eyre) has approach the developers and the planned development at that site does not provide suitable land (available to Peninsula Ports) for large scale grain accumulation within economic distance of the wharf for materials handling.	**Unlikely to be suitable** On-site storage capacity is limited. Volume of grain loading limited due to capacity trans-shipment vessel. Risk of delays when weather conditions prevent trans-shipment. Lack of freight or shipping cost advantage limits commercial viability of a multiple-operator model at this site.	**Not suitable** Existing grain accumulation and shiploading infrastructure is owned by Viterra and no suitable land for accumulation is available in Wallaroo. Capital cost of wharf and landside infrastructure would be extremely high, combined with the capital cost of 8km of dredging. High road transport costs

Whyalla	Port Bonython	Boston Bay, Port Lincoln	Thevenard	Port Pirie	Port Adelaide	Cape Hardy (Not Built))	Lucky Bay	Wallaroo
		grain to Boston Bay have increased significantly.				Berth slots at the project would be limited due to proposed mining activity. The currently proposed development at Cape Hardy is not economic on a grain only basis.		
Criteria: Terminus congestion								
Un-suitable Currently privately owned and servicing the iron industry. New berth would be required to open up capacity.	**Potentially suitable** Limited windows projected to be available around proposed mining and other exports.	**Potentially un-suitable** Lease to Flinders Ports, grain export infrastructure owned by Viterra. Given the port is primarily servicing grain export, competition for windows at optimum grain trading times will be high and access is likely to be limited by this, creating sub-optimal conditions for competition.	**Potentially un-suitable** Lease to Flinders Ports, grain export infrastructure owned by Viterra. Thevenard is one of the busiest berths in South Australia and is capacity constrained.	**Potentially suitable**	**Potentially suitable**	**Marginal** Berth slots at the project would be limited due to proposed mining activity.	**Un-suitable** In current configuration, Lucky Bay does not have sufficient throughput in transhipment operations to support the volumes proposed.	**Marginal** Lease to Flinders Ports, grain export infrastructure owned by Viterra. Given the port is primarily servicing grain export, competition for windows at optimum grain trading times will be high and access is likely to be limited by this, creating sub-optimal conditions for competition.

1.4 Alternatives Considered

The design and construction of the wharf for the Proposed Amendment requires balancing protection of the marine environment, construction risk associated with working over water and economic considerations. Through the design development three main options have been considered for the wharf:

- Modular wharf constructed using marine plant.
- Modular wharf constructed via an incremental launch method (no marine base construction).
- A combination of causeway and jetty structure.

Further detail of the design process and basis for decision-making is provided below.

1.4.1 Structure options considered and basis for selection of Rock Causeway

The initial design development considered options including the use of floating and jack up barges for pile driving combined with heavy lift ships and modular structure sections, i.e. the marine based construction techniques, compared with land based construction techniques. A detailed assessment of weather related risks, being a combination of wind, wave and rain data, resulted in land based techniques being selected as the lowest schedule, cost, safety and environmental risk methods.

Of the land based construction techniques keeping a majority of assembly activity on land rather than over water further reduced the risk profile, with incremental launching as the lowest risk construction method. By using this method the only works completed over the water relate to piling and installing the crosshead members, which is done without the need for significant structural welding or painting over the water.

During the design development process it became clear that a significant quantity of rock needed to be excavated from the silo and wharf structure assembly area, with a significant portion of that rock becoming surplus to requirements if only used for the on-site roads and other paved surfaces (bunkers etc.). This left the project with the situation of needing to stockpile significant volumes of rock on site, or potentially apply for an extractive minerals licence to enable the material to potentially be sold as a crushed rock product.

This availability of surplus rock on site enabled consideration of replacement of part of the marine structures with a causeway, or causeway. Had it been necessary to import that quantity of rock to the site it would not be economically feasible to consider such an option. It is only because of the surplus rock that this option was explored.

Due to the modular nature of incremental launching and the ability to use the launched structure as a construction platform for piling an optimum pile spacing of 42 m was determined. A range of different lengths of rock structure were assessed, with a maximum feasible crest length of 240 m (the proposed design) that uses a majority of the surplus rock but does not impact on the berthing pocket. A minimum causeway length of approximately 20 m would be required to establish an abutment close to the existing tidal area if it were desired to have a majority of the structure in steel.

The impact of the additional 220 m above the feasible minimum is that 5 spans of 42 m long structure, including 10 piles, can be eliminated. As each pile requires pile driving a 1200 mm diameter pile to refusal against rock and then drilling a 950 mm diameter socket at least 4 m into the rock there are significant benefits in reducing noise and vibration with each pile eliminated.

Whilst the approach of using a causeway increases the area of seagrass that is impacted compared with the Evaluated Project, it does create an additional rocky reef area all around the structure and the increased sea grass loss will be offset. The net construction cost saving of replacing 220 m of steel structure with Rock Causeway has been costed at approximately $10 million after allowing for all costs including causeway construction and the necessary offsets due to sea grass impacts.

This level of cost saving is materially significant within the overall project budget context and is proposed within the broader context of a grain only port with reduced shipping and other impacts (e.g. 180 piles reduced to 18)

as representing a reasonable balance between environmental impact and commercial, constructability and schedule risk issues.

1.4.2 Design Alterations Considered

Two design alterations to mitigate the effect of the proposed causeway on the sediment transport regime were also considered:

1) Realignment of causeway so it is better aligned to swells
2) Adding culverts that pass through the causeway to allow sediment throughput.

These options were not progressed for the following reasons:

- Realignment of the causeway will not alter its overall effect on the sediment transport regime. The causeway presents a hard structure that blocks the predominantly northward movement of sediment. Even if realigned it will remain an impediment to the long shore movement of sediment.
- Culverts built into the causeway will likely become blocked reasonably quickly as suspended sediment will enter the culverts, and in the absence of wave energy, will settle inside. There will be a build-up of sediment since tidal flows will not be strong enough to resuspend the sediment in the absence of wave energy.

1.5 Amended Project Timing and Staging

The indicative schedule for the Proposed Amendment is presented in Table 1-3 below. Peninsula Ports recognises that the decision for a varied development authorisation is yet to be made, but for the purposes of this document, it is assumed the authorisation could potentially be granted in the first quarter of 2020. The Proposed Amendment is planned as a single stage development, however there may become a need for some construction staging that enables a majority of bunker storage to be ready for the first operational harvest season (2021), with the balance of bunker storage to follow prior to the subsequent harvest season. Full completion is anticipated by the end of 2022.

Table 1-3 Indicative Development Schedule for the Proposed Amendment

Activity	Estimated Schedule
Submission of Amendment to the PER submitted to Government	Early November 2019
Project Development Approval	January 2020
Commencement of Construction	January 2020
Operation of the Project	Operational for 2021 harvest – Final bunkers completed by October 2022.

1.6 Process for Evaluation of Proposed Amendment

The Proposed Amendment is to be lodged with the Department for Planning, Transport and Infrastructure (DPTI) who will undertake processing of the application on behalf of the Minister for Planning.

Once the application is lodged and assessment reports are submitted by Peninsula Ports, the application will be subject to public notification via a notice in a local newspaper and *The Advertiser*. The period of notification is at the discretion of the Minister, however, is likely to be no less than 15 business days. During this period, members of the public can review the proposal plans and are invited to make written submissions to the Minister regarding the proposal.

The application will also be referred to the Tumby Bay District Council and State Agencies including the Coast Protection Board, the Department for Environment and Water, the Commissioner of Highways (c/- transport department of DPTI) and the Environment Protection Authority.

Following the public notification and referral periods, all responses received will be provided to Peninsula Ports for consideration and the preparation of a response document. The response document may include:

- Refinements to the assessment documents.
- Changes to the original proposal in response to matters that have been raised.
- Answer and/or clarification of matters raised.

The response document will be made available for public view, however, written submissions will not be accepted after the public notification and referral periods.

A public meeting or drop in session/s regarding the proposal may be convened by DPTI. The occurrence of any meeting (if required) or drop in session/s will be at the discretion of the Minister and would be held during the public notification period.

Following receipt of the response document, an Assessment Report will be prepared by DPTI staff and a decision made by the Minister for Planning. An overview of the evaluation process is shown in Figure 1-2.

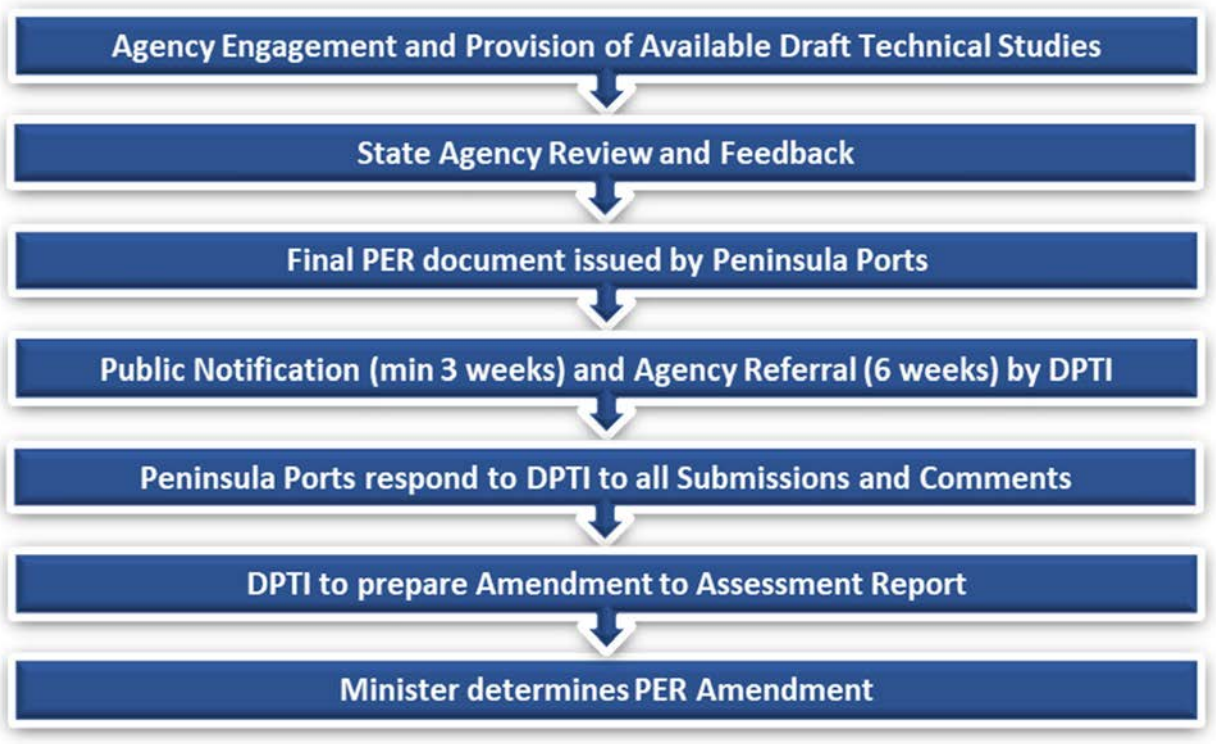

Figure 1-2 Process for evaluation of the Proposed Amendment

1.7 Original Conditions and Reserved Matters

The Evaluated Project is subject to 13 Reserved Matters and 18 Conditions of provisional development authorisation. The power to impose Reserved Matters and Conditions is addressed in Sections 33(3) and 42, respectively, of the Development Act.

Due to the advanced investigations undertaken by Peninsula Ports, and the differing nature of the Proposed Amendment to the Evaluated Project, it is submitted that a number of Reserved Matters and Conditions have been satisfied or made redundant.

Of the Reserved Matters that remain applicable to the Proposed Amendment, the applicant respectfully requests the Minister to accept these as conditions of the varied development authorisation to enable the timely staging of construction as described in Section 4.3.

The following section addresses each Reserved Matter from the Evaluated Project determination and discusses its applicability to the Proposed Amendment.

1.7.1 Applicability of Reserved Matters to the Proposed Amendment

(a) compliance with the Building Rules in relation to all aspects of the proposed Major Development relating to building works (refer to Conditions and Notes to Proponent below)

In Mar Mina (SA) Pty Ltd v City of Marion and Others [2008] (SASC 120), Debelle J (para 63) stated the meaning and effect of Section 33(3) of the Development Act "empowers a planning authority to grant a development consent but at the same time reserve its decision on a specified matter until further assessment of the development…it authorises a planning authority to make a grant of provisional development plan consent notwithstanding that some issues are being considered.

"The primary purpose…is to enable approval of a staged development. It might also be utilised to deal with something that is quite incidental to the development and does not affect the question whether development consent should be granted" (para 64).

It is a necessary step in the granting of Development Approval that Building Rules Consent is granted for elements of building work – this is addressed by section 33(4) of the *Development Act 1993* and section 102(8) of the *Planning, Development and Infrastructure Act 2016* (PDI Act).

Having regard to the intent of section 33(3) of the Development Act, we consider Reserved Matter '(a)' is not incidental to the granting of this development authorisation. The compliance with the Building Rules has no effect upon whether development authorisation should be granted. Lastly, it is considered that Reserved Matter '(a)' reproduces a matter of law and has no purpose as a Reserved Matter.

It is respectfully requested, that if the Minister is of the view to grant a variation to the development authorisation, Reserved Matter '(a)' be removed from the decision.

(b) road upgrades for the Lincoln Highway, Swaffers Road and associated roads (including overtaking lanes, turning lanes and intersections), finalised plans, drawings, specifications and financial arrangements (including Deeds of Agreement with road authorities), which are to be prepared to the reasonable satisfaction of the Department of Planning, Transport and Infrastructure and the District Council of Tumby Bay (refer to Conditions and Notes to Proponent below)

The Proposed Amendment does not make use of Swaffers Road, instead proposing access along Lipson Cove Road. It is suggested that this item be amended to substitute reference to Swaffers Road with Lipson Cove Road.

(c) road upgrades for the Lipson Cove Road, finalised plans, drawings, specifications and financial arrangements (including Deeds of Agreement with road authorities), which are to be prepared to the reasonable satisfaction of the District Council of Tumby Bay and the Department of Planning, Transport and Infrastructure (refer to Conditions and Notes to Proponent below)

No Change.

(d) a Road Maintenance and Monitoring Agreement for Swaffers Road and the Lipson Cove Road (including associated intersections) between Centrex Metals Ltd and the District Council of Tumby Bay (refer to Conditions and Notes to Proponent below)

The Proposed Amendment does not propose using Swaffers Road as an access to site and as such, reference to Swaffers Road is requested to be removed from this item. 'Centrex Metals Ltd' should be replaced with 'Peninsula Ports'.

(e) road upgrades for the Balumbah-Kinnard Road and associated roads (including intersections with the Lincoln Highway), finalised plans, drawings, specifications and financial arrangements (including Deeds of Agreement with road authorities), which are to be prepared to the reasonable satisfaction of the District Council of Cleve, the District Council of Tumby Bay and the Department of Planning, Transport and Infrastructure (refer to Conditions and Notes to Proponent below)

Not considered applicable as these related to the location of the mine site, as such it is respectfully requested for this item to be removed from the decision.

(f) road upgrades for the Murdinga-Murlong Road and associated roads (including intersections with the Birdseye Highway), finalised plans, drawings, specifications and financial arrangements (including Deeds of Agreement with road authorities), which are to be prepared to the reasonable satisfaction of the District Council of Cleve and the Department of Planning, Transport and Infrastructure (refer to Conditions and Notes to Proponent below)

Not considered applicable as these related to the location of the mine site, as such it is respectfully requested for this item to be removed from the decision.

(g) a Road Maintenance and Monitoring Agreement for the Balumbah-Kinnard Road and the Murdinga-Murlong Road between Centrex Metals Ltd, the District Council of Cleve and the District Council of Tumby Bay (refer to Conditions and Notes to Proponent below)

Not considered applicable as these related to the location of the mine site, as such it is respectfully requested for this item to be removed from the decision.

(h) the Construction Environmental Management and Monitoring Plan (CEMMP) for the pre-construction and construction phases, the finalised and consolidated version of which is to be prepared to the reasonable satisfaction of the Environment Protection Authority, other relevant government agencies and the District Council of Tumby Bay (refer to Conditions and Notes to Proponent below)

Draft Construction Environmental Management Plans have been prepared by the primary contractors proposed for the development and are provided for reference with this amendment application (refer to Appendix B). As such, it is respectfully requested that this be removed from the decision as the conditions adequately address the matter.

(i) the Operational Environmental Management and Monitoring Plan (OEMMP) for the operational phase of the development, the finalised and consolidated version of which is to be prepared to the reasonable satisfaction of the Environment Protection Authority, other relevant government agencies and the Tumby Bay District Council (refer to Conditions and Notes to Proponent below)

No change.

(j) the Revegetation and Rehabilitation Plan and Vegetation Management Plan, finalised and consolidated versions of which are to be prepared to the reasonable satisfaction of the Native Vegetation Council and the Eyre Peninsula Natural Resources Management Board (refer to Conditions and Notes to Proponent below)

That the significant environmental benefit is likely to be provided via direct payment into the Native Vegetation Fund for at least some of the proposed clearance. It is suggested this condition be reworded to give effect to this intent.

(k) a Management and Monitoring Plan for Rogers Beach, which is to be prepared in consultation with the District Council of Tumby Bay and to the reasonable satisfaction of the Department of Environment, Water and Natural Resources and the Eyre Peninsula Natural Resources Management Board

No change.

(l) a Beach Profile Monitoring and Sediment Management Plan, which is to be prepared to the reasonable satisfaction of the Coast Protection Board

No change. Noted a draft monitoring plan is attached as Appendix C.

(m) a Fire Management Plan, which is to be prepared to the reasonable satisfaction of the Country Fire Service

No change.

1.8 Community and Stakeholder Engagement

The Proposed Amendment is of strong interest to stakeholders and the community of the Lower Eyre Peninsula given the potential benefits to grain growers in the region. Taking a 'no surprises' approach to the Proposed Amendment, and that of engaging early and regularly, has been the approach in the development of the Amendment to PER.

In accordance with this approach, a considerable amount of stakeholder and community engagement has been undertaken during the development of the Proposed Amendment. This has ensured there is an agreed understanding of the local matters of interest in relation to the Proposed Amendment and that these matters have informed the amended project's design, where practicably possible.

1.8.1 Stakeholder and Community Engagement objectives

Peninsula Ports has remained committed to using the knowledge, views and expertise of stakeholders and the community, to guide the most sustainable design outcomes in our decision-making processes related to the Proposed Amendment. To achieve this, the project team have worked collectively to a core set of objectives, being to:

- Establish positive, proactive and transparent engagement with stakeholders and community
- Build awareness of the Proposed Amendment and its progress, including management of identified matters of interest
- Use tailored engagement methods, content and communications to effectively reach stakeholders and community
- Brief stakeholders and community, and make information available, so as to provide opportunities for people to talk to the project team.

1.8.2 Stakeholder and community engagement activities

Engagement with stakeholders and members of the community is regarded as a critical component of the Proposed Amendment. Peninsula Ports has taken the approach of proactively reaching out to stakeholders and the community.

As a result of this, throughout the development of the Amendment to PER, various emails, phone calls, meetings and presentations have taken place to inform stakeholders and members of the community about the Port Spencer Grain Export Terminal.

A summary of the various stakeholder and community groups and their membership and or liaison contacts that have been made (that is, those the project team have reached out to) is summarised in Figure 1-3.

It should be noted that supporting Figure 1-3, Peninsula Ports remain open to meeting one on one with any stakeholders and community members where requested.

Stakeholder and community consultation and engagement to date has been facilitated through:

- Presentations and liaison, with the board of the Barngarla Determination Aboriginal Corporation (BDAC) and offer to present at a future Barngarla Community meeting.
- Presentations and liaison, with Regional Development Australia Whyalla and Eyre Peninsula, Natural Resources Management Board and Eyre Peninsula Local Government Association.
- Meeting and offerings thereof (by email or phone) with all Fishing and Aquaculture Associations.

- Meetings and offerings thereof (by email or phone) with site neighbours (whose contact details we have been able to obtain within privacy laws).
- Presentation to Tumby Bay District Community Consultative Group, with follow up presentation for project update established.
- Meetings (and presentations) to Across Government Group, with regular fortnightly meetings established.
- Meetings (and presentations) to Technical Working Group, with future regular fortnightly meetings established.
- Advertising in Eyre Peninsula newspapers for expressions of interest for membership to the Grain Advisory Committee, with LEADA also informed, with first meeting scheduled for November 2019.
- Presentations to elected members of councils, with Tumby Bay and Lower Eyre Peninsula scheduled for the future.
- Education material prepared and distributed (presentations and fact sheets) detailing project overview, port declaration area and approvals process.
- Notifications to adjacent site neighbours (whose contact details we have been able to obtain within privacy laws) and councils, including the Environment Protection Authority (EPA), of geotechnical investigation works being undertaken at project site to facilitate the design development and the Amendment to PER.
- A dedicated contact number, email and website established.

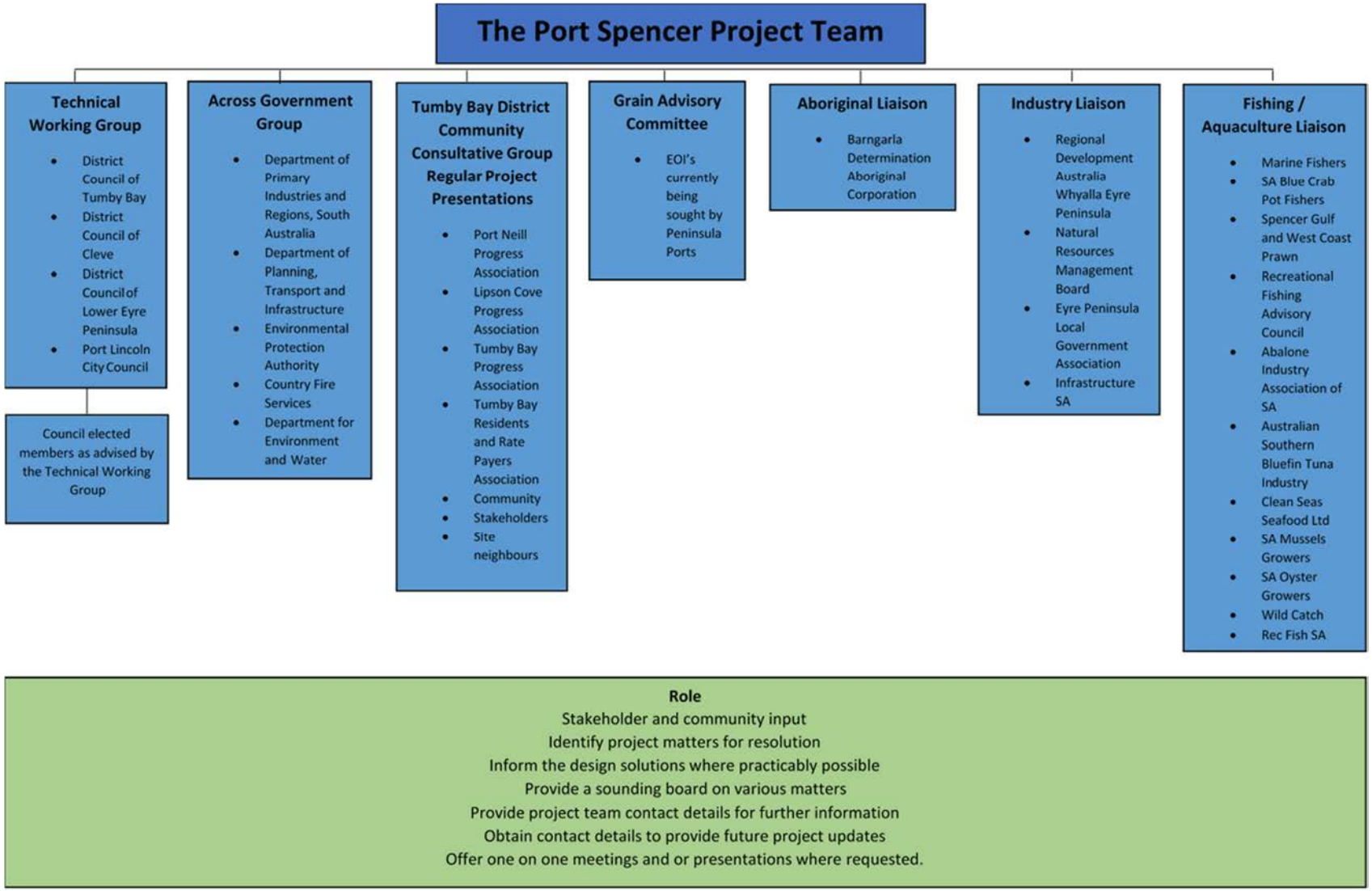

Figure 1-3 Stakeholder and Community Engagement Groups and Liaison Contacts

It should be noted that meetings with the Technical Working Group, Across Government Group, Tumby Bay District Community Consultative Group and Grain Advisory Committee are intended to remain regular throughout the approval phase and ongoing should approval be granted into construction and operation.

1.8.3 Matters raised by stakeholders and the community

A number of matters have been raised throughout the development of the Amendment to PER, including matters pertaining to the feasibility of various transport routes, site location and concept layout, and subsequently the social, economic and environmental concerns associated with these to include the causeway design and port declaration area.

A summary of the key matters raised in provided in Table 1-4.

Table 1-4 Stakeholder and Community Engagement Key Matters Raised

Areas of Interest	Key Matters Raised	Response
Project approvals	Confusion between the Centrex project and this project.	This Amendment to PER includes a detailed review and comparison between the Centrex project (the Evaluated Project) and the Port Spencer Grain Export Terminal (Proposed Amendment) proposed by Peninsula Ports. This review is provided as Appendix A. Clarity has also been provided within Section 1.6 of this Amendment to PER Document on the approvals process in that it is an amendment to the existing approval and that the proposed project is for grain only.
Terrestrial Native vegetation	Impacts on native vegetation.	Most of the site area is clear of native vegetation as a result of historic agricultural practices at the site (not related to this development). While there will be some native vegetation clearance as a result of the Proposed Amendment, an environmental offset will be developed for any disturbances to, or clearance of native vegetation, and relevant approvals under the Native Vegetation Act obtained (refer to Section 6.3.6.1 for details of the offset). Further detail is also provided in Sections 2.9 and 3.9 of Appendix A.
Native title and Aboriginal Heritage	Impacts on land ownership and Aboriginal heritage.	There is a small area of land associated with the Proposed Amendment whereby Aboriginal heritage and native title matters are of particular significance to the Barngarla community. Peninsula Ports is liaising with the Barngarla Determination Aboriginal Corporation, who have been confirmed as the relevant corporate entity under the Native Title Act, for an Indigenous Land Use Agreement. Further detail is also provided in Sections 2.9 and 3.9 of Appendix A.
Noise from port operations, trucks and ships	Noise impacts for adjacent site neighbours and users of Lipson Cove Island and Rogers Beach. Blasting and vibration during construction of site area and causeway.	Port operations and the truck movements to and from the site will generate some noise. To minimise the level of noise, trucks and port operations will be restricted to daytime hours where possible. All engines and equipment will also be kept in good working order. Noise levels will also be within limits of permits and approvals, with any community enquiries responded to in a timely manner. Blasting activities will occur only during the day in accordance with a Blast Management Plan. A draft Blast Management Plan is provided as part of Appendix B. Further detail is also provided in Sections 2.7 and 3.6 of Appendix A.
Amenity	Impact on the Lipson Cove Caravan Park and access to Roger's Beach.	Private access to Rogers Beach will be maintained. Noting that this is assumed to be provided by the gazetted public roadway to the west of the subject land. The causeway will also allow for community to maintain their walking access between Lipson Cove and Roger's Beach. The Lipson Cove Caravan Park will continue to operate. Traffic impacts along Lipson Cove Road are addressed in Section 3.7 of Appendix A.
Design elements	Causeway design and construction, particularly	The Proposed Amendment will have greater direct impact on seagrass compared with the Evaluated Project due to the construction of the causeway (though it is noted that

Areas of Interest	Key Matters Raised	Response
	effect to seagrass, marine life, sediment and erosion	the total structure in the marine environment is smaller than the Evaluated Project due to the removal of the perpendicular berthing jetty). However, in the context of the broader Spencer Gulf, the level of effect has been assessed as similar to the Evaluated Project. Countering the increase to seagrass clearance, reduced impacts to marine fauna are expected during construction due to the significantly lower number of piles required for the Proposed Amendment. A sediment transfer modelling study has been completed that confirms the impacts are expected to be 10-20 mm per annum (or 0.5 m-1 m per 50 years) of sediment build up immediately south of the causeway, similar erosion immediately north of the causeway, with some localised pockets of greater erosion potential. This will be monitored regularly, and the need to move sand from the south to the north is expected to be infrequent, due to the low rates of accretion and erosion. Native vegetation offsets will be required to address the loss of seagrass due to the causeway construction (refer to Section 6.3.6.1 for details of the offset). Section 1.3 provides further detail on the marine structure options considered and the basis for decision-making.
Dust	Dust mitigation strategies during loading from trucks to bunkers, and conveyors to the ships	The grain will be loaded onto ships using covered conveyors which will prevent wind blowing any product around. The conveyors have chutes which drop into the ship's hold and dispense the product directly into the ship which reduces dust generation in the open air. Trucks will also transport the grain via covered trailers and bunkers storing the product will also be covered. It is noted that in-loading activities will be a key source of dust for the facility. Refer to Section 3.5 of Appendix A for assessment of air quality effects.
Traffic	Local network impact and funding Speed zones on Lipson Cove Road. Sealing Lipson Cove Road and native vegetation removal. Intersection upgrades at Lincoln Highway and Lipson Cove Road. Access and exit points to the project site	A briefing has been provided to Infrastructure SA to assist development of a strategy for the east-west and north-south local road network impact as a result of the railway line closure to facilitate discussions between councils and the State Government. Speed zones will be in place along Lipson Cove Road in alignment with current road rules, with any native vegetation removed to upgrade the road managed through an environmental management plan (particularly addressing noise and visual aspect). Access and exit points to the project site have been designed well apart from each other to reduce congestion and ensure safe practice. Refer Sections 2.8 and 3.7 of Appendix A.
Visual amenity Light spillages Noise	Site neighbours being able to see the site from their properties. Visibility of site from Lipson Cove Island and Roger's Beach. Lights at night during port operations visible to site neighbours. Noise from port operations and trucks.	The existing landscape of the area adjacent the site provides an opportunity for the port infrastructure to be designed in a way that screens the site, particularly from the shore of Lipson Cove. To further aid this, low visibility colours and native vegetation screens will be used on the southern boundary of Lipson Cove Road. Operational hours are typically 16 per day during harvest (maximum of 17 per day on peak days) and will be kept to daylight hours wherever practicably possible, with night-time hours likely only to be during peak harvest period or when ships are being loaded (20-30 vessels per annum, totalling up to 40 nights per annum). Refer Section 2.7, 2.8, 2.14, 3.6, 3.7 and 3.14 of Appendix A.
Drainage	Stormwater drainage and recycling at the	The approach to water supply and management at the site is intended to avoid adverse impacts on the watershed and comply with the measures put forward in the Evaluated Project.

Areas of Interest	Key Matters Raised	Response
	project site using natural sources.	Refer Sections 2.4, 2.5, 3.3 and 3.4 of Appendix A.
Ballast water	Effect on ballast water to marine life and the environment. Introduction of marine pests via ballast water.	The intake and disposal of sea water ballast is used to control the weight of ships, with water only carried while the ship is empty. Some ballast water is required to be in the ship to aid mooring, and this water will be discharged at the port before loading, however will be exchanged local seawater. The water exchange will occur as per the Biosecurity Act 2015 and Australian Ballast Water Requirements (2017) and consistent with international standards. This will primarily reduce any risk of the introduction of pests. Refer Section 6.3.9.
Grain spillages Oil spillages Fire at the site	Grain spillages along the transport route. Oil spillages from ships at sea. Fire management at the site.	The Country Fire Service require a fire management plan to be developed during the detailed design phase once approval on the Amendment to PER has been sought. This has been referenced in Section 6.2.2of this Amendment to PER. The Emergency Response Plan to be developed for operations will include protocols for containing and management grain spills and oil spills.
Marine life Port declaration area	Effect on fishing and aquaculture industry. Access to Lipson Cove Island and Roger's Beach.	There is not expected to be any effect on the fishing and aquaculture industry. Furthermore the proposed port declaration area excludes Sir Joseph Banks Group Marine Park, Lipson Cove Island and Roger's Beach. This means access to Lipson Cove Island and Rogers Beach by others will be maintained at all times. The port declaration area is a 2 nautical mile radius, and only applies when a grain vessel is within this zone as per usual safe practice. There is only expected to be twenty to thirty vessels per year. Refer to Section 4.1.5 of this Amendment to PER for more information.
Shipping process	Access to the port site from ship staff. Service facilities for ships at the port.	The Port will not offer any ship servicing, cargo outload or vessel replenishment services. Only grain loading will be available and ship personnel will not be allowed to leave the designated Maritime Security Area. Berthing of the ships has been designed through ship simulation modelling. Smart Ship Australia is a world class ship simulator centre serving the global maritime industry who were engaged to undertake simulation relating to the project's operating procedures and port development. The port will adhere to strict operating procedures in relation to ship loading and ship movements. Secure transport measures for the product via enclosed conveyors and the ship's hold and dispense system will be in place. A clear shipping lane which minimises any impact to the seabed has been identified. In addition, the port will not provide any servicing of ships nor the disembarkation of staff from ships berthed at the port. Refer Section 4.1.5 for an overview of proposed port operations.
Operational hours	Port operation hours during the day and night and impact to site neighbours and users of Lipson Cove caravan park and Roger's Beach	Operational hours for delivery of grain will be a maximum of 17 hours per day on peak harvest days, but will be kept to day light hours wherever practicably possible, with these night-time hours likely only to be during peak harvest period. Vessels will be loaded on a 24 hours throughout the year to enable rapid loading. This is expected to result in 40-60 nights per annum of grain ship-loading for 20-30 vessels.

1.8.4 1.6.4 Summary

The stakeholder and community engagement undertaken to date has increased awareness of the Proposed Amendment and the Amendment to PER and enabled an opportunity to inform and influence, where practicably possible, the project's design development. The project team is committed to ongoing engagement throughout the project's development to ensure a sustainable outcome is achieved that minimises environmental, social and economic impact.

1.9 Structure of the Amendment to PER Document

This Amendment to PER document describes:

- Sections 0 and 2: The background and reason for the Proposed Amendment.
- Section 3: Description of key changes to applicable legislation, regulations and government policy since the Evaluated Project and the relevance to the Proposed Amendment.
- Section 4: A description of the Proposed Amendment for construction and operational phases.
- Sections 5: A summary of the outcomes of the detailed review of the Proposed Amendment compared to the Evaluated Project (Appendix A).
- Section 6:The proposed Environmental Management Framework for the Evaluated Project, summary of the risk assessment and mitigations measures proposed.

2. Reason for the Amendment

Centrex Metals has made the decision to transition out of iron ore on the Eyre Peninsula, meaning that the Evaluated Project will not proceed in its current form.

Grain handling and export capability formed part of the infrastructure proposal included in the Evaluated Project. FEL was selected by Centrex Metals in 2010 as the grain grower partner to work with Centrex to develop the grain receival and exporting precinct at Port Spencer at that time. The inclusion of grain receipt and export are not well described in the PER, as the prime driver for the Evaluated Project was to provide a route to market for iron ore. As such, further detail is provided in this section to provide context and justification for the Proposed Amendment.

Removing the iron ore component of the Evaluated Project creates significantly more space on the site for on-site grain storage, which will reduce supply chain handling inefficiencies.

2.1 Grain Demand and Export Capacity

The Eyre Peninsula produces an average of 2.7 million tonnes of grain per year, currently for export to Asian and Middle Eastern markets (Source – PIRSA 5 year average receivals 2012-2017). Grain is predominantly exported via supply chain storages and port infrastructure at Port Lincoln and Thevenard. Approximately 1.6 million tonnes of grain grown on the Eyre Peninsula is expected to be freight advantaged to Port Spencer due to the proximity of Port Spencer as compared to Port Lincoln or Thevenard.

Export capacity on the Eyre Peninsula is constrained between December and April, when grain prices are at their highest (counter season for international markets). Further, a lack of grain handling competition and an inefficient supply chain, particularly with the closure of the rail lines, means there is significant scope to provide economic benefits to grain growers on the Eyre Peninsula through a suitable export alternative.

2.1.1 Impacts on viability of other operational facilities or facilities under construction

Further to the identified 1.6 million tonnes that is freight advantaged to Port Spencer, this is considered unlikely to impact on the natural direct catchments associated with Luck Bay, Thevenard and Port Lincoln. The Proposed Amendment proposes bunker storage in the order of 800,000 t, which suggests that there also remains freight advantaged grain in suitable quantity for the proposed Cape Hardy development.

The secondary potential impact of freight advantaged ports such as Port Spencer and Cape Hardy, is that there may become (over time) a lesser reliance on up-country storage such as those owned and operated by Viterra.

2.2 Key Drivers for the Proposed Amendment

The key drivers for the Proposed Amendment are essentially the three levels of economic benefits the development will provide to local grain growers:

1) Extra competition in the grain handling and marketing industry
2) Freight savings from reduced travel and double handling
3) The ability to transport directly to port.

The market factors that underpin these economic drivers, including export options, limited supply chain export solutions and grain catchment, are discussed below.

2.2.1 Increase the Low Economic Returns for Grain Growers

The low economic returns for grain growers on the Eyre Peninsula are driven by lack of domestic market and the monopoly supply chain currently present in the region.

There are currently very limited domestic market opportunities for grain grown in this region and substantial freight disadvantages for accessing opportunities in other parts of the state and country. The relatively small population of the Eyre Peninsula in terms of people and livestock, precludes a robust local domestic grain market. Therefore, grain is predominantly exported to international customers.

As a result of the lack of domestic market and supply chain competition in the region, grain prices have historically been generally low relative to other regions in Australia. There is significant discussion regarding supply chain costs, the dominance of vertically integrated port operators and a lack of competition in South Australia (refer ACCC's bulk wheat ports monitoring report (December 2017) and ESCOSA's current inquiry).

The Proposed Amendment will provide an alternative supply chain for grain growers on the Eyre Peninsula and an opportunity for grain growers to improve their economic returns through increased competition.

The opening of the T-Ports Lucky Bay transhipment facility (expected to be operational by Q4 2019) is not anticipated to significantly change opportunities across the whole of Eyre Peninsula, with only 500,000 tonnes of total grain storage provided by the development across the Lock and Lucky Bay sites and the relatively high operating cost associated with transhipment. The Lucky Bay facility is better positioned for Northern Eyre Peninsula growers, whereas Port Spencer is positioned for a much larger central catchment area.

The development of Port Spencer is expected to contribute significant, reoccurring annual economic savings to grain growers in the catchment zone. Based on an assumed one million tonnes of grain exported through Port Spencer, the annual grower freight savings alone may be in the order of $3.5 -$5M p.a. The introduction of a new grain export facility will create immediate competition for the incumbent grain terminal operator(s) and initiatives to capture supply could realise a further $10-$15/ton increase across the Eyre Peninsula's growing region (subject to a large number of factors which ultimately determine the price a grower is paid). Those potential further benefits for Eyre Peninsula growers may then result in an increase in the price realised for grain of $27 - $40M p.a. assuming a 2.7 Mt harvest and competitive pressure between the supply chain operator(s) and exporters to capture supply. (These assumptions are theoretical in nature, difficult to predict and may or may not be ultimately realised).

It would be expected that the increased shipping capacity resulting from a new export facility will promote further competition from traders and exporters, leading to higher grain prices, which are more comparable to other exporting regions in Australia.

2.2.2 Provide a more economic route to market for a significant grain catchment zone

A grain production target zone of approximately 1.6 million tonnes of grain is expected to be freight advantaged to Port Spencer by up to $10 per tonne (average $3.50 per tonne) as compared to Port Lincoln or Thevenard. Further, this zone represents the prime growing region on Eyre Peninsula with comparatively more stable and reliable yields and rainfall than other areas. Freight advantages are further enhanced if a grower is unable to deliver grain to Port Lincoln at harvest. Port Lincoln can only receive certain commodities and grades at harvest time and is limited by its storage capacity. Port Spencer will ultimately have the capacity to store approximately 860,000 tonnes directly at harvest, with the ability to continue shipping during harvest as well.

This significant amount of port storage should also lessen the requirement for the incumbent storage provider's 'country' facility feeder sites with a more efficient 'internal' movement of grain between bunkers on site to the shipping position.

3. Amended Planning and Environmental Legislation and Policies

This section identifies applicable South Australian and Commonwealth Legislation relevant to the Proposed Amendment and outlines how the Proposed Amendment meets the requirements. It also considers State and Local Government planning strategies and policies.

There have been changes to applicable planning and environmental legislation since submission of the original PER for the Evaluated Project. Table 3-1 identifies changes to legislation and policies that have occurred since lodgement of the Evaluated Project that may affect the assessment of the Proposed Amendment.

Table 3-1 Comparison of Applicable Legislation and Policy between original PER and proposed amendment

Applicable legislation/policy for Original PER	Description of change to legislation/policy
South Australian Planning and Environmental Legislation & Policies	
Development Act 1993	The Development Act applies landside, from the high-water mark, for the project. The Evaluated Project remains an authorised development in accordance with section 48 of the Development Act. The Proposed Amendment is to be processed in accordance with section 47 of the Development Act. There have been no material changes to sections 47 or 48 of the Development Act that applies to the assessment or processing of the Proposed Amendment. As a result of the implementation of Phase 1 of the Planning and Design Code (refer to Section 3.1.2 below) on 1 July 2019, the PDI Act applies sea-side of the high-water mark for the project. Whilst assessment of the Proposed Amendment must have regard to the Planning and Design Code, the Development Act remains the applicable legislative planning instrument for the project.
Planning, Development and Infrastructure Act, 2016	As of 1 July 2019, the PDI Act applies to all areas not within a council. For the Proposed Amendment, the PDI Act applies to the area seaward of the high-water mark. (See Section 3.1.2 below)
Environment Protection Act 1993	No material change to Act or application to Proposed Amendment. Prescribed activities of environmental significance to be assessed by the Environment Protection Authority (EPA) as part of the formal amendment process are expected to be the same as for the original PER: • Petroleum production, storage or processing works or facilities – 40,000 L of storage is currently estimated for the Proposed Amendment • Bulk shipping facilities (export of grain only) • Dredging (for jetty construction only). Relevant EPA licences will be required if the Proposed Amendment is approved.

Applicable legislation/policy for Original PER	Description of change to legislation/policy
Environmental Protection (Air Quality) Policy 1994	Replaced with the Environmental Protection (Air Quality) Policy 2016 Applicable changes to this Environmental Protection Policy (EPP) include criteria for ambient air Ground Level Pollutant Concentrations (GLCs) (previously, proponents were to source appropriate alternatives). Compliance with the EPP is primarily assessed by comparison of the model-predicted ambient concentrations with the EPP GLC criteria.
Environmental Protection (Burning) Policy 1994	Ceased. (Matters addressed in EPP (Air Quality) 2016).
Environment Protection (Motor Vehicle Fuel Quality) Policy 2002	Ceased.
Environment Protection (National Pollutant Inventory) Policy 2008	No change.
Environment Protection (Noise) Policy 2007	No change.
Environment Protection (Waste to Resources) Policy 2010	No material change to Act or application to Proposed Amendment.
Environment Protection (Water Quality) Policy 2003	Replaced with the Environment Protection (Water Quality) Policy 2015.
Other State Legislation (Secondary Approvals)	
Aboriginal Heritage Act 1988	No material change to Act or application to Proposed Amendment.
Climate Change and Greenhouse Emissions Reduction Act 2007	No material change to Act or application to Proposed Amendment.
Coast Protection Act 1972	No material change to Act or application to Proposed Amendment.
Dangerous Substances Act 1979	No material change to Act or application to Proposed Amendment. As for the Evaluated Project, it is expected that the Act would primarily apply to fuel and fuel oil stored at the port facility.
Heritage Places Act 1993	No material change to Act or application to Proposed Amendment.
Historic Shipwrecks Act 1981	No material change to Act or application to Proposed Amendment.
Marine Parks Act 2007	No material change to Act or application to Proposed Amendment.
National Parks and Wildlife Act 1972	No material change to Act or application to Proposed Amendment.
Native Title (South Australia) Act 1994	No material change to Act or application to Proposed Amendment. Refer to Native Title Act 1993 (Cth) for context of changes to the status of native title at the site.

Applicable legislation/policy for Original PER	Description of change to legislation/policy
Native Vegetation Act 1991	Clearance for the purposes of a Major Development approved under Section 48 of the Development Act is assessed under Regulation 13 of the Native Vegetation Regulations 2017. Clearance must be consistent with the development consent and a significant environmental benefit (SEB) is required. The introduction of the Native Vegetation Regulations 2017 since the original PER has resulted in a change to the SEB calculation process. This amendment process has been included in ecological assessment to capture data suitable to determine the SEB required for the project. It is noted that seagrass impacts are also included in the SEB for the Proposed Amendment, and initial SEB estimates for seagrass clearance have been calculated in accordance with the updated (2017) regulations.
Natural Resources Management Act 2004	No material change to Act or application to Proposed Amendment.
Commonwealth Legislation	
Environment Protection and Biodiversity Conservation Act 1999	No material change to Act. The Evaluated Project was referred to the Commonwealth, deemed a Controlled Action and approved subject to conditions. The Commonwealth has advised the existing approval can be transferred from Centrex Metals to Peninsula Ports by both parties executing a deed of transfer. The approval stipulated a 5-year timeframe for commencing the development. Following the completion of the deed of transfer, Peninsula Ports will need to apply to have the existing approval timing constraint extended in line with the Proposed Amendment.
National Greenhouse Energy and Reporting Act 2007	Emission factors have altered – this has been considered in the updated assessments.
Native Title Act 1993	No material change to Act. Since the Evaluated Project was granted consent, a determination has been made through the Federal Court of Australia that the Barngarla have exclusive native title over an area affected by the project (National Native Title Tribunal Number: SCD2016/001). Peninsula Ports is well progressed in negotiating an Indigenous Land Use Agreement (ILUA) with the Barngarla Determination Aboriginal Corporation and anticipate this will be agreed prior to the decision on this Proposed Amendment, but with the formal consultation and registration process to follow. The ILUA will consider the lease over necessary Crown Land and the declaration of the Port and Harbour area over the seabed. As a result of the determination it has been confirmed that native title continues to exist on the subject Crown Land but has been extinguished on the freehold land.
Quarantine Act 1908	Biosecurity Act 2015
State and Local Government Strategies	

Applicable legislation/policy for Original PER	Description of change to legislation/policy
South Australia's Strategic Plan 2011	The State Strategic Plan has been replaced with plans for seven regional areas of the state, as well as The 30-Year Plan for Greater Adelaide. The Eyre and Western Region Plan applies to the Proposed Amendment.
Strategic Infrastructure Plan for SA 2004/5 – 2014/15	Ceased.
Regional Plan of the Eyre Peninsula (RPEP)	Replaced with the Eyre and Western Region Plan (EWRP) (April 2012). Both documents aim to support and develop the region's export-oriented industries, including fishing, mining and agriculture. Principle 4 of the EWRP seeks for the region's strategic infrastructure to be protected and developed further. Principle 5 of the EWRP promotes the protection and strengthening of the economic potential of the region's primary production land. The Proposed Amendment is consistent with Principles 4 and 5 and contributes to the envisaged infrastructure as illustrated in Map C2 of the EWRP (see Figure 3-1 below). There is no material difference between the two documents that would fundamentally alter the alignment of the Proposed Amendment with the now applicable EWRP.
Living Coast Strategy for South Australia	Ceased.
Tackling Climate Change, SA's Greenhouse Strategy 2007-2020	Replaced with South Australia's Climate Change Strategy 2015 – 2050: Towards a Low Carbon Economy in late November 2015.
Eyre Peninsula Coastal Development Strategy	Ceased.
District Council of Tumby Bay Strategic Plan 2020 – 2030	The 2020 – 2030 Strategic Plan was adopted at the 10 September 2019 meeting of the District Council of Tumby Bay. The Plan adopts four themes for continuous improvement. Theme 3, A Strong and Diverse Economy, identifies a need to build upon existing industry and business to enhance the local economy. Strategies associated with this Theme include; • Actively engage with local industry and business to encourage and support economic development and job opportunities; and • Encourage the development of value-add agriculture industries.
Development Plans	
Tumby Bay District Council Development Plan (Consolidated 13 January 2011)	Amended – most recent consolidation date 6 March 2018. Changes of note include: • Coastal Zone replaced with Coastal Conservation Zone and boundary altered over less of the subject land;

Applicable legislation/policy for Original PER	Description of change to legislation/policy
	• General Farming Zone replaced with Primary Production Zone (and boundaries altered over subject land, commensurate with change to Coastal Conservation Zone boundary); • Additional policy added, including Bulk Handling and Storage Facilities. A description of the changes and assessment Proposed Amendment against key Development Plan Policy is provided in Section 3.1.
Land Not within a Council Area (Coastal Waters) Development Plan (Consolidated 31 March 2011).	Ceased 1 July 2019 and replaced with Phase 1 of the Planning and Design Code as Applying to Land Not Within a Council Area.

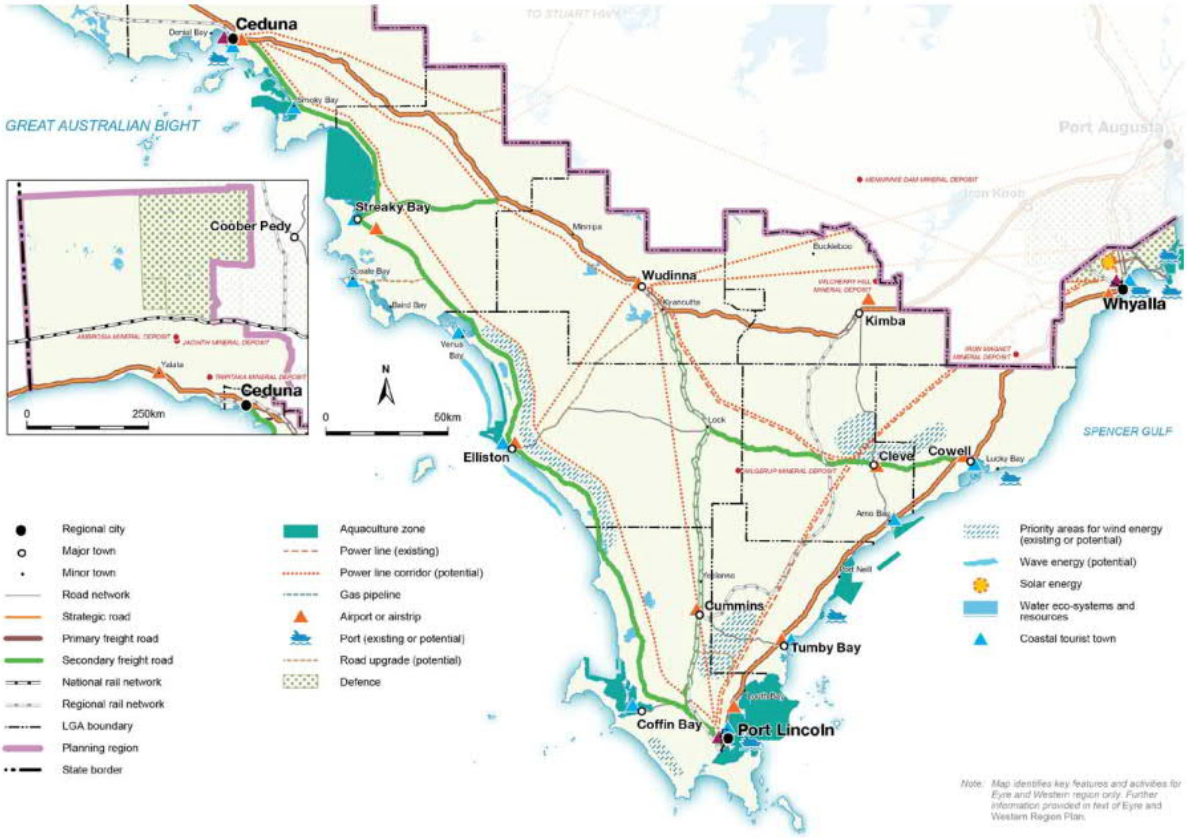

Figure 3-1 Map C2, Eyre and Western Region Plan – Economic development

3.1 Development Plan Assessment

3.1.1 Tumby Bay District Council Development Plan

Since lodgement of the Evaluated Project, the Tumby Bay District Council Development Plan has undergone five amendments via the Development Plan Amendment (DPA) process. The applicable Development Plan consolidation date for the Proposed Amendment is 6 March 2018. The most pertinent amendment to the Development Plan occurred with the 3 December 2015 consolidation – the General and Coastal DPA.

The site conditions have altered little since lodgement of the Evaluated Project; there are no mangroves or wetlands, vegetation is degraded of low habitat value and does not include fauna or habitat areas of significance. There remain no heritage sites, significant registered conservation sites or high economic value agricultural activities impacted.

Whilst zoning and applicable policy has altered, the Proposed Amendment finds comparable, or greater compliance with much of the Development Plan policy when compared to the Evaluated Project, as discussed below.

Coastal Zone replaced with Coastal Conservation Zone and boundary altered

The Coastal Conservation Zone maintains the general intent of the previous Coastal Zone. The Desired Character and Principles 9 and 11 of the Coastal Conservation Zone are additional policy to that applicable to the Evaluated Project.

The Desired Character, in part, seeks to maintain the natural landscape and for public access to be maintained and managed. Development in the zone should ensure the coastal environment and scenic qualities of the coast are protected, and natural elements of a site or locality must remain dominant to any introduced elements.

As a result of the altered layout of the Proposed Amendment and the realignment of the boundary between the (now) Primary Production Zone and the (now) Coastal Conservation Zone, significantly less built form is proposed within the Coastal Conservation Zone when compared to that proposed within the Coastal Zone for the Evaluated Project.

The built form within the Coastal Conservation Zone will consist of the following key elements:

- A cutting to 5 m Australian Height Datum (AHD) to facilitate launch of the wharf superstructure
- The western (coastal) extent of a causeway with crest length of approximately 240 m extending out to sea
- An export conveyor either supported on the causeway embankment, or a steel trestle structure
- A roadway for wharf access.

The total width of the built form in the Coastal Conservation Zone will be limited to less than 50 m.

Principle 9 seeks for development to not adversely impact the stability and natural condition of the coast, minimise vehicle access points, incorporate landscaping to enhance amenity and screen buildings and employ materials that minimise glare and blend with landscape features.

The Proposed Amendment's impact to the local and wider landscape and coastal environment are assessed in detail in Appendix A.

Terrestrial vegetation sought to be cleared is limited to low-diversity and low-value vegetation in rocky outcrops in fallow paddocks. The applicant has committed to undertaking re-vegetation in undisturbed areas of the fallow paddock which will assist in improving the visual outcome of the site and, over time, screen infrastructure.

In accordance with Principle 11, development should be self-sufficient or use existing infrastructure, minimise impacts on the natural environment, existing views and/or coastal features and avoid areas that impact nesting and breeding areas or migration patterns of fauna.

The impacts of the Proposed Amendment on sediment transfer patterns along the coast are to a similar degree as the Evaluated Project, however, there is some accretion and erosion anticipated in localised areas.

Access tracks and earthworks within the Coastal Conservation Zone is limited, although it is acknowledged the western-most extent of the causeway will be sited within the Zone. Built form will be of low reflectivity and not readily visible, due to the slim-line nature of the conveyor.

Removal of vegetation and potential habitat for native fauna was assessed as low impact. This is due to the limited extent and quantity of clearance.

The Proposed Amendment has no reliance on existing infrastructure within the Coastal Conservation Zone, all power, water and services will be provided on site and will traverse the Zone within the structure of the export conveyor.

The Proposed Amendment finds a high level of compliance with the Coastal Conservation Zone policy.

General Farming Zone replaced with Primary Production Zone

The Desired Character of the Primary Production Zone generally replicates that of the General Farming Zone, with (new) reference made to the accommodation of wind farms and associated infrastructure.

The Primary Production Zone promotes agricultural activities and recognises the opportunity for agro-based industry, such as processing or handling of primary produce. The Proposed Amendment achieves this aim.

Notably, Objective 5 of the General Farming Zone, which sought “[p]rotection of rural support infrastructure for the bulk handling and transportation of farm commodities located near Port Neill”, has not been reproduced in the Primary Production Zone.

New policy that applies to the Proposed Amendment (in the now, Primary Production Zone), includes Principle 10 which seeks to avoid development within 500 m of a National Park, Conservation Park, Wilderness Protection Area or significant stands of native vegetation if increasing, or resulting in the spread of pest plants.

The closest boundary of the subject land is situated some 880 m from the Lipson Island Conservation Park, with built form approximately 1.5 km from the Conservation Park. The land use proposed is not anticipated to increase the potential for, or result in, the spread of pest plants, and as such, achieves compliance with Principle 10 of the Zone.

The General Farming and Primary Production Zones both seek for the visual impact of buildings to be minimised. As assessed in Appendix A, it is considered Proposed Amendment maintains a similar visual impact to the Evaluated Project.

Minimal impact to roadside vegetation is anticipated. The Traffic Impact Assessment (included in Appendix A) noted that only “localised vegetation trimming (to improve sight lines)” is necessary. Retention of local vegetation assists in reducing the visual impact of structures on site.

The Proposed Amendment achieves greater compliance with the Primary Production Zone compared to the Evaluated Project with the General Farming Zone, by virtue of the facility exclusively supporting primary production within the region; furthering the aims of the Zone.

Table TuB/2 – Building Setbacks from Road Boundaries applies the same metric as that applicable for the Evaluated Project – 30 m from any road boundary.

It is acknowledged the Proposed Amendment incorporates infrastructure within 30 m of the western site boundary which is adjacent an unmade road.

This infrastructure includes 10 kL tank, amenities and registration building, sample stands and weighbridges.

The sample stands and weighbridges are elements that would not be readily visible from the current formed public road and will not be of a height or scale that would compromise the amenity of adjoining land or any future streetscape that may result if the road is formed for public access.

The tank and building will be much smaller in scale than other site elements, such as the grain bunkers, which are located some 60 m from the western site boundary.

Importantly, all built form elements are some 50+ m from the southern boundary of the site, which is the only site boundary that abuts a formed and publicly accessible road, being Lipson Cove Road.

Various Changes to Development Plan Policy

Excluding the changes to Development Plan policy discussed above, most changes between the 13 January 2011 and 6 March 2018 consolidations are a result of the conversion of the Development Plan to the 'Better Development Plan' modules and use of standard policy from the State Planning Policy Library.

Commentary regarding the more pertinent changes to Development Plan policy applicable for the Proposed Amendment is provided in Table 3-2.

Table 3-2 Changes to District Council of Tumby Bay Development Plan applicable to the Proposed Amendment

Chapter / Matter	Commentary
Bulk Handling and Storage Facilities	The Bulk Handling and Storage Facilities chapter in the current Development Plan (consolidated 6 March 2018) did not form part of the applicable Development Plan (consolidated 13 January 2011) for the Evaluated Project. The Proposed Amendment finds general conformity with this chapter. It is noted the proposal will have a similar visual impact to that of the Evaluated Project (refer Appendix A) and is located in a suitable zone – in accordance with Objective 1 and Principle 1. Terrestrial vegetation clearance will be limited to approximately 3 hectares (ha) of low diversity and low value vegetation located in rocky outcrops in fallow paddocks. Peninsula Ports has committed to undertaking re-vegetation in undisturbed areas of the fallow paddock as part of the ILUA for the project. All built form, except for the conveyor and causeway, which by their nature must span or abut the coastal interface, will be afforded appropriate separation from sensitive features, such as clifftops, sand dunes and beaches. The Proposed Amendment offers on-site marshalling and manoeuvring of vehicles, avoids the use of public roads to access activity areas on site and will enable the simultaneous forward entry and exit of all vehicles to/from the site. This is achieved by separating incoming and outgoing heavy vehicle streams and providing treatments at intersections anticipated to receive high volumes of heavy vehicle traffic. It is proposed to seal internal roads and Lipson Cove Road to minimise dust nuisance and provide a strengthened road pavement that is more reliable during wet weather. The above treatments satisfy Principles 2 and 4. Bunker positioning does not compromise efficient vehicle circulation and parking – in accordance with Principle 3.
Coastal Development / Coastal Areas	Much of the planning policy included in the Coastal Areas chapter of the current Development Plan shares the same intent to that comprising Council Wide Objectives 52 – 67 (Coastal Development) and Principles 202 – 248 (Coastal Areas) of the Development Plan applying to the Evaluated Project.

Chapter / Matter	Commentary
	The Proposed Amendment finds a reasonable level of compliance with applicable policy, including protecting against coastal hazards, such as storm tides and sea level rise. A sediment transfer modelling study has been completed that confirms the impacts are expected to be 10-20 mm per annum (or 0.5 m-1 m per 50 years) of sediment build up immediately south of the causeway, similar erosion immediately north of the causeway, with some localised pockets that are greater. Both Lipson Island and Rogers Beach were found to experience minimal impact, noting that a small increase in post-development erosion is predicted at Rogers Beach (refer to Appendix A). The visual impact of the Proposed Amendment has been re-assessed given the change in built form proposed. A similar level of visual impact is expected from the Proposed Amendment as for the Evaluated Project, as viewed from important vantage points. (Refer Appendix A for assessment regarding visual impacts). It is noted several references are made to maintaining or enhancing public access to coastal areas – this desire has limited mention in the 13 January 2011 Development Plan. The Proposed Amendment achieves the aims of the Coastal Areas Chapter in this regard, by maintaining public access to, and along the coast.

3.1.2 Land Not Within a Council Area (Coastal Waters) Development Plan / Planning and Design Code as Applying to Land Not Within a Council Area

The structure of the Planning and Design Code differs from the previous Development Plan. The Coastal Waters Zone incorporates limited Zone provisions, rather, Overlays and General Development Provisions guide the assessment of development.

Given the change in policy structure, and for ease of reference, a planning assessment against the applicable Planning and Design Code policy is provided in Table 3-3.

Table 3-3 Planning Assessment for the Proposed Amendment – Planning and Design Code

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
Coastal Waters Zone	DO 1 Environmental Protection PO 1.1, 1.2 Built Form and Character PO2.1	Built Form and Character DTS/DPF 2.1	*Desired Outcome 1* The Proposed Amendment achieves a comparable level of compliance with the Desired Outcome as the Evaluated Project. The design of the project is cognisant of the site's location within an important ecological, commercial, tourism and recreational locality. *Environmental Protection* The revised jetty design incorporates less piers and a reduced total length, resulting in less disturbance to the marine environment. However, introduction of the causeway will increase seagrass disturbance compared to the Evaluated Project. For further discussion

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
			regarding marine impact, refer to Coastal Areas Overlay below. Resultant turbidity and sedimentation disturbance have been modelled and indicate an increased effect immediately south of the wharf, with no significant change at Rogers Beach, Lipson Cove and Lipson Island, where minimal effects on beaches are predicted. In terms of overall impact to the marine environment, the Proposed Amendment has been determined to have a similar level of effect as the Evaluated Project. *Built Form and Character* All built form proposed is situated approximately 1.5km from the nearest Conservation Park (Lipson Island).
Coastal Areas Overlay	DO 1, Hazard Risk Minimisation PO 2.1, 2.2, 2.4 Coast Protection Works PO 3.1, 3.2 Environment Protection Works PO 4.1, 4.2, 4.3, 4.5 Access PO 6.1	Hazard Risk Minimisation DTS/DPF 2.1, 2.2	*Desired Outcome 1* In totality, the Proposed Amendment will have a comparable impact upon the marine environment as the Evaluated Project. Natural coastal processes will not be unduly impacted; however, sand transfer may be required as part of recommended beach monitoring. The development will not be compromised by coastal hazards, such as sea level rise, flooding erosion or dune drift. *Hazard Risk Minimisation* The Proposed Amendment maintains conformity with good planning practice, and is designed having regard to sea level rise, storm surge, land subsidence and coastal erosion (refer to Appendix A). The existing minimum site level is approximately 10 m AHD. The minimum developed site level will be 7 m AHD associated with grain bunkers and truck marshalling yards. The jetty will have a minimum floor level of 8.5 m AHD. The jetty and conveyors are located on a raised portion of the coast that is not likely to be inundated associated with sea level rise or storm surge from climate change contributions. All levels comply with the recommended site levels nominated by the

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
			Coast Protection Board for the Evaluated Project and satisfy PO 2.1 and 2.2. A sediment transport and coastal processes modelling study has indicated the footprint of the Proposed Amendment will result in a broad level of sediment accretion (0.15 km^2 or 150,000 m^2) on the southern side of the coastal infrastructure and erosion (0.08 km^2 or 80,000 m^2) on the northern side. In this regard, the proposal results in localised coastal erosion, which is sought to be avoided by PO 2.4, however, it is noted the Proposed Amendment does not necessitate coast protection measures. *Coast Protection Works* Coast protection measures are not necessary, nor will the proposal compromise existing coastal structures. *Environment Protection Works* The construction of the proposed causeway is likely to alter nearshore sediment transport adjacent the structure. While the change in sediment transport and coastal processes is likely to impact the nearshore benthic habitats, the significance of these impacts are determined to be moderate in the context of the extent of the wider benthic habitats within the Spencer Gulf. In addition, the modelling has demonstrated that any changes in the nearshore sediment transport regime are not expected to impact Lipson Cove and Lipson Island to the south of the proposed development. The potential for introduction of non-indigenous marine species associated with the Proposed Amendment is significantly reduced due to the revised construction methodology (majority of marine works being shore-based). The proposal has been designed to avoid stormwater discharge to the marine environment. It is acknowledged the revised design will result in a higher level of seagrass loss than the Evaluated Project (estimated to be

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
			11,108 m^2 compared with 4,702 m^2 for the seagrass meadows). Impacts to seagrass (and all marine habitat) will be offset through the Native Vegetation Act SEB offset process. Additionally, an assessment of the revised nearshore infrastructure footprint (including the proposed causeway and jetty) and proposed construction methodology indicates the predicted total area of impact on the benthic environment is less than half of that initially predicted for the Evaluated Project, primarily as a result of the significant reduction in the jetty footprint within the sandy substrate. The Proposed Amendment poses a reduced risk to marine mammals when compared to the Evaluated Project, due to the significant reduction in piling required for wharf construction and subsequent reduction in noise and vibration in the marine environment. The proposal avoids built form upon environmentally-sensitive coastal areas, such as sand dunes. Excluding the proposed conveyor, all built form is sufficiently setback from cliff tops to avoid exacerbating coastal erosion. The proposed causeway will disturb seagrass habitat beneath its footprint and shading effects will result from the wharf structure. In context with the wider environment, however, the overall level of effect is comparable to the Evaluated Project. The Proposed Amendment does not necessitate the need for dredging during operation – consistent with the Evaluated Project. Due to the modelled accretion to the south-west and erosion on the north-east of the development, a draft Beach Monitoring and Management Plan has been developed and is attached as Appendix C. Any beach management would be undertaken based on triggers identified in the plan to avoid erosion of Rogers Beach to the north. In this regard, the proposal does not find compliance with PO 4.5.

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
			Access The Proposed Amendment maintains public access to the coast.
Historic Shipwrecks Overlay	DO 1 General PO 1.1, 1.2	General DTS/DPF 1.1, 1.2	*Desired Outcome 1* The Proposed Amendment will not impact known historic shipwrecks or historic relics. *General* The proposed built form will not compromise any located historic shipwrecks. It is noted the Three Sister Wreck has been previously positively identified and is located at Lipson Cove, over one km to the south of site.
Bulk Handling and Storage Facilities	DO 1 Siting and Design PO1.1, 4.1	Siting and Design DTS/DPF 1.1(a)	*Desired Outcome 1* The Proposed Amendment will have differing impacts to transport networks, the landscape and surrounding land uses as a result of the use for exclusive grain handling, differing site layout and peak period of operation. *Siting and Design* The development sea-side is situated no less than 1.4 km from the nearest sensitive land use (residential). The site measures a minimum of 450 m from the nearest sensitive land use (residential). Air quality and noise modelling undertaken for the Proposed Amendment demonstrates the facility can be operated to meet the requirements of the EPPs for air quality and noise.
Design and Siting	DO 1(a), (b) Environmental and Cultural Context PO 1.1		*Desired Outcome 1* The causeway and wharf structures will maintain a low profile within the marine environment. The open nature of the wharf will further limit visibility of the structure. *Environmental and Cultural Context* The Proposed Amendment will have a comparable impact upon the landscape and character of the marine environment. The structures will be designed to withstand the severe environmental conditions expected.

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
Interface Between Land Uses	DO 1 General Land Use Compatibility PO 1.2 Hours of Operation PO 2.1 Activities Generating Noise or Vibration PO 4.1 Air Quality PO 5.1 Light Spill PO 6.1	DTS/DPF 4.1	*Desired Outcome 1* The Proposed Amendment will not have an unreasonable impact on adjoining land due to noise or air emissions (refer below). *General Land Use Compatibility* The development sea-side is situated no less than 1.4 km from the nearest sensitive land use (residential). *Hours of Operation* During the 8-week harvest period, deliveries to the site are expected to occur between 6 am – 10 pm seven days per week. Outside of harvest season, the site would operate 9 am – 5 pm five days per week. Ship-loading would be a 24-hour activity occurring throughout the year. *Activities Generating Noise or Vibration* Noise modelling undertaken for the Proposed Amendment demonstrates the facility can be operated to meet the requirements of the EPPs for noise. Mitigations to minimise noise effects are described in Section 6.3.3. *Air Quality* Air quality modelling undertaken for the Proposed Amendment demonstrates the facility can be operated to meet the requirements of the EPPs for air quality. Mitigations to minimise air quality effects are described in Section 6.3.1. *Light Spill* Consistent with the Evaluated Project, lights at the Port will be domed focussed low level lights and will minimise potential light pollution.
Marinas and On-Water Structures	DO 1 Navigation and Safety PO 1.1, 1.2, 1.3, 1.4, 1.5, 1.6		*Desired Outcome 1* The Proposed Amendment will not impair commercial or navigational activities. It is acknowledged the Proposed Amendment will have a visual impact upon (informal) recreational use of adjacent public land, including beaches, however, the impact has

Zone / Overlays / General Development Provisions	Applicable Desired Outcome (DO) / Performance Outcome (PO)	Applicable Deemed to Satisfy Criteria (DTS) / Designated Performance Feature (DPF)	Commentary
	Environmental Protection PO 2.1		been determined to be comparable to the Evaluated Project. The marine impacts due to the footprint of the marine infrastructure differ due to the inclusion of a causeway (refer to Section 1.3); a higher level of seagrass clearance will result, while potential effects on marine fauna will be significantly reduced. During operations impacts to the marine environment are primarily a result of accretion and erosion either side of the causeway. However, the overall marine impacts have been assessed as being comparable to the Evaluated Project. *Navigation and Safety* Public access along the coast is maintained via the causeway design. Wharves in the locality will not be impaired by the proposed causeway and jetty structure. A detailed hydrographic study would be undertaken prior to operations to establish a clear shipping lane from the Port to Spencer Gulf deep water. Appropriate navigation aids will be installed to assist the safe movement of vessels. Commercial shipping lanes are not impaired by the proposed wharf. *Environmental Protection* The proposed marine structures are not expected to impact water circulation or exchange.

4. Proposed Amendment Description

This section describes the Proposed Amendment. As for the Evaluated Project, the site layout has been designed to maximise operational efficiency, maintain separation between heavy vehicles, light vehicles and site workers and minimise potential visual impacts. Project construction is currently anticipated to commence in Q1 2020 and jetty construction is anticipated to take up to 18 months. The Proposed Amendment is anticipated to be operational for the 2021 harvest season (Q3 2021).

As for the Evaluated Project, the scope of the Proposed Amendment includes road access from the Lincoln Highway to the Port. The Proposed Amendment proposes to use Lipson Cove Road as the only point of access to site.

4.1 Operational Description

This section describes the key functional processes that will occur on site as part of the Proposed Amendment, from transport to site to shipping. It establishes the context for the infrastructure proposed under the amendment. The overall process flow for the site is shown in Figure 4-1.

Grain expected at site will be typically across six grades/types including:

- H1 – approximately 40% of grain delivered
- H2 – approximately 40% of grain delivered
- AHW – approximately 5% of grain delivered
- ASW – approximately 5% of grain delivered
- GP – approximately 5% of grain delivered
- Feed – approximately 5% of grain delivered.

Other, minor volumes and non-wheat products may also be experienced. Operationally these would be accommodated in a similar manner to low volume wheat products, such as Barley and Canola.

Site infrastructure is being designed to accommodate up to 1 MT per annum of grain receival, storage and export. The peak daily receivals to be accommodated are 30 kT/day at site.

4.1.1 Transport to site

Grain will be transported via third party, independent trucking from a diffuse network of growers and potentially up-country storage. The catchment area for grain to be delivered to the site extends across the central Eyre Peninsula. Transport of grain to site will generally occur during grain harvest (i.e. typically October-December with a significant peak in November). Vehicles will be mixed in size and type however the dominant vehicle type is expected to be a B-Double and Double Road Train. The maximum vehicle to be accommodated at site is a B triple.

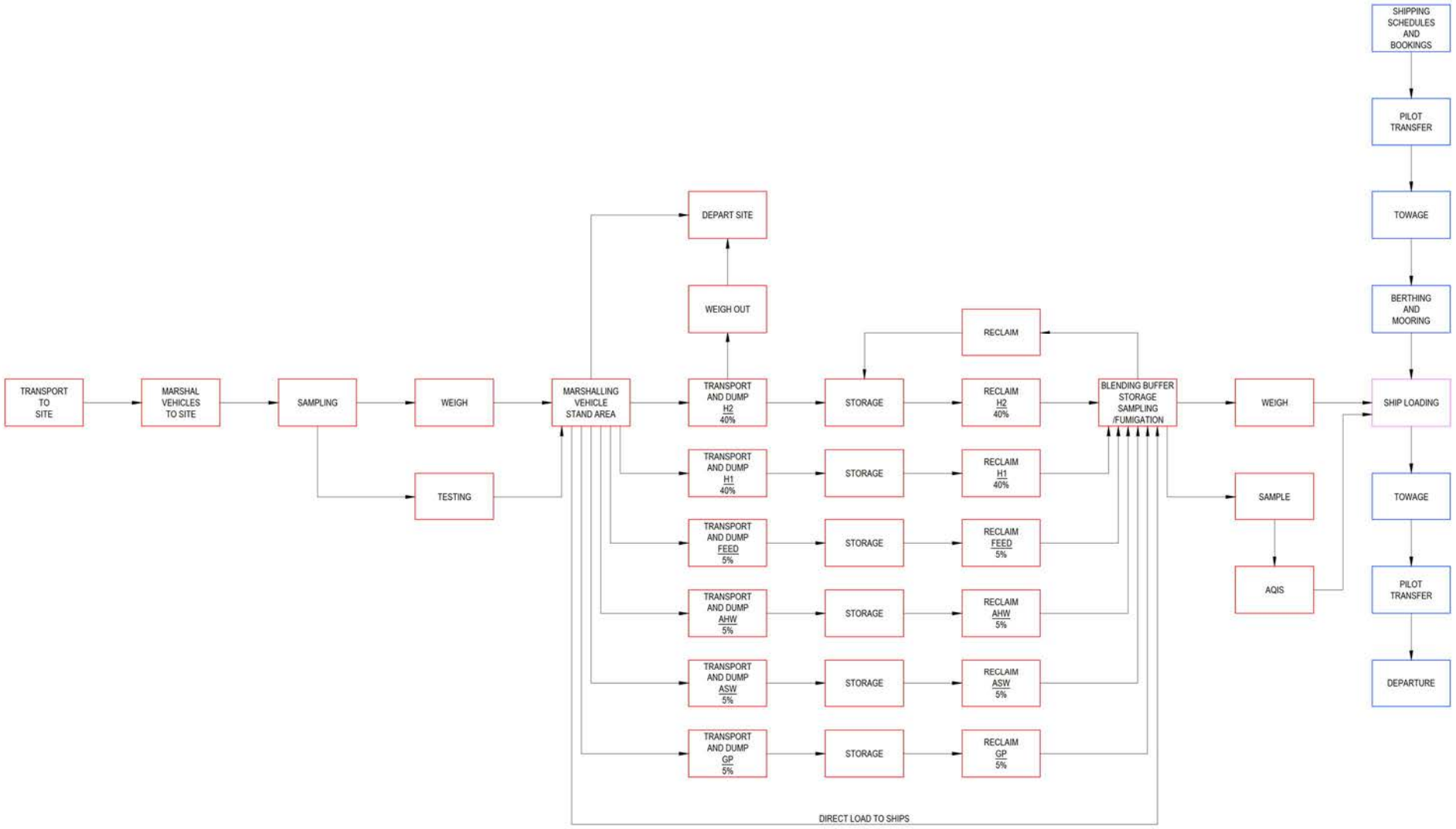

Figure 4-1 Project Process Flow

4.1.2 Product Delivery

Vehicles arriving at site will be marshalled and organised to maximise the efficiency of site processes according to grain product lines. Vehicles entering site will line-up for sampling, testing and weighing prior to unloading grain.

Sampling will be undertaken from all vehicle trailers and will meet the requirements of Grain Trade Australia standards. Samples captured are tested for moisture content, protein content and hardness. Depending on the weather conditions in the catchment, a falling number test (simulates dough strength) may be required. All grain delivery vehicles will be weighed for gross weight upon entry, and unladen weight upon vehicle exit.

Following sampling and weighing of vehicles, each trailer-load will be allocated a grade and in-loading point. The mode of in-loading may vary depending on grade and volume. Options include:

- Truck directly to bunker and dump to drive over grid stacker
- Truck to in-ground road hoppers and stack via conveyor and travelling stacker.

The preferred operational paradigm of the project site is to provide for in ground hoppers and conveyor loading systems (CLS) at all bunker storages on site. This may however be subject to capital restrictions in the final design of the site and it is possible that grain handling may need to be accommodated by mobile drive over grid stackers. This would require trucks to traverse between the bunker rows to deliver grain, before re-joining the primary site haul routes to be tared out and exit site.

For the purposes of the Proposed Amendment, key studies (noise and air quality, included as part of Appendix A) have considered both operational scenarios. This recognises the fact that an automated scenario produces a lesser number of more concentrated sources, whilst a mobile drive over grid (DOG) operational scenario produces a larger number of more diffuse noise and dust sources.

4.1.3 Product Storage and Reclaim

The bulk of grain storage will be in bunkers, with some silo capacity (nominally 60 kT). The bunkers are a commonly adopted grain storage solution throughout Australia and consist of a sealed floor (asphalt surface), steel or concrete walls to a height of approximately 1.3 m to contain the stack and a tarpaulin cover over the stacked wheat.

The bunkers to be adopted at the Port Spencer site will be 40 m wide, with the peak height of the bunker stack reaching approximately 8-9 m depending on the achieved angle of repose of the grain.

Grain may be stored in the bunkers for up to one year prior to being reclaimed for export. Fumigation of the bunkers is required in order to control pests such as weevil and is commonly achieved using Phosphene in gaseous or tablet form.

A number of options for reclaim from bunkers are being considered for the Proposed Amendment. The final system or mix of systems adopted will be governed by capital and technical constraints as the project progresses. The stated aim of the Proposed Amendment is to provide for an automated or semi-automated reclaim system, unloading bunkers onto a conveyor system for transport to the silos and accumulation prior to export. For the purposes of the Proposed Amendment, a range of options for reclaim are described. These include: front-end loader and truck, front-end loader to mobile stacker and conveyor, sweeper and mobile stacker through to fully automated portal scraper reclaims.

4.1.4 Ship-Loading

Prior to ship-loading, a silo-system will allow accumulation of the desired volume and grade for loading to the ship. This will enable the blending of multiple grades from the incoming reclaim system. The silo-system will incorporate methyl-bromide fumigation when required for certain export markets.

The silo infrastructure includes sampling equipment and laboratories for quality assurance and Australian Quarantine Inspection Services (AQIS). Batch weighing equipment is proposed to meet with the requirements of trade measurement regulations and legislation.

The export circuits of the silo infrastructure will be capable of achieving a 2000 t/ effective throughput.

All conveyors, bucket elevators and transfer points on the silo infrastructure will be fully enclosed and active dust capture systems are included.

Grain will be loaded to ships via an overland, covered conveyor. On the wharf, a conveyor and travelling ship-loader will elevate the grain and accommodate ship-loading. The ship-loader and associated infrastructure is capable of a 2000t/h effective throughput. The ship-loader accommodates longitudinal travel, luffing, slewing and shuttle movements on the boom. The chute is telescoping. The combination of this range of movement allows for efficient loading and filling of hatches, avoids the need for slingers and other mechanical spreaders and limits the generation of dust due to loading. Loading will accommodate a range of vessel sizes and types, with a Panamax vessel being the maximum design vessel (32.2 m beam).

4.1.5 Port Operations

Proposed Port Operations at Port Spencer are described in the 'Marine Operations Plan (Operations Marine and Shipping Plan), Port Spencer', prepared by Pacific Maritime on behalf of Peninsula Ports. Key aspects of the plan are outlined in this section. The proposed port limits are shown in Figure 4-2. The port will be outside the limits of the Sir Joseph Banks Group Marine Park.

Vessels calling at Port Spencer are bulk grain carriers only. No servicing or other provisioning will be provided.

Having undertaken the appropriate booking and notification procedures, vessels will arrive at anchorage and take up a position as directed by Peninsular Ports (through Port Spencer VTS), approximately 3 NM from the end of the wharf, East. While at anchorage the ship will be inspected by grain surveyor/loadmaster and authorised officer, and any other contractors as necessary to obtain arrival clearance.

The anchorage is outside port limits, at location 34° 15.33' S / 136° 19.90' E, approximately 3 NM East.

Once the wharf operations are ready for receiving the bulk carrier, a Port Spencer Marine Pilot will come aboard at the boarding ground (3 NM from end of wharf, East) who will bring the ship to the loading wharf.

Personnel will be transferred to ship and return by General Purpose Vessel (GPV). The GPV will be moored on the Southern side of the Jetty at a small vessels berth. This berth is not a permanent mooring facility and it is envisaged that the GPV would be brought to Tumby Bay and dry docked in extreme weather or periods of inservice.

Tug escort will be provided by a contracted tug provider under the direction of a suitably qualified master. Tug operations will remain under direction from the master and operating under the vessel's Safety Management System (SMS). Two 60 TBP tugs will be required to manage a Panamax size vessel into safe berthing.

Mooring of vessels is to be undertaken under the assistance of two 60 TBP tugs as per the berthing procedure. The pilot will see the vessel out of the Port Limits and return to Port Spencer via GPV.

Refer to Table 4.2 in *Marine Operations Plan (Operations Marine and Shipping Plan), Port Spencer* for a summary of the key marine processes, personnel, equipment and regulations.

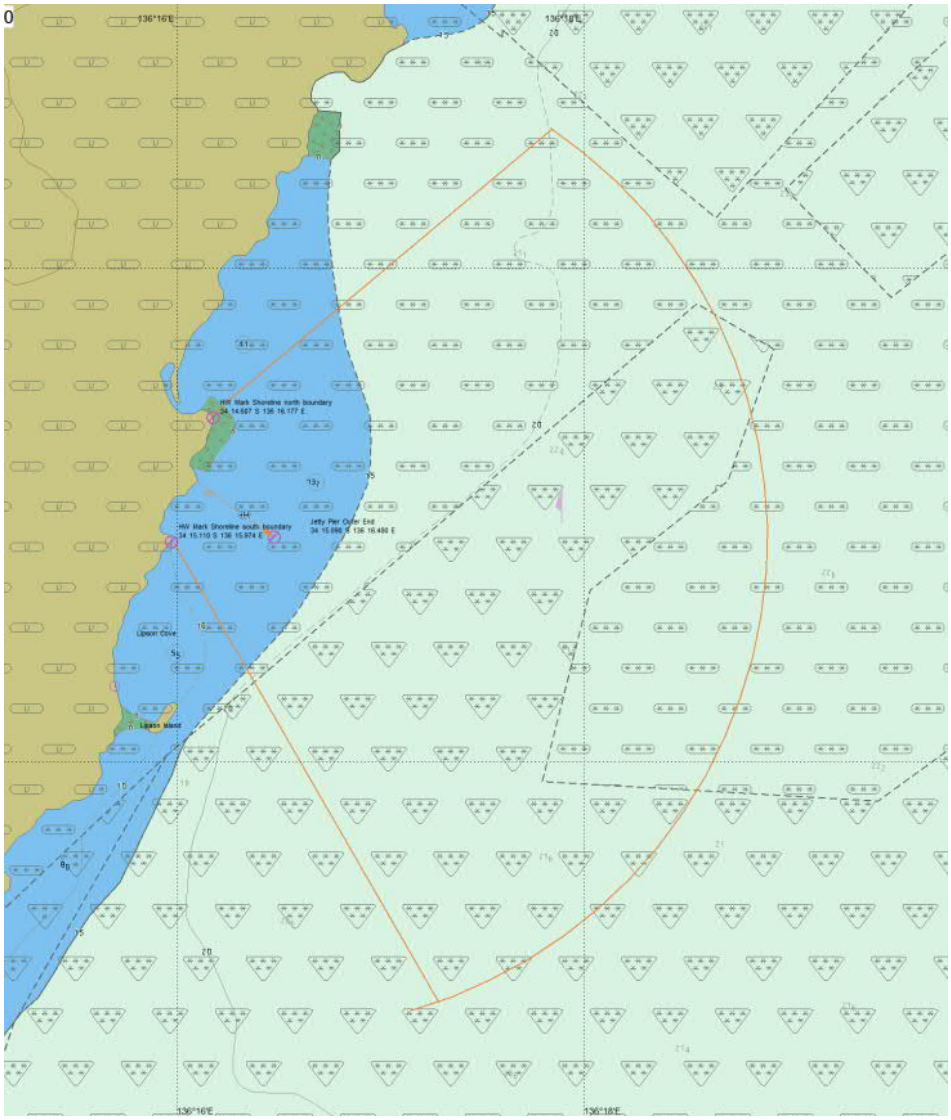

Figure 4-2: Proposed Port Limits

4.2 Infrastructure Description

This section described the upgrades and new infrastructure requirements to deliver the functional needs of the project. The layout of the Proposed Amendment is shown in Figure 4-3.

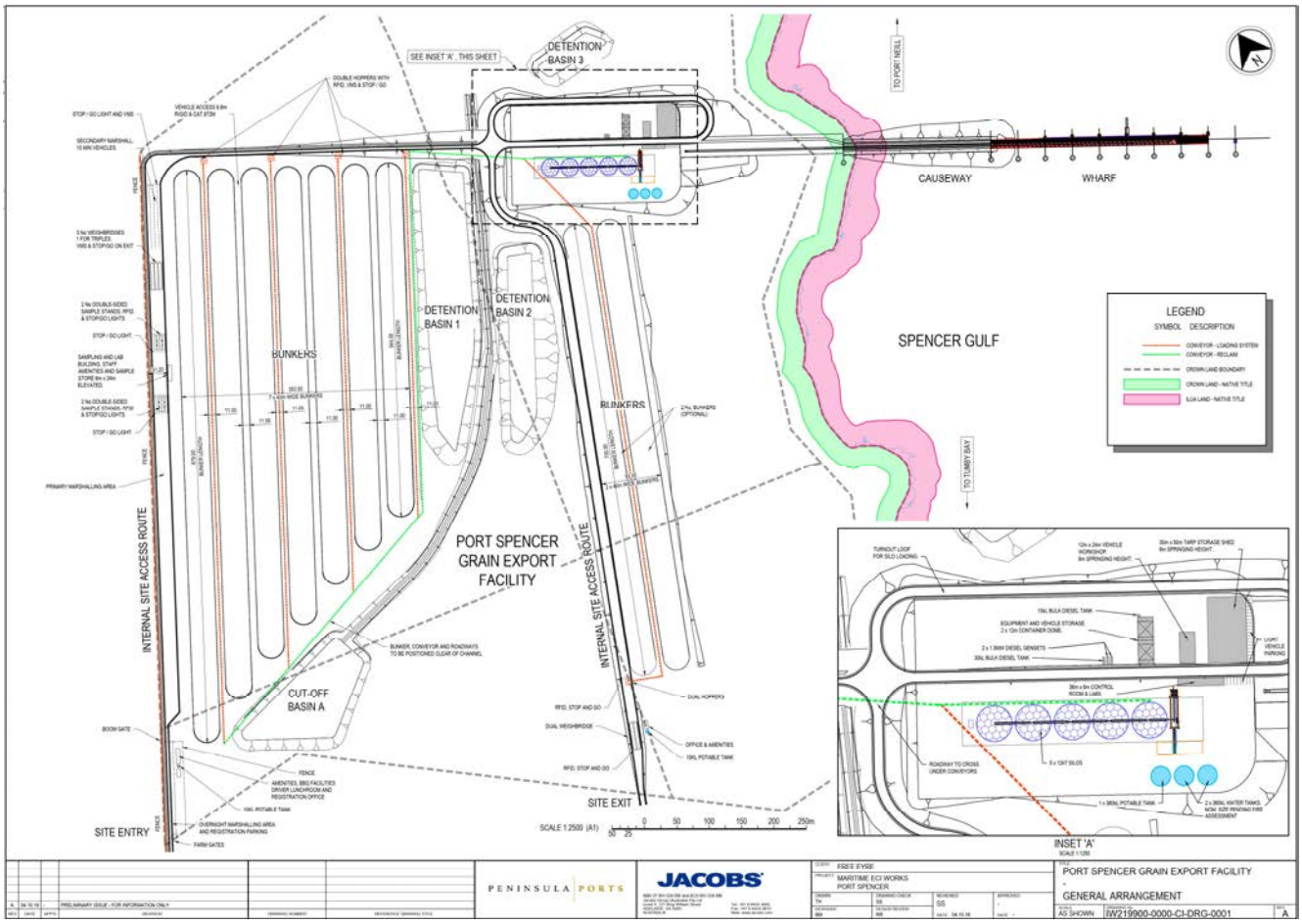

Figure 4-3 Proposed Amendment Layout

4.2.1 Roads and Road Upgrades

4.2.1.1 External Roads

Access corridor, approximately 5.6 km in length from the Lincoln Highway via Lipson Cove Road.

4.2.1.2 Internal Roads and Marshalling Areas

The internal road network will separate light and heavy vehicles movements by providing dedicated light and heavy vehicle lanes.

The internal roads for heavy vehicles provide for all-weather operation and have been designed for safe low speed manoeuvring of grain delivery vehicles.

Marshalling areas will be provided:

- Two lanes at the site entry running parallel to Un-named Road on the western boundary, accommodating approximately 10 trucks prior to the site opening for operation. This is to address the possibility of contract drivers queuing prior to opening in peak periods and avoid impact to the public network.
- Marshalling inside the site gate, running from south to north alongside the western boundary and accommodating four lanes of trucks and sufficient length to accommodate modelled vehicle volumes at a peak receival rate of 30 kT per day. The capacity of this area can accommodate up to 64 B-Double vehicles, noting that site throughput is intended to avoid marshalling of significant numbers of vehicles.
- After the weighbridge stations to allow for surge volumes and flexibility in managing traffic movements, a secondary marshalling area with 4 lanes of marshalling and capacity for a maximum of 12 vehicles.

4.2.2 Landside Infrastructure

Landside infrastructure will include:

- Site entry with amenities for delivery drivers
- Four double-sided sampling stations to accommodate expected peak traffic flow. An automated system is proposed with a remotely operated or robotic arm controls the sampling spear which is lowered into the trailer, taking a sample across the depth of the trailer and returning the sample to the testing control room via sealed pipeline.
- Three weighbridge stations located after the sampling stations. Typical systems are automated and capable of accommodating vehicle configurations from B-Double to B-Triple and A-Double.
- Materials handling equipment (preferred load in method):
    - Dual In-loading hoppers for each pair of storage bunkers
    - Conveying system including bunker conveyors with travelling tripper
    - Travelling stackers
    - Reclaim conveyor system

As mentioned in preceding sections, the above infrastructure forms Peninsula Port's preferred load in method. Depending on capital and operational requirements as the project continues to develop, it may be necessary to provide grain loading through a number of DOG stackers, dispersed across site.

- Grain storage in the form of:

- Approximately 800 kT of bunker storage (Approximately 9 bunkers, 40 m wide and varying from 540 to 880 m in length)
- Nominally 60 kT of silo storage to provide for blending, buffer storage, in-stream sampling and fumigation (as required). The concept layout includes four to five silos, with a top-of-silo height of approximately 45 metres (vessel height of 35 m).

- Silo storage facility will incorporate:
- Dual drive-over in-loading hoppers
- Bucket elevators for transfer of grain to and from the storage facility
- Dual screens
- Conveyors systems for in-loading and reclaim
- Bulk weigher system for export

Bunker storage will be all weather and covered (or coverable). The covers are a typical tarped system which minimises requirements for manual handling and lowers working at heights risks as far as practicable.

- Grain in-loading will primarily occur at the bunkers to accommodate concurrent loading and stacking of up to 6 grades of wheat, or at the storage silos for direct in-loading to silos. Bunker in-loading method will depend on grade and volume. Options include:
- Truck directly to bunker and dump to DOG stacker
- Truck to dump pit and stack via conveyor and travelling stacker
- Site office and grain sampling laboratories adjacent the western boundary, consisting of a 2 m x 24 m elevated building.
- Site office, control room, AQIS and QA laboratories, motor control rooms and server rooms adjacent the silo compound consisting of a single, 6 m x 32 m single story building.
- Equipment and vehicle storage sheds and workshops consisting of:
  - Two 20 m x 12 m container dome shelters
  - 12 m x 24 m workshop shed
  - 30 m x 50 m storage shed.
- Potable and fire storage water tanks.
- 2 x 1.5 MW diesel generators and associated 30 kL bulk diesel tank – all self bunded.
- 10 kL bulk diesel tank for mobile plant re-fuel – self bunded.
- Export conveyor from storage silos (bulk weigher) to ship loader.

4.2.3 Marine Infrastructure

Marine infrastructure will include:

- Rock and earthen causeway, 240 m crest length, with a crest height of 5 m AHD.
- Wharf structure, consisting of 8 x 42 m bents and one mooring dolphin.
- Wharf designed to accommodate Panamax vessels (down to Handysize).
- Travelling ship-loader with a target rate of 2400 t/h, and effective rate of 2000 t/h
- Ship-loader will provide full coverage of hatches for design vessel range, with luffing, slewing and telescoping boom and chute.

4.2.3.1 Shipping Lanes and Anchoring

Anchorage of vessels is only likely to be required if a vessel arrives early at the Port. An offshore anchoring point will be located approximately 3 NM offshore.

Declared port extents will be at approximately 2 NM radius from the wharf as outlined in *Marine Operations Plan (Operations Marine and Shipping Plan), Port Spencer.*

4.2.4 Ancillary Infrastructure and Services

4.2.4.1 Security

The wharf will be subject to maritime security and customs regulations, commencing at the abutment of the wharf structure.

Broader site security infrastructure will be assessed during the detailed design phase and physical and non-physical means put in place to protect property, mitigate the risk of malicious damage and meet duty of care requirements.

It is envisaged that the system will comprise of a layered system, with low security boundary fencing and gates, CCTV and physical barrier (via fencing and gates, cages or secure rooms) as relevant for high value and high risk assets such as equipment, chemical and fuel storage facilities.

4.2.4.2 Fuel and Chemical Storage

2 x 1.5 MW diesel generators are proposed to be provided at site. A 30 kL bulk diesel tank with 110% self-bunding capacity will be provided to service the generation demand. In addition, a 10 kL bulk diesel tank with 110% self bunding will be provided for provision of general fuel for equipment.

Chemical storage will consist of fumigation chemicals, primarily expected to be Methyl Bromide and Phosphene.

General chemical storage for laboratory and office needs will be provided as required.

4.2.4.3 Water Supply and Stormwater Management

The approach to water supply and management at the site is intended to avoid adverse impacts on the watershed and comply with the measures put forward in the Evaluated Project. In contrast with the Evaluated Project, potable water requirements do not envisage a mains connection or desalination at any point, with potable needs to be met by water purchase, treatment of on-site captured water or a combination of both. Fire water needs are to be met via on-site capture, with dedicated fire water storage tanks provided.

The following summarises the key principals adopted for site water and runoff management (refer to Figure 4-4 for concept layout):

- Zero discharge of the site runoff to the marine environment.
- Low velocity design where possible.
- Offsite runoff continues to discharge to Rogers Beach, but quantity is not increased by the project.
- Tributary flows are diverted around the site towards Rogers Beach.
- Similar total impervious area to the Evaluated Project.
- Detained site runoff is to be reused on site.

Key differences between the conceptual stormwater design for the Evaluated Project and the Proposed Amendment are:

- The major flow path through the site still flows through the site instead of being diverted around the site. However, it's a portion of the flow path is shifted from its natural path.
- A decrease in site runoff extended detention storage from 136 ML to 65 ML (comprising three detention basins of (41, 15 and 9 ML). This is due to the decrease in contributing catchment from 169 ha to 61ha. The Evaluated Project was designed to store water from a much greater catchment area, which included a sub-catchment outside of the project site and site area that was undisturbed.
- Energy dissipation basin upstream of discharge to Rogers Beach is maintained but a flow spreader is incorporated to minimise the impact on Rogers Beach from the discharge of the constructed channels.

The assessed project water demand based on WSUD approach was determined as follows:

- Approx. 1 ML/day for 10 months during initial construction period for earthworks.
- Approx. 0.25 ML/day for the following 15 months for construction of jetty and site infrastructure.
- Approximately 0.25 ML/day during port operation.

The Proposed Amendment does not require water for process or dust mitigation measures (i.e. stockpile watering). Operational water needs are therefore limited to wash-down water only and can be met through the captured site run-off. Construction water demands are similar to the Evaluated Project and are intended to be met through a brackish bore onsite.

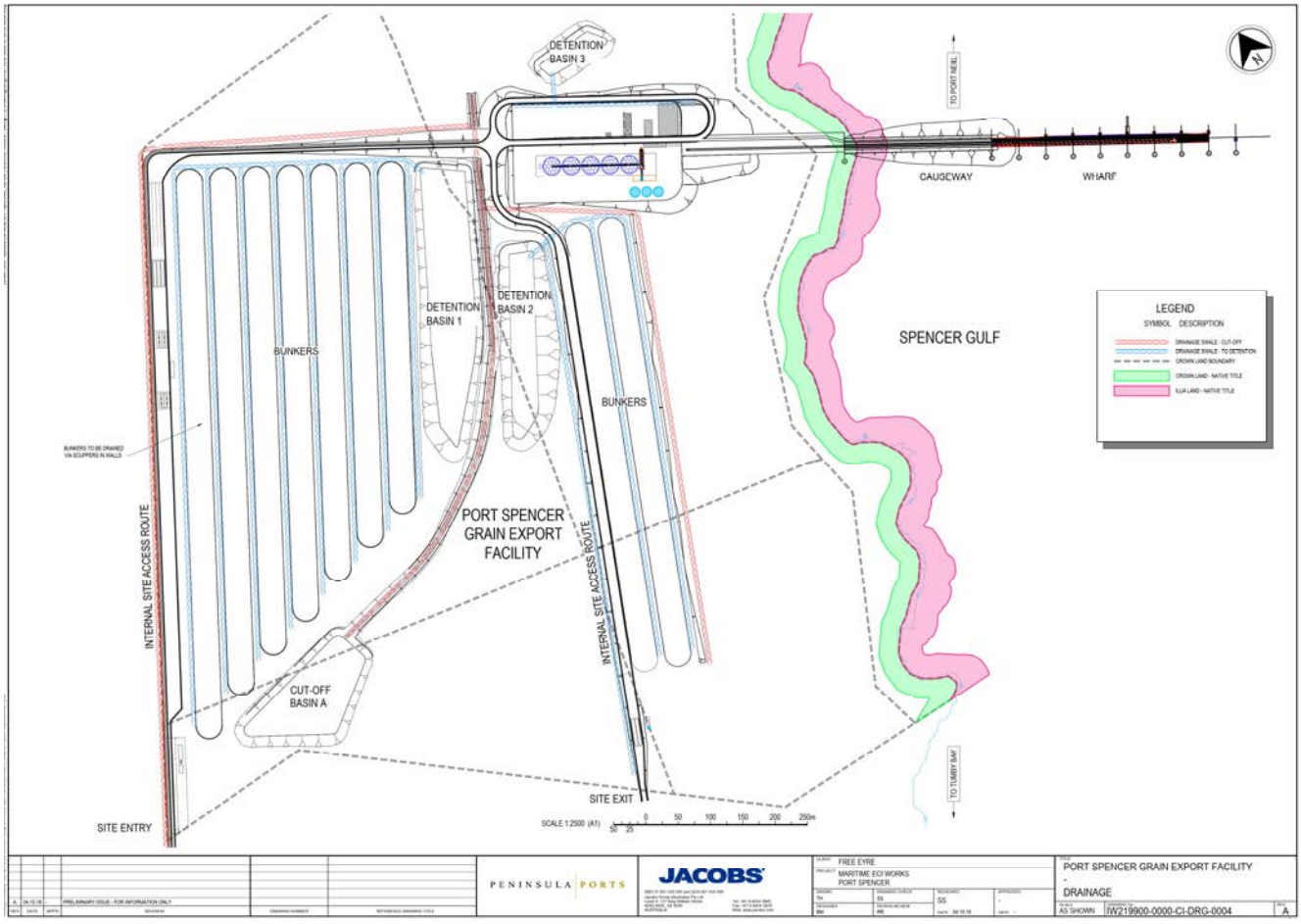

Figure 4-4 Conceptual Stormwater Management Design

4.2.5 Power Supply

The current projected power demand is 1.5 MW at peak. Two 1.5 MW diesel generators will be located on site to meet the power demand requirements, including provision for redundancy.

4.3 Construction Phase

Construction activities may require both day and night shifts to operate for the duration of construction. Blasting will be limited to day works only. Crushing, welding and piling activities may be required to operate on day and night shift. All other activities can be accommodated in day shift only.

Table 4-1 Indicative construction schedule for each work package

Activity	Start	End
Address Conditions of Approval and Reserved Matters		
Construction Environmental Management Plan(s)	November 2019 - Drafts attached as Appendix B	January 2020
Road upgrade and maintenance agreements	November 2019	March 2020
Civils and Earthworks		
Mobilisation to site	February 2020	
Blasting activities	January 2020	May 2020
Crushing activities	March 2020	November 2020
Causeway construction	May 2020	June 2020
Silo and launch pads	February 2020	August 2020
Earthworks	January 2020	January 2021
Pavements	March 2020	April 2021
Bunker walls and sealing	April 2021	July 2021
Demobilisation from site		July 2021
Marine Structures		
Design and procurement	October 2019	March 2020
Offsite fabrication	March 2020	November 2020
Mobilisation to site	September 2020	
Abutment preparation (excluding earthworks)	October 2020	October 2020
Onsite fabrication	October 2020	March 2021
Jetty construction using incrementally launched method	January 2021	April 2021
Installation of piles and anchors (driven and drilled and grouted)	September 2020	May 2021
Installation bearings	March 2021	April 2021

Activity	Start	End
Mechanical and electrical works	March 2021	May 2021
Site assembly and installation conveyor and ship-loader	June 2020	June 2021
Demobilisation from site		June 2021
Silos		
Design and procurement	October 2019	October 2020
Fabrication	February 2020	December 2020
Mobilisation to site	March 2020	
Foundations	March 2020	October 2020
Silo construction	May 2020	January 2021
Mechanical installation	October 2020	May 2021
Electrical installation	May 2020	April 2021
Demobilisation from site		June 2021

4.3.1 Landside

4.3.1.1 Blasting

Blasting is required to generate excavations for the Jetty construction launch site and silos area. The rock generated by blasting will subsequently be used to produce several products for re-use within the Proposed Amendment:

- Causeway Materials – varying size to 8 t.
- Pavement Source Rock – Varying size up to 600 mm max to enable crushing.
- If required as general fill materials for bunker construction.

Blasting works will be undertaken in accordance with Australian Standard (AS) 2187 Explosives – Storage Transport and Use. Vibration Limits will be set within the Blast Management Plan (BMP) and will be guided by limits set out in Appendix J of AS 2187. A draft BMP is included as part of Appendix B.

Drilling and Blasting are programmed to be carried out as dayshift operations.

4.3.1.2 Crushing

Crushing of blasted rock is required to produce pavement materials to be used in:

- Construction of bunkers
- Backfill to Silo foundations
- Internal roads and marshalling areas
- Upgrade of Lipson Cove Road
- Stormwater drainage materials.

Subject to crushing trials it is anticipated a suitable crushed product will be produced with a two stage (jaw crusher + secondary crusher) process. It is expected that this process will producing approximately 7,000-9,000 tonnes per week on a dayshift only basis. Subject to productivity targets night shift crushing may be required.

Due to the requirement to establish the Launch and Silo pads as soon as practically possible, the material for the crushing will be excavated from the blast site, transported by off road trucks and stockpiled on the south of the site. The proposed location for crushing and stockpiling is shown in Figure 4-5.

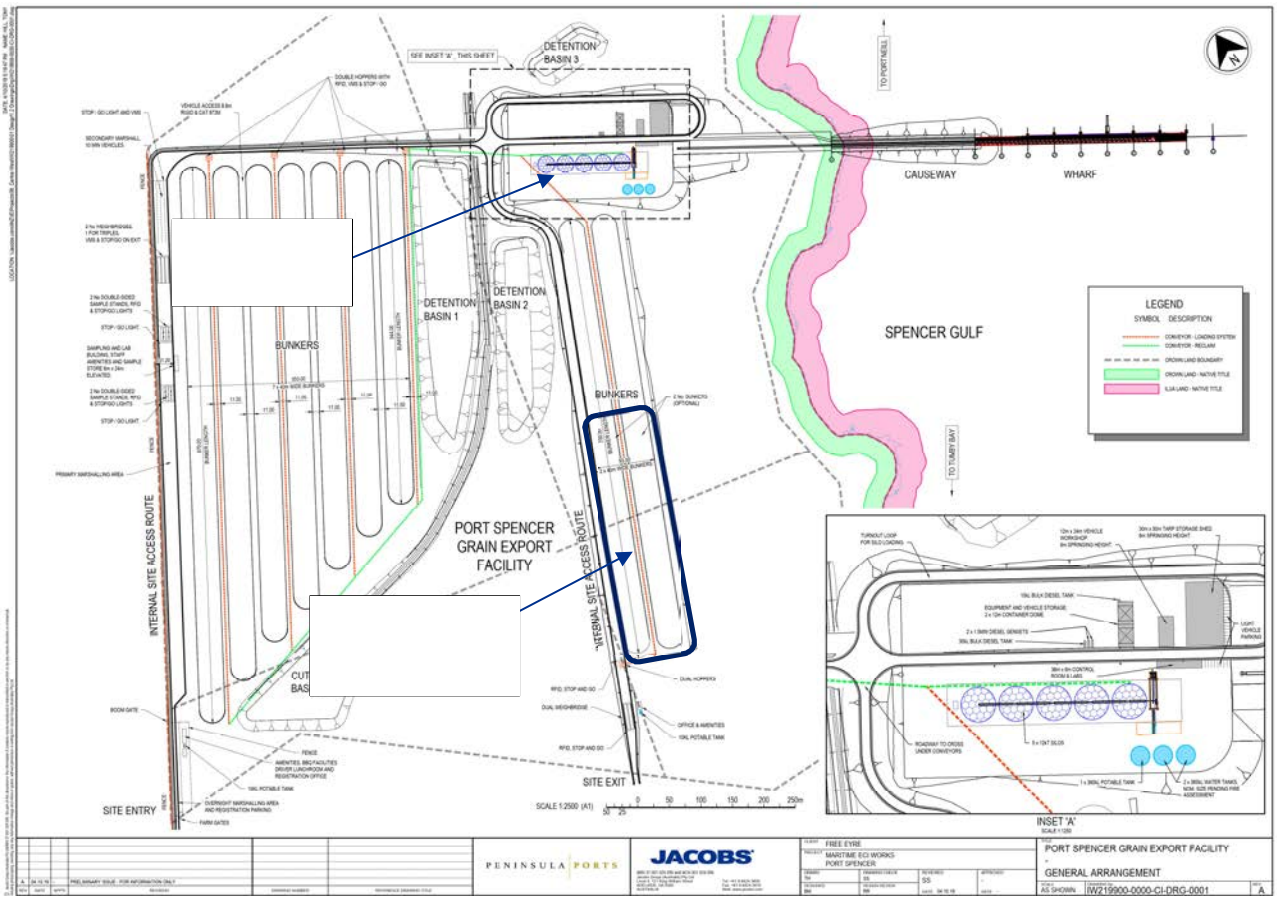

Figure 4-5 Proposed areas for blasting, stockpiling and crushing activities

4.3.1.3 Causeway Construction

Prior to construction a floating silt curtain will be placed around the causeway footprint. It is likely that this will be placed progressively and extended as the works proceeds to the final footprint. A work boat will be in attendance at all times for silt curtain placement and management.

A combination of end tipper trucks and a dozer will place and push the excavated rock to be used for the Causeway core out into the footprint of the causeway to create a 'finger'. Refer to Appendix D for a diagrammatic representation of the construction process.

Core material for Causeway construction is intended to be the raw excavated material loaded with a skeleton bucket to reduce fines content.

A long reach excavator is to be used to trim the batters of the core to be 1:1.5 (refer to Appendix D).

As the causeway encroaches into the water and wave zone, a capping of 8 tonne rock is to be carted and placed using a combination of end tipper trucks and excavators.

As the depth of the causeway exceeds the wave impact zone depth at -4.8 m AHD, a toe of 1-2 tonne rock is to be carted and placed using a combination of end tipper trucks and excavators prior to the placement of the 8 tonne rock.

It is proposed that the armour rock is placed progressively to mitigate the risk of washout of the causeway core during a storm event.

To meet construction scheduling requirements, causeway construction is proposed as a day / night (double shift) operation.

4.3.1.4 Earthworks and Pavement Construction

Approximately 200,000 m^3 of cut and fill works are required for the bunkers, marshalling area, internal roads and silo/shed pad. All earthworks materials will be sourced from within the site, with the majority of the fill being generated from rock overburden and cut zones within the western bunkers. It is anticipated that off road dump trucks will be the haulage units.

The pavement material will be hauled from the crushed material stockpile. Following subgrade preparation and moisture conditioning, crushed rock will be spread to form the pavements. Compaction will be carried out using standard compaction equipment (compactors and 12-15 T vibrating rollers.)

Both cut to fill (earthworks) and pavement works are anticipated to be dayshift operations.

4.3.1.5 Bunker Walls

Bunker walls are likely to be extruded concrete barriers (slip formed) with pre-mixed concrete being hauled from Tumby Bay and extruded.

Bunker Wall construction will be a dayshift operation.

4.3.1.6 Asphalt Works

Bunker floors and internal roads will be a sealed surface consisting of either asphalt or chip coat seal to reduce in service dust scouring of pavement materials.

Asphalt will be sourced from Port Lincoln to negate the need for an onsite Asphalt Plant and the placement will be carried out during daylight hours.

4.3.1.7 Export Conveyor and Shiploader

The following activities will be undertaken to construct he approximately 950 m long export conveyor and ship-loader:

- Structural and mechanical assembly and installation
- Electrical and control installation
- First fill activities
- Dry and Wet Commissioning of the above-mentioned items.

This construction will require a plant spread consisting of a large (150 T crane) and a number of small, mobile cranes (i.e. Franna). Operations will be day shift only.

4.3.2 Marine

The wharf structure is proposed to be constructed via an incremental launch method, with piling undertaken from the launched structure as construction progresses. The proposed work method negates the need for marine plant in the form of barges or jack-up barges. Silt curtains, monitoring, survey and other activities required to be performed on water will be accommodated via small workboats.

The wharf structure consists of 8 x 42 m bents, with a mooring dolphin seaward of the final bent. The total wharf length is 336 m. Pile bents consist of 2 piles each, for a total of 18 piles.

The wharf superstructure will be brought to site via truck in pre-assembled modules. The modules will be welded together on site, with final fittings and furniture installed on land. The completed wharf will be launched along the causeway and out to the final position. A heavy crane will be launched along with the superstructure, and will drill and install piles and wharf bent steelwork through a custom pile gate on the leading edge of the superstructure.

In order to meet construction timeframes, 24 hour construction is proposed (including for piling activities).

4.3.3 Construction Workforce

A peak construction workforce of approximately 150 is anticipated to be required. The construction workforce will be accommodated locally. No on-site living accommodation is proposed as part of the Proposed Amendment.

4.3.4 Construction Water Supply

Construction water is required for all of the above activities. For bulk earthworks, fresh potable water is not mandatory except for the production of concrete.

Salt water may be used to construct pavements, earthworks and dust suppression. Salt water will be sourced by placing a sump in the location of the detention basin.

Potable water will be imported to site and retained in storage tanks for use.

4.3.5 Construction Power Supply

Construction power supply will be largely provided by small generators for mobile lighting, power tools and equipment.

Construction offices, workshops and welding workshops will be concentrated to the cutting area in the North East of the site. Containerised generation and temporary reticulation will be considered for this area of site. The generation demand is lesser than the final operational requirements of the site.

5. Proposed Amendment Impact Assessment Summary

A review of the Evaluated Project was undertaken to identify and compare changes in environmental effects due to the Proposed Amendment (refer to Appendix C). The following definitions were adopted for the comparison for effects:

- **No change** – The effect described in the PER was qualitative in nature and the Proposed Amendment will not significantly alter the nature and scale of the effect.
- **Similar level of effect** – The effect has been described in quantitative terms in the PER. Some differences in effect have been identified, but the overall risk profile remains the same.
- **Reduced effect** – The effect has been described in quantitative terms in the PER and the effect (impact or benefit) of the Proposed Amendment is expected to be less (for example in terms of intensity or temporal or geographic scale).
- **Increased effect** – The effect has been described in quantitative terms in the PER and the effect (impact or benefit) of the Proposed Amendment is expected to be greater in terms of intensity or temporal or geographic scale.
- **No longer applicable / No impact** – the effect will not occur for the Proposed Amendment.
- **Altered effect** – the nature of the effect has changed (for example due to differences in timing, intensity, location, which make it difficult to directly compare effects).
- **Increased / reduced potential for effect** – The issue is not expected to occur as part of standard project activities, but there is a risk of it occurring in some circumstances. Changes as a result of the Proposed Amendment increase or decrease the likelihood of the risk eventuating.

An overview of the outcomes of the review of the Evaluated Project is shown in Table 5-1 and a detailed summary of the comparative impact assessment is provided in Table 5-2. Most of the potential impacts considered for the Evaluated Project are expected to be similar (i.e. no change or similar level of effect) for the Proposed Amendment. Of the 137 risk and impact issues identified, three increased impacts due to the Proposed Amendment are anticipated; associated with traffic along Lipson Cove Road during construction and operations and the presence of the causeway. However, the level of impact has been assessed as acceptable to the project. The removal of iron ore receival, storage and handling from the project scope means that several potential impacts are no longer applicable.

Table 5-1 Review of Evaluated Project – Summary of outcomes

Definition of Impact (Compared to Evaluated Project)	Number of Impacts	Relevant Environmental Aspect Categories	
No change	86	• Climate change • GHG Emissions • Soils • Surface water • Groundwater • Air quality	• Noise • Waste • Terrestrial Ecology • Lipson Cove Ecology • Marine Ecology • Visual Amenity
Similar level of effect	29	• Climate change • Soils • Air quality • Noise • Traffic	• Terrestrial Ecology • Coastal Environment and Sediment • Visual Amenity • Socio-Economics
Reduced effect (impact)	2	• Marine ecology	
Reduced effect (benefit)	2	• Socio-Economics	

Definition of Impact (Compared to Evaluated Project)	Number of Impacts	Relevant Environmental Aspect Categories
Increased effect (impact)	3	• Traffic • Marine Ecology • Coastal Environment and Sediment
Increased effect (benefit)	1	• Socio-Economics
No longer applicable / No impact	5	• Soils • Traffic • Marine Ecology • Lipson Island Ecology
Altered effect	6	• Traffic • Terrestrial Ecology • Socio-Economics
Reduced potential for effect	2	• Marine Ecology
Increased potential for effect	1	• Marine Ecology
TOTAL	137	

It is acknowledged that the inclusion of a solid causeway as part of the wharf structure will increase the seagrass disturbance due to the Proposed Amendment compared to the Evaluated Project. However, in the context of the broader Spencer Gulf, the level of effect has been assessed as similar to the Evaluated Project. In addition, seagrass clearance will be offset through the provision of a SEB. Countering the increase to seagrass clearance, reduced impacts to marine fauna are expected due to the significantly lower number of piles required for construction of the Proposed Amendment.

In addition to the environmental effects considered for the Evaluated Project, the Proposed Amendment has also considered the potential accumulation of seagrass wrack during operations. Direct impacts on the local community beach access or tourism are not predicted due to seagrass accumulation (refer to Appendix A).

Table 5-2 Summary of Effects- Evaluated Project compared to the Proposed Amendment

No.	Impact Description from PER	Proposed Amendment Impact
	Climate Change	**Refer to Section 3.1 of Appendix C**
1	Temperature increases could stress or change the ecology at the Port site.	No change.
2	Variability of rainfall may cause flooding, vegetative stress or reduction in captured rainwater volumes for on-site use should rainfall decrease.	No change.
3	Potential inundation during severe storm events through the combined effects of sea level rise, storm surge and ocean waves.	No change.
4	Potential seabed disturbance, coastal erosion, recession and vulnerability brought about by variations in offshore wave climate such as large wave events or changes in wave events.	Similar level of effect.
5	During construction and operational phases, working conditions may become increasingly hostile due to temperature increases.	No change.
	Greenhouse gas emissions	**Refer to Section 3.1 of Appendix C**
6	Greenhouse gas emissions during construction	Similar level of effect.
7	Greenhouse gas emissions during operations	Similar level of effect.
	Soils	**Refer to Section 3.2 of Appendix C**
	Construction	
8	Potential impacts from blasting (low impact)	No change.

No.	Impact Description from PER	Proposed Amendment Impact
9	Soil impacts (wind and water erosion) from removal of vegetation cover and exposure of soils.	No change.
10	Impacts to Rogers Beach by project personnel and unauthorised access (insignificant impact)	No change.
11	Contamination of soils during construction (low impact)	No change.
	Operation	
12	Inadequate rehabilitation and revegetation leading to areas exposed to wind and water erosion (insignificant impact)	No change.
13	Pollution from spills of fuel and other substances (insignificant impact)	No change.
14	Inadequate treatment of sewage and waste water generated from project facilities, with untreated water escaping to land (insignificant impact)	No change.
15	Spill of hematite ores and dust from the storage shed and ship loading, which may result in elevated levels of iron in the surrounding soils (insignificant impact)	Not applicable – iron ore excluded from Proposed Amendment
16	Impacts on Rogers Beach from berthed ships.	Similar level of effect.
	Decommissioning	
17	Similar potential impacts to construction (no significant impacts)	No change.
	Surface water controls	**Refer to Section 3.3 of Appendix C**
18	Build-up of sediment in channels	No change.
19	Exposed soils on cut slope and earther channel	No change.
20	Erosion	No change.
21	Non-stormwater discharge to surface water	No change.
22	Flood control	No change.
23	Spills to surface water	No change.
24	Stormwater runoff	No change.
	Groundwater	**Refer to Section 3.4 of Appendix C**
	Construction	
25	Mobilisation of existing contaminants present on-site due to earthworks and the potential for the creation of preferential pathways to groundwater.	No change.
26	Migration of hydrocarbons to groundwater through spills or leakage due to the presence of earthmoving and construction plant and equipment, including vehicles, compressors and diesel generators.	No change.
27	Migration of chemicals and hydrocarbons to groundwater due to spills or leakage due to the storage and use of chemicals on-site including fuels, oils, greases and solvents.	No change.
28	Migration to groundwater of wastewater or treated wastewater through failure of waste water treatment systems or designated irrigation disposal area.	No change.
29	Off-site surface water impacted by agricultural land use (such as fertiliser, herbicides or pesticides) that is captured, stored and re-used on-site may permeate to groundwater.	No change.
	Operations	
30	Migration of hydrocarbons to groundwater through spills or leakage due to the presence of site, earthmoving and construction plant and equipment, including vehicles, compressors and diesel generators.	No change.

No.	Impact Description from PER	Proposed Amendment Impact
31	Migration of chemicals and hydrocarbons to groundwater due to spills or leakage due to the storage and use of chemicals on-site, including fuels, oils, greases and solvents.	No change.
32	Migration to groundwater of wastewater or treated wastewater through failure of waste water treatment systems or designated irrigation disposal area.	No change.
33	Off-site surface water impacted by agricultural land use (such as fertiliser, herbicides or pesticides) that is captured, stored and re-used on-site may permeate to groundwater.	No change.
34	Reduction in groundwater recharge due to the presence of low permeability surfaces and pavements on the site (and corresponding benefit in reducing the mobilisation of any contaminants underlying the soil).	No change.
	Air Quality	**Refer to Section 3.5 of Appendix C**
	Construction	
35	Dust generated from construction activities including wind-borne dust from exposed surfaces, vehicle movements, earthworks, crushing, blasting of rock material.	No change.
	Operations	
36	Dust emissions associated with the transport and handling of materials.	Similar level of effect. *Operational controls will be implemented when required to achieve PM_{10} and $PM_{2.5}$ compliance with the assessment criteria.*
37	Products of combustion from fuel use in vehicles and mobile plant.	No change.
	Decommissioning	
38	Dust and products of combustion generated from decommissioning activities.	No change.
	Noise	**Refer to Section 3.6 of Appendix C**
	Construction	
39	Noise emissions from project construction impacting nearby noise sensitive receptors.	No change.
	Operations	
40	Noise emissions from site operations impacting nearby noise sensitive receptors. *Night-time noise criterion exceeded at one residence with no acoustic treatment in place. Upon application of acoustic treatments, modelling demonstrated compliance with acoustic treatments,*	Similar level of effect. *Operational controls will be implemented when required to achieve night time assessment criteria.*
	Traffic noise	
41	Noise emissions from operational traffic impacting nearby noise sensitive receptors. *Predicted noise levels indicated exceedance of criteria at one residential dwelling along Swaffers Road. Acoustics treatments proposed at the dwelling.*	Similar level of effect.
	Traffic	**Refer to Section 3.7 of Appendix C**
	Construction	
42	Construction vehicle access has the potential to impede local traffic or cause congestion.	Similar level of effect.
	Operations	

No.	Impact Description from PER	Proposed Amendment Impact
43	Significant increase in heavy vehicle turning movements at the Swaffers Road / Lincoln Highway Junction.	No impact / Not Applicable - the Proposed Amendment does not propose to use Swaffers Road.
44	Lipson Cove Road - Light vehicle access has the potential to impede local traffic or cause congestion.	Increased effect due to the use of Lipson Cove Road for heavy vehicle grain deliveries.
45	Traffic impacts to the regional road network.	Altered effect due to the seasonal delivery of grain and absence of a specified haul route (associated with iron ore).
	Waste	**Refer to Section 3.8 of Appendix C**
	Construction	
46	Generation of waste and materials and consumption of resources.	No change.
47	Uncontrolled (accidental) release of waste from the project.	No change.
	Operations	
48	Generation of waste and materials and consumption of resources from site operations.	No change.
49	Generation of waste and materials from shipping activities.	No change.
50	Uncontrolled (accidental) release of waste from the project.	No change.
	Decommissioning	
51	Generation of waste and materials and consumption of resources.	No change.
52	Uncontrolled (accidental) release of waste from the project.	No change.
	Terrestrial Ecology	**Refer to Section 3.9 of Appendix C**
	Construction	
53	Native vegetation clearance	Similar level of effect.
54	Impacts to rare and/or threatened species and communities	No change.
55	Direct mortality of individuals during clearing and earthworks	No change.
56	Habitat fragmentation, edge effects and isolation due to clearance of habitat.	No change.
57	Potential for an increase in already established weed species or the introduction of new weed species via the importation of soil and rock or soil attached to earth moving plant.	No change.
58	Impacts to terrestrial flora and fauna due to dust, noise and light.	No change.
	Operations	
59	Potential for an increase in already established weed species or the introduction of new weed species.	No change.
60	Attraction of new or increased number of pest animal species (or for normally benign species to become pests through over-abundance) due to the storage and shipment of grain.	No change.
61	Altered habitat and landscape functioning from the construction of the public access road and the conveyor and jetty infrastructure due to altered overland surface flows.	No change.
62	Impacts to rare and/or threatened species and communities.	No change. Peninsula Ports is currently seeking to transfer the EPBC Act Approval and will undertake the project in accordance with the conditions of approval.

No.	Impact Description from PER	Proposed Amendment Impact
63	Direct mortality of individuals due to increased traffic movements along Swaffers Road.	Altered effect – the potential for impact would occur along Lipson Cove Road.
64	Revegetation, habitat enhancement and compensation	No change – An appropriate SEB will be provided for the clearance proposed as part of the Proposed Amendment.
65	Attraction of fauna due to presence of artificial water sources and increase in population size. *Assessed as low significance impact due to expected variability in water presence.*	No change.
66	Impacts to terrestrial flora and fauna due to dust, noise and light. *Assessed to be insignificant.*	No change.
67	Project infrastructure creates barriers to fauna movement	No change.
	Decommissioning	
68	Expected to be like the construction phase.	No change.
	Lipson Cove Ecology	**Refer to Section 3.10 of Appendix C**
69	Noise disturbance to seabird rookeries and roots.	No change.
70	Light disturbance to seabird rookeries and roots during construction.	No change.
71	Soil erosion and siltation of adjacent coastal marine environments.	No change.
72	Weed proliferation on Lipson Island.	No change.
73	Siltation and turbidity pollution of Lipson Island marine environment.	No change.
74	Smothering of terrestrial vegetation on Lipson Island due to dust generation from the project.	No change.
75	Impacts to wildlife through exposure to dust containing metals.	Not applicable – No potential for impact due to the removal of iron ore from the project scope.
76	Impact of feral animals on seashore foraging seabirds.	No change.
77	Release of invasive marine species from ballast water.	No change.
78	Uncontrolled spill of wastewater containing oils, solvents, metals and other contaminants.	No change.
79	Wildlife entanglement from uncontrolled release of hard waste.	No change.
80	Disturbance to Lipson Island from increased visitation due to interest in the project.	No change.
81	Increased habitat for terrestrial invasive species (e.g. silver gull).	No change.
	Marine Ecology	**Refer to Section 3.11 of Appendix C**
	Construction	
82	Native vegetation (i.e. seagrass) and other benthic habitat loss due to disturbance of the seabed.	Similar level of effect – Reduced overall marine footprint, but the area of seagrass disturbance is expected to increase. A similar level of effect in the context of the broader Spencer Gulf.
83	Impacts to rare and/or threatened species and communities	No change.
84	Direct mortality of individuals of (primarily sessile or slow moving) species directly beneath where piles are installed.	Increased potential for effect (recognising that rock dumping activities will also have an impact).
85	Direct mortality of individuals smothered by sediment generated from construction.	Similar level of effect.

No.	Impact Description from PER	Proposed Amendment Impact
86	Impacts to marine biota (direct mortality or behavioural impacts) due to noise pollution.	Reduced effect.
87	Habitat fragmentation due to vegetation loss.	Increased effect.
88	Introduction of additional marine pests via marine vessels / construction equipment.	Reduced potential for effect.
	Operations	
89	Habitat fragmentation and native vegetation loss due to vegetation loss from shading or sedimentation	Similar level of effect.
90	Shading causes loss of species which are dependent on high light levels.	Similar level of effect.
91	Potential impacts on marine communities due to sedimentation	Similar level of effect.
92	Revegetation, habitat enhancement and compensation	No change.
93	Impacts to marine biota (direct mortality or behavioural) due to noise pollution (vessel traffic).	No change.
94	Establishment and spread of marine pest species	No change.
95	Impacts to fauna behaviour due to light from operations	No change.
96	Impacts to fishing activities and the sustainability of fishing stocks.	No change.
97	Impacts associated with increased fishing pressure by foreign crews accompanying vessels (abalone and reef-associated fish species).	No change.
98	Creation of artificial substrates altering the marine ecosystem.	No change.
99	Disturbance to sandy substrates from propeller wash.	No change.
100	Increased sedimentation from port operations.	Similar level of effect.
101	Impacts to organisms due to accumulation of shipping related contaminants in sediments.	Reduced potential for effect.
102	Incidental ore spillage to the marine environment.	Not applicable / No impact. - Iron ore export is not within the scope of the Proposed Amendment.
103	Incidental grain spillage to the marine environment.	No change.
104	Oil spills in the marine environment.	No change.
	Coastal Environment and Sediment	**Refer to Section 3.12 of Appendix C**
105	Changes to local wave heights associated with the vessels moored at the jetty.	Similar level of effect.
106	Movement of sediment due to a combination of waves, tidal currents and wave induced currents.	Similar level of effect.
107	Beach impacts at Rogers Beach due to jetty construction and operation.	Similar level of effect.
108	Beach impact south of the jetty due to jetty construction and operation.	Increased effect immediately south of the wharf, with no significant change at Lipson Cove and Lipson Island.
109	Formation of scour holes due to the jetty.	Reduced level of effect.
	Heritage	**Refer to Section 3.13 of Appendix C**
	Construction	
110	Disturbance of registered (known) Aboriginal Heritage sites/objects.	No change.
111	Disturbance to areas of mythological and ethnographic significance to the local Traditional Owners.	No change

No.	Impact Description from PER	Proposed Amendment Impact
112	Disturbance to unregistered areas of Indigenous archaeological significance which occur in the dunes adjacent to Rogers Beach.	No change.
113	Disturbance of unregistered Aboriginal heritage sites/objects.	No change.
114	Disturbance to registered non-indigenous heritage values.	No change.
115	Disturbance to non-registered non-indigenous heritage values.	No change.
116	Disturbance to historic shipwreck site.	No change.
	Visual	**Refer to Section 3.14 of Appendix C**
	Construction	
117	Visual impact at key observation viewpoints due to construction.	No change.
	Operations	
118	Visual impact at key observation viewpoints due project infrastructure and operations (e.g. ships at berth). *Overall magnitude of effect assessed as:* • *VP-1 Rogers Beach – Moderate* • *VP-2 Ocean – Low* • *VP-3 Lipson Cove Beach – Moderate* • *VP-4 Lipson Cove Road – Low* • *VP- 5 Swaffers Road - Negligible*	Similar level of effect.
119	Visual impact of shipping vessel travel.	No longer applicable / No impact.
	Decommissioning	
120	Visual impact during decommissioning	No change.
	Socio-Economics	**Refer to Section 3.15 of Appendix C**
	Construction	
121	Construction workforce - Population and demographic impacts.	Similar level of effect.
122	Construction workforce - Changes in local employment opportunities.	Similar level of effect.
123	Construction workforce accommodation	Altered effect as no construction village proposed.
124	Benefits for local business and industry.	Similar level of effect.
125	Social infrastructure	Similar level of effect.
126	Haul road transport and infrastructure access corridor – changes to access and connectivity.	Altered effect due to the use of Lipson Cove Road for construction deliveries.
127	Impacts to community values including visual amenity.	Similar level of effect.
	Operation	
128	Operational workforce - Population and demographic impacts.	Similar level of effect.
129	Operational workforce housing and accommodation.	Altered effect due to the seasonal nature of some positions.
130	Operational workforce - Changes in local employment	Reduced effect (benefit).
131	Benefits for local business and industry.	Reduced of effect (benefit).
132	Impacts to local tourism	Similar level of effect.
133	Social infrastructure	Similar level of effect.
134	Impacts to community values including visual amenity.	Similar level of effect - particularly in relation to such things as scenic amenity, natural

No.	Impact Description from PER	Proposed Amendment Impact
		environment, local amenity and health and safety.
135	Impacts to traffic due to haulage of ore and grain on the regional network	Similar level of effect.
136	Impacts to traffic due to haulage of ore and grain associated with site access	Altered effect
137	Regional traffic benefits due to the location of the port.	Increased effect (benefit).

6. Risk and Mitigation

As for the Evaluated Project, a risk-based approach to environmental management is proposed for the Proposed Amendment. This section presents the revised risk profile for the site and describes the environmental framework that will apply to the amended project.

6.1 Qualitative Risk Assessment

This section presents the findings of a qualitative risk assessment undertaken for the Proposed Amendment. The risk assessment process adopted accords with the Evaluated Project. The detailed risk assessment outcomes, including comparison with original PER is presented in Appendix A.

Differences in the mitigated risk profile are primarily due to the interpretation of the risk definitions, and the reasoning for the assigned ratings is included in Table 6-1 where relevant.

Table 6-1 Summary comparison of qualitative risk assessment for the Evaluated Project and Proposed Amendment (mitigated risk)

No.	Project Aspect	Mitigated Risk (L × C)	
		EP	PA
1	Air emissions – dust and fugitive emissions *Risk of exceedance of project air quality criteria.*	Low (Unlikely × Minor) *Air dispersion modelling predicted compliance with Ambient Air Quality NEPM criteria (1988 and 2003) at sensitive receptors.*	Moderate (Unlikely x Moderate) *Air dispersion modelling predicted compliance with the air quality criteria for the Proposed Amendment.* *Moderate consequence rating considered appropriate as if the risk were to eventuate, an offsite receptor would be impacted in the short term.*
2	Greenhouse Gas (GHG) Emissions	Moderate (Almost Certain x Insignificant) *Overall the port offers the potential to significantly reduce GHG emissions associated with ore transport to other port options, while it is recognised the Ports establishment will create GHG.*	Low (Unlikely x Insignificant) *Overall the port offers the potential to reduce GHG emissions associated with road transport of grain to Port Spencer compared with the distance of road transport to Port Lincoln, while it is recognised the Ports establishment will create GHG.*
3	Noise *Risk of exceedance of project air noise criteria.*	Low (Unlikely x Insignificant) *Noise modelling estimates indicate residences along Lipson Cove Road will not exceed noise criteria from road traffic, although the noise criterion was exceeded for a residence along Swaffers Road*	Moderate (Unlikely x Moderate) *Moderate consequence rating considered appropriate as if the risk were to eventuate, an offsite receptor would be impacted in the short term.*
4	Stormwater / Surface water	Low (Unlikely x Minor)	Low (Unlikely x Minor) *Mitigations and management measures designed prevent and contain impacts to immediate site.*
5	Groundwater	Low (Unlikely x Minor)	Low (Unlikely x Minor) *Routine risk able to be managed by standard controls.*

No.	Project Aspect	Mitigated Risk (L × C)	
		EP	PA
6	Terrestrial Flora	Low (Possible x Insignificant)	Moderate (Almost certain x Insignificant) *Considered appropriate to maintain an 'almost certain' likelihood, as vegetation clearance will occur (as for the Evaluated Project) despite the fact it will be offset.*
7	Terrestrial Fauna	Low (Possible x Insignificant)	Low (Possible x Insignificant)
8	Terrestrial Weeds, Pests and Pathogens	Low (Possible x Insignificant)	Moderate (Unlikely x Moderate) *The mitigation measures are considered to reduce the likelihood of weed, pest and pathogen risks, not the consequence.*
9	Lipson Island Terrestrial Fauna	Low (Unlikely x Minor)	Moderate (Unlikely x Moderate)
10	Lipson Island Terrestrial Flora	Low (Rare x Insignificant)	Low (Rare x Insignificant)
11	Lipson Island Marine Fauna and Flora	Low (Unlikely x Minor)	Low (Unlikely x Minor)
12	Soils	Low (Unlikely x Minor)	Low (Unlikely x Minor)
13	Marine Flora (Jetty)	Moderate (Possible x Minor)	High (Almost certain x Minor) *Considered appropriate to maintain an 'almost certain' likelihood, as vegetation clearance will occur (as for the Evaluated Project) despite the fact it will be offset.*
14	Marine Fauna (Jetty)	Moderate (Possible x Minor)	Low (Unlikely x Minor) *Duration and extent of underwater noise from piling activities significantly reduced. Monitoring and controls expected to further reduce likelihood.*
15	Marine Pests	High (Possible x Moderate)	High (Possible x Moderate)
16	Coastal Processes	Low (Possible x Insignificant) *Based on hydrodynamic modelling only localised sediment and scouring effects around the jetty are expected.* *Significant impacts to beaches around the Project are not expected, including Rogers Beach and Lipson Island.*	Moderate (Possible x Minor) *Based on hydrodynamic modelling localised sediment and scouring effects around the causeway are expected.* *Significant impacts to beaches around the Project are not expected, including Rogers Beach and Lipson Island.*
17	Traffic	Moderate (Possible x Minor)	Moderate (Unlikely x Moderate) *Moderate consequence retained as any effects will be experienced off the project site.*

No.	Project Aspect	Mitigated Risk (L × C)	
		EP	PA
			Measures will reduce potential for traffic safety or capacity risks.
18	European Heritage	Low (Rare x Insignificant)	Low (Rare x Insignificant)
19	Maritime Heritage	Low (Rare x Insignificant)	Low (Rare x Insignificant)
20	Indigenous Heritage	Low (Unlikely x Minor)	Low (Unlikely x Minor)
21	Visual Amenity	Low (Possible x Insignificant)	Moderate (Almost certain x Insignificant) *Following mitigations, development of a port at the site will still have a visual impact.*
22	Waste	Low (Possible x Insignificant)	Low (Possible x Insignificant)
23	Chemical Storage and Handling	Low (Unlikely x Minor)	Low (Unlikely x Minor)
24	Maritime Spills, Leaks and Anti-foulants (Port area)	Low (Unlikely x Minor)	Low (Unlikely x Minor)
25	Spencer Gulf: Maritime Spills	Low (Rare x Minor)	Moderate (Rare x Moderate) *Moderate rating retained as by definition, effects would impact waters outside of the project area.*
26	Spencer Gulf: Marine Mammal Collision	Low (Unlikely x Minor)	Low (Unlikely x Minor)
27	Vessel Anchored Stability	Low (Unlikely x Minor)	Low (Unlikely x Minor)
28	Local and Regional Economics	Low (Unlikely x Insignificant)	Low (Unlikely x Insignificant)
29	Local and Regional Infrastructure	Low (Unlikely x Insignificant)	Low (Unlikely x Insignificant)
30	Local and Regional Services	Low (Unlikely x Minor)	Low (Unlikely x Minor)
31	Social amenity	Low (Unlikely x Minor)	Low (Unlikely x Minor)
32	Tourism and Recreation Values	Low (Unlikely x Insignificant)	Low (Unlikely x Insignificant)

Based on this qualitative risk assessment of potential environmental and social impacts the following aspects of the Proposed Amendment were considered high and moderate risks:

- High Risk:
  - Marine pest import and export to and from the Project site
  - Marine flora impacts - jetty (assumed to include the causeway)
- Moderate Risk:

- Air quality
- Noise
- Terrestrial Weeds, Pests and Pathogens
- Marine Fauna impacts – jetty
- Lipson Island Terrestrial Fauna
- Coastal Processes
- Traffic
- Visual Amenity
- Spencer Gulf Marine Spills.

Based on the management and monitoring measures proposed (refer to 6.3), it is considered that the environmental risks can be reasonably managed, and the likelihood and consequence of these risks have been reduced to as low as reasonably practicable (i.e. as per the ratings summarised in Table 6-1. The potential risks associated with development of Port Spencer are considered to be commensurate with such activities and the site offers an overall low risk environmental impact option for such a facility.

6.2 Environmental Management Framework

Implementation of environmental management for the Port Spencer Grain Export Terminal will occur through Construction and Operational Environmental Management Plans (EMPs).

The Construction EMPs and Operational EMP are overarching documents which will be subject to regulatory approval. A number of specific issues in each EMP will be addressed through more detailed sub-plans to provide appropriate guidance and instruction to staff and contractors working on site. Construction of the Port Spencer Grain Export Terminal has been broken up into several work packages, with key components as follows:

- Civils and earthworks (including causeway)
- Silos
- Conveyors and ship loader
- Jetty construction.

A Construction EMP will be prepared for each work package by the responsible contractor. Draft construction EMPs, are provided as Appendix B.

6.2.1 Environmental Aspects

Environmental aspects are defined as elements of an organisation's activities, products or services that can interact with the environment. A significant environmental aspect has, or can have, a significant environmental impact (AS/NZS ISO 14001:2016). Peninsula Ports has identified its significant environmental aspects as shown in Table 6-3. These are based on the environmental assessment undertaken for the Port Spencer Grain Export Terminal and draft Construction EMPs prepared by the Contractors.

The Construction and Operational EMPs will address the significant environmental aspects relevant, identify when review of these aspects should occur and describe management strategies to mitigate the impacts and risks associated with those aspects.

6.2.2 Hierarchy of Environmental Management Documentation

The hierarchy of environmental management documentation that will be prepared for construction of the Proposed Amendment is as follows:

- Traffic Management Plan

- Fire Management Plan
- Civils and earthworks – Construction and Environmental Management Plan (refer to Appendix B for draft)
  - Emergency Management Plan
  - Blast Management Plan
  - Construction Noise and Vibration Management Plan
  - Soil, Erosion, Drainage and Water Quality Management Plan (SEDMP)
  - Air Quality Management Plan
- Jetty construction – Construction EMP (refer to Appendix B for draft)
  - Biosecurity Management sub-Plan
  - Abrasive Blasting and Painting Control Sub-Plan
  - Pile Installation Environmental Sub-Plan
  - Marine Fauna Management Sub-Plan
  - Spill Response Sub-Plan
  - Concrete and Grouting Management Sub-Plan
  - Maintenance and Refuelling Sub-Plan
  - Waste Management Sub-Plan
  - Marine Debris and Working over Water Sub-Plan
  - Environmental Nuisance Management Sub-Plan
- Silos – Construction EMP (refer to Appendix B for draft)
- Export Conveyor and Shiploader – Construction EMP (refer to Appendix B for draft).

The hierarchy of environmental management documentation that will be prepared for operational phase of the project is as follows:

- Operational EMP
  - Management and Monitoring Plan for Rogers Beach prepared in consultation with the District Council of Tumby Bay.
  - A Beach Monitoring and Management Plan. (refer to Appendix C)
  - Weed and Pest Management and Monitoring Plan
  - Air Quality Management and Monitoring Plan
  - Emergency Response Plan.
  - Fire Management Plan

6.2.3 Content of Environmental Management Plans

The EMPs will address the relevant significant environmental aspects for the project as identified in Table 6-3. The elements to be included in the EMPs are shown in Table 6-2, noting that each contractor will adopt slightly different templates and terminology.

Table 6-2 Elements to be included in the Construction and Operational EMPs

Element	Description
Management Context	An introductory overview of the project and key issues requiring management.
Legal and other requirements	The key legislation, policies, standards and other requirements that apply to the proposed activities.
Environmental aspects and risk assessment	The environmental aspects will be identified relevant to the specific EMP scope. A risk assessment will be undertaken based on specific work methods to determine specific management and mitigation measures.
Objectives	The performance goals the EMP is seeking to achieve.
Management measures	The strategies and measures that will be implemented to manage environmental risk and meet the objectives and targets.
Performance indicators (targets)	A specification of the required level of performance (including timeframes) to meet environmental / legislative or project-specific standards.
Monitoring	Describes how environmental performance will be monitored.
Reporting	As relevant will comprise: • Internal project reporting. • External notification requirements to regulators, the community and other stakeholders for incidents that trigger notification.
Non-conformance	The procedures to be undertaken if performance indicators are not met or if non-conformances are identified (e.g. through monitoring or audit).

6.2.4 Legal and Other Requirements

Peninsula Ports must comply with a range of legislation, policies and other requirements as identified in Chapter 3. The Construction and Operational EMPs will identify and address compliance with regulatory requirements, environmental protection policies and relevant guidelines and codes of practice. The specific requirements for each environmental aspect will be considered in developing the EMPs.

6.2.5 Objectives and Targets

Objectives and targets (performance indicators) for the Proposed Amendment will be incorporated into the Construction and Operational EMPs for the project. The objectives establish the overall goals for environmental performance for each significant aspect and the targets define the measurable performance level and timeframe to meet objectives. The objectives are summarised in Table 6-3.

Table 6-3 Significant environmental aspects and environmental management objectives for the Proposed Amendment

Environmental Aspect	Objectives
Emissions to Air	
• Particulate emissions • Noise and vibration generation (terrestrial and marine) • Greenhouse gas emissions	• Maintain air quality to protect the environment, human health and amenity. • To manage noise and vibration generation to protect the environment, human health and amenity. • To implement reasonable measures to minimise greenhouse gas emissions during development and operation of the Port Spencer Grain Export Terminal.

Environmental Aspect	Objectives
Interaction with Natural Resources	
• Potential introduction and spread of terrestrial pest plants and animals • Terrestrial fauna interactions • Ship loading and shipping activities (operations)	• To proactively manage and prevent new incursions of weed and pests to maintain or improve the ecological values of the site. • No preventable death or serious injury to native terrestrial fauna • To minimise disturbance to coastal and marine communities and habitats at the local scale to maintain regional coastal and marine values. • To manage ground, surface and marine water quality to protect ecological and social values. • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Land Disturbance and Vegetation Clearance	
• Soil disturbance and changes to surface water flows (construction) • Vegetation clearance (construction) • Potential disturbance of heritage sites (construction) • Marine disturbance	• To minimise vegetation clearance required for project construction and ensure it is offset by long-term actions that deliver a significant environmental benefit. • Maintain the quality of land and soils to protect ecological and social environment values. • Manage the hydrological regimes of surface water so that environmental values of waters are maintained. • To prevent unauthorised disturbance to Aboriginal, Non-Aboriginal and Maritime heritage. • To minimise disturbance to coastal and marine communities and habitats at the local scale to maintain regional coastal and marine values. • To maintain and protect beaches north and south of the port. • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Generation of wastes and discharges	
• Stormwater discharge (operations) • Accidental release from chemical/hydrocarbon storage • Waste generation	• To manage ground, surface and marine water quality to protect environmental values, both ecological and social. • To ensure that human health and safety is not adversely affected. • To maintain the quality of land, soils and surface water to protect environment values, both ecological and social. • To minimise any adverse environmental impacts from wastes and to implement reasonable measures to implement the waste management hierarchy (avoid, reduce, reuse, recycle)
Community Interactions	
• Traffic generation and access • Changes to visual amenity (operational) • Fire risk	• To minimise impacts associated with operational traffic and compensate fairly where impacts are recognised and are unavoidable. • To maintain safe access to valued community assets including Rogers Beach and Lipson Cove Beach. • To ensure that impacts to amenity are reduced as low as reasonably practicable. • To ensure that human health and safety is not adversely affected

6.2.6 Implementation

Implementation of environmental management requirements will occur through project specific EMPs and procedures. Peninsula Ports has established an Early Contractor Involvement (ECI) process for design and construction which will govern the structure and implementation of the EMPs during construction.

6.2.7 Roles and Responsibilities

All personnel involved in the project including Peninsula Ports employees, contractors and sub-contractors, are required to undertake work in accordance with the EMPs. The Peninsula Ports Managing Director is ultimately responsible for the effective implementation of the EMPs through the Project Manager.

6.2.8 Training

All project personnel (staff and contractors) involved in construction activities will be required to undertake training in environmental management requirements as part of a project induction prior to any construction works being carried out. Minimum content requirements for the project induction include:

- Background to the Port Spencer Grain Export Terminal
- Environmental management framework for the project
- Approval conditions
- Legislative requirements applicable to the project and individuals
- Key personnel and roles
- Environmental issues at the site and relevant management plans and procedures
- Heritage management protocol and unexpected finds procedure.
- Hazard and Incident reporting and management procedure
- Emergency response plan.

Staff and contractors will also undertake job-specific training relevant to their role. Each Construction Contractor is responsible for ensuring staff are provided adequate training in the relevant Construction EMP requirements.

During the operational phase, appropriate professional development for Peninsula Ports staff and contractors will be conducted to enable them to implement sound environmental practice in all their work practices.

6.2.9 Communication

Peninsula Ports will continue to implement a community engagement plan during construction, and will report on the implementation of the Construction EMPs in accordance with this plan.

The Construction EMPs and Operational EMP will identify the relevant external government agency contacts and outline any requirements for reporting and communication.

6.2.10 Review

It is acknowledged that environmental management plans are dynamic documents that should be subject to regular review and continual improvement. It is proposed that Construction EMPs will be reviewed at least once a year, and the Operational EMP will be reviewed every three years. The following circumstances may also trigger a review of an EMP:

- Change in the scope and design of the project (including construction methods)
- Changes in regulatory standards
- Following environmental incidents, reported non-compliances or in response to complaints
- Subsequent to environmental audits where outcomes warrant improvement.

6.3 Mitigation Measures

This section details the mitigation measures which have been identified for the Proposed Amendment based on the Review of the Evaluated Project (Appendix A) and the mitigation measures presented in Section 7 of the original PER. Mitigations carried over from the Evaluated Project are listed in plain text. New mitigations to be implemented by the Proposed Amendment are identified in ***bold italicised*** font. For transparency and ease of comparison, mitigations not carried forward by the Proposed Amendment are also identified at the bottom of each section (in grey).

6.3.1 Mitigation Measures for Air Quality

The key objective of the air quality management measures is to maintain air quality to protect the environment, human health and amenity during the construction, operation and decommissioning phases. Requirements for the protection and management of air quality will be described in Air Quality Management Plans for the construction and operational phases.

Air quality management and mitigation measures to be implemented for each phase are as follows:

Construction Phase

- Vegetation will be cleared progressively as land is required for construction activities, to reduce exposed areas susceptible to wind erosion and dust generation.
- Disturbed areas that can be revegetated will be progressively revegetated and mulched to limit the duration of surface exposure.
- All access roads and internal roads will be sealed, and vehicle and mobile plant movement confined to those roads as much as practicable. Sealing of onsite roads will not occur until the end of construction.
- Material transported to the Project that has the potential to generate dust (including fill materials and road base) will be covered during transport.
- Wind conditions and forecasts will be monitored and taken into account when scheduling earthworks. Increased water truck usage will be employed for dust mitigation on windy days.
- On-site material movement will be planned to avoid stockpiling where practicable, and, where stockpiling is required, such that the duration of stockpiling is as short as practicable. For example, material will be excavated and immediately placed as fill, and imported materials delivered near the time they are required, wherever possible.
- Stockpile heights will be designed with maximum heights to reduce potential wind entrainment of materials.
- Dust suppression will be applied to stockpiles and other exposed surfaces. Wet suppression techniques will be used to reduce dust emissions from crushing and screening of road base, and from earthworks activities.
- Blasting work will be undertaken by personnel certified to design and execute blasting operations, and will be carried out considering wind direction and weather forecasts, but also in accordance with all relevant codes and government and regulatory requirements.
- Equipment, plant and vehicles will be serviced in accordance with manufacturer recommendations to promote their efficient running and hence minimise combustion product emissions.

Operational Phase

- Truck unloading will include tipping payloads into a hopper through Burnley Baffles or similar. Burnley Baffles are a dust suppression device for reducing fugitive dust emissions from dump hoppers and chutes handling dry granular bulk raw materials such as grains and ores.
- ***Grain storage will be via:***

- Approximately 9 bunkers (800 kT). Maximum of eight operational at a time. Bunker fitted with either traditional tarpaulin cover arrangement or lightweight semi-mobile roof system to weather proof the grain.
- 5 sealed silos with dust collectors on all grain handling processes and conveyors.

- ***Design, construction and operation of grain storages in accordance with fumigation rules.***
- ***Yard conveyors will comprise uncovered conveyor loading system, covered reclaim conveyor. No dust collection at transfer points.***
- ***Silo conveyors will be serviced by ventilation systems with pulsed jet fabric filters at each of the conveyor transfer points.***
- ***The ship-loading conveyor will be covered, with dust capture at all transfer points.***
- ***A meteorological station at the site will be installed. During the harvest period, forecasting of meteorological conditions at the site will be used to assist in decisions to temporarily restrict truck in-loading operations, thereby reducing the likelihood of dust impact at any of the sensitive receptor sites.***
- Ship loading will be undertaken using appropriate dust controls, such as a loading chute with a cascade system that prevents free fall of material, or a chute that has a vacuum system around the exit point to capture dust. ***Specifically, a telescopic chute is proposed.***
- Equipment, plant and vehicles will be serviced in accordance with manufacturer recommendations to promote their efficient running and hence minimise combustion product emissions.

Operational mitigations not carried forward by the Proposed Amendment:

- Trucks will unload within a covered gantry (two sides and a roof).
- The hematite shed will be serviced by a ventilation system and reverse air filters, 24 hours per day, to reduce fugitive dust emissions.
- The grain storage shed will be sealed and utilise dust collectors on all grain handling processes within the shed.
- Conveyors will be fully enclosed and serviced by ventilation systems with pulsed jet fabric filters at each of the conveyor transfer points to minimise fugitive dust emissions.
- The hopper head space, elevator and conveyor will be ventilated through a reverse air fabric filter before being discharged.

Decommissioning Phase

If material handling or earthworks activities are required during decommissioning, these will be conducted in accordance with relevant air quality mitigation measures described for the construction and operational phases.

6.3.2 Mitigation Measures for Greenhouse Gas Emissions

Greenhouse gas management and mitigation measures to be implemented for each phase are as follows:

Pre-Construction

Prior to the construction phase, an Energy Efficiency Plan (EEP) will be developed for implementation during the construction, operations and decommissioning phases of the Project. The EEP will include methods for:

- Monitoring and measurement of fuel usage
- Monitoring and measurement of electricity usage
- Estimation of greenhouse gas (GHG) emissions and National Greenhouse Energy and Reporting (NGER) Act reporting
- Identification, assessment and implementation of energy efficiency opportunities

- Principles of continuous improvement whereby review, and update will occur such that new practices and measures can be implemented.

Construction Phase

- Energy efficiency and conservation measures, such as using high efficiency motors and generators, energy efficient lighting, and using automatic controls and timed systems will be assessed during detailed design phase.
- Source materials with low embodied energy or carbon footprints will be used where performance and efficiency are not compromised. Commitment to the purchase of local and recycled materials where possible.
- To fulfil reporting requirements under the NGER Act, fuel usage will be tracked during construction works. If the annual reporting threshold is triggered, energy and GHG emissions will be reported as required under the NGER Act.
- Investigate options to offset construction and/or operation GHG emissions, for example, under the Australian Government's Carbon Farming Initiative.

Operational Phase

- Connection to the Eyre Peninsula's electricity supply network will be considered when it has the capacity to provide sufficient electricity for the project.
- The generator configuration will be designed with consideration of energy efficiency.
- If electricity grid connection is established the generator use would be discontinued.
- Energy efficiency and conservation measures, such as using high efficiency motors and generators, energy efficient lighting, efficient dust suppression design, and using automatic controls and timed systems will be assessed and implemented where practicable.
- The transport scenario generating the lowest transport related estimated GHG emissions is the development of the Project. ***The Proposed Amendment will directly load Panamax sized vessels with product from a freight advantaged grain catchment zone, which will provide savings on road transport impacts (i.e. additional distance to Port Lincoln).***
- Options to install small-scale renewable energy generation, such as solar, to supply electricity for office buildings will be investigated during the detailed design phase.
- To facilitate GHG emissions estimation and reporting required under the NGER Act, fuel and electricity use will be tracked during operations. If the annual reporting threshold is triggered, energy and GHG emissions will be reported as required under the NGER Act.

Decommissioning Phase

As the project is decommissioned, all shipping operations will cease. Electricity consumption will decline and the use of on-site plant and equipment will also decline until cessation.

Therefore, GHG emissions will reduce and will become zero when decommissioning is complete.

- During this phase, fuel and electricity use will continue to be monitored to assess energy use and GHG emissions as required under the NGER Act. If a reporting threshold is triggered, energy and GHG emissions will be reported as required under the NGER Act.

6.3.3 Mitigation Measures for Noise

The key objective of the noise management measures is to manage noise and vibration generation to protect the environment, human health and amenity.

Noise management and mitigation measures to be implemented for each phase are as follows:

Construction Phase

- Use of low level noise reversing beepers.
- Ensure machines that are used intermittently one shut down in the intervening period between works or throttled down to a minimum.
- Vehicle warning devices such as horns should not be used as signalling devices.
- Silencers and enclosures will be appropriately maintained to ensure they are intact, the rotating plant is balanced, loose bolts are tightened, frictional noise is reduced through lubrication and cutting noise reduced by keeping equipment sharp.
- Traffic practice controls will be considered to prevent vehicles and equipment queuing or reversing near noise-sensitive locations.
- Using plant equipment that can achieve a similar outcome with less vibration, or modification of existing equipment to reduce vibration power levels.
- Implementing staging of the construction activities such that sufficient respite is provided between periods of high impact activity, particularly for night works.
- Developing a monitoring regime for both noise and vibration to ensure predicted noise and vibration impacts are maintained and met. This will be particularly important for activities such as piling.
- Source plant and equipment that performs at or better than industry expectations, as noise level emissions and potential annoyance depend significantly on the condition of the equipment.
- Look for opportunities to acoustically enclose generators and compressors.
- Acoustically screen individual activities where reasonable and practicable. Some activities suitable for screening are fixed operations. Effective screening depends upon the extent to which the noise source and/or the operator can be enclosed without hampering operation of the equipment.

Operational Phase

- The site is located a significant distance (about 1,000 m) from the majority of noise sensitive locations including residences (***noting that there is one residential dwelling located approximately 450 m from the site***).
- Ensuring conveyor belts are fully enclosed where possible noting that the conveyor loading system is not able to be covered.
- Procurement of generators with a maximum sound power level of 85 dBA at a distance of 1 m, as per the Mechanical Specification prepared for the Proposed Amendment (Andvare 2019).
- For all mobile equipment on-site, noise will be managed through the installation of broadband reversing alarms, which emit a warning signal that is less invasive than common reversing alarms, but is still compliant with relevant safety requirements.

In order to ensure that the predicted noise levels are maintained, the following acoustic measures will be adopted for the Proposed Amendment:

- ***Ensure that all pumps, fans, motors and conveyor drives are designed/selected to meet the maximum sound pressure levels required by the Design Requirements.***
- ***Ensure that the generators are selected with a maximum sound power level of 108dB(A) per unit, with a barrier constructed around the generator area which blocks line-of-sight to Dwelling 1 and extends a minimum of 1-metre above the top of the generator casing or exhaust outlet (whichever is higher).***
- ***Front End Loaders (FELs) to be selected having a maximum rated sound power level of 102dB(A).***
- ***Ensure that bunker conveyors are designed or selected to meet a maximum sound power of 74 dB(A) per metre. Subject to the design of the conveyors, this may require:***

- Selecting “low noise” idlers;

- Enclosing the conveyors within a gantry or similar structure, or installing within a channel or trench such that line-of-sight to nearby dwellings is blocked at all times; In practice, this is achieved through the haul road and bunker walls.
- Ensuring that any gantry, enclosure or screen is resiliently mounted to the conveyor structure.
- ***Extend the northern dust barriers adjacent the fixed receival hoppers to a minimum height of 2.5 metres for an extent sufficient to block line-of-sight to Dwelling 1.***

The following additional controls will be implemented for night-time operations (i.e. prior to 7am and after 10pm):

- ***Limit site throughput prior to 7am or after 10pm to the following:***
- ***Operation of up to four sampling stations, and three weighbridges.***
- ***Operation of up to four fixed hoppers (i.e. any two pairs of hoppers, or four single hoppers).***
- ***Operation of up to four mobile drive-over hopper stackers.***
- ***For the manual scenario, all mobile tipping points to be selected such that 'line of sight' to Dwellings 1 and 2 is blocked by a full or partially full bunker.***
- ***No stopping/idling in the secondary marshalling area (i.e. drivers proceed directly to the designated tipping point).***

Operational mitigations not carried forward by the Proposed Amendment:

- All unloading activities will occur in fully enclosed buildings.
- Conveyor belts will be fully enclosed – this is unable to be achieved for the Proposed Amendment's conveyor loading system.
- To ensure the 40 dB(A) night-time goal noise level is achieved at all surrounding noise-sensitive locations, a number of acoustic treatments for generators were identified.

6.3.4 Mitigation Measures for Surface Water

The key principles in the stormwater management of the site remain the same from the Evaluated Project to the Proposed Amendment. As for the Evaluated Project, stormwater management will include:

- Water Sensitive Urban Design principles (consistent with Section 6.3.2).
- Zero discharge of the site runoff to the marine environment
- Offsite runoff will continue to discharge to Rogers Beach, but quantity will not be increased by the project
- Detained site runoff will be reused on site.

A Site Water Management Plan (SWMP) will be developed including surface and stormwater management.

Construction Phase

Water quality and construction best management practices are contained in the Code of Practice for the Building and Construction Industry (EPA, 1999). The Project falls under the Building and Construction Industry category. The construction of the Project will follow the guidelines in the Code of Practice for the Building and Construction Industry.

The following strategy and practices will be implemented to optimise surface water management for the construction phase of the project:

- Early construction and stabilisation of offsite catchment diversion channels and extended detention pond.
- Remove and stockpile topsoil for revegetation.
- Early revegetation of cut slopes and earthen channel.

- Erosion and sediment control.
- Non stormwater discharge and material management
- Extended detention pond can be used as a temporary sediment pond and is sized to contain the 100 year storm event thereby minimising the potential to discharge stormwater to the marine environment during the construction phase.

Operational Phase

Operation and maintenance of the diversion and flood control channels will include the following:

- Maintain vegetation and/or channel stabilisation for erosion and sediment control.
- Sediment control at energy dissipation basin/sediment trap.
- Remove sediment from channels on regular basis.

Decommissioning Phase

Surface water controls should still continue to function following decommissioning of the project, until demolition and removal of the infrastructure. Therefore the same maintenance requirements will be in place during the decommissioning phase.

6.3.5 Mitigation Measures for Groundwater

Construction water demands are similar to the Evaluated Project and are intended to be met through a brackish bore onsite. The site is not located within a Prescribed Water Resource Area. As for the Evaluated Project, the main risk to groundwater is considered to be contamination risk from possible chemical and fuel spills at site.

Mitigation and management for the protection of groundwater to be implemented for each phase are as follows:

Construction and Operational Phases

- ***A well construction permit will be sought if the bore is to be less than 2.5 m below ground level.***
- ***Use of saline water will be contained within the site boundary and avoid retained areas of native vegetation.***
- Low permeability hard stand surfaces will be constructed in operational areas that provide a barrier layer between the surface and underlying soils and groundwater.
- Site vehicles, earthmoving and construction plant and equipment will be maintained in accordance with manufacturer specifications and will be visually inspected daily to assess evidence of fluid or hydrocarbon leaks.
- Appropriate care will be taken during on-site refuelling or maintenance to minimise fluid or hydrocarbon spills. These activities are to be conducted on low permeability hard stand areas.
- All chemicals, fuels, oils, greases and solvents will be stored in low permeability bunded and covered locations in accordance with SA EPA Bunding and Spill Management Guideline EPA 080/07 (EPA, 2016).
- Commensurate with the plant and equipment on-site, an appropriate number of spill and fluid absorbent kits will be provided. Staff will be trained in their use.
- Sanitary wastewater will be managed by on-site facilities in accordance with approval conditions. These facilities will be inspected and maintained in accordance with manufacturer requirements and approval conditions.

Decommissioning Phase

Prior to decommissioning, stores of fuel, oil, chemicals and site consumables will be run down to minimise their remaining volumes upon the cessation of works.

Additionally, upon decommissioning, all materials and waste, including those deemed to be potentially hazardous such as fuel, oil and other chemicals or residual materials which require removal, will be removed from site by an appropriately EPA licensed waste carrier.

6.3.6 Mitigation Measures for Terrestrial Ecology

This section provides general construction and operational management measures for the protection and management of terrestrial ecological values, including weed and pest control, as well as specific discussion about the significant environmental benefit (SEB) required to offset native vegetation clearance for the Proposed Amendment. Detailed management plans and procedures would be developed prior to actual construction and operation phases.

Management and mitigation measures to be implemented for the protection and management of terrestrial ecological values for each phase are as follows:

Construction Phase

- A Construction EMP will be developed (***by each contractor***), which will include mitigation, management and monitoring measures for impacts to terrestrial ecology. Mitigation, management and monitoring measures will include the following:
  - Onsite weed controls and monitoring.
  - Controlling the movement of soil onto the Project from the surrounding area will be implemented to reduce the possibility of introducing new weed species. Similarly, all plant and machinery will be certified weed free before they are brought to the construction site.
  - A designated wash down bay will be established before entering and leaving the project area.
  - Access to Rogers Beach by Project personnel will be restricted.
  - All vegetation to be retained will be clearly demarcated on the ground and identified on a Project plan. Access to these areas will be restricted.
  - During vegetation clearance, fauna found will be captured and relocated to adjacent suitable habitat.
  - Any trenches and holes left uncovered for more than a day will be inspected for trapped fauna first thing in the morning and late in the afternoon. Any trapped fauna will be caught and released into nearby habitat.
  - Stockpiles of materials and any associated infrastructure will be located in cleared areas in order to minimise impacts to vegetation.
  - Construction machinery and vehicles will not be parked or stored within areas containing native vegetation.
  - Proposed rehabilitative works associated with addressing disturbance during construction.
- An environmental section within the worker induction process that advises all workers of their responsibilities with regard to protecting native vegetation at the site.
- Where native vegetation is impacted either during the construction or operational phases, the incident will be investigated and corrective measures implemented as required.

Operational Phase

- Strict policies will be adopted on managing food waste and littering within the Project area to discourage feral animals and birds.
- There will be continuous implementation of a feral animal eradication programme and weed management programme.
- ***Revegetation and rehabilitation of undisturbed areas of the site located within the fallow paddock (i.e. to the north of the site near Rogers Beach and south of the silos) will be undertaken as part of***

the ILUA negotiated for the site. Under this agreement, resources will be provided to support native vegetation management in the vicinity of Rogers Beach.

- A weed and pest management strategy for the whole site will be developed following construction so that potential weed infestation sources are controlled and the success of revegetation activity is maximised. Pest control measures will be employed across the entire property. The Weed and Pest Management Plan (WPMP) will be developed in consultation with Natural Resources Eyre Peninsula and meet the statutory requirements of the Natural Resources Management Act 2004.
- Pest control measures will be implemented as required (e.g., plague locusts), and as part of a long term integrated pest control program (e.g., rabbit control). There would be a component of reactive works in addition to a program of programmed work that would be developed on a species specific basis. Programmed work will be reviewed annually to allow changes that reflect the on-ground situation to be incorporated.
- Weed control will commence prior to revegetation.

Operational mitigations not carried forward by the Proposed Amendment:

- A Rehabilitation and Revegetation Plan will be developed, which will include erosion and sediment control, suggested local, native species for rehabilitation, minimising the need for fertiliser. The creation of a SEB was the key element of this plan for the Evaluated Project. Due to the lack of significant native vegetation on site and changes to the *Native Vegetation Clearance Regulations 2017*, it is not considered practicable to deliver an on-site SEB for the Proposed Amendment.

6.3.6.1 Significant Environmental Benefit

Native vegetation in South Australia is protected under the provisions of the *Native Vegetation Act 1991* (NV Act). The clearance of native vegetation requires approval in accordance with the NV Act and *Native Title Regulations 2017.*

An offset is required for the approved removal of native vegetation and this offset is known as a SEB. Options for delivering the SEB include provision of commensurate replacement vegetation (including via a third party provider) or equivalent compensatory payment into the Native Vegetation Fund. The determination of the size of the SEB is based upon a number of factors including the location of the clearance and the quality of native vegetation, as measured by Unit Biodiversity Scores.

The requirement to provide a SEB is in addition to any on site rehabilitation requirements. Consultation with the Department for Environment and Water, Native Vegetation Group/Native Vegetation Council may be necessary to establish the final details of the SEB and the mechanism by which it would be attained.

Peninsula Ports proposes to undertake a SEB through direct payment to the Native Vegetation Fund. Draft SEB requirements for the Proposed Amendment are presented in Table 6-4. Appendix K of the original PER did not identify seagrass in the Intertidal rocky reef and subtidal rocky reef, as such, two assessment scoresheets have been prepared for calculation of the marine component of the SEB (refer to Appendix E for the datasheets).

Terrestrial assessment scoresheets have been included as part of the terrestrial vegetation survey report (included as part of Appendix A).

Table 6-4 Draft SEB requirements for the Proposed Amendment

BAM Site	Description	Area of proposed impact (ha)	Vegetation Condition Score	Unit Biodiversity Score	Total Biodiversity Score	SEB Points	SEB Ha required	Total Cost
Terrestrial								
1	*Lomandra effusa* Sedgeland	0.01	41.79	47.64	0.35	0.37	0.05	$ 153.64
1a	*Lomandra effusa* Very Open Sedgeland	0.13	3.97	4.52	0.6	0.63	0.08	$ 261.83
3	*Nitraria billardierei*	0.44	37.83	43.13	19.08	20.03	2.5	$ 8,381.27
4	*Triodia* grassland	0.28	33.86	38.6	10.93	11.48	1.43	$ 4,803.12
5	*Lomandra effusa* rocky outcrops	2.15	3.3	3.76	8.08	8.49	1.06	$ 3,550.57
	Total Terrestrial SEB					**41**	**5.12**	**$ 17,150.43**
Marine								
	Seagrass Zone	1.11	44.53	54237	54.41	63.42	7.93	$.....83,634.86
	Sandy Substrate	0.95	23.63	28.85	24.60	28.68	3.58	$ 37,816.59
	Total Marine SEB					**81.86**	**10.37**	**$ 121,451.50**
Total SEB								**$ 138, 601.88**

The total offset area for the Evaluated Project was 21 ha, noting that this was calculated using different metrics.

6.3.7 Mitigation Measures for Lipson Island

Peninsula Ports will undertake management and monitoring within its control to minimise the potential impact of the Proposed Amendment upon the environmental values identified for Lipson Island. Potential impacts to Lipson Island are expected to be managed through general control measures at the project relating to noise, construction, air and marine management measures.

Mitigation and management for the protection of Lipson Island's ecological values to be implemented for each phase are as follows:

Construction and Operational Phases

- Domed focussed low level light will limit potential light impacts at Lipson Island.
- Measure and monitor light pollution in the vicinity of Lipson Island seabird rookery during operation to qualify predicted impacts and determine if further mitigation is required.
- Development and implementation of a Silver Gull Management Plan (***incorporated into the WPMP***) for construction, operation and decommissioning phases of the project that includes, but is not limited to, the following:
  - Eliminating waste food that may be scavenged.
  - Monitoring Silver Gull populations and impacts at the site.
  - Guide for staff access and behaviour by signage, inductions, educational briefings, workshops and other educational material.

6.3.8 Mitigation Measures for Soils

Mitigation and management for the management and protection of site soils to be implemented for each phase are as follows:

Construction Phase

- Blasting undertaken by personnel certified to design and execute blasting operations.
- Blasting carried out in accordance with all relevant government codes and regulatory requirements. A draft Blast Management Plan is provided as part of Appendix B.
- A Construction EMP will be developed (***by each contractor***) and present the mitigation and management measures for impacts to Project area soils. Proposed details for the Construction EMP include the following:
- Design of site layout and surface levels to optimise cut and fill, minimising any requirement to import material onto the project area.
- Measures will be identified to allow for all suitable material excavated during construction to be re-used in the completion of civil works ***and construction of the causeway***.
- Topsoil removed as part of civil will be stored for reuse in site revegetation activities.
- Erosion and sediment control measures, in the form of a SEDMP will be prepared to:
    - Limit the amount of land exposed to the risk of wind and water erosion for the shortest period.
    - Install sediment control structures in the project area prior to earthworks commencing, which will control and divert water around the construction site to minimise flow over non-vegetated construction areas.
    - Install erosion control and sediment collection structures for site drainage in accordance with the EPA's Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry (EPA 1999).
    - Temporarily mulch all areas cleared of vegetation (for example, hydromulched, or covered with biodegradable matting), if to be developed later, or permanently rehabilitated to limit the exposed surfaces and prompt revegetation, or they will be sealed (i.e. pavements, etc.) following construction.
    - Locate stockpiles away from concentrated expected water flow and drainage paths.
    - Appropriately bunded spoil stockpiles with catch drains, and cover with a sterile cover crop if they are to be left for more than 30 days.
    - Place trench spoil parallel to and up-gradient of excavations, so that any runoff will be trapped in the trench.
    - Backfill and compact trenches and rehabilitate, as soon as practicable.
    - Temporarily stabilise watercourse banks and crossings that are to be disturbed until more permanent stabilisation is carried out (i.e. revegetation, gabions, etc.).
    - Outline minimum standards and requirements for rehabilitation and revegetation, including road shoulders and adjacent swales.
    - Specify conditions under which erosion control or sediment collection structures can be decommissioned.
    - Provision of fencing and other controls to limit access to Rogers Beach, especially from vehicles, for the purpose of preventing erosion. This would only be done at the site block boundary and apply to construction workers only as Peninsula Ports does not own Rogers Beach. Private access to Rogers Beach maintained. Noting that this is assumed to be provided by the gazetted public roadway to the west of the subject land.
- All waste to be stored on-site in such a manner so as to prevent any materials from contaminating soil and other environmental receptors.

Operational Phase

The operational EMP to be developed for this phase will include amongst other aspects ongoing monitoring and maintenance requirements for rehabilitated and revegetated areas ***and surface water controls***.

Decommissioning Phase

Similarly, for the decommissioning phase, a Decommissioning Management Plan will be developed as required.

6.3.9 Mitigation Measures for Marine Ecology

Management and mitigation measures to be implemented for the protection and management of marine ecological values for each phase are as follows:

Construction Phase

- An SEB offset for native vegetation clearance will be delivered in accordance with the Native Vegetation Act and associated regulations, including to compensate for impacts to marine habitat.
- End-over-end construction of the jetty, will assist with minimising impacts of marine habitats. ***The jetty structure will be incrementally launched from the shore, meaning the use of marine plant for construction of the jetty is not required.***
- Development of targeted Construction EMP (***by the two relevant contractors)***, ***refer to Appendix B for draft documents***. The Construction EMPs will includes measures such as:
  - Sediment control measures and management of material generated by marine based construction.
  - Spill, erosion and sediment control equipment used for all possible pollutants which are likely to be generated through construction.
- Development of an Emergency Response and Incident Management Plan prior to the commencement of works. The plan would include environmental incident response requirements, both for water quality, marine flora and fauna.
- The principles of ‘best management practice’ (BMP) and ‘best available technology economically achievable’ (BATEA) would be applied in order to minimise potential impacts on marine mammals from pile driving activities including:
  - When impact pile driving, employ where possible a “ramp up” or “soft start” technique to give adequate time for marine mammals to leave the vicinity before exposure to the maximum sound pressure level.
  - Marine mammal monitoring would be implemented during all impact pile driving activities.
  - A 500 m safety perimeter would be visually monitored around the pile being driven to monitor for presence of main mammals. Piling would cease if marine mammals are sighted within 500 m of the work area.
  - Construction of the marine structures would begin onshore and would advance seaward, allowing for an extended period of response time by acoustically sensitive marine mammals in the area (by means of avoidance or habituation).
  - The approach to pile installation for the marine structures would include preferential use of vibrational pile driving over impact pile driving (where possible), as the latter is associated with louder sound pressure levels underwater.
  - Noise insulation measures would be identified as part of the Construction EMP’s consideration of marine piling activities and other marine based activities.

No mitigation measures are proposed for vibrational pile driving, pile drilling, and vessel traffic, as noise generated during these activities is not anticipated to reach levels that would result in injury to marine mammals.

Operational Phase

- In-built structural pollution controls (such as enclosed conveyors) are included in project description to minimise loss of product during ship loading activities.
- Vessel management practices which aim to decrease the potential for turbidity and disturbance to sediments. Such measures would ensure that vessels are not under their own power within 1.5 km of the jetty, with tugboats being the only vessels permitted to operate in the area.
- Ballast water management procedures to be implemented by incoming vessels in compliance with national requirements. ***The water exchange will occur as per the Biosecurity Act 2015 and Australian Ballast Water Requirements (2017) and consistent with international standards (updated requirements since the Evaluated Project).*** Reduction of biosecurity risks associated with operation of the port through biofouling and ballast water management, surveillance and monitoring to detect marine pest introductions.
- Emergency response planning in the event that a pest species is discovered.
- Foreign crews would not be permitted to leave vessels while berthed at the Port. To ensure this is enforced, site security controls would be implemented as part of port operations.
- Fishing by personnel working on the port would be discouraged at the project.

No mitigation measures are proposed for noise from vessel traffic, as noise generated during these activities is not anticipated to reach levels that would result in injury to marine mammals.

Mitigation and management strategies not carried forward by the Proposed Amendment:

- The nature of the SEB is likely to differ from the rehabilitation and revegetation proposed from the Evaluated Project.
- Any sediment generated from drilling activities would be extracted and pumped to the seabed within a disposal area. This disposal area would be bunded by silt curtains, established within the construction footprint and located away from the rocky reef and seagrass habitats – This proposed mitigation is not thought to be practical or proportional given the significantly reduced number of piles required for the Proposed Amendment and the proposed application of alternative best practice measures for managing sediment dispersion (i.e. the use of silt curtains).
- Use of noise insulation and hammer cushions - The use of physical noise attenuation techniques for the proposed piling is not thought to be practical or proportional given the significantly reduced number of piles required and the proposed application of the alternative best practice measures for managing noise impacts on marine fauna (i.e. use of safety zones).
- Underwater noise monitoring would be undertaken during initial pile driving activities to verify that the noise signals being generated do not overly exceed the modelling predictions used in this risk assessment. Table 7-5 of the PER which lists the proposed monitoring for the Evaluated Project does not specify underwater noise monitoring. Given the significantly lower piling activity required for the Proposed Amendment, underwater noise modelling is not proposed.

6.3.10 Mitigation Measures for Traffic

Traffic management and mitigation measures to be implemented for each phase are as follows:

Construction Phase

- Majority of the construction workforce is to be transported to and from the site by bus.
- A Traffic Management Plan will be developed for the construction of the site.
- Sealing of Lipson Cove Road from the junction with Lincoln Highway through to the access to the project to cater for passenger vehicles, including buses that will be accessing the site during the construction phase.

Operational Phase

It is noted that junction and road upgrades will be required for the Proposed Amendment but will differ from the Evaluated Project due to the use of Lipson Cove Road for site access, and the slightly different locations of the access points; however, the treatments are similar. The recommended upgrades and improvements to Lipson Cove Road for the Proposed Amendment are as follows:

- ***New Intersections:***
  - ***<u>Entry Access Point (T1):</u> Basic left turn treatment from major road (Lipson Cove Road), see Figure 6-1.***
  - ***<u>Exit Access Point (T2):</u> Basic right turn treatment from minor road (site access road), see Figure 6-2.***

Figure 6-1: Example of a basic left turn (BAL) treatment from major road (Source: Austroads)

Figure 6-2: Example of a basic left and right turn treatment from minor road (Source: Austroads)

- **Intersection Upgrades:**
  - **Lipson Cove Road / Lincoln Highway intersection:** Full channelised turn treatment, see Figure 6-3 to Figure 6-5. Channelised right turn treatment from major road (Lincoln Highway) to be provided to allow for two queued Road Trains. Channelised left turn treatment from major road (Lincoln Highway) to be provided. Channelised left turn treatment from minor road (Lipson Cove Road) to merge into a add lane on Lincoln Highway exit to allow for slow moving vehicles to come up to speed.

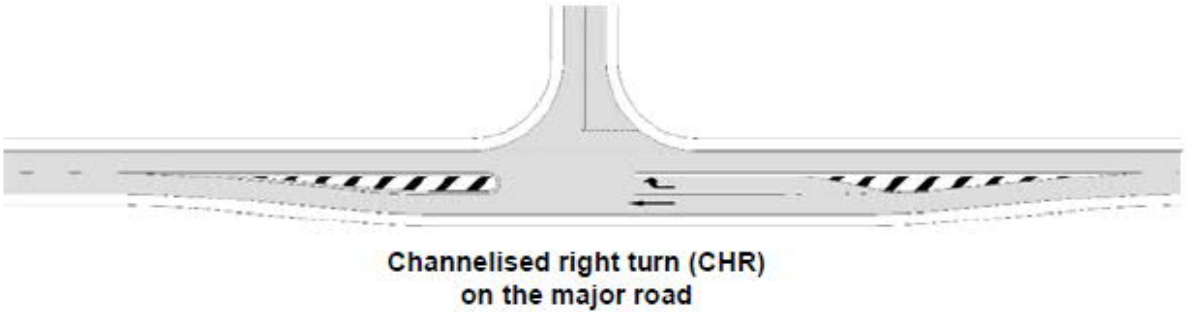

Figure 6-3: Example of a channelised right turn (CHR) treatment from major road (Source: Austroads)

Other design measures and mitigations to minimise traffic impacts during operations are:

- ***The site is proposed to operate with separate entry and exit access points from Lipson Cove Road, with provision for heavy vehicle queueing areas (waiting bays) on-site.***
- ***The site access arrangement has been developed to eliminate the number of vehicle conflict points (opposing turn movements) and contains all internal vehicle circulation movements on-site.***
- ***Separate Traffic Management Plans (TMP) will be developed for the operation of the site.***
- Localised vegetation trimming undertaken to improve sight lines.
- Provision of on-site parking for light commercial vehicles and staff.

Figure 6-4: Example of a channelised left turn (CHL) treatment from major road (Source: Austroads)

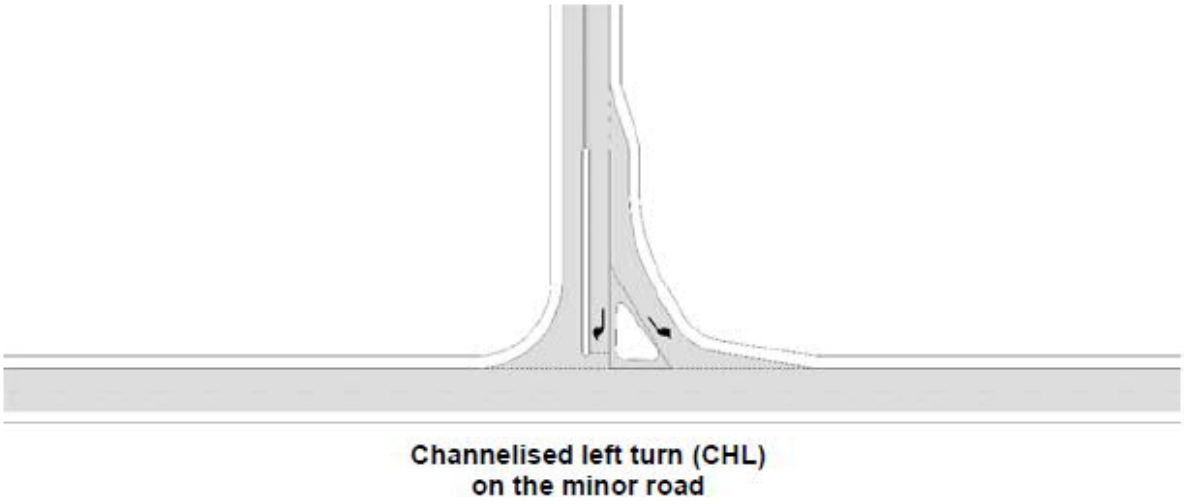

Figure 6-5: Example of a channelised left turn (CHL) treatment from minor road (Source: Austroads)

Mitigation and management strategies not carried forward by the Proposed Amendment:

- All proposed upgrades relating to Swaffers Road, as the Proposed Amendment will not use this road.
- Sealing of both approaches of Coast Road for a distance of 150 m each for safety and maintenance reasons.
- A truck preparation area and parking area has been included in the Project design along the haul road on the northern side of the Project. The Proposed Amendment will manage truck preparation within the site boundary.

6.3.11 Mitigation Measures for Heritage

Mitigation and management for the protection of heritage values to be implemented for each phase are as follows:

Construction and Operational Phases

- ***The design approach for the Proposed Amendment is to keep infrastructure as far south as reasonably practicable, to avoid known heritage sites.***
- Prior to any construction activities occurring, a physical inspection of the Project area would be undertaken, in consultation with the local Indigenous heritage representatives.
- Standard procedures would be developed and implemented on-site for the Project to redress discovery of items or sites of heritage significance and ensure appropriate stop work processes are implemented.

- ***Cultural awareness training for all personnel on the project.***
- ***Heritage monitoring officers to be used for the duration of the construction phase of the Proposed Amendment.***
- ***Re-vegetation of a buffer area at the northern end of the site, in conjunction with the Traditional Owners, to enhance the protection of known heritage sites.***

6.3.12 Mitigation Measures for Visual Aesthetics

Mitigation and management to minimise visual effects of the Proposed Amendment to be implemented for each phase are as follows:

Construction and Operational Phases

- Colour and texture of facilities visibility - Usage of sea blue or an earth tone paint colour for most facilities.
- Night-time lighting of facilities visibility - Domed focussed low-level lighting to be placed within project area.
- ***Re-vegetation along the eastern boundary of the site, screening views from Lipson Cove Beach.***

Mitigation and management strategies not carried forward by the Proposed Amendment:

- Project visibility from Lipson Cove Road and Lipson Cove Beach - Planting of trees and shrubs (2 - 4 m height) on Lipson Cove Road along southern boundary of Project. Proposed planting is proposed along the eastern boundary of the site adjoining the coastal clifftop.

Decommissioning

Visual amenity can be mitigated in the long-term by the decommissioning/removal of facilities and reclamation of developed areas.

6.3.13 Mitigation Measures for Waste and Materials

As for the Evaluated Project, waste will be managed in accordance with the waste hierarchy. Also as for the Evaluated Project, options to avoid and reduce waste generation and resource demand (the highest preferences in the waste management hierarchy) are inherent in the Project design, and are not described explicitly in this section.

Mitigation and management for waste to be implemented for each phase are as follows:

Construction, Operational and Decommissioning Phases – Waste Generation

Common to the construction, operational and decommissioning phases is the need to develop and implement a Waste Management Plan (WMP). The WMP would include principles of continuous improvement whereby review and update would occur such that new practices and measures can be implemented. The WMP would apply the principles of the waste management hierarchy where practicable and describe how waste would be classified, stored, managed, monitored and disposed. It would also include the requirement for all waste to be removed by an appropriately EPA licensed waste transporter for disposal or recycling at an appropriately licensed EPA waste or recycling depot. The WMP will include the following key aspects:

- A system of waste tracking to record waste amounts, types and identity of the waste transporter and disposal destination
- Provision for an annual audit of waste management strategies, their implementation and reporting
- Implement source separation of waste streams to maximise recycling opportunity
- Divert appropriate waste streams to recycling facilities
- Ensure appropriate treatment and disposal of residual waste
- Reuse waste materials in site processes or applications where appropriate

- Source recycled materials
- Source local materials, and
- Source materials based upon demand to minimise wastage

Construction Phase

- Re-use and recycling:
  - Spoil generated by site cutting and filling activities would be reused during construction for road construction road construction and other site earthworks (***including causeway construction***) to minimise the use of virgin materials for these purposes.
  - Infrastructure will be primarily composed of steel materials, which also contain recycled content and it is recyclable at end of life which can avoid it becoming a waste product.
  - Topsoil - during construction, topsoil would be stripped from areas that are being developed. This material is a resource and would be reused as a vegetative growth medium during related revegetation activities.
- Where direct waste reuse is not practical, options to apply approaches lower on the waste management hierarchy will be considered. General principles considered for implementation are:
  - Road Construction - Additional materials required for road construction (such as clay and aggregate) and for fill at the Project would be sourced from suppliers on the Eyre Peninsula as far as possible.
  - Quarry products (such as aggregate) would be sourced from local quarries and concrete from local concrete plants. Preliminary enquiries with local contractors have indicated the presence of suitable quarries for supply of this material on the Eyre Peninsula.
  - Infrastructure Fabrication - Off-site fabrication of structures will be undertaken to support resource efficiency at the construction phase. This is intended to reduce requirements for material import for the Project, and reduces the likelihood of on-site waste production associated with fabrication of these structures.
- General waste management
  - Generation of large volumes of general and mixed waste from the construction phase is not expected. Waste will be removed from the project by an appropriately EPA licensed commercial waste and recyclable removal and transport contractor on a regular basis. It will be source-separated to improve the potential for the recycling of suitable materials. This contractor will dispose of waste or deliver recyclable material at appropriately EPA licensed waste or recycling depots.
- Sewage and Effluent Management
  - Temporary ablution facilities would be installed at the site. Sewage and effluent generated by these facilities will be managed and disposed of through an approved waste control system, with capacity to manage volumes of sewage and effluent generated by up to ***150*** site personnel.
- Stormwater
  - Where possible during construction, stormwater will be harvested from the site catchment and stored for re-use for compaction, dust suppression, vehicle wash down and other non-potable applications. This would reduce requirements for water supply and will reduce requirements for stormwater disposal.

Mitigation and management strategies not carried forward by the Proposed Amendment:

- A procurement policy will be developed by Peninsula Ports to encourage purchase and use of materials with recycled content, minimal packaging and materials that can be recycled at their end of life. Contractors and suppliers would be expected to reflect policy requirements in their procurement activities.

Operational Phase

- General Waste Management
  - Generation of large volumes of general and mixed waste from the operation phase is not expected. However, that which is produced will be removed from site by an appropriately EPA licensed commercial waste and recyclable removal and transport contractor on a regular basis. It would be source-separated to improve the potential for the recycling of suitable materials. This contractor will dispose of waste or deliver recyclable material at appropriately EPA licensed waste or recycling depots.
- Sewage and Effluent Management
  - A package plant will be installed to treat effluent from ***30*** people and treat washdown water to a water standard suitable for disposal via irrigation around the Project area.
- Stormwater
  - During operation, stormwater will be harvested from the catchment and stored for re-use for compaction, dust suppression, vehicle wash down and other non-potable applications. Both surface water run-off and rain falling on rooftops would be captured.
- Ballast Water
  - Pursuant to the Australian Quarantine and Inspection Service (AQIS) "National Seaports Program – Australian Ballast Water Management Requirements, version 5", dated 10 August 2011 (***noting that the legislation has been updated and new operational plans will be required to comply with the updated requirements***), foreign ballast water is not to be discharged within Australia's territorial sea (the area within 12 nautical miles of the Australian coastal baseline). Management of discharge outside Australia's territorial sea area is governed by these mandatory AQIS requirements. They also include methods of ballast water exchange that are acceptable to AQIS, such that when a vessel arrives in port its ballast water is not considered foreign and can be discharged during loading at the project.

Decommissioning Phase

- Removal of Materials and Waste Products
  - Prior to decommissioning, fuel, oil, chemicals and consumables will be run down to minimise their remaining volumes upon the cessation of works. This reduces the need for the off-site transport and disposal of these materials.
  - All waste materials, including those deemed to be potentially hazardous such as fuel, oil and other chemicals or residual materials which require removal, would be removed from site by an appropriately EPA licensed waste transporter.

6.3.14 Mitigation Measures for Socio-Economics

The Socio-Economic Assessment undertaken for the Proposed Amendment, identified little requirement for specific measures to manage socio-economic effects. However, as a member of the local community, Peninsula Ports will adopt a number of the measures

Mitigation and management of socio-economic effects to be implemented for each phase are as follows:

Construction and Operational Phases

- ***The Proposed Amendment will consult with tourism representatives about peak construction worker demand periods to manage potential impacts on tourism in the study area and avoid potential for any residual impacts post-construction.***
- ***Peninsula Ports will establish a policy and process to enable support to community groups/programs by way of donations/ sponsorship.***

- Peninsula Ports, and its contractors, will open all employment positions to local people, where the skills and qualifications of the applicants are otherwise equal.
- Peninsula Ports, and its contractors, will open all training positions (e.g., apprenticeships) to locally based applicants to increase local capacity and skill sets.
- Peninsula Ports, its contractors and the project operator, will seek to engage local suppliers where their services and skills are competitive, during construction and operations.
- Stormwater will be harvested on site for reuse, where feasible, and environmentally advanced waste water treatment would produce reclaimed water for irrigation (***if required)***. The project reflects the principles of WSUD.
- Peninsula Ports, and its contractors, will maintain ongoing communications with local emergency services including SA Police, health providers, fire services and the State Emergency Service.
- Peninsula Ports will undertake consultation with Tumby Bay Hospital and local ambulance service prior to the start of construction and conduct a risk assessment of local capacity for responding to anticipated requirements during construction.
- Peninsula Ports, and its contractors, would appropriately manage worker behaviour through a Code of Conduct which would be clearly communicated and enforced with all project staff (during construction and operation).
- Peninsula Ports will maintain public access to Rogers Beach and the Lipson Cove campsite throughout construction and operation of the project.
- After construction and during the operating phase, pedestrian access along the coast (***over the causeway***) would be maintained.

Mitigation and management strategies not carried forward by the Proposed Amendment:

- Accommodation will be provided for fly in/fly out workers during construction, most likely at a purpose-built village adjacent to Tumby Bay. Due to the reduced workforce requirements, this is not considered necessary for the Proposed Amendment.
- Worker accommodation would likely provide high quality facilities including catering, internet and recreational facilities
- Centrex would pay the capital costs required to extend the ElectraNet transmission line to the Project for operations. Electricity would be self-sourced during construction. An extension of the existing transmission line is not included in the Proposed Amendment.
- Centrex would pay the capital costs required to extend the main water pipeline from the intersection of Swaffers Road and Lincoln Highway to provide water services to the Project. An extension of the water main is not included in the Proposed Amendment.
- Centrex would seek to build capacity with local suppliers by developing a business register.
- Centrex would continue to provide support to community groups/programs by way of donations/ sponsorship in accordance with Centrex policy.

6.4 Construction Monitoring Measures

An overview on the type of monitoring to be implemented during construction of the Proposed Amendment to evaluate environmental performance and compliance is described in Table 6-5. No monitoring is proposed in relation to groundwater effects or visual amenity during construction. Interaction with groundwater is not proposed as part of the Proposed Amendment, and amenity effects will be monitored indirectly through other identified environmental monitoring including for particulate emissions, noise and vibration and waste generation.

Table 6-5 Construction phase monitoring measures for the Proposed Amendment.

Construction EMP Element	Construction EMP Minimum Requirements
Emissions to Air:	**Particulate Emissions**
Objective	• Maintain air quality to protect the environment, human health and amenity.
Performance Indicators (Targets)	• Respond proactively to dust issues raised by the community. • Investigation of air quality complaints indicates no exceedance of project air quality criteria due to project construction activities.
Monitoring	• Daily visual monitoring of dust and implementation of adaptive management strategies • Monthly review of adherence to processes and timeframes in Complaints Management Procedure
Emissions to Air:	**Noise and Vibration**
Objective	• To manage noise and vibration generation to protect the environment, human health and amenity.
Performance Indicators (Targets)	• No significant impact to marine mammals from underwater construction noise • Respond proactively to construction noise issues raised by the community • Investigation of noise and vibration complaints indicates no exceedance of project noise and vibration criteria due to project construction activities
Monitoring	• Audit and review of adherence to mammal observation and piling start up procedures • Monitor the movement of marine mammals in waters impacted by construction noise • Monthly review of adherence to processes and timeframes in Complaints Management Procedure
Emissions to Air:	**Greenhouse Gas Emissions**
Objective	To implement reasonable measures to minimise greenhouse gas emissions during development and operation of the Port Spencer Grain Export Terminal.
Performance Indicators (Targets)	• Identify opportunities and implement associated actions to reduce greenhouse gases generated during construction of the project
Monitoring	• Develop a monitoring program to enable adequate accounting and reporting of greenhouse gas emissions to NGER requirements and to help identify opportunities to reduce greenhouse gases generated during construction of the project. • Annual greenhouse gas emissions will be estimated and reported to the relevant regulatory authority, as/if required, to assist with the ongoing management of energy efficiency programs. • Review of monthly reporting shows that greenhouse gas efficiency measures are being identified and considered.
Interaction with Natural Resources:	**Potential introduction and spread of terrestrial pest plants and animals**
Objective	• To proactively manage and prevent new incursions of weed and pests to maintain or improve the ecological values of the site.

Construction EMP Element	Construction EMP Minimum Requirements
Performance Indicators (Targets)	• No evidence of increased pest animals within the project site. • No introductions of new environmental or declared weed species to the project site • No spread of existing weed species on the project site.
Monitoring	• Follow up surveys and regular monitoring to determine level of pest control required. • Follow up surveys and periodic monitoring of weed species distributions to determine weed control effort required (e.g. annually or after trigger events – seasonal rainfall events, bushfire). Adaptive management and control measures to be applied as required.
Interaction with Natural Resources:	**Fauna interactions**
Objective	• No preventable death or serious injury to native terrestrial fauna • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Performance Indicators (Targets)	• No preventable death or serious injury to native terrestrial fauna during clearing or construction works
Monitoring	• Pre-clearance fauna inspections • Visual observations as part of routine site inspections.
Land Disturbance and Vegetation Clearance	**Soil disturbance and changes to surface water flows**
Objectives	• Maintain the quality of land and soils to protect ecological and social environment values. • Manage the hydrological regimes of surface water so that environmental values of waters are maintained. • To manage ground, surface and marine water quality to protect ecological and social values.
Performance Indicators (Targets)	• Surface water that is released from the site during construction meets the relevant Environmental Value water quality criteria (defined by Clause 6 and 7 and Schedule 1 of the Environmental Protection (Water Quality) Policy 2015.
Monitoring	• Monitoring of stormwater discharged from the site during rainfall events for compliance with the Environmental Protection (Water Quality) Policy 2015 (pH and turbidity as a minimum). • Regular (minimum weekly and following heavy rain events) audit/inspection to review effectiveness of sediment and erosion controls.
Land Disturbance and Vegetation Clearance	**Vegetation clearance**
Objectives	• To minimise vegetation clearance required for project construction and ensure it is offset by long-term actions that deliver a significant environmental benefit
Performance Indicators (Targets)	• All native vegetation clearance approved under the Native Vegetation Act 1991
Monitoring	• Monitoring of cleared areas versus approved clearance areas.

Construction EMP Element	Construction EMP Minimum Requirements
Land Disturbance and Vegetation Clearance	**Potential disturbance of heritage sites**
Objectives	• To prevent unauthorised disturbance to Aboriginal, Non-Aboriginal and Maritime heritage
Performance Indicators (Targets)	• No unauthorised disturbance to Aboriginal, non-Aboriginal or Maritime heritage. • All construction activity to be contained within the defined construction zones. • No clearance activities outside approved areas which have been surveyed and cleared for Aboriginal heritage values, unless a cultural heritage monitor is in place.
Monitoring	• Completion of inductions prior to working on site will be regularly monitored. • Regular inspection/audit to verify activities are occurring within defined construction zones and approved clearance areas. • Should heritage sites or objects of significance be identified, the process followed would be monitored (against the developed procedure).
Land Disturbance and Vegetation Clearance	**Marine disturbance**
Objectives	• To maintain the structure, function, diversity, distribution and viability of coastal and marine communities and habitats at local and regional scales • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Performance Indicators (Targets)	• No significant impact to marine fauna • No introduction of marine pests as a result of construction of the Proposed Amendment. • Maintain existing marine water quality (turbidity, total suspended solids, hydrocarbons)
Monitoring	• The marine study area will be monitored for the presence of marine mammals for at least 30 minutes prior to the commencement of construction activities. Monitoring will be focused on the safety zones from an appropriate vantage point. • Sightings of marine mammals within the observation zone and shutdown zone to be recorded daily during construction. • Regular marine water quality monitoring (turbidity, total suspended solids, hydrocarbons) • Baseline and annual monitoring for invasive marine species
Generation of Wastes and Discharges	**Accidental release from chemical/hydrocarbon storage**
Objective	• To ensure that human health and safety is not adversely affected • To maintain the quality of land, soils and surface water to protect environment values, both ecological and social.
Performance Indicators (Targets)	• Spills/accidental releases of chemicals/hydrocarbons are contained. • No long term reduction in soil and water quality attributed to accidental releases of chemicals/hydrocarbons.

Construction EMP Element	Construction EMP Minimum Requirements
Monitoring	• Implement a regular inspection program to monitor fuel and chemical storage areas and handling practices to ensure integrity, housekeeping and correct use. • Containment and clean-up of accidental spills will be monitored (against developed procedure).
Generation of Wastes and Discharges	**Waste generation**
Objective	• To minimise any adverse environmental impacts from wastes and to implement reasonable measures to implement the waste management hierarchy (avoid, reduce, reuse, recycle).
Performance Indicators (Targets)	• All waste material to be appropriately classified and segregated for reuse, recycling or offsite disposal • Waste to be disposed of lawfully • No complaints received in relation to waste management practices.
Monitoring	• Regular inspection to monitor storage, handling and disposal of wastes on site and to ensure management is in accordance with the relevant EMP.
Community Interactions	**Traffic generation and access**
Objective	• To minimise impacts associated with construction traffic and compensate fairly where impacts are recognised and are unavoidable. • To maintain safe access to valued community assets including Rogers Beach and Lipson Cove Beach.
Performance Indicators (Targets)	• Minor traffic delays as a result of construction activities (no change to existing level of service). • Access to Rogers Beach and Lipson Cove Beach is maintained for the duration of construction. • No traffic accidents during construction of the project which are attributed to negligence of construction contractors/workers • Road pavements along major construction haul routes are rehabilitated (where required) post-construction.
Monitoring	• Visual surveillance by site staff to review implementation of control measures and verify performance indicators. • Regular monitoring of stakeholder feedback • Pavement condition monitoring and verification remedial works to pavements in conjunction with DPTI and the District Council of Tumby Bay.
Community Interactions	**Fire Risk**
Objective	• To ensure that human health and safety is not adversely affected
Performance Indicators (Targets)	• Bushfire management planning activities are implemented in consultation with the Country Fire Service. • No fires attributed to construction of the project.
Monitoring	• Audits to review implementation of fire reduction measures as outlined in fire management plan. • Review of independent bushfire investigation findings (in the event of a fire in the project area).

6.5 Operational Monitoring Measures

An overview on the type of monitoring to be implemented during operation of the Proposed Amendment to evaluate environmental performance and compliance is described in Table 6-6. No monitoring is proposed in relation to groundwater effects or visual amenity, consistent with the Evaluated Project.

Table 6-6 Operational phase monitoring measures for the Proposed Amendment.

Operational EMP Element	Operational EMP Minimum Requirements
Emissions to Air:	**Particulate Emissions**
Objective	• Maintain air quality to protect the environment, human health and amenity.
Performance Indicators (Targets)	• Air quality from Port Spencer operations does not exceed the air quality criteria for the Project at sensitive receptor locations • Respond proactively to dust issues raised by the community. • Investigation of air quality complaints indicates no exceedance of project air quality criteria due to Port Spencer activities.
Monitoring	Monitoring program to confirm compliance with the air quality criteria for the project. The dust monitoring program would focus on the sensitive receivers with the greatest potential for air quality impacts. Monitoring would also enable modification or suspension of activities in response to the following triggers: • Predicted increased dust emission risk from weather forecast information (e.g. low wind speeds) • Warnings or exceedance alarms from real time dust monitoring at selected sites around the port facility • Observations(s) of significant dust generation during visual monitoring It is proposed that monitoring would be undertaken until such time as confidence in the performance of the system has been established and to allow for the implementation and/or application of reactive mitigation if the criteria are exceeded. • Review of adherence to processes and timeframes in Complaints Management Procedure
Emissions to Air:	**Noise and Vibration**
Objective	• To manage noise and vibration generation to protect the environment, human health and amenity.
Performance Indicators (Targets)	• Noise from Port Spencer operations does not exceed the relevant noise criteria at sensitive receptor locations • Respond proactively to noise issues raised by the community • Investigation of noise and vibration complaints indicates no exceedance of project noise and vibration criteria due to Port Spencer activities
Monitoring	• Post construction noise monitoring (developed in accordance with statutory requirements) to verify that operational noise complies with noise criteria. • Review of adherence to processes and timeframes in Complaints Management Procedure
Emissions to Air:	**Greenhouse Gas Emissions**

Operational EMP Element	Operational EMP Minimum Requirements
Objective	To implement reasonable measures to minimise greenhouse gas emissions during development and operation of the Port Spencer Grain Export Terminal.
Performance Indicators (Targets)	• Identify opportunities and implement associated actions to reduce greenhouse gases generated during operation of the project
Monitoring	• Develop a monitoring program to enable adequate accounting and reporting of greenhouse gas emissions to NGER requirements and to help identify opportunities to reduce greenhouse gases generated during construction of the project. • Monitor to detect whether Port Spencer operations are exceeding required emissions levels for the project. • Review of monthly reporting shows that greenhouse gas efficiency measures are being identified and considered.
Interaction with Natural Resources:	**Potential introduction and spread of terrestrial pest plants and animals**
Objective	• To maintain representation, diversity, viability and ecological function of flora and fauna at the species, population and community/assemblage level.
Performance Indicators (Targets)	• No evidence of increased pest animals within the project site. • No introductions of new environmental or declared weed species to the project site • No spread of existing weed species on the project site.
Monitoring	• Follow up surveys and regular monitoring to determine level of pest control required. • Follow up surveys and periodic monitoring of weed species distributions to determine weed control effort required (e.g. annually or after trigger events – seasonal rainfall events, bushfire). Adaptive management and control measures to be applied as required.
Interaction with Natural Resources:	**Fauna interactions**
Objective	• To maintain representation, diversity, viability and ecological function of flora and fauna at the species, population and community/assemblage level. • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Performance Indicators (Targets)	• No preventable death or serious injury to native fauna during operational activities • Respond proactively to fauna interaction issues raised by the community
Monitoring	• Visual site inspections • Review of adherence to processes and timeframes in Complaints Management Procedure
Interaction with Natural Resources:	**Ship loading and shipping activities**
Objective	• To maintain the structure, function, diversity, distribution and viability of coastal and marine communities and habitats at local and regional scales

Operational EMP Element	Operational EMP Minimum Requirements
	• To manage ground, surface and marine water quality to protect environmental values, both ecological and social. • To prevent disturbance to flora, fauna and marine values on Lipson Island.
Performance Indicators (Targets)	• No significant impact to marine fauna due to port operations • Maintain existing marine water quality (turbidity, total suspended solids, hydrocarbons) • No introduction of marine pests as a result of port operations
Monitoring	• Monitoring and reporting of whale sightings and ship strike • Regular marine water quality monitoring (turbidity, total suspended solids, hydrocarbons), until results have demonstrated compliance. • Annual baseline monitoring for invasive marine species, with adaptive management if required.
Land disturbance and vegetation clearance	**Marine Disturbance**
Objective	• To maintain the structure, function, diversity, distribution and viability of coastal and marine communities and habitats at local and regional scales. • To maintain and protect beaches north and south of the port.
Performance Indicators (Targets)	• Sedimentation effects are within the limits predicted from hydrodynamic modelling of the causeway and jetty.
Monitoring	• A beach monitoring program will be developed and implemented to validate the quantity of sediment deposition in and around the causeway in line with predicted impacts (refer to Appendix C).
Generation of Wastes and Discharges	**Stormwater discharge**
Objective	• To manage ground, surface and marine water quality to protect environmental values, both ecological and social.
Performance Indicators (Targets)	• No offsite discharge of stormwater to the marine environment.
Monitoring	• Visual monitoring during rainfall periods to confirm stormwater is being retained on site. • Regular inspection to identify localised erosion within the site boundary and to confirm site stormwater infrastructure is adequately maintained.
Generation of Wastes and Discharges	**Accidental release from chemical/hydrocarbon storage**
Objective	• To ensure that human health and safety is not adversely affected • To maintain the quality of land, soils and surface water to protect environment values, both ecological and social.
Performance Indicators (Targets)	• Spills/accidental releases of chemicals/hydrocarbons are contained. • No long term reduction in soil and water quality attributed to accidental releases of chemicals/hydrocarbons.
Monitoring	• Implement a regular inspection program to monitor fuel and chemical storage areas and handling practices to ensure integrity, housekeeping and correct use.

Operational EMP Element	Operational EMP Minimum Requirements
	• Containment and clean-up of accidental spills will be monitored (against developed procedure).
Generation of Wastes and Discharges	**Waste generation**
Objective	• To minimise any adverse environmental impacts from wastes and to implement reasonable measures to implement the waste management hierarchy (avoid, reduce, reuse, recycle).
Performance Indicators (Targets)	• All waste material to be appropriately classified and segregated for reuse, recycling or offsite disposal • Waste to be disposed of lawfully • No complaints received in relation to waste management practices.
Monitoring	• Regular inspection to monitor storage, handling and disposal of wastes on site and to ensure management is in accordance with the relevant EMP.
Community Interactions	**Traffic generation and access**
Objective	• To minimise impacts associated with construction traffic and compensate fairly where impacts are recognised and are unavoidable. • To maintain safe access to valued community assets including Rogers Beach and Lipson Cove Beach. • To ensure that human health and safety is not adversely affected.
Performance Indicators (Targets)	• Minor traffic delays as a result of operational traffic during harvest season. • No accidents during Port Spencer operations which are attributed to negligence of contractors/workers • Access to Rogers Beach and Lipson Cove Beach is maintained for the duration of operations.
Monitoring	• Visual surveillance by site staff to review implementation of control measures and verify performance indicators. • Regular monitoring of stakeholder feedback • Pavement condition monitoring and verification remedial works to pavements in conjunction with the District Council of Tumby Bay.
Community Interactions	**Fire Risk**
Objective	• To ensure that human health and safety is not adversely affected
Performance Indicators (Targets)	• Bushfire management planning activities are implemented in consultation with the Country Fire Service. • No fires attributed to operation of the project.
Monitoring	• Audits to review implementation of fire reduction measures as outlined in fire management plan. • Review of independent bushfire investigation findings (in the event of a fire in the project area).

7. Conclusion

Peninsula Ports is seeking an Amendment to the PER for the Port Spencer export facility (the Evaluated Project). This Amendment to the PER is submitted pursuant to Section 47 of the Development Act.

The proposed Port is a greenfields site located on, and surrounded by coastal agricultural land approximately 20 km north-east of Tumby Bay and 20 km south-west of Port Neill.

The Evaluated Project comprised a deep-water marine port, capable of accommodating Panamax and Cape class vessels, suitable for export of up to 2 million tonnes of ore per annum and up to 1 million tonnes of grain. The Proposed Amendment removes the mining related component from the Evaluated Project (the storage and export of iron ore) and seeks to reconfigure the site for efficient grain storage, handling and export.

Transport of grain to site will generally occur during grain harvest (i.e. typically October-December with a significant peak in November). Vehicles will be mixed in size and type however the dominant vehicle type is expected to be a B-Double and Double Road Train. The maximum vehicle to be accommodated at site is a B triple.

- Grain stored on site will be in the form of:
- Approximately 800 kT of bunker storage (Approximately 9 bunkers, 40 m wide and varying from 540 to 880 m in length)
- Nominally 60 kT of silo storage to provide for blending, buffer storage, in-stream sampling and fumigation (as required). The concept layout includes four to five silos, with a top-of-silo height of approximately 30 metres.
- Silo storage facility will incorporate:
- Dual drive-over in-loading hoppers
- Bucket elevators for transfer of grain to and from the storage facility
- Dual screens
- Conveyors systems for in-loading and reclaim
- Bulk weigher system for export.

Grain will be loaded to ships via an overland, covered conveyor. On the wharf, a conveyor and travelling ship-loader will elevate the grain and accommodate ship-loading. The ship-loader and associated infrastructure is capable of a 2000t/h effective throughput.

Vessels calling at Port Spencer are bulk grain carriers only. No servicing or other provisioning will be provided. The port will be outside the limits of the Sir Joseph Banks Group Marine Park.

7.1 Reasons for the Amendment

Centrex Metals has made the decision to transition out of iron ore on the Eyre Peninsula, meaning that the Evaluated Project will not proceed in its current form.

Peninsula Ports now owns the freehold land for the purposes of the onshore Port infrastructure development and is currently in discussions with the government to secure land tenure agreements over the use of the subjacent land (seabed) and coastal strip of the proposed site.

There are currently very limited domestic market opportunities for grain grown in the region and substantial freight disadvantages for accessing opportunities in other parts of the state and country. The relatively small population of the Eyre Peninsula in terms of people and livestock, precludes a robust local domestic grain market. Therefore, grain is predominantly exported to international customers.

As a result of the lack of domestic market and supply chain competition in the region, grain prices have historically been low relative to other regions in Australia. There is significant discussion regarding supply chain costs, the dominance of vertically integrated port operators and a lack of competition in South Australia (refer ACCC's bulk wheat ports monitoring report (December 2017) and ESCOSA's current inquiry).

7.2 Benefits of the Project

The Proposed Amendment will provide an alternative supply chain for grain growers on the Eyre Peninsula and an opportunity for grain growers to improve their economic returns through increased competition.

The Proposed Amendment will provide three levels of economic benefits to local grain growers:

- Extra competition in the grain handling and marketing industry
- Freight savings from reduced travel and double handling
- The ability to transport directly to port.

The Proposed Amendment continues to offer significant opportunity to contribute to agricultural development, as well as the short and long term social and economic sustainability of the region and State through direct and indirect business, infrastructure, employment and contractor opportunities.

A grain production target zone of approximately 1.6 million tonnes of grain is expected to be freight advantaged to Port Spencer by up to $10 per tonne (average $3.50 per tonne) as compared to Port Lincoln or Thevenard. Further, this zone represents the prime growing region on Eyre Peninsula with comparatively more stable and reliable yields and rainfall than other areas. Freight advantages are further enhanced if a grower is unable to deliver grain to Port Lincoln at harvest. Port Lincoln can only receive certain commodities and grades at harvest time and is limited by storage capacity. Port Spencer will ultimately have the capacity to store approximately 860,000 tonnes directly at harvest, as well as having the ability to continue shipping during harvest.

The development of Port Spencer is expected to contribute significant, reoccurring annual economic savings to grain growers in the catchment zone. Based on an assumed one million tonnes of grain exported through Port Spencer, the annual grower freight savings alone may be in the order of $3.5 -$5M p.a.

The introduction of a new grain export facility will create immediate competition for the incumbent grain terminal operator(s) and initiatives to capture supply could realise a further $10-$15/ton increase across the Eyre Peninsula's growing region (subject to a large number of factors which ultimately determine the price a grower is paid). Those potential further benefits for Eyre Peninsula growers may then result in an increase in the price realised for grain of $27 - $40M p.a. assuming a 2.7 Mt harvest and competitive pressure between the supply chain operator(s) and exporters to capture supply. (These assumptions are theoretical in nature, difficult to predict and may or may not be ultimately realised).

The proposed significant amount of port storage should also lessen the requirement for the incumbent storage provider's 'country' facility feeder sites with a more efficient 'internal' movement of grain between bunkers on site to the shipping position.

7.3 Alignment with State and Regional Policy

This Amendment to the PER has considered requirements of the updated Tumby Bay District Council Development Plan, the now-applicable Planning and Design Code, State legislative and policy needs and overall contribution of the development to South Australian government strategic development goals.

The Port site exists within two different zoning areas, which have altered since the Evaluated Project: the Coastal Conservation and Primary Production zone. The site is not located within the boundaries of any Marine Parks or aquaculture areas.

The Amended Proposal generally finds an improved level of compliance with Development Plan policy when compared to the Evaluated Project.

Significantly less built form is proposed within the Coastal Conservation Zone when compared to that proposed within the Coastal Zone for the Evaluated Project.

The impacts of the Proposed Amendment on sediment transfer patterns along the coast are to a similar degree as the Evaluated Project, however, there is some accretion and erosion anticipated in localised areas. The development is cognisant of sea level rise and does not require coastal protection measures.

By virtue of the facility exclusively supporting primary production within the region, the Proposed Amendment furthers the aims of the Primary Production Zone; a zone identified as appropriate to accommodate bulk handling facilities.

The Proposed Amendment finds synergies with the Eyre and Western Region Plan, which aims to;

- Support and develop the region's export-oriented industries, including fishing, mining and agriculture;
- Protect and develop further the region's strategic infrastructure; and
- Protect and strengthen the economic potential of the region's primary production land.

7.4 Mitigation Measures

Design principles for the Proposed Amendment are aligned with the Evaluated Project, including:

- Consideration of sustainability principles including resource and energy efficiency, through water reuse, waste management and civil construction approaches.
- Making use of existing topography and considering colour and form to ensure visual impacts are minimised to the extent practicable along the coast.

A detailed review of the Evaluated Project has been undertaken compared to the Proposed Amendment (Appendix A), including a comparison of impacts and risks between to two projects. A summary is provided in Sections 5 and 6.1, which indicates that while some of the impacts and risks are expected to differ (e.g. due to seasonal nature of grain delivery, increased grain storage capacity, use of Lipson Cove Road and inclusion of a causeway structure), a similar level of effect and risk profile is expected for the Proposed Amendment.

As with the Evaluated Project, management and monitoring measures to enhance potential benefits and mitigate potential negative impacts are identified.

The Port location and design are such that identified environmental and social impacts can be managed without unacceptable risk to the community or environment and the Project is predominantly considered low risk.

Based on a qualitative risk assessment of potential environmental and social impacts, the following aspects of the Proposed Amendment were considered high and moderate risks:

- High Risk of marine pest import and export to and from the Project site
  - This is a risk consistent with Port operation and international vessel movement.
  - Management and monitoring procedures would be put in place to meet Federal and State regulatory requirements.
- High risk of marine flora impacts due to seagrass clearance which will result from construction of the causeway
  - Impacts are expected to be limited in geographic extent, and minor in the context of the broader Spencer Gulf.
  - Clearance will be offset by an appropriate SEB.
- Moderate risks associated with:

- Air quality
- Noise
- Terrestrial Weeds, Pests and Pathogens
- Marine Fauna impacts – jetty
- Lipson Island Terrestrial Fauna
- Coastal Processes
- Traffic
- Visual Amenity
- Spencer Gulf Marine Spills.

Moderate risks are primarily due to consequence ratings being assigned as moderate, due to the off-site nature of effects. Mitigation and management measures will be implemented to mitigate risks as low as reasonably practicable.

7.5 Summary

The following conclusions are made with regard to the Proposed Amendment overall, and general policy and strategic goals for the region and State:

- Export capacity on Eyre Peninsula is constrained between December and April, when grain prices are at their highest (counter season for international markets). Further, a lack of grain handling competition and an inefficient supply chain, particularly with the closure of the rail lines, means there is scope to provide significant economic benefits to grain growers on Eyre Peninsula through a suitable export alternative.
- The Project has received positive local government and stakeholder support, with the region keen for the employment and business development opportunities, which the project is likely to offer directly and indirectly through development of Port Spencer.
- The proposed site does not support threatened flora or fauna and the coastal dune system at Rogers Beach would be protected by a development exclusion zone.
- Port infrastructure has been sited to ensure no significant impact upon the Low Open Shrubland vegetation association which represents important coastal remnant vegetation given the extent of historic vegetation clearance on Eyre Peninsula.
- Revegetation and other environmental management measures are to be implemented to improve biodiversity values at the site. The proposed rehabilitation and revegetation of the eastern aspect of the site offers a potential significant environmental benefit in addition to the formal SEB that the Proposed Amendment would contribute to offset native vegetation clearance.
- The Proposed Amendment would not require operational dredging and therefore many of the significant environmental marine impacts of port management would be avoided when compared to the Evaluated Project.
- The Project is located on a relatively remote part of the Eyre Peninsula coastline with a small camping ground associated with the Lipson Cove beach south of the project. Based on air and noise assessments it is not anticipated that camp ground amenity would be disturbed by the development.
- There would be distinct visual changes to the coastline associated with the silos, jetty infrastructure and shipping, however this is limited to direct viewing from the Gulf and has limited lines of sight from north and south of the site. As with the Evaluated Project, the Proposed Amendment would be visible from the Lipson Cove beach.
- Traffic has been considered as part of the development for access to the Port and is unlikely to have significant impacts on Lincoln Highway. Road upgrade benefits are expected for Lipson Cove Road, and the intersection with Lincoln Highway would also be upgraded to allow for suitable large haul access to site.

The expected traffic vehicle numbers expected to Lipson Cove Road are not expected to impact safety or level of service of the roads following the necessary upgrades.

- Public access to Rogers Beach, adjacent to the site's north, would be maintained, and the Port site would exclude Rogers Beach dunes and beach frontage from the operational footprint.
- The Proposed Amendment is considered to be of significant strategic and economic value to not only Peninsula Ports, but to grain growers on Eyre Peninsula. It offers potential economic and employment opportunities to local communities as well as regional and State contractors and businesses.

The Proposed Amendment is consistent with planning and regulatory requirements and should be granted the requested variation to the existing approval.

8. References

Andvare, 2019, Port Spencer Grain Terminal General Design Requirements (Rev B), Andvare, 16 August 2019.

Golder Associates, 2012, Port Spencer Stage 1 Executive Summary and Public Environmental Report Volumes 1-5, Golder Associates, February 2012

Golder Associates, 2012b, Port Spencer Stage 1, Response to Submissions, Golder Associates, October 2012.

EPA, 1999, Code of Practice for the Building and Construction Industry, Environment Protection Authority, Government of South Australia, Adelaide.

EPA, 2016, EPA Guidelines: Bunding and spill management, June 2016, Environment Protection Agency, Adelaide, South Australia, viewed 26 October 2019.

EP NRM Board, 2017, Eyre Peninsula Region Natural Resource Management Plan – Strategic Plan for the Eyre Peninsula Natural Resources Management Region - 2017-2027, Natural Resources Eyre Peninsula

9. Draft General Arrangement

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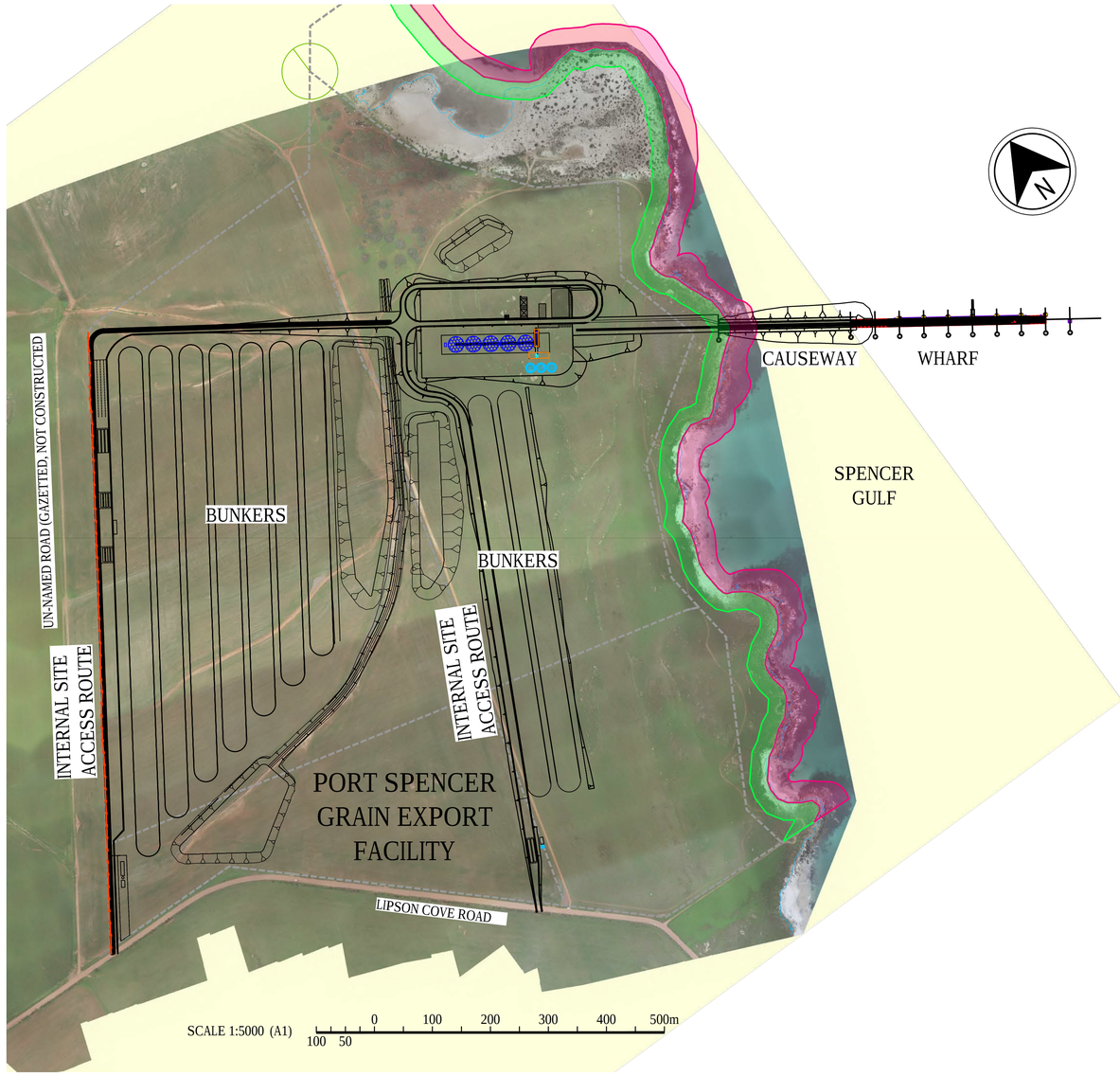
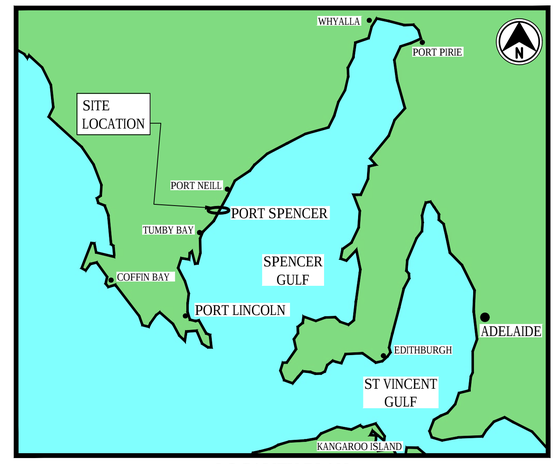
PORT SPENCER GRAIN FACILITY
PENINSULA PORTS

DRAWING INDEX

TITLE AND INDEX





LOCALITY PLAN

REV	DATE	APP'D	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
A	04.10.19	-	PRELIMINARY ISSUE - FOR INFORMATION ONLY		

PENINSULA PORTS

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CLIENT	FREE EYRE		
PROJECT	MARITIME ECI WORKS PORT SPENCER		
DRAWN	DRAWING CHECK	REVIEWED	APPROVED
TH	SS	SS	-
DESIGNED	DESIGN REVIEW	DATE 04.10.19	DATE -
BM	RR		

TITLE
PORT SPENCER GRAIN EXPORT FACILITY
-
TITLE AND INDEX

SCALE	DRAWING No	REV
AS SHOWN	IW219900-0000-CI-DRG-0000	A

SEE INSET 'A', THIS SHEET

DETENTION BASIN 3

DOUBLE HOPPERS WITH RFID, VMS & STOP / GO

VEHICLE ACCESS 8.8m RIGID & CAT 972M

STOP / GO LIGHT AND VMS

SECONDARY MARSHALL. 10 MIN VEHICLES.

FENCE

3 No WEIGHBRIDGES. 1 FOR TRIPLES. VMS & STOP/GO ON EXIT

2 No DOUBLE-SIDED SAMPLE STANDS, RFID & STOP/GO LIGHTS

STOP / GO LIGHT.

SAMPLING AND LAB BUILDING, STAFF AMENITIES AND SAMPLE STORE 6m x 24m ELEVATED.

31.20

2 No DOUBLE-SIDED SAMPLE STANDS, RFID & STOP/GO LIGHTS

STOP / GO LIGHT.

FENCE

PRIMARY MARSHALLING AREA

INTERNAL SITE ACCESS ROUTE

BUNKERS

353.00
7 x 40m WIDE BUNKERS

11.00

879.00 BUNKER LENGTH

544.00 BUNKER LENGTH

DETENTION BASIN 1

DETENTION BASIN 2

BUNKERS

2 No. BUNKERS (OPTIONAL)

700.00 BUNKER LENGTH

93.00
2 x 40m WIDE BUNKERS

INTERNAL SITE ACCESS ROUTE

PORT SPENCER GRAIN EXPORT FACILITY

BUNKER, CONVEYOR AND ROADWAYS TO BE POSITIONED CLEAR OF CHANNEL

CUT-OFF BASIN A

BOOM GATE

FENCE

AMENITIES, BBQ FACILITIES DRIVER LUNCHROOM AND REGISTRATION OFFICE

10KL POTABLE TANK

SITE ENTRY

FENCE

OVERNIGHT MARSHALLING AREA AND REGISTRATION PARKING

FARM GATES

RFID, STOP AND GO

DUAL WEIGHBRIDGE

RFID, STOP AND GO

DUAL HOPPERS

OFFICE & AMENITIES

10KL POTABLE TANK

SITE EXIT

SCALE 1:2500 (A1)

0 50 100 150 200 250m

50 25

TO PORT NEILL

CAUSEWAY

WHARF

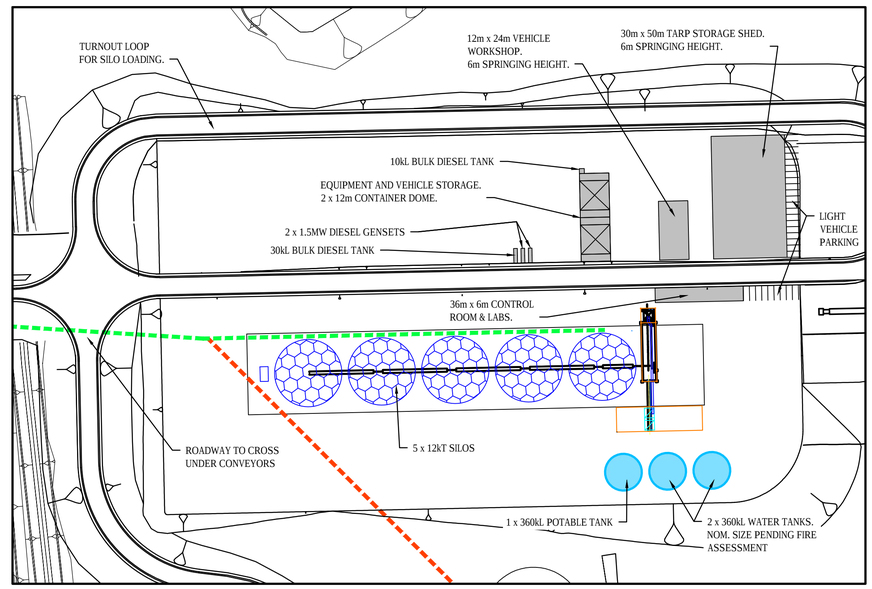
SPENCER GULF

TO TUMBY BAY

N

LEGEND

SYMBOL	DESCRIPTION
	CONVEYOR - LOADING SYSTEM
	CONVEYOR - RECLAIM
	CROWN LAND BOUNDARY
	CROWN LAND - NATIVE TITLE
	ILUA LAND - NATIVE TITLE



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CLIENT	FREE EYRE		
PROJECT	MARITIME ECI WORKS PORT SPENCER		
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DESIGNED BM	DESIGN REVIEW RR	DATE 04.10.19	DATE -

TITLE
PORT SPENCER GRAIN EXPORT FACILITY
-
GENERAL ARRANGEMENT

SCALE	DRAWING No	REV
AS SHOWN	IW219900-0000-CI-DRG-0001	A

DETENTION BASIN 3

DETENTION BASIN 1

DETENTION BASIN 2

BUNKERS

BUNKERS

CAUSEWAY

WHARF

TO PORT NEILL

SPENCER GULF

LEGEND

SYMBOL	DESCRIPTION
10	MAJOR CONTOUR
	MINOR CONTOUR

INTERNAL SITE ACCESS ROUTE

PORT SPENCER GRAIN EXPORT FACILITY

INTERNAL SITE ACCESS ROUTE

CUT-OFF BASIN A

SITE ENTRY

SITE EXIT

TO TUMBY BAY

SCALE 1:2500 (A1)

0 50 100 150 200 250m

50 25

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PORT SPENCER GRAIN EXPORT FACILITY
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FINAL SURFACE CONTOURS

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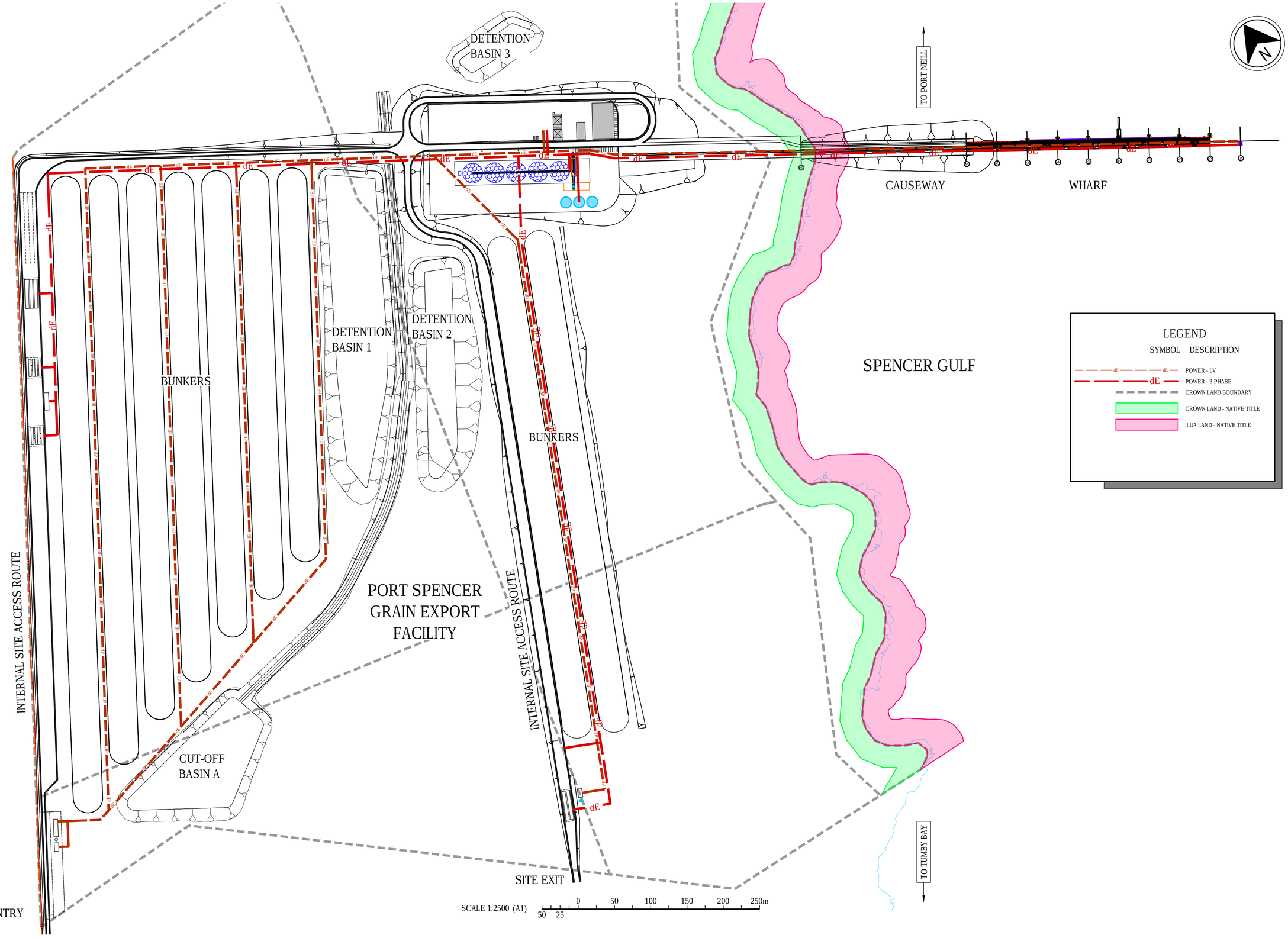

LEGEND

SYMBOL	DESCRIPTION
dE dE	POWER - LV
dE	POWER - 3 PHASE
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	CROWN LAND - NATIVE TITLE
	ILUA LAND - NATIVE TITLE

REV	DATE	APP'D	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
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PROJECT: MARITIME ECI WORKS PORT SPENCER			
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DESIGNED: BM	DESIGN REVIEW: RR	DATE: 04.10.19	DATE: -

TITLE: PORT SPENCER GRAIN EXPORT FACILITY - POWER

SCALE	DRAWING No	REV
AS SHOWN	IW219900-0000-CI-DRG-0003	A

DETENTION BASIN 3

TO PORT NEILL

CAUSEWAY

WHARF

DETENTION BASIN 1

DETENTION BASIN 2

BUNKERS

BUNKERS

SPENCER GULF

BUNKERS TO BE DRAINED VIA SCUPPERS IN WALLS

INTERNAL SITE ACCESS ROUTE

PORT SPENCER GRAIN EXPORT FACILITY

INTERNAL SITE ACCESS ROUTE

CUT-OFF BASIN A

SITE EXIT

SITE ENTRY

TO TUMBY BAY

SCALE 1:2500 (A1)

0 50 100 150 200 250m

50 25

LEGEND

SYMBOL	DESCRIPTION
	DRAINAGE SWALE - CUT-OFF
	DRAINAGE SWALE - TO DETENTION
	CROWN LAND BOUNDARY
	CROWN LAND - NATIVE TITLE
	ILUA LAND - NATIVE TITLE

REV	DATE	APP'D	REVISION	DRAWING NUMBER	REFERENCE DRAWING TITLE
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PROJECT MARITIME ECI WORKS
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TITLE
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-
DRAINAGE

SCALE	DRAWING No	REV
AS SHOWN	IW219900-0000-CI-DRG-0004	A

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