

# SMITH BAY WHARF

DRAFT ENVIRONMENTAL IMPACT STATEMENT

## APPENDIX T

PREPARED FOR KANGAROO ISLAND PLANTATION TIMBERS BY ENVIRONMENTAL PROJECTS  
JANUARY 2019

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**APPENDIX T – RISK ASSESSMENT**

**T** Risk Assessment Table .....





## Appendix T – Risk Assessment Table



Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
<b>Construction</b>											
1	Construction of berth pocket and approaches	Dredging of seafloor	Loss of seagrass communities	Major	Possible	High	<p>Direct loss of approximately 10 ha of mixed habitat but minor ecological significance due to vast similar habitat in Smith Bay and surrounding areas.</p> <p>Although the health of seagrass within several hundred metres of the dredge footprint may be compromised, to some degree, by turbidity and sedimentation effects during construction, recovery is likely to rapid after construction is completed.</p>	<p>Project designed to minimise dredging where possible, within the constraints of the Project requirements.</p> <p>A strict program of measures would be adopted to mitigate the potential impact of dredging on adjacent marine communities. These would relate to the type of dredge and its mode and rate of operation, and turbidity limits.</p> <p>Implementation of appropriate vegetation clearance offsets that result in a significant environmental benefit.</p>	Minor	Unlikely	Low
2	Construction of berth pocket and approaches	Dredging of seafloor	Impacts on marine heritage items (ship wrecks)	Moderate	Unlikely	Medium	<p>Four wrecks are recorded as lying in waters in the vicinity of study area, although their precise locations are unknown.</p> <p>The likelihood that the proposal would have an impact on any of these wrecks is considered to be low.</p>	<p>Project designed to minimise dredging where possible, within the constraints of the Project requirements.</p> <p>A discovery protocol would be implemented if maritime heritage material was discovered during site works. The Heritage Management Plan would provide further detail the protocol outlined in Section 24.5.4.</p> <p>Dredging management plan to include work instruction to cease work and seek advice should anything resembling wreckage be encountered.</p>	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
3	Construction of berth pocket and approaches	Silt plumes	Loss of local seagrass and other benthic communities due to light reduction and smothering	Moderate	Likely	High	<p>Sediment deposition from capital dredging will be &lt;10 mm except within approximately 200 m of the dredge footprint. It will present a temporary minor impact to benthic communities in Smith Bay.</p> <p>The duration of reduced benthic Photosynthetically Active Radiation (PAR) would be limited to the duration of the dredging construction program and is therefore likely to have only a temporary minor impact on seagrass communities.</p>	<p>Project designed to minimise dredging where possible, within the constraints of the Project requirements.</p> <p>Project designed to eliminate any requirement for offshore disposal of dredge spoil.</p> <p>Dredging to be conducted in accordance with EPA dredging licence, including water quality monitoring plan (approved by independent third-party) and stop-work procedures if water quality thresholds are exceeded.</p> <p>Onshore retention basin designed to maximize retention time of supernatant seawater prior to discharge to Smith Bay.</p>	Minor	Unlikely	Low



Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
4	Construction of berth pocket and approaches	Silt plumes	Poor water quality (for abalone health) at Yumbah's seawater intakes.	Major	Possible	High	<p>The 'zone of low to moderate impact' for detectable sediment plumes is predicted to be restricted to within 200–300 metres of the dredge footprint and tailwater discharge point for the expected case.</p> <p>The Yumbah intakes are not predicted to be within any zones of impact for the expected case.</p> <p>Under worst-case conditions, however, the 'zone of low to moderate impact', is predicted to extend approximately 2 km to the east of the dredge footprint and overlap the Yumbah intakes.</p> <p>The information and analysis presented in Chapter 11 provided evidence that abalone have a robust capacity to deal with suspended sediments in the water column. In particular, the results indicate that it is unlikely that the on-shore abalone aquaculture facility would be impacted by this development if an appropriate dredge management plan is developed to manage the risk from periods when suspended sediment levels exceed water quality criteria.</p>	<p>Project designed to minimise dredging where possible, within the constraints of the Project requirements.</p> <p>An appropriate dredge management plan will be developed to manage the risk from periods when suspended sediment levels exceed water quality criteria.</p> <p>A key element of the dredge management program would be the incorporation of real-time monitoring of in situ turbidity at an appropriate location between the dredging and construction activities and the Yumbah seawater intakes.</p> <p>On the rare occasions when the TSS threshold is at risk of being exceeded at the seawater intakes, dredging will cease in response to alarms being triggered by live monitoring of water quality at a site half way between the dredge footprint and the Yumbah intakes.</p> <p>Disposal of dredge spoil onshore within a settlement basin to enable removal of most sediment prior to the return of supernatant seawater to Smith Bay.</p>	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
5	Construction of berth pocket and approaches	Silt plumes	Visible silt plume around construction site at Smith Bay	Minor	Likely	Medium	The zone of influence (i.e. extent of detectable plumes but no predicted ecological impact) is predicted to extend east and west along the coastline for approximately 5–6 km for the expected case and approximately 8 km for the worst case.	Project designed to minimise dredging where possible, within the constraints of the Project requirements. Project designed to eliminate any requirement for offshore disposal of dredge spoil. Dredging to be conducted in accordance with EPA dredging licence, including water quality monitoring plan (approved by independent third-party) and stop-work procedures if water quality thresholds are exceeded. Onshore settlement basin designed to maximize retention time of supernatant seawater prior to discharge to Smith Bay.	Minor	Unlikely	Low
6	Construction of berth pocket and approaches	Mobilisation of potentially contaminated material in sediments (including naturally occurring contaminants such as ammonia, hydrogen sulphide, COD and BOD)	Impacts on marine communities including seagrass	Moderate	Unlikely	Medium	The analysis of marine sediments at Smith Bay revealed nothing of concern when compared with sediment quality guideline levels. The potential mobilisation of contaminants during capital dredging is therefore likely to result in a temporary negligible risk to water quality.	Project designed to minimise dredging where possible, within the constraints of the Project requirements. Project designed to eliminate any requirement for offshore disposal of dredge spoil. Dredging to be conducted in accordance with EPA dredging licence, including water quality monitoring plan (approved by independent third-party) and stop-work procedures if water quality thresholds are exceeded. Retention of spoil in onshore settlement basin designed to maximize retention time of supernatant seawater prior to discharge to Smith Bay Spoil solids to be utilized for onshore site levelling and not returned to the Bay.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
7	Construction of berth pocket and approaches	Mobilisation of potentially contaminated material in sediments (including naturally occurring contaminants such as ammonia, hydrogen sulphide, COD and BOD)	Poor water quality (contaminants) at Yumbah's seawater intake.	Major	Unlikely	Medium	The analysis of marine sediments at Smith Bay revealed nothing of concern when compared with sediment quality guideline levels.  The potential mobilisation of contaminants during capital dredging is therefore likely to result in a temporary negligible risk to water quality.	Project designed to minimise dredging where possible, within the constraints of the Project requirements.  Retention of spoil in onshore settlement basin designed to maximize retention time of supernatant seawater prior to discharge to Smith Bay.	Minor	Unlikely	Low
8	Construction of berth pocket and approaches	Spill of fuel or hydraulic fluids during dredging operations	Impacts on marine communities	Moderate	Possible	Medium	The risk of fuel, oil or chemical spills will be minimised through mandated compliance with established fuel/oil storage and handling standards and protocols.  With the adoption of appropriate management measures, fuel, oil and chemical spills during construction are likely to result in a temporary negligible risk to marine water quality.	CEMP to include established management procedures covering vessel maintenance, reporting of leaks and use of spill kits in the event of a spill.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
9	Construction of berth pocket and approaches	Dewatering (and return water losses) of potentially contaminated dredge spoil on land	Contamination of site (such that contaminated soil guidelines are breached)	Moderate	Unlikely	Medium	<p>The analysis of marine sediments at Smith Bay revealed nothing of concern when compared with sediment quality guideline levels.</p> <p>The results of sediment sampling (SEA 2017) suggest that the dredge spoil would likely be suitable for use on land and as causeway fill, because the sediment was found to be relatively pristine, with no synthetic or natural pollutants, and consists mostly of coarse white and grey sand.</p> <p>During dewatering, the transfer of chemical contaminants to surface water is unlikely as the marine sediment is not contaminated.</p> <p>During dewatering, the transfer of sediment to surface water is unlikely as the sediment is mostly coarse sand.</p>	<p>The dredge spoil dewatering system would be designed to contain all sediment. No water would be discharged directly into the marine environment or into the adjoining Smith Creek.</p> <p>A water retention basin would be constructed to contain dredge spoil supernatant (the liquid that lies above the solid residue after centrifugation, precipitation, crystallisation or settling).</p>	Minor	Unlikely	Low
10	Construction of berth pocket and approaches	Dewatering (and return water losses) of potentially contaminated dredge spoil on land	Poor water quality (contaminants) at Yumbah's seawater intake	Major	Unlikely	High	<p>The analysis of marine sediments at Smith Bay revealed nothing of concern when compared with sediment quality guideline levels.</p> <p>Sampling confirmed that contamination levels are acceptable, so supernatant is not expected to be contaminated.</p>	<p>The dredge spoil dewatering system would be designed to contain all sediment. No water would be discharged directly into the marine environment or into the adjoining Smith Creek.</p> <p>A water retention basin would be constructed to contain dredge spoil supernatant (the liquid that lies above the solid residue after centrifugation, precipitation, crystallisation or settling).</p>	Minor	Unlikely	Low

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11	Pile driving	Underwater noise and vibration	Whales and dolphins in particular may be harmed by excessive underwater noise	Minor	Possible	Medium	<p>Without mitigation, the overall risk of adverse noise effects on the relevant marine species is low, except for a medium level of risk associated with impact piling potentially resulting in hearing damage in southern right whales.</p> <p>Damage to the hearing of marine fauna is considered to be unlikely as the normal behavioural response to loud noise would be to move away.</p> <p>Behavioural changes in response to noise, including vessel noise, are expected to be temporary and ecologically inconsequential as Smith Bay is not known to provide important feeding or breeding habitat for any species likely to be affected by construction noise.</p> <p>The study area is not near an aggregation area, so southern right whales are unlikely to be present during construction of the KI Seaport.</p>	<p>Using alternative lower impact piling methods.</p> <p>Implementing a soft-start procedure when piling begins.</p> <p>Controlling the construction programme to avoid noise exposure, including scheduling piling to occur outside the months when whales may be present in the area.</p> <p>Establishing safety and shut-down zones, and using marine mammal observers to monitor the presence of relevant species.</p>	Minor	Unlikely	Low
12	Movement of construction materials	Barging materials from the mainland, or trucking materials from other areas of the Island or the mainland	Introduction of pests (including vermin) and/or diseases	Major	Possible	High	<p>With the adoption of appropriate management measures, the movement of construction materials into Smith Bay is likely to result in a long-term negligible risk to the Island's biosecurity.</p>	<p>A detailed marine pest management plan would be produced in consultation with DAWR, SARDI, Biosecurity SA and the Biosecurity Advisory Committee of the Kangaroo Island Natural Resources Management Board.</p> <p>Standard vehicle hygiene measures will be implemented to manage translocation of pest plants and pathogens.</p>	Moderate	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
13	Movement of construction materials	Barging materials from the mainland	Increase in marine traffic	Minor	Unlikely	Low	The marine traffic volumes during construction are expected to be low, with no significant impact to existing vessel traffic. The exception is some minor inconvenience caused through the establishment of restricted access areas in the immediate vicinity of the construction shipping movements. These restrictions would be temporary and relatively infrequent in nature and the overall potential for marine vessel impacts is assessed as low.	A Marine Activity Zone (MAZ) would be prescribed for the construction period. The details of the zone would be provided to the DPTI, and KIPT would issue a Notice to Mariners advising other users of works that may affect the safe navigation of vessels in the vicinity.	Negligible	Unlikely	Low
14	Movement of construction materials	Road transport of construction materials from the mainland	Increase in road traffic	Negligible	Possible	Low	The proposed construction methodology and transport strategy aims to minimise the need to move material by road on Kangaroo Island, with bulky materials moved preferentially by barge directly to Smith Bay. Any materials that are moved to site by road would be transported using general access vehicles and the number of movements is not expected to generate any material impacts.	A construction traffic management plan would be implemented.	Negligible	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
15	Movement of construction materials	Road transport of construction materials from within Kangaroo Island	Increase in road traffic	Negligible	Possible	Low	The proposed construction methodology and transport strategy aims to minimise the need to move material by road on Kangaroo Island, with bulky materials moved preferentially by barge directly to Smith Bay. Any materials that are moved to site by road would be transported using general access vehicles and the number of movements is not expected to generate any material impacts.	A construction traffic management plan would be implemented.	Negligible	Unlikely	Low
16	Causeway construction	Silt plumes	Loss of seagrass and other benthic due to light reduction and smothering	Minor	Possible	Medium	Sediment plumes generated during causeway construction are likely to be much less significant than those generated during dredging. Water quality effects associated with causeway construction are likely to be confined to a 'zone of influence' (i.e. extent of detectable plumes, but no predicted ecological impact) extending approximately 1 km east and west of the causeway.	The impact of plumes due to causeway construction would be minimised by minimising the fines content of material used in the causeway core construction, and minimising the length of exposed causeway core before placing the geotextile fabric and rock armour.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
17	Causeway construction	Interruption of coastal processes	Interruption of movement of seawater, sand and seagrass wrack (shed leaf material) along the coast; potential pooling of seawater and temperature effects	Minor	Possible	Medium	<p>The rocky nature of the nearshore coastal environment at Smith Bay is likely to result in very little net transport of sediment along the coast. The proposed causeway is therefore unlikely to interrupt active littoral zone sediment transport within Smith Bay, but if accretion of sediment were to occur it could be managed.</p> <p>Drift seagrass and macroalgae (wrack) may sometimes accumulate against the causeway in response to prevailing winds and currents, but is likely to disperse naturally. The situation would be monitored and managed if and when required.</p>	<p>In the event of shoreline accretion of sediment occurring against the causeway, it may be necessary to occasionally mechanically transport the accumulated sediment to the other side of the causeway using an excavator and dump truck.</p> <p>Should the accumulation of wrack become excessive, it may occasionally require removal and relocation. Potential management measures, should they be required, would be determined in consultation with DEW and the EPA. As with sediment, this may include mechanically transporting the accumulated wrack to the other side of the causeway using an excavator and dump truck.</p>	Minor	Unlikely	Low



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18	Causeway construction	Silt plumes	Poor water quality (for abalone health) at Yumbah's seawater intake	Major	Possible	High	<p>Water quality effects associated with causeway construction are likely to be confined to a 'zone of influence' (i.e. extent of detectable plumes, but no predicted ecological impact) extending approximately 1 km east and west of the causeway.</p> <p>The median and 95th percentile TSS concentrations at the Yumbah seawater intakes did not exceed 0.5 mg/L and 1 mg/L, respectively.</p> <p>Sediment plumes associated with flood flows from Smith Creek would be directed further offshore by the causeway, resulting in a significant reduction in TSS in the nearshore zone to the east of the causeway, including at the Yumbah seawater intakes.</p>	The impact of plumes due to causeway construction would be minimised by minimising the fines content of material used in the causeway core construction, and minimising the length of exposed causeway core before placing the geotextile fabric and armour rock.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
19	Causeway construction	Use of potentially contaminated dredge spoil to construct causeway	Impacts on adjacent marine communities (exceed marine disposal guidelines for protection of marine communities)	Moderate	Unlikely	Medium	The results of sediment sampling (COOE 2017) suggest that the dredge spoil would likely be suitable for use on land and as causeway fill, because the sediment was found to be relatively pristine, with no synthetic or natural pollutants, and consists mostly of coarse white and grey sand. Sampling confirmed that contamination levels are acceptable, so supernatant is not expected to be contaminated.	Additional sediment sampling and analysis as part of dredge spoil management would provide validation that dredge spoil meets appropriate waste fill classification (SA EPA Waste Fill criteria) and that it is suitable for use onsite.  The dredge spoil dewatering system would be designed to contain all sediment. No water would be discharged directly into the marine environment or into the adjoining Smith Creek (i.e. prior to treatment).  A water retention basin would be constructed to contain dredge spoil supernatant (the liquid that lies above the solid residue after settling).	Minor	Unlikely	Low
20	Causeway construction	Use of potentially contaminated dredge spoil to construct causeway	Poor water quality (contaminants) at Yumbah's seawater intake	Major	Unlikely	High	The results of sediment sampling (COOE 2017) suggest that the dredge spoil would likely be suitable for use on land and as causeway fill, because the sediment was found to be relatively pristine, with no synthetic or natural pollutants, and consists mostly of coarse white and grey sand. Sampling confirmed that contamination levels are acceptable, so supernatant is not expected to be contaminated.	The dredge spoil dewatering system would be designed to contain all sediment. No water would be discharged directly into the marine environment or into the adjoining Smith Creek.  A water retention basin would be constructed to contain dredge spoil supernatant (the liquid that lies above the solid residue after settling).	Negligible	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
21	Onshore construction activities	Site clearance	Loss of remnant native vegetation Loss of habitat Loss of foreshore values Disturbance of native fauna	Minor	Certain	Medium	<p>No nationally or state-listed flora species are known to inhabit the study area, so no listed threatened species would be affected by vegetation clearance.</p> <p>No nationally or state-listed threatened ecological communities have been recorded within the area, so no listed threatened ecological communities would be affected by vegetation clearance.</p> <p>No more than 2.93 ha of native vegetation in moderate to very poor condition would be cleared.</p>	<p>Implementation of appropriate vegetation clearance offsets that result in a significant environmental benefit.</p> <p>Approved clearing footprint will be clearly demarcated to prevent off-site disturbance.</p> <p>Ensure that ground disturbance and vegetation clearing are limited to the approved clearing footprint.</p> <p>If native fauna noted in pre-construction site inspection, an authorised professional with appropriate permits, would be engaged to determine best management option, which may be relocation.</p>	Minor	Unlikely	Low
22	Onshore construction activities	Site clearance	Impacts on Aboriginal and non-Aboriginal heritage items	Moderate	Possible	Medium	<p>There are no listed heritage places (non-Aboriginal) in the study area.</p> <p>No Aboriginal heritage sites have been recorded within the study area.</p>	The Heritage Management Plan, which includes an induction procedure and a site discovery protocol, outlined in Section 24.5.4, would detail the action required if a non-Aboriginal or Aboriginal artefact of potential heritage significance were discovered.	Minor	Unlikely	Low
23	Onshore construction activities	Excavation	Impacts on Aboriginal heritage items	Moderate	Possible	Medium	No Aboriginal heritage sites have been recorded within the study area.	A Heritage Management Plan which includes an induction procedure and a site discovery protocol, outlined in Section 24.5.4, for construction activities would be developed and implemented. An archaeologist would monitor early site works to check for indicators of potential heritage sites, and Aboriginal site monitors may also be present.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
24	Onshore construction activities	Excavation	Exposure and inappropriate disposal of contaminated soil (such that contaminated soil guidelines are breached)	Moderate	Possible	Medium	No site contamination or CASS has been identified in the study area, so the movement and reworking of soils as part of site development would not require special management, treatment or monitoring.	Contingency plans to prevent environmental impacts would be developed in the event that contamination or CASS is discovered during construction activities, such as deep excavation works or pile driving.	Minor	Unlikely	Low
25	Onshore construction activities	Silt laden run-off entering Smith Bay	Loss of seagrass and other benthic communities due to light reduction and smothering	Moderate	Possible	Medium	The development would be likely to increase localised stormwater flow in some areas where the surface was less permeable. However, the site design would prevent stormwater spilling outside site boundaries.	<p>The development site would be designed to contain and manage all stormwater runoff during construction and operation – no stormwater would discharge to the sea of Smith Creek directly.</p> <p>A retention basin would be designed and constructed in the early stages of development to contain stormwater during subsequent works and operation.</p> <p>All runoff would be directed to this basin during construction and operation through engineered bunds and other structures.</p> <p>As the basin would be designed for long-term sustainability, it would have the capacity to be cleaned.</p> <p>The basin could allow infiltration of stormwater into groundwater if the runoff was from general site areas only (not timber or chemical storage areas).</p>	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
26	Onshore construction activities	Silt laden run-off entering Smith Bay	Poor water quality (for abalone health) at Yumbah's seawater intake	Major	Possible	High	The development would be likely to increase localised stormwater flow in some areas where the surface was less permeable. However, the site design would prevent stormwater spilling outside site boundaries.	The development site would be designed to contain and manage all stormwater runoff during construction and operation – no stormwater would discharge to the sea or Smith Creek directly.  A retention basin would be designed and constructed in the early stages of development to contain stormwater during subsequent works and operation.  All runoff would be directed to this basin during construction and operation through engineered bunds and other structures.	Minor	Unlikely	Low
27	Onshore construction activities	Noise	Temporary disturbance to neighbours and Yumbah's abalone	Minor	Unlikely	Low	Provided the majority of construction work is carried out during normal hours, and reasonable and practicable steps are taken to minimise noise, compliance with Division 1 of the Noise EPP can be readily achieved.  The noise associated with construction and operation of the KI Seaport, would be minor compared to the noise caused by Yumbah's existing operations.	KIPT would seek to minimise noise during the construction phase so amenity at the nearby receivers was not unduly impacted.  To mitigate the potential for the criterion to be exceeded and to minimise construction noise and vibration impacts, a number of controls may be implemented (as detailed in the CEMP).	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
28	Onshore construction activities	Noise	Disturbance to fauna, in particular any protected species on or within the vicinity of the site	Minor	Possible	Medium	<p>Numerous bird species may occasionally fly over the site or use the adjacent beach or remnant habitat in the area. However, the study area is not important or critical habitat for these species.</p> <p>Coastal raptors such as the white-bellied sea-eagle and osprey would fly over the site while foraging along the coast. Although both species are also known to nest mainly on cliffs along the north coast, the site itself does not have suitable nesting habitat.</p> <p>Although a small amount of beach habitat may be affected by the proposal, the site is not a known breeding site or flocking site (i.e. critical habitat for this species). There are many other beaches in the surrounding region that provide similar or better foraging habitat for the hooded plover (eastern).</p> <p>Echidnas are unlikely to have a large portion of their home range in the study area and construction is unlikely to affect their habitat availability in any meaningful way.</p>	<p>The general area would be inspected before construction begins. If required, authorised professional, with appropriate permits, would be engaged to determine the best possible management option, which may include relocation.</p> <p>If a hooded plover (eastern) nest was found during construction or operations a buffer zone – the extent of which would be determined in consultation with DEW – would be implemented during the breeding season.</p> <p>Measures would be taken to avoid, or at least minimise, road-kills of fauna – particularly the Kangaroo Island echidna on Freeoak Road.</p>	Minor	Unlikely	Low

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29	Onshore construction activities	Fugitive dust	Temporary nuisance to neighbours and health affects to Yumbah's abalone	Moderate	Possible	Medium	The predicted dust deposition rates at the abalone farm are predicted to be low (i.e. no greater than 0.2 to 0.5 g/m <sup>2</sup> /month over existing rates). Existing deposition is 2.0 g/m <sup>2</sup> /month from background and non-development-related sources.	A series of dust gauges would be established on the site boundaries to monitor dust deposition rates before and during construction. A number of these gauges would be established at locations considered to represent the background site air quality (i.e. not influenced by site operations). Over time, this would allow the operational contribution to local air quality changes and/or amenity impacts to be quantified. Additional mitigation measures to reduce fugitive dust would be implemented and are detailed in the CEMP.	Minor	Unlikely	Low
30	Onshore construction activities	Construction traffic	Impacts on echidnas that occasionally forage on site, causing a reduction to the Island's population	Moderate	Possible	Medium	Echidnas are known to forage for invertebrates in agricultural paddocks as well as native vegetation. It is unlikely the study site encompasses a large portion of the home range for the local Kangaroo Island echidnas, (which can be as large as 400 ha). However, the site could be used for foraging.	The general area would be inspected before construction begins. If echidnas were observed, an authorised professional, with appropriate permits, would be engaged to determine the best possible management option, which may include relocation.  Trenching guidelines would be set to ensure that uncovered trenches did not pose a risk to fauna.  Speed limits would be established in the study area and on Freeoak Road to reduce the risk of vehicle strikes.  Echidna signage would be installed at the access road into the site.  Waste and rubbish would be minimised and managed to avoid attracting echidnas and echidna predators.  Standard vehicle hygiene protocols would be followed to reduce the risk of introducing or spreading weeds and pathogens.	Negligible	Unlikely	Low

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31	Onshore construction activities	Light emissions	Temporary disturbance to abalone farm	Minor	Possible	Medium	Existing lighting from the onshore aquaculture facility provides a visual reference for the proposed lighting system at the KI Seaport, and for the residence south-east of the site. The KI Seaport's lights would likely blend into the existing lighting.	Minimise night work to only those activities that cannot be avoided (e.g. dredging operations). Placement of shades over lights to ensure that light spill out of site is minimized.	Minor	Unlikely	Low
32	Onshore construction activities	Introduction of noxious weeds	Further degradation of remnant vegetation communities and habitat at Smith Bay	Minor	Unlikely	Low	Given the cleared and degraded nature of the study area, the introduction or spread of weeds would be unlikely to cause impacts to native flora and fauna on the site. However, it could have the potential to spread offsite in the absence of appropriate controls on the movement of plants and plant material attached to machinery.	Vehicle hygiene measures would be implemented to minimise the risk of introducing and spreading weeds. Ongoing management of declared weeds within the on-shore area would occur as required. If an emergency pest plant was detected, the terrestrial biosecurity response procedure would be implemented, and the relevant authorities notified.	Minor	Unlikely	Low
33	Onshore construction activities	Potential up-grading of some timber transport roads (whilst construction underway)	Loss of remnant native vegetation (particularly Kangaroo Island Narrow-leaf Mallee) and fauna habitat	Major	Likely	High	Any proposal to clear vegetation along a proposed timber haul route would require a separate assessment of impacts and be subject to a separate approvals process.	Ecological surveys to map remnant vegetation and habitat along potential routes to inform route selection.	Minor	Unlikely	Low



Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
34	On-site fuel / chemical storage and use (on and offshore)	Fuel / chemical spillage	Soil contamination	Moderate	Possible	Medium	It is considered that the risk of contamination of the site soils by fuel or chemical spillages could be effectively managed using standard management measures and monitoring.	Preparation and implementation of a Fuel and Chemical Storage and Handling Plan. Placement of storage tanks and drums within spill trays or bunds. Lining of bunds with impervious material. Clean-up of any spills in a timely manner.	Minor	Unlikely	Low
35	On-site fuel / chemical storage and use	Fuel / chemical spillage	Marine water pollution	Disastrous	Possible	High	If not managed, contaminated stormwater and groundwater could affect the marine environment. Although dilution would reduce the impact to some degree, the immediate receiving environment could be affected.	Preparation and implementation of a Fuel and Chemical Storage and Handling Plan. Placement of storage tanks and drums within spill trays or bunds. Lining of bunds with impervious material. Clean-up of any spills in a timely manner.	Minor	Unlikely	Low
<b>Operations</b>											
36	Wharf operations	Noise	Disturbance to neighbouring abalone farm	Moderate	Possible	Medium	Operational noise levels at the KI Seaport are predicted to comply with the daytime noise criterion and slightly exceed the night-time criterion. With the application of some controls, operational noise emissions are predicted to comply with daytime and night-time criteria at all noise-sensitive receptor locations.	To mitigate the potential for the criterion to be exceeded and to minimise operational noise and vibration impacts, a number of controls may be implemented as detailed in the OEMP.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
37	Wharf operations	Noise	Disturbance to fauna, particularly any listed species nesting on or within close proximity to the site	Minor	Unlikely	Low	<p>Taking into account the limited number of fauna species currently using the site and the likelihood of these individuals relocating to nearby habitat during construction, the impact of additional noise on fauna is considered to be low.</p> <p>The closest known raptor nesting site (white-bellied sea-eagle, as shown on Figure 137) is approximately 4.1 km from the study area and would not need a buffer zone.</p>	If a hooded plover (eastern) nesting site was found during operation of the proposal, a buffer zone – the extent of which would be determined in consultation with the Department of Environment and Water (DEW) – would be implemented around the nest during the breeding season.	Negligible	Unlikely	Low
38	Wharf operations	Fugitive dust	Temporary nuisance to neighbours and health affects to Yumbah's abalone	Moderate	Possible	Medium	The predicted dust deposition rates at the abalone farm are predicted to be low (no greater than 0.2 to 0.5 g/m <sup>2</sup> /month over existing rates). Existing deposition is 2.0 g/m <sup>2</sup> /month from background and non-development-related sources.	<p>Potentially seal roads or use of sprinklers during dry conditions to control dust emissions.</p> <p>Planting of vegetation around perimeter of site to act as a wind break.</p> <p>Additional mitigation and management measures to further reduce dust generation during operations are detailed in the OEMP.</p>	Minor	Unlikely	Low
39	Wharf operations	Light emissions	Disturbance to land-based abalone farm/ neighbouring farms/nearby residents	Minor	Possible	Medium	Existing lighting from the nearby onshore aquaculture facility provides a visual reference for the proposed lighting system at KI Seaport and, for the residence south-east of the site. The KI Seaport's lights would likely blend into the existing lighting.	KIPT would design the lighting system to avoid or minimise the potential for the illumination from spill light being obtrusive (particularly where the light enters rooms that are normally dark, such as bedrooms), and the direct view of bright lights causing annoyance, distraction or even discomfort.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
40	Wharf operations	Presence of wharf, causeway, timber stockpiles and ships in Smith Bay	Lowering the visual amenity of Smith Bay	Minor	Possible	Medium	<p>The proposed KI Seaport would extend the existing relatively disturbed, industrial-like character of that part of Smith Bay.</p> <p>The reduction in landscape quality for the study area and Smith Bay is not considered significant. However, the changes to visual amenity would be noticeable and are considered significant for the local neighbours and distant residents who are on elevated land with views to Smith Bay.</p>	Mitigation measures which target design features and finishes, incorporate sympathetic design of elevated areas and use vegetation plantings to integrate the facility into the existing environment as much as is possible and practicable, would help soften and minimise visual impacts.	Minor	Unlikely	Low
41	Storage of logs and woodchips	Leachate generation	<p>Soil contamination</p> <p>Groundwater contamination</p> <p>Marine pollution and effects on marine communities</p> <p>Poor water quality at intake for abalone farm</p>	Major	Likely	High	<p>Leachate may be produced when an uncovered store of woodchips is exposed to precipitation and the water emerges as a contaminated liquid.</p> <p>If not managed properly, leachate could harm surface water via direct runoff or through stormwater transport and groundwater via infiltration through a permeable base. Given groundwater is within fractured rock aquifers and flowing towards Smith Bay, site groundwater is considered to be directly connected to the marine environment.</p>	<p>Stormwater runoff from the woodchip storage areas would be contained in those areas and not allowed to mix with general site runoff because it probably would be contaminated by leachate.</p> <p>Leachate could accumulate in sumps in these areas and would be allowed to evaporate (not infiltrate). A design based on likely stormwater volumes would determine acceptable strategies.</p> <p>A separate retention basin would be constructed to contain potentially leachate-affected stormwater, but would not allow infiltration. No leachate-affected water would be discharged to surface water.</p> <p>Depending on the likely volumes of contaminated water, various treatment options would be considered and take into account space limitations.</p>	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
42	On-site diesel storage and use	Diesel spillage	Soil contamination Marine pollution and effects on marine communities	Moderate	Possible	Medium	If not managed, contaminated stormwater and groundwater could affect the marine environment. Although dilution would reduce the impact to some degree, the immediate receiving environment could be affected.	Preparation and implementation of a Fuel and Chemical Storage and Handling Plan. Placement of containment bunds around storage tanks and drums. Lining of bunds with impervious material. Clean up any spills in a timely manner. Provision of spill kits on site.	Minor	Unlikely	Low
43	Shipping	Disposal of ballast water – international shipping	Introduction of marine pest species and diseases (particularly the abalone disease Abalone Viral Ganglioneuritis (AVG) and the abalone parasite <i>Perkinsus</i> )	Disastrous	Possible	High	With the adoption of appropriate management measures, the discharge of international shipping based contaminants to Smith Bay is likely to result in a long-term minor risk to marine biosecurity.	National, state and regional biosecurity management policies and strategies would be followed to minimise the potential for the introduction of marine pests and/or aquatic diseases . Incoming ships would be required to comply with the Commonwealth policies and guidelines relevant to the management of ballast water disposal. International vessels must meet the requirements of the <i>Biosecurity Act 2015</i> . A detailed marine pest management plan would be produced in consultation with DAWR, SARDI, Biosecurity SA and the Biosecurity Advisory Committee of the Kangaroo Island Natural Resources Management Board. Operational procedures would include a program of regular and strategic inspections and process for notification of actual or suspected pests or diseases for immediate action.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
44	Shipping	Ballast water disposal – domestic shipping	Introduction of marine pest species and diseases (particularly the abalone disease Abalone Viral Ganglioneuritis (AVG) and the abalone parasite <i>Perkinsus</i> )	Disastrous	Possible	High	With the adoption of appropriate management measures, the discharge of ballast water from domestic shipping to Smith Bay is likely to result in a long-term medium risk to marine biosecurity.	National, state and regional biosecurity management policies and strategies would be followed to minimise the potential for the introduction of marine pests and/or aquatic diseases  Incoming ships would be required to comply with the Commonwealth policies and guidelines relevant to the management of ballast water disposal.  Specific operating procedures would be developed on consultation with Biosecurity SA to reduce the risk of discharging unacceptable ballast water into Smith Bay.	Minor	Unlikely	Low
45	Shipping	Biofouling – international and domestic shipping	Introduction of marine pests and aquatic diseases	Disastrous	Possible	High	With the adoption of appropriate management measures, the biosecurity risk to Smith Bay from biofouling is likely to result in a long-term negligible risk to marine biosecurity.	Incoming ships (both domestic and international shipping) would be required to comply with the State Environment Protection (Water Quality) Policy 2015 relevant to the management of biofouling and pollution management.  No in-water or dry dock cleaning would be permitted at the KI Seaport.	Minor	Unlikely	Low
46	Shipping	Stowaways and vermin	Introduction of pest animals (vertebrate and invertebrate)	Disastrous	Possible	High	Smith Bay would not be a first port of entry (under the <i>Biosecurity Act 2015</i> ).	International vessels would arrive at a designated first port of entry prior to arrival at Smith Bay. However, vigilance would be required to detect any pest species that may arrive at Smith Bay.	Minor	Unlikely	Low
47	Shipping	Winnowing of sediments and generation of silt plumes	Seagrass decline due to reduction in light availability and smothering	Minor	Possible	Medium	Sediment plumes generated by propwash would have a negligible effect on seagrass and other benthic communities as they would be infrequent, of short duration, of relatively low intensity and of limited extent.	Unnecessary due to very low frequency of shipping movements and low level of impact.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
48	Shipping	Winnowing of sediments and generation of silt plumes	Poor water quality (for abalone health) at Yumbah's seawater intake	Moderate	Unlikely	Medium	<p>Effects on water quality from operational propwash are likely to be minor as the sediments on the sea floor at Smith Bay are relatively coarse and would therefore tend to settle rapidly to the sea floor after disturbance.</p> <p>The 100th percentile (maximum) modelling outputs for operational propwash show that local plumes in excess of 10 mg/L TSS would occur for short periods, but would be confined to the berth pocket and not extend to the Yumbah seawater intakes.</p>	Unnecessary due to very low frequency of shipping movements and low level of impact.	Minor	Unlikely	Low
49	Shipping	Vessel movements	Potential collisions with whales	Minor	Unlikely	Low	Modelling has shown there is a low probability of whale strikes (approximately one per 300 years) associated with vessels travelling to and from the KI Seaport along the southern Australian coastline.	Maintaining vigilance for whales during shipping operations and deviating course to avoid whales should it be required. No other management strategies are considered to be warranted or feasible.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
50	Transport of timber to Smith Bay	Dust	Impacts on roadside vegetation	Minor	Possible	Medium	No dust impacts to roadside vegetation were noted during the ecological survey of segments of the transport routes. However, this vegetation may have adapted in response to the existing dust levels. Therefore, it is possible that an increase in immediate road-side dust effects to vegetation may occur as a result of the use of heavy vehicles on the transport route. It is expected that these effects would be limited to the immediate vicinity of the road.	The adoption of a road management regime to maintain a sound road surface will assist in minimising the potential for dust generation on unsealed roads. It should also be noted that the areas that are most suitable for plantation forestry are those with relatively high rainfall and persistent soil moisture, so that dust-related problems in the forestry areas themselves are likely to be confined to the summer months.	Negligible	Likely	Low
51	Transport of timber to Smith Bay	Additional trucks using KI roads	Inconvenience / interactions between trucks and tourist and local traffic Disturbance to residences near haul roads	Major	Likely	High	Potential increases in traffic volumes of two-to-three times on minor unsealed roads. The traffic impact assessment has demonstrated that some impacts to nearby residents and other road users are likely. However, these are generally minor in nature and, where relevant, the proposed operations comply with appropriate standards and guidelines.	Project site (Smith Bay) chosen to minimise distance between plantations and wharf facilities. Mitigation and management measures are proposed aimed at reducing the total number of vehicle movements with the use of high productivity (i.e. large) vehicles which would be authorised to use a defined transport route. The recommended route has been chosen following extensive studies which were completed with the agreement and support of the Kangaroo Island Council. The recommended route would minimise the number of affected residents, minimise the potential for impacts to local ecology, and optimise the costs of road upgrades and ongoing maintenance.	Minor	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
52	Transport of timber to Smith Bay	Additional trucks using KI roads	Disturbance to fauna, particularly the Glossy Black Cockatoo (potential feeding and nesting habitat)	Moderate	Possible	Medium	The glossy black-cockatoo (Kangaroo Island) may occasionally fly over the study area or use the remnant habitat in the area. The cockatoo may fly over the area to access remnant patches of drooping sheoak ( <i>Allocasuarina verticillata</i> ) feeding habitat along the North Coast Road within 2 km of the site. The study area itself, however, is not an important or critical habitat for this species. Being highly mobile, they would relocate to alternative habitat that is abundant throughout the region.	Ecological surveys to map remnant vegetation and habitat along potential routes and inform route selection.  KIPT proposes to provide significant ongoing support to the glossy black-cockatoo recovery program on the Island.	Minor	Unlikely	Low
53	Transport of timber to Smith Bay	Additional trucks using KI roads	Road kills of native fauna (particularly echidnas)	Moderate	Possible	Medium	There is a risk that trucks transporting timber products will increase the number of echidna road kills.  Estimates (see Appendix K6) of potential annual echidna deaths as a result of KIPT haulage trucks range from six to 21 per annum (which equates to 0.1–0.4 per cent of the estimated total population of echidnas on the Island).	Driver education and awareness training would help manage this risk and continued monitoring of vehicle strikes would enable research to further clarify the nature of this risk.  The transport route would be inspected regularly for roadkill. Deceased echidnas would be collected and provided to the University of Adelaide for research purposes. This would also remove a food source for feral cats, which are a threat to echidnas.  Ecological surveys to map remnant vegetation and habitat along potential routes and inform route selection.  The loss of echidnas may be offset by supporting the feral cat control program on KI, which is expected to result in a net benefit to the echidna population.	Minor	Unlikely	Low



Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
54	Overall development	Greenhouse gas emissions	Carbon footprint of the development and contribution to global warming	Negligible	Unlikely	Low	Emissions as a result of the KI Seaport are expected to be no greater than 1700 tonnes of CO2-e annually, which represents a negligible change to current projections for South Australia and Australia, and is a small fraction of the CO2-e sequestered in KIPT plantation assets. As a result, no negative impacts as a result of a change in greenhouse gas emissions are predicted.	KIPT is committed to reducing its carbon footprint to as low as is reasonably achievable. To help achieve this goal, the following mitigation and management measures are proposed to be investigated during detailed design: <ul style="list-style-type: none"> <li>- minimising electricity consumption through the use of energy-efficient infrastructure such as low-friction conveyors, wood re-chippers, lighting and air-conditioning</li> <li>- investigating the installation of solar photovoltaic panels to supply electricity to site buildings and for site lighting, minimising the potential for downtime associated with power outages under peak load situations</li> <li>- maintaining regular maintenance schedules for site vehicles and timber transport trucks to ensure they remain compliant with relevant legislation and operate as efficiently as possible</li> <li>- seeking to use grid electricity wherever possible and increase the use of renewably-generated electricity, to reduce the reliance on diesel-powered on-site generation</li> <li>- use of the most efficient permissible haulage vehicle configuration</li> <li>- use of the most direct permissible haulage route.</li> </ul>	Negligible	Unlikely	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
55	Overall development	Climate change	Sea level rise potentially impacting coastal developments	Minor	Possible	Medium	Under a medium-emissions scenario, the predictions for Kangaroo Island are sea levels 33 cm higher by 2070, with a corresponding increase in sea surface temperatures of 1.2°C by 2090.	A number of design and management measures have been identified to minimise the potential impacts to KI Seaport infrastructure and operations as a result of climate change (see Chapter 19).	Negligible	Unlikely	Low
56	Overall development	Fire at Smith Bay	Timber stockpiles could catch fire should a bushfire, or other cause, occur in the area  Site activities (during construction and operation) could be an ignition source for fire	Major	Possible	Medium	The potential for fire at Smith Bay impacting the KI Seaport has been considered and an Emergency Response Management Plan and a Bushfire Hazard Management Plan have been developed for the site.	Fire management at the KI Seaport would focus on the prevention of fires and would include discussions with the South Australian fire authorities.  A firefighting water system would be established, consisting of a saltwater tank and pumping station for distribution across the site.  Appropriate firebreaks will be maintained where necessary for the protection of property and vegetation onsite.  Implementation of a bushfire hazard management plan, developed in liaison with CFS, for bushfire response at KI Seaport.	Minor	Unlikely	Low
57	Overall development	Employment (direct and indirect)	Pressure to services and business due to increased population on Kangaroo Island	Moderate	Possible	High	Assuming an average household size of 2.4 people in South Australia, the Island's population would increase by a conservative estimate of approximately 330 people.	Liaison with relevant government agencies to share information on employment prospects.  Ongoing engagement with the community and stakeholders on employment opportunities.	Negligible	Possible	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
58	Overall development	Employment (direct and indirect)	Increased competition and for skilled workforce and training	Moderate	Possible	High	<p>The development is expected to create 234 full-time equivalent (FTE) jobs over the first five complete years of operation, and the new workforce would introduce a wide variety of new occupations on Kangaroo Island, with varying requirements for training, qualifications, skills and experience.</p> <p>Many of the jobs directly created would require a specific set of skills not currently available on the Island and this reinforces the likelihood that there would be a net migration of skilled workers to the Island.</p>	<p>Liaison with relevant government agencies to share information on employment prospects.</p> <p>Ongoing engagement with the community and stakeholders on employment opportunities.</p>	Negligible	Possible	Low
59	Overall development	Employment (direct and indirect)	Displacement of other employment	Moderal	Possible	High	<p>Given the current low unemployment and high labour force participation rates, and the need for specific skills and experience not currently available, it is estimated that at least 60 per cent of the total (140 FTE jobs) would be taken by people currently living off the Island.</p>	<p>Liaison with relevant government agencies to share information on employment prospects.</p> <p>Ongoing engagement with the community and stakeholders on employment opportunities.</p>	Negligible	Possible	Low
60	Overall development	Demand for services (commercial, technical)	Availability of services vs needs	Moderate	Possible	High		<p>Liaison with relevant government agencies to share information on service needs.</p> <p>Ongoing engagement with the community and stakeholders on service needs.</p>	Negligible	Possible	Low

Reference	Activity	Hazard (Environmental aspect)	Potential (pre-EIS) impact	Consequence	Likelihood	Inherent (or potential) risk level	EIS findings	Management measures	Consequence	Likelihood	Residual (or remaining) risk level
61	Overall development	Demand for housing	Effects on housing	Moderate	Possible	High	It is anticipated that in the medium to longer-term (i.e. beyond 24 months) new houses would be required as an outcome of the project's operations.	Liaison with relevant government agencies to share information on employment prospects. Ongoing engagement with the community and stakeholders on employment opportunities.	Negligible	Possible	Low
62	Overall development	Demand for services (community, including health and education)	Availability of health, education and other community services	Moderate	Possible	High	The forecast population growth is likely to generate new demand across the full range of community and social services.	Liaison with relevant government agencies to share information on workforce needs. Ongoing engagement with the community and stakeholders on workforce needs.	Negligible	Possible	Low
63	Overall development	Smith Bay's contribution to Kangaroo Island's economy	Effects on Yumbah Aquaculture, tourism and any other operations reliant on Smith Bay and the marine waters of Smith Bay	Major	Possible	High	The KI Seaport would involve a total capital investment of around \$41.2 million over a three-year period. It would add approximately \$42 million per annum to the Kangaroo Island GRP in the first five years of operations, generate 234 ongoing full-time jobs (163 directly and a further 71 from the flow-on effects) and generate approximately \$16 million in additional annual household income on Kangaroo Island.	Liaison with relevant government agencies to share information on KIPT's economic contributions. Ongoing engagement with the community and stakeholders on KIPT's economic contributions.	Negligible	Possible	Low

Note: Items considered risk assessment for activities associated with the KI Seaport and not assessed or approved by this EIS are in grey text.

0 – Low	> Low risks will be maintained under review but it is expected that existing controls will be sufficient and no further action will be required to treat them unless they become more severe.
5 – Medium	> Medium risks can be expected to form part of routine operations but they will be explicitly assigned to relevant managers for action, maintained under review and reported upon at senior management level.
10 – High	> High risks demand attention at the most senior management level to ensure that they are mitigated and controlled as rapidly as possible. They are reported on at the executive level.
17 – Extreme	> Extreme risks demand urgent attention at the most senior (including executive) level and must be immediately controlled. Operations must cease if the risk cannot be controlled.

