23.0 Residual Environmental Risk Analysis

This chapter presents the results of the residual environmental risk analysis for the proposed modification. It should be noted that this chapter does not assess the residual risk of the overall Outer Harbour Development. Rather, it assesses the risk posed by modified elements of the development prior to, and after mitigation.

23.1 Approach

The residual environmental risk for the proposed modification was assessed qualitatively on the basis of the significance of the environmental impacts and the ability to confidently manage and mitigate those impacts to minimise harm to the environment.

The significance of the environmental impacts prior to detailed environmental assessment and mitigation was determined based on the issues analysis undertaken in **Chapter 8.0**. This identified the environmental risks associated with modified elements of the development, prior to conducting the detailed environmental assessment and prior to developing mitigation and management measures for the proposed modification.

This residual risk assessment targets specific impacts resulting from the modification that are related to the broader categories identified in the issues analysis (for details refer to **Chapter 9.0** through **Chapter 21.0**). These include:

- Increased throughput of bulk commodities with associated growth in train movements.
- Construction of additional rail and road infrastructure to accommodate increased train movements.
- Growth in shipping movements and accommodation of larger vessels (including additional dredging and reduction of reclamation footprint).
- An enlarged operational land area for Stage 1 from 9 hectares to 22 hectares to accommodate increase in bulk volumes.
- Construction of shed facilities for product storage, rather than open stockpiles, and enclosed conveyors.
- Change in alignment of Salty Creek.
- Increase in operational workforce.
- Imported fill sources.

The residual environmental risks post-detailed environmental assessment and mitigation were determined based on the ability to manage the environmental impacts through the use of mitigation and management measures (refer to the summary of mitigation and management measures in **Chapter 24.0** and existing conditions of approval (refer to the Concept Plan and Major Project Approval Conditions in **Appendix C** and **Appendix D** respectively).

23.2 Residual Environmental Risk Analysis Results

Table 23-1 presents the results of the residual environmental risk analysis of the modification. The residual environmental risk analysis indicates that the proposed modification presents an overall negligible low to moderate risk in relation to each of the identified environmental issues, provided that the recommended mitigation and management measures are implemented.

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Table 23-1 Residual environmental risk analysis

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
1. Increased throughput of bulk commodities with associated growth in train movements.			
Noise and Vibration			
Changes to the operational impacts on nearby sensitive receivers as a result of increased bulk rail movements, expansion of the Stage 1 area, and activities associated with the additional bulk throughput.	High	The use of enclosed sheds and conveyor systems as part of the proposed modification has minimised noise contributions from this component of the Outer Harbour Development. Additional mitigation for the Major Project (Stage 1) includes acoustic barrier in the South Yard, enclosure of the southern break bulk area, the selection of acoustically considerate plant (where possible) and use of noise reducing measures such as silencers, shrouds and enclosures. Exceedances are predicted at some sensitive receivers for the Major Project (Stage 1) and at the ultimate completion of the Concept Plan. Further investigations and assessments would be undertaken at Stage 2 and Stage 3 of the Concept Plan when seeking approval. There would be a greater understanding of the activities associated with those stages and feasibility of suggested mitigation strategies at that point in time.	Moderate
Air Quality			
Impact on air quality due to increased transport and handling activities within the site associated with the Outer Harbour Development.	High	The use of enclosed sheds and conveyor systems as part of the proposed modification has minimised air quality contributions from this component of the Outer Harbour Development. The Air Quality Environmental Management Plan requirements under the Minister's approvals and the Statement of Commitments provide a framework to minimise the potential for predicted exceedances of particulates and NO_2. Further, the need to investigate the feasibility for Shore power supply for vessels would be undertaken, as per the Concept Plan Approval Condition 2.26. The silt loading factor for the internal roads would be monitored, and applied in future assessments for Stage 2 and Stage 3.	Moderate

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Road Traffic and Transport			
Impacts to road movements along Old Port Road as a result of increased rail movements at the railway level crossing.	Moderate	A preferred treatment option(s) for Old Port Road rail level crossing would be selected in consultation with RMS and Transport for NSW. This would follow consultation with directly affected businesses. The selected option (be it a temporary or permanent option) would be implemented and operational prior to the commencement of rail cargo movements associated with Stage 1 of the Outer Harbour Development.	Moderate
Surface Water Quality and Hydrology			
Impact on water quality due to polluted surface water run-off as a result of increased volumes of bulk materials being transferred from ship to terminal to rail.	Moderate	During operation there would be increased volumes of bulk materials being transferred from rail to terminal and from terminal to ship. However the materials would be handled in a contained manner using enclosed conveyors and storage sheds to minimise potential for materials to enter surrounding surface waters and the Outer Harbour. Appropriate storm water management infrastructure for the terminal areas would also treat stormwater before discharge to the Outer Harbour.	Low
Hazard and Risk			
Hazards associated with storing additional coal on the multi-purpose terminal and associated potential for combustion.	Moderate	Conduct Hazard Audits of each project associated with the Concept Plan consistent with *HIPAP No.5, Hazard Audit Guidelines* (Concept Plan Approval Condition 2.28). Prepare a Fire Safety Study consistent with *HIAPAP No. 2, Fire Safety Study Guidelines* and the NSW Government's *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems* (Major Project Approval Condition B31). Prepare a Final Hazard Analysis in accordance with HIPAP No. 6 (Major Project Approval Condition B31) prior to commencement of construction of the Major Project. PKOPL would consider designs options to prevent the accumulation of coal dust within conveyor and handling systems, as well as mitigation and management responses (such as cleaning and the working of stockpiles) to minimise the risk associated with the accumulation of coal dust within these structures.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Terrestrial Ecology			
Impact of modification on potential for fauna to forage and roost within the development area.	Low	The development area is unlikely to provide significant foraging or roosting habitat for fauna. However, rail infrastructure upgrade works in the South Yard may directly or indirectly impact potential GGBF habitat in this area. Lighting for the portion of the dry bulk/multi-purpose terminal that would be operational as part of Stage 1 and other operational areas, including the new road link and rail infrastructure, would be carefully selected to minimise light spill on surrounding areas outside the terminal boundaries and minimise visual impact when viewed from adjacent premises. Prior to any works which involve the clearing of vegetation and debris within the Major Project (Stage 1) area, a suitable and targeted survey would be undertaken by an ecologist in order to allow for the detection of any GGBF. If GGBFs are detected, no clearing works would commence until GGBF response provisions have been implemented. A Green and Golden Bell Frog Master Plan would be prepared to provide a strategic framework on how GGBFs and their habitat would be managed within the harbour area, and to inform the development of individual GGBF management plans for each project associated with the Concept Plan approval (Concept Plan Approval Condition 2.13).	Low
Landscape and Visual Amenity			
Visual impact from increase in operational train movements.	Low	Visual impacts of additional rail operations would be consistent with existing operations in the rail corridor. As such, no mitigation measures are deemed necessary.	Low
Visual impact of storage sheds on multi-purpose terminal.	Low	Visual impacts of storage sheds would be consistent with existing Outer Harbour landscape, surrounding industrial context and would internalise operational activities that would have been previously visible. A Design and Landscape Management Plan would be prepared to outline measures to minimise the visual impacts of the project and to consider the visual compatibility of the project with the surrounding broader land uses. The use of reflective building elements would be minimised, and the use of building materials and treatments that visually complement the surrounding development would be used.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Waste			
Increase in wastewater from washing down conveyors.	Low	Additional wastewater would be managed as per mitigation measures outlined in the previous Environmental Assessment. A Stormwater Management Plan (STMP) would be prepared as part of the OEMP prior to the commencement of operation of activities. An Integrated Water Cycle Management Plan would be prepared and implemented for the project to facilitate WSUD measures to ensure that stormwater systems are designed and built to minimise pollutant discharges into receiving waterways (Conditions B13 and B14 of Project Approval).	Low
2. Construction of additional rail and road infrastructure to accommodate increased train movements.			
Air Quality			
Impact of additional emissions associated with the construction of additional road and rail infrastructure, namely dust through the disturbance of soils.	Moderate	Condition C1 of the Major Project Approval requires PKOPL to implement a range of mitigation measures to prevent visible emissions from the construction sites. These would be documented in a CEMP.	Low
Noise and Vibration			
Impact on the nearby residential receivers from additional noisy activities in the South Yard associated with the construction of the proposed rail infrastructure upgrades.	Moderate	A CNVMP would be implemented which would identify measures to reduce emissions where reasonable and feasible, such as through the selection of equipment and the use of appropriately constructed temporary noise barriers to mitigate the construction noise from the South Yard works. Work would be temporary and limited to standard construction hours.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Soils and Groundwater			
Potential for mobilisation of contaminated soil or ASS due to rail and road infrastructure modifications.	Moderate	Based on the extensive previous soil investigations conducted to date across the area of the proposed modification, soil contamination issues, with the exception of asbestos, are not likely to require remediation or management assuming continued commercial/industrial land use. It is recommended that disturbance of fill materials be controlled as part of the CEMP by: - the Construction Soil and Water Quality Management Plan which is required by the Project Approval for Stage 1 (refer Condition C37c) and which would include an ASSMP that would ensure any construction activities in identified areas of ASS risk are undertaken in accordance with the *Acid Sulfate Soil Manual* (ASSMAC) (Major Project Approval Condition C21). - the Asbestos Management Plan (AMP) for the management of asbestos impacted soils. The Soil and Water Quality Management Plan would establish a suitable management framework for excavation works, which would include identifying contamination impacts based on visual observations and through detailed soil sample analysis, if required. The plan would be designed with reference to the design and construction criteria in the *Managing Urban Stormwater: Soils and Construction* guidelines (Landcom, 2004) (Major Project Approval Conditions B9, C18 and C19). This assessment has identified that there are some limited areas associated with the modification that have not been adequately characterised, particularly the train bulk unloading facility and some parts of the rail loop and sidings. Therefore it is recommended that soil and groundwater investigations be conducted in these areas prior to conducting excavation activities. There is already a condition within the existing Project Approval for Stage 1 which recognises that there may be circumstances that warrant undertaking additional Phase 2 contamination investigations prior to commencement of land based excavation activities (refer Condition B22).	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Potential for interception of groundwater that may be contaminated, due to excavation for rail infrastructure, and potential impacts to human health and receiving environments.	Moderate	Minimising impacts relating to groundwater containing heavy metals contamination would be managed in the CEMP and through appropriate PPE. Groundwater with elevated concentrations of heavy metals may be encountered during construction activities, particularly during the construction of the proposed train bulk unloader facility where the greatest subsurface excavation (up to 16 m depth) would be required. Further soil and groundwater investigations would be undertaken prior to determining a final design for the unloader facilities and before conducting any excavation work which has the potential to intercept groundwater. Potential to encounter contaminated groundwater would be managed in the context of the Soil and Water Quality Management Plan to be prepared for the site as required by the Project Approval for Stage 1 (refer Condition C37c)). Continued implementation of a groundwater monitoring program to the satisfaction of DPI (NSW Office of Water), to be implemented during construction and operation (Condition B11 of the Project Approval). PKOPL would also ensure that direct contact with groundwater is managed and minimised to reduce risks in relation to intrusive ground maintenance and construction workers (Major Project Approval Condition B12).	Low-Moderate
Potential for construction activities to impact upon groundwater quality due to leaching of contaminants in the instance of fuel spills and groundwater potentially being exposed during modification construction works.	Moderate	A SWMP would be included in the CEMP and would include a contingency plan for a major fuel or other chemical spill (Major Project Approval Condition C37(c)).	Low
Qualitative Human Health and Ecological Risk			
Impact to human health due to potential interception of contaminated groundwater, due to excavation for rail infrastructure.	Moderate	A Phase 2 investigation of soil and groundwater would be undertaken at excavation locations, prior to construction. In the instance that contaminants are found at levels that result in a risk to human health, appropriate mitigation measures would be developed and implemented through an Occupational Health and Safety Plan and a SMP for the site. Measures would likely include appropriate PPE and hygiene procedures.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Landscape and Visual Amenity			
Construction impacts to visual amenity due to additional road and rail infrastructure.	Low	Visual impacts related to construction of the modification would not be significantly different to those originally assessed in the previous Environmental Assessment. Impacts would remain minor and temporary in nature. The following mitigation measures would assist in minimising impacts resulting from the modification: - Construction activities and lighting during night works would be managed to minimise the period of disturbance and light spill, respectively. - Lighting for terminals, storage areas and plant/machinery would be carefully selected to minimise light spill during operations.	Low
Surface Water Quality and Hydrology			
Impact on water quality due to mobilisation of sediments and contaminants through surface water runoff as a result of additional construction works for road and rail infrastructure.	Moderate	Existing mitigation measures would be appropriate for mitigation of additional water quality impacts. A SWMP as part of the CEMP, would be prepared and implemented, to manage hydrology and water quality impacts associated with construction of Stage 1 (Major Project Approval Condition C37). The SWMP would include details on how land-based soil erosion, discharge of sediment or water pollutants from the site, contaminated soil and appropriate management methods, as well as a contingency plan for the discovery of contaminated material, major fuel or other chemical spill.	Low
Heritage			
Impacts on Indigenous and historic heritage as a result of additional rail and road infrastructure proposed as part of the modification.	Low	The rail infrastructure upgrades required as part of the proposed modification would not have any impact on known items of heritage significance. Should unidentified European heritage items and/or archaeological relics be encountered during construction, works in the immediate vicinity would cease, the Heritage Branch (OEH) would be contacted immediately and a suitably qualified heritage consultant would be contacted to assess the discovery and provide advice on mitigation and recording.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Terrestrial Ecology			
Impacts to terrestrial ecology as a result of additional rail and road infrastructure for the proposed modification, including direct and indirect impacts.	Moderate	A Green and Golden Bell Frog Management Plan would be prepared and included in the CEMP to provide a strategic framework on how GGBFs and their habitat would be managed within the harbour area, and to inform the development of individual Green and Golden Bell Frog Management Plan for each project associated with the Concept Plan approval (Concept Plan Approval Condition 2.13). A SWMP would be prepared and included in the CEMP to manage potential indirect impacts associated with construction.	Low
Hazard and Risk			
Impact of potential ship collisions due to larger and increased number of vessels visiting the harbour.	Low	There would be increased shipping movements resulting from the modification. Safeguards currently used at the Port, maintained by the harbour master, would still be appropriate for managing shipping within the Outer Harbour.	Low
Waste			
Increase in excavated material and construction materials from construction of additional rail, road and terminal infrastructure.	Low	If excavated material is of suitable quality, it would be used in the reclamation area. All waste would be collected and disposed of by a licensed contractor to an appropriate facility for recycling or disposal. Waste Management Plans would be prepared as part of the CEMP and OEMP and would emphasise potential for waste minimisation, recovery and reuse of waste including specific requirements for each of the waste types identified (Major Project Approval Conditions C36 and D6).	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
3. Growth in shipping movements and accommodation of larger vessels (including additional dredging and reduction of reclamation footprint)			
Noise and Vibration			
Contributions towards the total noise impact of the Major Project and the Concept Plan as a result of additional ship movements.	Moderate	Mitigation of noise contributions from vessels, when at berth, is difficult as PKOPL does not have control of the equipment associated with vessels that would use the port. An investigation of the feasibility of providing shore-based power would be undertaken, which would reduce contributions from ship APUs. As discussed earlier, alternative measures have been identified which target noise contributions within the Outer Harbour Development that can be controlled by PKOPL (such as the enclosure or shrouding of equipment).	Moderate
Air Quality			
Impacts to air quality due to increase in the volume of dredging material and the associated odour.	Moderate	Odour monitoring would be conducted, as per the existing conditions of approval and the DREMP. During dredging activities, odour would be monitored using field screening. The results of olfactory determination of the degree and extent of odour shall be recorded together with a description of concurrent operational activities (Major Project Approval Condition C2).	Low
Landscape and Visual Amenity			
Impacts to visual amenity of the Port for residential receivers due to increase in the size and number of the vessels in the Outer Harbour.	Low	The increase in shipping traffic and size of vessels at the Outer Harbour Development would be noticeable but consistent with the active port operations at Port Kembla and its industrial context. As such, no specific mitigation for this impact is deemed necessary.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Surface Water Quality and Hydrology / Harbour Sediment Quality			
Impact of additional dredging on disturbance of concentrations of contaminated sediment, and mobilisation of PASS.	Moderate	Additional dredged material would contain similar contaminants and concentrations of contaminants as surrounding sediment. As such, existing mitigation measures and conditions are sufficient to manage contamination-related risks of additional dredging. The DREMP would include use of silt curtains to create a water column within which all dredging would be confined, procedures for ongoing turbidity and turbid plume monitoring, secured spoil containment bunds, and auditing of these bunds and the emplacement method. In addition, the use of mechanical dredging during Stage 1 to minimise turbidity, would seek to ensure minimal impacts beyond the water column. An ASSMP would be prepared prior to the dredging and reclamation works. Measures for the appropriate management of Acid Sulfate Soils would be carried out in line with the *Acid Sulfate Soil Manual* (ASSMAC).	Low
Generation of turbid plumes from mobilisation of sediment due to additional dredging.	Moderate	Existing mitigation measures would adequately manage the increase in risk associated with the generation of turbid plumes as a result of the modified dredging activities. Turbidity control measures would be designed, installed and maintained outside and surrounding all dredging, reclamation and emplacement works until turbidity in the water column with the measures has fallen below relevant turbidity limits. An inspection program would be implemented to ensure all turbidity control measures are maintained. All dredging, reclamation and emplacement works would ensure turbidity levels stay within relevant criteria in the WQMP (Major Project Approval Conditions C22 to C24).	Moderate
Increased potential for disturbance of dinoflagellate cysts leading to potential for toxic blooms as a result of mobilisation of additional contaminated material in modified dredging area.	Moderate	Potential for toxic blooms as a result of mobilising additional contaminated material would be mitigated through existing measures. This includes installing silt curtains to trap any suspended material within the area of disturbance. Water quality and ecological monitoring requirements would be contained within the DREMP (Major Project Approval Conditions C25 to 29 and C35). Avoiding dredging during conditions known to be associated with bloom formation in other similar environments would form part of monitoring, inspections and contingency actions for risk factors such as algal blooms (Major Project Approval Condition C35 (ix)).	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Soils and Groundwater			
Impact on groundwater flow regime as a result of the minor modification to the reclamation footprint.	Low	The minor alterations to the reclamation footprint as a result of this modification would not change the impact to the groundwater flow regime presented in the previous Environmental Assessment. PKOPL would verify that the design of the berths and reclamation, and the characteristics of the associated reclamation material, would not significantly alter groundwater flows and that a similar hydraulic conductivity to the existing Outer Harbour shorelines would be maintained (Major Project Approval Condition B10).	Low
Aquatic Ecology			
Impact on hard substrate community as a result of modified reclamation design.	Low	Hard substrate surfaces of the project would incorporate marine habitat friendly structures and aquatic habitat improvement features taking into consideration *Environmentally Friendly Seawalls: A Guide to Improving the Environmental Values of Seawalls and Seawall-lined Foreshores in Estuaries* (Sydney Metro CMA and DECC, 2009) (Major Project Approval B24). The modification would not change impacts related to the removal of hard substrate community in the Outer Harbour. As the length of hard substrate to be created along revetments of the reclamation area would not change, there would be no change in impact related to the creation of hard substrate. As such, no additional mitigation measures are considered necessary.	Low
Disturbance to aquatic fauna as a result of increased and larger vessels visiting the Outer Harbour.	Low	The modification is not likely to significantly increase the impact to aquatic fauna that currently inhabit an operational port environment. As such, no specific mitigation for this impact is deemed necessary.	Low
Impact on marine fauna, as a result of minor additional blasting from a change in the reclamation footprint in the south of the basin between the multi-purpose and container terminals.	Moderate	The minor increase in blasting would not cause a significant increase in impact as existing mitigation measures are deemed adequate for the control of additional blasting. Prior to any underwater blasting, pressure thresholds to prevent physical trauma to fish and marine mammals would be determined, and identification of appropriate distances between marine mammals and the project during blasting activities would occur. These thresholds and distance would be incorporated into the DREMP required under Major Project approval Condition C35 (Major Project Approval Condition C32).	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Impacts to sediment infauna due to additional dredging and reduction in reclamation footprint.	Moderate	The reduction in the reclamation footprint, proposed as part of the modification, would see a decrease in the smothering of sediment infauna and a lower loss of permanent infauna habitat, which would be beneficial for sediment infauna overall. Temporary loss would occur across a slightly larger area with the increased extent of dredging. However, it is likely that this would recover within a period of months. As such, no specific mitigation for this impact is deemed necessary.	Low
Impact on hard substrate community and mobile fauna due to mobilisation of contaminants through increased dredging.	Moderate	The increase in dredging would impact on hard substrate community structure. Existing mitigation measures would assist in minimising dispersion of additional mobilised sediment resulting from the modification towards ecological receptors found on the hard substrate. Management measures would include turbidity control measures such as silt curtains, selection of appropriate work methods and preventing the overflow of barges or bunds (Major Project Approval C22 to C24). A Dredging Water Quality Monitoring Plan would be prepared as part of the DREMP (Major Project Approval Conditions C25 to C29). Water quality monitoring would be undertaken for turbidity, dissolved oxygen, temperature, pH, metals and metalloids and PAHs.	Low
Qualitative Human Health and Ecological Risk			
Risk to human health as a result of increased dredging mobilising additional sediments that are potentially contaminated, including impacts on edible fish tissue, and direct contact with harbour surface waters.	High	The risk to human health as a result of increased dredging are not expected to be significant. Approved dredging management techniques that seek to minimise direct contact with water would be employed in modified dredging areas to protect the human health of dredging workers. In addition, recreational fishers would be isolated from dredging activities. Boats would not be permitted to anchor in shipping channels and would be kept clear of dredging activities. A further qualitative risk assessment will be undertaken once dredging methodology has been confirmed, prior to the commencement of dredging tasks in Stage 1 and Stage 3, and would include reference to contaminated sediment dispersal and ecological receptors. Recommendations and mitigation measures that arise from these additional assessments will be incorporated into the DREMP.	Moderate

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Toxicological risk to ecological receptors as a result of increased dredging mobilising additional sediments that are potentially contaminated.	Moderate	Potential for increased toxicological risk as a result of additional dredging would be manageable through existing mitigation measures. The DREMP would include environmental management practices and procedures to be followed during dredging, reclamation and emplacement works including installation of silt curtains, turbidity control measures and confined spoil emplacement methods (Major Project Approval Condition C35). The DREMP would include a Water Quality Monitoring Program which would monitor for turbidity, dissolved oxygen, temperature, pH, metals and metalloids and PAHs (Major Project Approval Condition C29 and C30). The DREMP would outline contingency actions for risk factors. PKOPL would undertake an ecological monitoring program to assess the ecological health of the Port Kembla Outer Harbour. This program would identify monitoring parameters, testing procedures and the framework for reporting monitoring results (Major Project Approval Condition C29 (f)).	Low
Coastal Hydrodynamics			
Impact on infragravity (long) waves and associated conditions in the Outer Harbour due to modified dredging and reclamation design.	Low	The Concept Plan, as modified, would continue to improve conditions within the Outer Harbour when compared to the pre-development conditions. As such, no change to proposed mooring configurations identified in the previous Environmental Assessment is required as a result of the modification.	Negligible
Impact on gravity (ocean swell) activity due to additional dredging.	Low	The Concept Plan, as modified, would continue to improve conditions within the Inner Harbour and Outer Harbour when compared to the pre-development conditions. As such, no change to proposed mooring configurations identified in the previous Environmental Assessment is required as a result of the modification.	Negligible
Impacts on tidal hydraulics relating to changes in tidal flushing performance due to increase in dredging and altered reclamation design.	Low	The modification is not anticipated to significantly alter tidal flushing performance in the Outer Harbour. As such, no mitigation is deemed necessary.	Negligible (benefit)
Waste			
Impact of increased waste due to additional dredged material.	Low	Additional dredged material would be deposited in the reclamation areas, reducing the volume of imported fill required for reclamation. As such, no mitigation is deemed necessary.	Negligible

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
4. An enlarged operational land area for Stage 1 from 9 hectares to 22 hectares to accommodate increase in bulk volumes			
Noise and Vibration			
Changes to the impacts on nearby sensitive receivers as a result of increased rail movements, reconfiguration of the Stage 1 operational layout, and activities at the Outer Harbour Development associated with the additional throughput.	High	The use of enclosed sheds and conveyor systems as part of the proposed modification has minimised contributions of this component of the Outer Harbour Development. Mitigation for the Major Project (Stage 1) includes acoustic barrier in the South Yard, enclosure of the southern break bulk area, the selection of acoustically considerate plant (where possible) and use of noise reducing measures such as silencers, shrouds and enclosures.	Medium
Air Quality			
Impact on air quality due to increased transport and handling activities associated with the Outer Harbour Development.	High	The use of enclosed sheds and conveyor systems as part of the proposed modification has minimised contributions of this component of the Outer Harbour Development. The Air Quality Environmental Management Plan requirements under the Minister's approvals and the Statement of Commitment provide a framework to minimise the potential for predicted exceedances of certain particulate criteria during Stage 1. The silt loading factor for the internal roads would be measured, and if required, the silt loading factor would be used to identify appropriate mitigation measures during Stage 1. Dust mitigation measures would be implemented at the stockpiles.	Medium
Surface Water Quality and Hydrology			
Increase in potential for spills and leaks of hazardous materials due to increase in construction plant and equipment.	Low	Potential increase in risk would be managed adequately with existing mitigation measures. As part of the CEMP a SWMP would be prepared to document mitigation measures to manage hydrology and water quality impacts associated with construction of Stage 1, as per Condition 37c of the Project Approval. The SWMP would include details on how land-based soil erosion, discharge of sediment or water pollutants from the site would be managed in the short and long term. It would also cover details of contaminated soil and appropriate management methods, as well as a contingency plan for the discovery of contaminated material, major fuel or other chemical spill.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Road Traffic and Transportation			
Impact on the road network due to the additional truck movements during construction activities	Moderate	The increase in construction truck movements is comparable to the number of vehicles generated by the approved operational phase of the Stage 1 development (including the CGM) and well within the approved traffic volume generated at the ultimate completion of the Concept Plan. No intersection upgrades would be required for the additional construction traffic. The Major Project Approval Condition C37b requires the implementation of a Construction Traffic Management Plan, which would identify measures to minimise any potential impact on the road network. Major Project Approval Condition C16 also provides a framework to manage any vehicle movements that are over and above the predicted volumes under this modification.	Low
5. Construction of shed facilities for product storage, rather than open stockpiles, and enclosed conveyors.			
Air Quality			
Impact related to change from storage of bulk materials in open stockpiles to enclosed sheds.	Moderate	The use of enclosed sheds and conveyor systems as part of the proposed modification would minimise contributions of this component of the Outer Harbour Development. However, potential for exceedances remain as a result of other activities within Stage 1. This has been discussed in previous sections.	Low
Landscape and Visual Amenity			
Visual impact due to additional construction as a result of the modification.	Low	Commercial and industrial developments would partially screen construction areas from certain immediate and local viewpoints. The industrial nature of Port Kembla would minimise visual intrusiveness of additional construction activities. Construction impacts would be minor and temporary in nature.	Low
Sustainability			
Use of sheds on multi-purpose terminal for rainwater capture.	Negligible (benefit)	Throughout all stages of the Concept Plan PKOPL is committed to investigating the potential for water capture and reuse during the detailed design of terminals and storage sheds.	Negligible (benefit)

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
6. Change in alignment and length of Salty Creek.			
Surface Water Quality and Hydrology			
Impact on hydrology of Salty Creek as a result of realignment associated with modification.	Low	There would be no change in impact relating to the hydrology of Salty Creek as a result of the modification. The modification would still result in the transformation of Salty Creek from an ICOLL to a channel permanently open to the sea, resulting in benefits for channel flushing.	Low
Aquatic Ecology			
Impact on use of Salty Creek as a fish passage due to realignment and shortening associated with modification.	Low	The modification to the alignment and length of Salty Creek would not change the impact on aquatic fauna outlined in the previous Environmental Assessment. The box culverts for conveying Salty Creek flows would be designed to the satisfaction of NSW Fisheries and would incorporate a V-shaped recess to facilitate the movement of fish and other mobile aquatic species during periods of low flow and be designed so as not to preclude light access as part of future project applications (Major Project Approval Condition B25).	Low
7. Increase in operational workforce			
Socio-economic			
Socio-economic impact of modification associated with doubling of operational workforce for Stage 1 of the Outer Harbour Development.	Low	The modification would result in positive socio-economic benefits related to increased investment in the Illawarra region and NSW and flow on economic benefits associated with additional employment opportunities.	Negligible (benefit)
8. Imported fill sources			
Surface Water Quality and Hydrology			
Increase in potential sediment-laden surface water runoff impacting on water quality of receiving environments, due to larger stockpiles.	Moderate	All materials stockpiled shall be adequately managed to prevent erosion or dispersal of the materials. Dredged sediments shall not be stockpiled on site, unless as otherwise agreed by the Director-General after assessment of relevant environmental impacts (Major Project Approval Condition C20). Unpaved reclamation surfaces would be design to prevent sediment-laden runoff impacting on the receiving waters of the Outer Harbour.	Low

Issue	Risk Pre-Detailed Assessment and Mitigation	Impact and Mitigation Measures	Residual Risk
Landscape and Visual Amenity			
Impact on visual amenity from the increased size of stockpiles.	Low	Commercial and industrial developments would partially screen stockpiling areas from certain immediate and local viewpoints. The industrial nature of Port Kembla would minimise visual intrusiveness of additional construction activities. Stockpiles would be visually consistent with the surrounding landscape. As such, no mitigation measures are deemed necessary.	Low
Impact on air quality due to increased size of stockpiles	Moderate	Dust mitigation measures would be implemented at the stockpiles, such as the use of water sprays to prevent dust emissions through wind erosion. It is considered unlikely that the increase in stockpiling capacity would result in any additional exceedances of the EPA criteria at sensitive receivers.	Low

23.3 Conclusion

The majority of potential impacts are associated with the growth in shipping movements and accommodation of larger vessels (including additional dredging for berth and reduction of reclamation footprint), increased size of the multi-purpose terminal area in Stage 1 and the construction of additional road and rail infrastructure to accommodate increased operational train movements for the increased bulk throughput in Stage 1. Mitigation measures that would be implemented during construction and operation would assist in lowering the overall residual risk of the modification. Where appropriate, minor alterations to the Statement of Commitments presented in the previous Environmental Assessment are proposed to assist in minimising potential impacts associated with the modification.

Overall, the residual environmental risk analysis has identified that residual risks resulting from the proposed modification would be negligible to moderate, with the majority of impacts resulting in low residual risk to the surrounding environment and receivers.

With a thorough suite of existing mitigation measures and the Concept Plan and Major Project approval conditions, suitable measures would be in place to support the amelioration of potential impacts associated with the development.

It is considered that based on the environmental assessment and suite of mitigation measures and existing conditions, that the overall level of residual risk associated with the modification is acceptable.

24.0 Revised Statement of Commitments

Final Statement of Commitments were prepared and submitted as part of the Submissions Report for the Concept Plan and Major Project Application (AECOM, 2010) in accordance with section 75F(6) of the EP&A Act. The commitments for the Concept Plan and Major Project were presented in separate tables.

The Statement of Commitments identify a combination of matters that will be dealt with in the next stage of the Major Project (detailed design) and implemented during both construction and operation phases. The SoC for the Concept Plan also includes matters that require further assessment and/or that must be dealt with during subsequent stages of the development, based on current knowledge and design resolution.

The Statement of Commitments has been reviewed in the context of the proposed modification, with amendments identified in **Table 24-1** and **Table 24-2**. In all instances, PKPC has been replaced with 'The Proponent'.

Table 24-1 Revised Statement of Commitments – Concept Plan

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
1	Environmental Management	The proposed Outer Harbour Development will be constructed and operated generally as described in the *Port Kembla Outer Harbour Development, Environmental Assessment* (prepared by AECOM and dated February 2010), and as modified in the *Port Kembla Outer Harbour Development – Modification, Environmental Assessment* (prepared by AECOM and dated November 2013) and portrayed in that report in **Figure 4-1** (Concept Plan, as modified) and **Figure 4-3** (Stage 1, as modified). ~~and portrayed in **Figure 5-3** (Concept Plan) and in **Figure 5-5** (Major Project).~~ If there is any inconsistency between the *Port Kembla Outer Harbour Development, Environmental Assessment* and *Port Kembla Outer Harbour Development – Proposed Modification, Environmental Assessment,* the more recent document will prevail to the extent of the inconsistency. ~~PKPC~~The Proponent will prepare and implement a suite of Environmental Management Plan (EMP) Framework documents that will be developed for construction (including dredging and reclamation) and operation for Stages 1, 2 and 3 of the Concept Plan. Each discrete phase of construction activity will have its own CEMP. Similarly, discrete operating units (e.g. terminals) will each have their own OEMP. All CEMPs and OEMPs will include appropriate strategies and management measures to control and manage environmental risks, assess environmental performance and comply with relevant statutory requirements that are applicable to activities to be undertaken within that stage of the Concept Plan. Sub-plans will be included in the CEMP and OEMP Framework and will be included in each relevant stage of the project as appropriate. Sub-plans that will be required to be prepared for either construction or operation of at least one of the stages of the project will include the following: - Soils and Water Management Plan (SWMP).	The figures of the Concept Plan and Major Project have changed as a result of the proposed modification. There is also a need to acknowledge the change in the modified Outer Harbour Development as detailed in this environmental assessment. The DREMP is the term applied in the Major Project approval and is proposed to provide consistency between the two documents.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		- Stormwater Management Plan (STMP). - Acid Sulfate Soil Management Plan (ASSMP). - Spoil Management Plan (SPMP). - Dredging and Reclamation Environment Management Plan (DREMP). - Site Management Plan (SMP). - Hazardous Substance Management Plan (HSMP). - Emergency Response Plan (ERP). - Green and Golden Bell Frog Management Plan (GGBFMP). - Traffic Management Plan (TMP). - Noise and Vibration Management Plan (NVMP). - Air Quality Management Plan (AQMP). - Safety Management Plan (SFMP). - Landscape Management Plan (LMP). - Conservation Management Plan (CMP). - Waste Management Plan (WMP). - Demolition Management Plan (DMP). - Refuelling Management Plan (RMP).	
2	Soil Erosion and Sedimentation	Controls and measures to mitigate soil erosion and sedimentation construction and operation impacts as a result of Stage 1 of the Concept Plan are detailed within the Major Project SoC (**Table 20-2**). A *Soils and Water Management Plan* (SWMP) would be prepared prior to the commencement of construction activities and will be included as a sub-plan in the relevant CEMP for that stage. The SWMP will be prepared in accordance with Landcom's *Managing Urban Stormwater; Soils and Construction Manual 2004* and will be maintained for the duration of the construction process and operational period. A *Stormwater Management Plan* (STMP) would be prepared prior to the commencement of operation of activities. Potential impacts to soil erosion and sedimentation as a result of Stages 2 and 3 of the Concept Plan will be identified during environmental assessments undertaken to support project applications for those stages. Controls and measures to mitigate impacts will be incorporated into SWMPs and STMPs to be implemented during construction and operation phases for Stages 2 and 3, respectively.	
3	Hydrology and Water Quality	A SWMP would be prepared prior to the commencement of key project components and will outline specific measures to ensure impacts to water quality and hydrology during construction of each stage of the Concept Plan are minimised. Monitoring programs for water quality and biology will be developed, in consultation with EPA ~~DECCW~~ and the Port Kembla Harbour Environment Group, and implemented for each stage of the Concept Plan. These monitoring programs will outline monitoring frequencies and testing procedures	To reflect the change in agency name since 2010.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		and results will be used to identify emerging trends or problems, provide data for measuring the impact of operational activities, determine whether pollution controls are working and provide a basis for efficient response to emergencies such as spills. ~~PKPC~~The Proponent will ensure that hydrological and ecological considerations are taken into account in the stormwater design for terminals for all stages of terminal construction. Water sensitive urban design (WSUD) will be utilised where ever practicable to reduce the volume, velocity and contaminants associated with stormwater runoff. Inclusion of pollution control devices on the future paved surfaces of the development.	
4	Contaminated Sediments	Mitigation measures proposed to manage contaminated sediment impacts associated with Stage 1 will be included within a DREMP and are presented in the Major Projects SoC (**Table 20-2**). A DREMP will also be prepared prior to dredging activities for Stage 3 and will broadly include the following: - Description of extraction methodology and machinery to be employed. - Identification of dredge areas. - Identification of disposal (reclamation) areas. - Turbidity control devices (floating booms, silt curtains). - Erosion and sediment control measures. - Water and air quality monitoring locations. Additional Contaminated Sediment Investigations will be undertaken as part of subsequent project applications for Stage 3. The additional investigations will assess potential contaminated sediment impacts associated with the following: - Area to be dredged north of Port Kembla Gateway to accommodate the third multi-purpose berth. - Dredging for expansion of the existing ship swing basin ~~turning circle~~ located south of the northern breakwater. - Reclamation for northern portion of the multi-purpose terminals. Mitigation measures that are proposed to manage contaminated sediments that are located in these areas will be included in the SMPs for those stages.	The DREMP is the term applied in the Major Project approval and is proposed to provide consistency between the two documents. An amendment is proposed to reflect the term for the swing basin within supporting documentation.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
5	Contaminated Soils and Groundwater	Mitigation measures proposed to manage contaminated soil and groundwater impacts associated with Stage 1 will be included within a SMP and are presented in the Major Projects SoC (**Table 20-2**). Additional Contaminated Land Investigations will be undertaken as part of subsequent project applications for Stages 2 and 3. The additional investigations will assess potential contaminated soil and groundwater impacts associated with the following: - ~~An extension of the road link from Christy Drive to connect with the container terminals~~ The potential extension of the internal port road running parallel to Foreshore Road on the southern foreshore of the Outer Harbour. - Reconfiguration of rail in the South Yard to enable efficient operation of the western and eastern container facilities (this is in addition to the rail infrastructure upgrade required as part of Stage 1). - An extension of an existing rail siding into and along the length of the container terminals. - New road link from Darcy Road to the boat harbour. - Hardstand of landward extent of development west to the Darcy Road drain ~~existing rail lines~~ and south to Foreshore Road. Any contamination 'hot spots' that are identified during subsequent investigations for Stages 2 and 3 will be included within SMPs for those stages. Develop a groundwater monitoring program to be conducted at the site prior to the commencement of the works and regularly thereafter. This program will be designed and undertaken so as not to impede construction or operation of the development. In developing the groundwater monitoring program ~~PKPC~~the Proponent will review and utilise the results for the existing groundwater monitoring program being undertaken for the Outer Harbour.	The extension of the road link from Christy Drive forms part of Stage 1, as well as now the section of the multi-purpose terminal up to east of the Darcy Road drain. The corrected description is a more accurate description of the road and terminal infrastructure proposed in the later stages of the Concept Plan.
6	Human Health and Ecological Risk	Measures proposed to mitigate potential risks for Stage 1 are presented in the Major Project SoC. Where applicable, these measures will also be applied to Stages 2 and 3 of the Concept Plan. *Site Management Plan* ~~PKPC~~The Proponent will prepare a SMP for each stage of the Concept Plan which will set out procedures to manage potential risks identified to human receptors and ecological receptors during land based construction works. *Dredging and Reclamation Environment Management Plan (DREMP)* ~~PKPC~~The Proponent will prepare a DREMP prior to dredging activities for Stage 3.	The DREMP is the term applied in the Major Project approval and is proposed to provide consistency between the two documents.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		Hazardous Substance Management Plan An HSMP will be prepared for each Stage of the Concept Plan and will contain the following information where it is relevant to the proposed activities: - Work methods to safeguard against hazards such as spills. Any fuel spillage will be reported, documented and immediately remediated. - Appropriate methyl bromide management procedures for the container terminals. - Separation of the flammable solids and flammable liquids storage areas. - Ammonium Nitrate (AN) storages at the container terminal will be sited and designed to comply with the relevant Australian Standard (AS) in respect to both storage quantities and siting (distance separation). - Transport risk assessment studies which will be conducted for future development at each facility will include an assessment of the transport requirements and risks associated with the transport of Dangerous Goods. - Appropriate training and qualifications for staff involved in the handling of chemicals and in emergency spill response procedures. - Diagrams and descriptions of access and unloading locations will be developed as well as procedures for drivers of vehicles delivering chemicals. - A program of regular monitoring and maintenance of equipment used in the transportation and handling of chemicals. - A register of equipment, responsibilities and procedures for responding to spills. - A program of monitoring of the condition of bunding. *Emergency Response Plan* An Emergency Response Plan (ERP) will be prepared as part of the OEMP for each of the general cargo terminals and container terminals. The ERP will be prepared in accordance with the HIPAP No.1 Emergency Planning Guidelines. *Additional Assessments* A further qualitative risk assessment will be undertaken once dredging methodology has been confirmed, prior to the commencement of dredging tasks in Stage 1 and Stage 3, and will include: - A further qualitative risk assessment of contaminated sediment dispersal to assess potential risks to ecological receptors. - Recommendations and mitigation measures that arise from these additional assessments will be incorporated into the DREMP.	

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
7	Potential Hazard	*Hazardous Substance Management Plan* ~~PKPC~~The Proponent will ensure that the risks that may be associated with potential hazards will be maintained within the permissible levels via mitigation measures included in a HSMP. Measures will include: - The container terminal will be designed with appropriate Methyl Bromide dosing and capture systems and operated in a manner that minimises the risk of release of potentially harmful gas. - The flammable solids storage area will be separated from the flammable liquids storage area by a minimum of 35 metres. - The risks associated with the potential storage of toxic gases will be specifically addressed in the individual environmental impact assessments conducted for the various terminal operators. Appropriate risk reduction measures that may be determined as a result of this assessment will be included in the terminal design and operational procedures, where applicable. A Final Hazard Assessment will be prepared as part of detailed project applications for operation of the container terminals.	
8	Flora and Fauna	*Compensatory Measures* Compensatory measures to offset the loss of soft substrate habitat in the Outer Harbour and the sandy beach area of Red Beach are proposed for Stage 1 of the Concept Plan. A summary of these measures is presented in the Major Project SoC. The need for additional compensatory measures for Stages 2 and 3 will be considered during environmental assessments prepared as part of project applications for those stages. *Green and Golden Bell Frog Master Plan* *A GGBF Master Plan* will be prepared to provide a strategic framework for how GGBF and its habitat will be managed across the Port Kembla Outer Harbour area. The GGBF Master Plan will focus upon sites with the greatest potential for GGBF habitat and connectivity, particularly freight rail corridors and associated land areas. The GGBF Master Plan will be prepared following preparation of the Rail Master Plan (so that it is compatible with the rail infrastructure requirements of the port). ~~PKPC~~The Proponent will consult with OEH ~~DECCW~~ and other relevant stakeholders during preparation of the GGBF master plan. *Green and Golden Bell Frog Management Plan* The GGBFMP framework prepared as part of the EA will be developed into a comprehensive GGBFMP in consultation with a suitably qualified ecologist and OEH ~~DECCW~~ prior to the commencement of construction works for Stage 1. The	The changes to the timing of the GGBF Master Plan are proposed to reflect the timing as specified in the Concept Plan approval and to also recognise the additional rail infrastructure upgrades identified in this modification for Stage 1. To reflect the change in agency name since 2010.

Ref	Concept Plan		
	Issue	Environmental Commitment	Reason for Amendment(s)
		GGBFMP developed for Stage 1 construction works will be reviewed and updated for environmental assessments that will be undertaken as part of project applications for Stages 2 and 3. Each GGBFMP will include the following as a minimum: - Program of works and timeline for all key components of the project. - Undertake a conservation assessment ranking for any known or likely GGBF habitats in the study area, including but not limited to, identification and assessment of breeding, shelter, foraging, and movement habitat components. - Identify any actual or potential threats from construction and operations. - Identify appropriate actions to prevent or minimise actual or potential threats. - Include details of how ~~PKPC~~the Proponent will monitor and report on the ongoing effectiveness of the GGBFMP. - A program of works and timeline for planting and landscaping in appropriate areas with vegetation suitable for GGBF foraging and shelter as well as installing structures (such as logs and concrete pieces) to facilitate movement and over wintering habitat. - A feasibility assessment of retaining and/or enhancing shelter, foraging and movement habitat or potential breeding habitat along the proposed road corridor off Darcy Road. Further mitigation measures that will be implemented in relation to the proposed road corridor off Darcy Road during Stage 2 and include: - Pre construction frog surveys. - Careful, staged clearing of site and provision of proximate alternate habitat to encourage frogs to seek shelter. - Installation of permanent 1 metre high frog exclusion fencing. - Careful direction of surface water runoff. - Appropriate signage at entrance and exit of the proposed road alerting staff and visitors that an endangered species has been found in this area and to exercise caution. - Site inductions to educate workers. - Monitoring and regular review of performance of mitigation measures. Mitigation measures proposed to manage impacts on GGBFs for Stage 1 construction works are detailed in the Major Project SoC. The need for additional breeding ponds to be constructed to offset impacts to potential foraging habitat for populations of GGBF (particularly adjacent to Site 8) will be assessed as	

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		part of project applications for Stage 2 and Stage 3 of the Concept Plan. Ecological impacts of the Concept Plan will be reviewed as part of project applications for Stages 2 and 3 including impacts on threatened species, populations and ecological communities, and riparian and stream ecology (Salty Creek).	
9	Rail	Recommendations for rail infrastructure upgrade and arrangements for Stage 1 are presented in the Major Project SoC. ~~A~~The adequacy of the existing rail infrastructure and capacity of the regional network will ~~need to~~ be reassessed prior to the construction and operation of Stages 2 and 3. In particular ~~The following commitments are proposed to assess rail infrastructure and network capacity for Stages 2 and 3~~: - ~~PKPC~~The Proponent will participate in the Maldon Dombarton Study, ensuring that the Outer Harbour is included as a main destination for goods in the Maldon Dombarton Study. - ~~PKPC~~The Proponent will liaise with Transport for NSW ~~RailCorp regarding access from the Outer~~ with regard to ~~Harbour to the Unanderra Line~~ the outcomes of the access study for Coniston to Unanderra Junction ~~(a distance of 4km)~~. ~~PKPC~~The Proponent will prepare a rail master plan prior to the commencement of construction of Stage 2 to identify rail infrastructure requirements for Stages 2 and 3 of the Concept Plan.	To reflect the change in agency name since 2010, as well as the investigations currently underway. It is noted the *Maldon-Dombarton Rail Link Feasibility Study* was completed by Hyder and ACIL Tasman in September 2011. PKOPL made representations during the preparation of this study.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
10	Traffic	A Traffic Management Plan (TMP) will be prepared by ~~PKPC~~ the Proponent in accordance with Traffic Control at Worksites (RTA, 2003), prior to construction of Stage 1 in order to minimise impact on pedestrian and vehicle movements. The TMP will include control measures such as designated haulage routes and driver code of conduct to encourage safe driving practices. The proposed content of the TMP is detailed in the Major Project SoC. Future traffic and transport assessments will be undertaken as part of project applications for Stages 2 and 3. This will include an assessment of the traffic impacts associated with the changes to the road network and to separate port related traffic and public traffic accessing the boat harbour. ~~PKPC~~The Proponent will progressively assess the volume of truck movements associated with the Project applications for each stage of the Outer Harbour Development to ensure that they are consistent with the volumes predicted in the EA. The assessment will take into account actual truck volumes generated from the Outer Harbour Development at that point of time. If the volume of truck movements is predicted to exceed the volumes assessed in the EA, ~~then~~ further assessment of the likely impacts associated with any additional truck traffic on the road network will be carried out~~required~~. - All roads constructed as part of the development would be designed to accommodate the number and type of vehicle movements projected and would satisfy relevant design standards and would consider local guidance publications including the Wollongong City Council's Subdivision Policy for Road Construction. Car park facilities will be established within dedicated construction areas internal to the site. Car parks will be designed to cater for the number of construction vehicles to reduce or avoid potential overflow impacts on the local road network, such as Foreshore Road.	
11	Noise	*Noise and Vibration Management Plans* A Construction Noise and Vibration Management Plan (CNVMP) will be prepared by ~~PKPC~~the Proponent prior to the commencement of construction of Stage 1 in line with the Interim Construction Noise Guideline (DECC, 2009) ~~DECCW "Draft Construction Noise Guidelines"~~. The content of the CNVMP is detailed in the Major Project SoC. ~~PKPC~~The Proponent will prepare an Operational Noise and Vibration Management Plan (ONVMP) prior to the commencement of operation of each stage of the Concept Plan. The ONVMP should be prepared in accordance with the relevant EPA ~~DECCW~~ guidelines and should incorporate	This is to correct the incorrect guideline name referenced in the Statement of Commitments. To reflect the change in agency name since 2010. The specific mention to the South Yard is to recognise this is the main source of rail noise for the Outer

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		best practice mitigation measures. *Rail Noise and Sleep Disturbance* An assessment of the acoustic impact arising from changes to the rail infrastructure associated with Stages 2 and 3 of the Concept Plan will be undertaken following completion of the Rail Master Plan when more information is known about the likely train movements in the Outer Harbour, particularly in the South Yard. Operational noise and sleep disturbance impacts arising from increased rail movements associated with Stages 2 and 3 of the Concept Plan will be investigated and, if required, appropriate noise mitigation measures will be recommended. To mitigate the potential sleep disturbance impacts associated with the use of train horns, ~~PKPC~~the Proponent will commit to use shorter train horn toots rather than standard longer train horn blasts. In addition, for Stages 2 and 3 of the Concept Plan ~~PKPC~~the Proponent will investigate the feasibility of further mitigation measures such as the removal of the Foreshore Road rail crossing. • ~~Grade separation at the Old Port Road rail crossing.~~ Noise and vibration assessments will be undertaken as part of applications for project applications for Stages 2 and 3 to assess both construction and operation impacts.	Harbour Development. The grade separation of Old Port Road rail crossing will be considered under Stage 1 of the Outer Harbour Development to resolve road traffic constraints, as discussed in **Section 10.0**.
12	Air Quality	An AQMP will be prepared for inclusion in the CEMP and OEMP for each stage of the Concept Plan. The AQMP should include a requirement for on-going dust monitoring during the construction of Stage 1 of the project (for further details refer to Major Project SoC – **Table 20-2**). Site specific mitigation measures for the management of particulate emissions during construction and operation of each of the stages of the Concept Plan will be included in AQMPs. Mitigation measures to be included in the AQMP for Stage 1 are detailed in the Major Project SoC (**Table 20-2**). ~~PKPC~~The Proponent will assess future operations at the development site on a case by case basis, for potential impacts on the local air shed, with consideration of the regional and local pollution findings of the Air Quality Impact Assessment (AQIA Report, Pacific Environment, 2013 ~~AECOM 2009~~). Further analysis and atmospheric dispersion modelling will be undertaken for Stages 2 and 3 of the Concept Plan. The reporting of this modelling will be included in separate project applications for Stage 2 and 3 of the Concept Plan. This includes use of a site specific silt loading factor for the internal road determined during Stage 1 operations.	To reflect the reference to updated air quality technical assessment for the proposed modification, and the recommendation concerning the use of a site-specific silt loading in the future assessments for Stage 2 and Stage 3.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
13	Socio-Economic	Throughout the progressive development of the Concept Plan, ~~PKPC~~the Proponent will ensure that access to the existing small boat harbour and associated facilities is not affected during either the construction of operational activities of each stage. In addition, ~~PKPC~~the Proponent will include appropriate measures in a Safety Management Plan to ensure that safe access is provided for recreational boaters entering and exiting the small boat harbour. ~~PKPC~~The Proponent will continue to liaise with community groups to inform them about project status throughout the development of the Concept Plan.	
14	Landscape and Visual Amenity	~~PKPC~~The Proponent will prepare a Landscape Management Plan to ensure visual impacts associated with Stage 1 are minimised. The content of the LMP is detailed in the Major Project SoC. LMPs will be prepared for CEMPs and OEMPs for each stage of the Concept Plan and will include the following: - Lighting used for evening and night time work will be projected downward and onto the proposed works. - Construction timing should be programmed to ensure efficiency of works and minimise the period of disturbance. - Construction areas and plant/machinery and materials storage areas will be clearly designated and clearly defined. - Lighting for terminals and other operational areas, including the new road link, will be carefully selected to minimise light spill. - A Landscape Management Plan (LMP) will be prepared to guide any landscaping works that are proposed across the area of development. Suitable colours and materials will be selected for the terminal pavement, buildings and other structures to minimise reflectivity and contrast. The design of any acoustic barriers would have consideration to visual amenity impacts. Landscape and Visual Amenity assessments will be undertaken as part of project applications for Stages 2 and 3.	This amendment is to reflect the potential for acoustic barriers in proximity to residential areas to be recommended in future mitigation strategies for Stage 2 and Stage 3.
15	Heritage	*Archival Photographic Recording* An archival photographic recording will be prepared prior to demolition of No. 3 and No. 4 Jetties (part of Stage 1) and a comprehensive history of the jetty prepared. An archival photographic recording will be prepared prior to demolition of No. 6 Jetty during Stage 3 and a comprehensive history of the jetty prepared. *Historic Shipwrecks* Should any evidence of shipwreck material be encountered during dredging or other activities during Stages 1 and 3,	To reflect the change in agency name since 2010.

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		works in the immediate vicinity will cease, the Heritage Branch (OEH) will be contacted immediately and a suitably qualified maritime archaeologist will be contacted to assess the discovery and provide advice on mitigation and recording. *Other Heritage Items or Archaeological Rites* Should unidentified European heritage items and/or archaeological relics be encountered during construction, works in the immediate vicinity will cease, the Heritage Branch (OEH) will be contacted immediately and a suitably qualified heritage consultant will be contacted to assess the discovery and provide advice on mitigation and recording. The environmental assessment to be undertaken as part of a project application for Stage 2 will further consider the intrusion of the new road link connecting Darcy Road with the boat harbour on accessibility between the concrete pillbox and the Historic Military Museum. ~~PKPC~~The Proponent will ensure the design of the new road limits intrusion on the listed heritage items including consideration of the use of landscaping to ensure that any visual impact is minimised. ~~PKPC~~The Proponent will prepare a Conservation Management Plan (CMP) for the Mobile Block Setting Crane prior to commencing construction activities within the proximity of the item during Stage 2. ~~PKPC~~The Proponent will restore the crane in accordance with the recommendations of the CMP, relocate the crane to a safe and prominent location nearby and provide interpretive signage for the public.	
16	Waste	*Waste Management Plan* WMPs will be prepared for inclusion in relevant CEMPs and OEMPs for all stages of the Concept Plan and will emphasise potential for recovery and reuse of waste, minimise waste generation, and include specific requirements for each of the waste types identified. *Demolition Management Plan* A Demolition Management Plan (DMP) will be prepared to include appropriate management measures for the dismantling, removal and disposal of structures and materials during Stages 1 and 3. Waste assessments will be undertaken for Stages 2 and 3 as part of project applications for these stages.	

Ref	Concept Plan		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
17	Sustainability	Throughout all stages of the Concept Plan ~~PKPC~~the Proponent is committed to the following: - ~~Consider~~ Consideration of the potential for incorporating local renewable power generation (e.g. from micro and large scale wind turbines) as part of future design and construction works. - ~~Consider~~ Consideration of the potential for power generation from the sun by encouraging future tenants and lessees to install panels on structures to take advantage of the solar potential. - ~~Investigate~~Investigation of the potential for water capture and reuse during the detailed design of terminals and storage sheds. Recommendations and mitigation measures to manage sustainability issues identified during this environmental assessment will be reviewed as part of environmental assessments for Stages 2 and 3, and revised to incorporate new technological innovations that could be considered and implemented as part of the total development. The design of berths and terminal areas will include allowance for the provision of alternative marine power (AMP) for vessels while at berth to allow for possible future use of ship to shore power.	This amendment is to reflect the inclusion of large storage sheds in the Outer Harbour Development, which would provide an additional measure to harvest stormwater.
18	Climate Change	Throughout all stages of the Concept Plan ~~PKPC~~the Proponent is committed to the management of the impacts of a variable climate and extreme weather conditions as follows: - The proposed reclamation and pavement levels will be set above predicted extreme sea level rises (i.e. including storm surges and extreme events) for the 100 year design life, with a freeboard suitable to cater for further sea level rise beyond that time. - Risk management strategies will be in place for extremely hot days to manage potential rail buckling. - Maintenance regimes will take accelerated degradation of infrastructure into account. Assessments for Stages 2 and 3 will review the findings of this assessment in light of the latest climate change projections and statistics. Assessments for Stages 2 and 3 will review the findings of this assessment in light of the latest climate change projections and statistics.	

Table 24-2 Revised Statement of Commitments – Major Project (Stage 1)

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
Construction Phase			
1	Major Project - General	The proposed Outer Harbour Development will be constructed and operated generally as described in the *Port Kembla Outer Harbour Development, Environmental Assessment* (prepared by AECOM and dated February 2010), and as modified in the *Port Kembla Outer Harbour Development – Proposed Modification, Environmental Assessment* (prepared by AECOM and dated Mary 2013) and as portrayed in that report in **Figure 4-1** (Concept Plan, as modified) and **Figure 4-3** (Stage 1, as modified). ~~and portrayed in **Figure 5-3** (Concept Plan) and in **Figure 5-5** (Major Project).~~ If there is any inconsistency between the *Port Kembla Outer Harbour Development, Environmental Assessment* and *Port Kembla Outer Harbour Development – Modification, Environmental Assessment,* the more recent document will prevail to the extent of the inconsistency. ~~PKPC~~The Proponent will prepare and implement a suite of Environmental Management Plan (EMP) Framework documents that will be developed for construction (including dredging and reclamation) and operation for Stage 1. Each discrete phase of construction activity will have its own CEMP. Similarly, discrete operating units (e.g. terminals) will each have their own OEMP. All CEMPs and OEMPs will include appropriate strategies and management measures to control and manage environmental risks, assess environmental performance and comply with relevant statutory requirements that are applicable to that part of Stage 1. A number of sub-plans will be included in relevant CEMPs and OEMPs and will include the following, where relevant: - Soils and Water Management Plan (SWMP) - Integrated Water Cycle Management Plan (IWCMP) ~~Stormwater Management Plan (STMP)~~ - Acid Sulfate Soil Management Plan (ASSMP) - Spoil Management Plan (SPMP) - Dredging and Reclamation Environment Management Plan (DREMP) - Site Management Plan (SMP) - Hazardous Substance Management Plan (HSMP) - Emergency Response Plan (EMP) - Green and Golden Frog Management Plan (GGFMP) - Traffic Management Plan (TMP) - Noise and Vibration Management Plan (NVMP) - Construction Noise and Vibration Management Plan (CNVMP) - Operational Noise and Vibration Management Plan (ONVMP) - Air Quality Management Plan (AQMP) - Safety Management Plan (SFMP) - Landscape Management Plan (LMP) - Conservation Management Plan (CMP) - Waste Management Plan (WMP) - Demolition Management Plan (DMP)	The figures of the Concept Plan and Major Project have changed as a result of the proposed modification. There is also a need to acknowledge the change in the Outer Harbour Development as detailed in this environmental assessment. The DREMP and IWCMP is the term applied in the Concept Plan approval and is proposed to provide consistency between the two documents.

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		- Refuelling Management Plan (RMP)	
2	Soil Erosion and Sedimentation	*Soils and Water Management Plan* SWMPs will be prepared by ~~PKPC~~the Proponent prior to commencement of construction of Stage 1 and will be included where relevant in the CEMPs for that stage. The SWMPs will be prepared in accordance with Landcom's *Managing Urban Stormwater; Soils and Construction Manual 2004*. *Erosion and Sedimentation Controls* Management controls aimed at containing, redirecting, and stabilising soils that are unavoidably disturbed by construction activities will include: - Installing water diversion structures to ensure surface water runoff does not enter zones of exposed soils during construction, particularly in the vicinity of the new road link from Christy Drive, and rail infrastructure upgrade in the North Yard, South Yard, balloon and bulk loops. - ~~Installation~~Installing erosion and sedimentation control devices prior to excavation at the site, that will remain in place until the bare soils and surfaces are stabilised temporarily or permanently (by suitable surface materials, revegetation or other means) and removed when redundant. - Installing sediment traps around areas of soils that will be exposed as a result of construction activities to protect downstream water quality. Sediment traps will be maintained and will remain in place until all works are finalised and surfaces are stabilised. - Installing buffers to the riparian zone, for example sediment fences, to prevent sediment laden water from entering Salty Creek, Darcy Road Drain, and the Outer Harbour. - Installing filter rolls at stormwater drain locations to minimise potential for sedimentation of drains and subsequent flooding during heavy rainfall. - ~~Implementation~~Implementing site management procedures including watering or covering of unsecured stockpiles of reclamation material (if stockpiles contain fines) anticipated to be exposed and unused for a period longer than two continuous weeks. - Limiting the area of disturbance to those locations necessary to construct the new roads, reclamation area and rail infrastructure upgrade. - ~~Disturbed areas will be restored~~ Restoring disturbed areas (sealed or covered with pebbles/gravel or vegetated, as appropriate) upon the completion of the works in that area to ensure that soils are exposed for as short a time as possible. - Daily visual inspections of erosion and sediment control devices to determine the condition and effectiveness of control measures. Immediate action will be taken to repair any control devices that have failed to work adequately. Emergency procedures will be detailed for high rainfall events that could increase soil erosion during construction.	This amendment is proposed to reflect the additional rail infrastructure proposed under the Major Project (Stage 1) construction stage, and to more accurately reflect the staging.

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		Fill materials, dredging and reclamation - Environmentally suitable fill materials will be used for reclamation only. - Appropriate soil enhancement procedures and treatments will be implemented, as required, to facilitate consolidation of soft material and minimise slumping. - Soils confirmed to be Actual ASS will be handled in accordance with the Acid Sulfate Soil Management Plan (ASSMP). - ~~PKPC~~The Proponent will carefully consider the disposal/placement of potential ASS and preference will be given to disposal/placement of Potential ASS in locations beneath the water to avoid exposure to oxygen. - Where feasible, reclamation will be undertaken with a material which will allow for a similar groundwater flow to the current flow regime into the Outer Harbour. *Terminal hardstand and temporary unpaved surfaces* - The surface material of reclaimed areas that are to remain unpaved ~~until Stage 2~~ will be selected and prepared to minimise potential erosion. If surface fill material is susceptible to erosion a suitable surface layer with low erosive qualities will be laid.	
3	Hydrology and Stormwater Design	*Soil and Water Management Plan* A SWMP will be prepared to document mitigation measures to manage hydrology and water quality impacts associated with construction of Stage 1. The SWMP will include the following measures: - A control system to ensure that bulk material stockpiles and materials within handling areas are contained on site, through the use of containment walls, bunding, stormwater and dust controls. Any excess sediment laden runoff will either be contained within the bunded storage areas or directed to a land based treatment area. A program of regular monitoring and maintenance of the storage and handling of bulk materials will be implemented. - Measures to minimise excess materials being deposited off-site during loading and transportation of bulk materials from the material handling area. Controls such as vehicle shaker pad, use of vacuum road sweepers, covering loads during transport and dust suppression. - Emergency spill response procedures will also be included in the Emergency Response Plan (ERP). *Dredging and Reclamation Environment Management Plan* A DREMP will be prepared and implemented for all stages of Stage 1, incorporating: - Description of extraction methodology and machinery to be employed. - Identification of dredge areas. - Identification of disposal areas.	The amendments to the different terminology for the Dredging Environmental Management Plan and the Water Quality and Biological Monitoring programs are proposed to be consistent with the Major Project (Stage 1) approval.

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	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		- Turbidity control devices (floating booms, silt curtains). - Erosion and sediment control measures. - Water and air quality monitoring locations. *Salty Creek and Darcy Road Drain* ~~PKPC~~The Proponent will design and size channel structures or culverts to convey flows from Salty Creek and Darcy Road Drain through the reclamation area for flood events up to the 100 year ARI design storm event. The design of these structures will consider: - Potential climate change impacts due to increasing sea levels and rainfall intensities. - Possible hydraulic impacts due to flows greater than the 100 year ARI storm and up to the Probable Maximum Flood and/or due to blockage of the structure. - Fish passage. Consideration should be given for the incorporation of a V-shaped recess in the floor of the culverts to facilitate movement of fish and other mobile aquatic species during periods of low flow. - Water sensitive urban design (WSUD) will be utilised where ever practicable to reduce the volume, velocity and contaminants associated with stormwater runoff. *Potential Pollutants Handling* The handling of oils and fuels, washing of all equipment, (including all concreting equipment) will be undertaken within bunded areas or containers and pollutants trapped in bunded areas will be disposed of in accordance with the waste management section of the CEMP. Any fuel spillage will be reported, documented and immediately remediated. Collected contaminated material will be disposed of as per the management section of the CEMP and in accordance with the NSW Waste Classification Guidelines 2008. *Water Quality and Ecological ~~Biological~~ Monitoring programs* ~~PKPC~~The Proponent will develop water quality and ecological ~~biological~~ monitoring programs, in consultation with the Port Kembla Harbour Environmental Group and EPA ~~DECCW~~, during construction and operation. The water quality and ecological ~~biological~~ monitoring programs will form part of the CEMP and will: - Identify monitoring parameters. - Identify representative monitoring locations and frequency of monitoring. - Identify testing procedures (ensuring chemical testing is undertaken by a NATA accredited laboratory). - Outline the framework and format for reporting monitoring results.	

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4	Contaminated Sediments	*Acid Sulfate Soils* An ASSMP will be prepared prior to the dredging and reclamation works. Measures for the appropriate management of Acid Sulfate Soils, in line with the ASSMAC. These measures will either ensure that future works avoid exposing Potential Acid Sulfate Soils (PASS) to air or provide for appropriate management of the PASS. *Dredging and Reclamation Environmental Management Plan* A DREMP will be prepared based on the measures recommended by the AECOM Sediment Investigation, 2010 and will include: - Procedures for sediments to be dredged and emplaced in the reclamation area as soon as practicable ~~at essentially the same time~~ (to avoid the need for land storage and wastewater management, and avoid the exposure of PASS.) - Dredged sediments deposited as part of the proposed reclamation will be contained and effectively encapsulated and confined in an engineered containment structure which will be constructed of clean imported fill. - Dredged sediments will be placed at depth, below the depth of wave action at the base of the reclamation fill. - Dredging and reclamation will be undertaken within the protection of parallel silt curtains encompassing the dredging and placement areas. - Dredging technologies will be selected in consideration of their ability to minimise the generation of turbidity. - Turbidity monitoring will be employed in conjunction with twice daily observations by personnel undertaking the dredging and reclamation activities to assist in early identification of problems and proactive implementation of mitigation measures. - Regular monthly flyovers will be undertaken to assess the presence of potential sediment plumes and algal blooms from the dredging or emplacement areas. - Contingency measures will be implemented immediately in the event visible turbidity and harbour water quality impacts are identified during routine monitoring. The DREMP will refer to the ASSMP and will include appropriate management measures for: - Handling and transportation of PASS in a manner that minimises the exposure of PASS to air ~~below water~~, where possible. - Any PASS dredged material will be encapsulated and confined within an engineered containment structure (bunded area) at a lower harbour depth within the reclamation. - The removal of PASS from dredged material ~~to land (~~if encapsulating and confining the material underwater is not possible~~)~~. - Any mobilisation of disturbed soils that are confirmed to be AASS. Twice-daily manual measurements of turbidity will be carried out in conjunction with observations by personnel undertaking the dredging and reclamation activities to assist in early identification of problems	This amendment is proposed to be consistent with the Major Project (Stage 1) approval. Additional information on dredging methods has also clarified the options for minimising the exposure of PASS and ASS, as described in **Section 15.0** of this report. The SoC has been changed to reflect this. Minor changes are also proposed to make the commitments clearer. The extension of the SoC is required to reflect the modified dredging area.

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		and proactive implementation of mitigation measures. *Human Health Risk Assessment* The risk to human health and the environment associated with the contaminated sediment (in particular the identified sediment contamination hotspots and the modified dredging area) should be evaluated by a further qualitative risk assessment. If the risk assessment concludes that the contamination ~~hotspots~~ present an unacceptable risk to the environment, a Remedial Action Plan will be prepared to appropriately manage the identified materials of concern. *Groundwater Considerations* The reclamation will be designed to ensure that the existing groundwater flow regimes are not significantly altered and that there is no increased risk of harm associated with groundwater contamination.	
5	Contaminated Soils and Groundwater	*Site Management Plan* ~~PKPC~~The Proponent will prepare a CEMP which would include a Soil and Water Quality Management Plan (SWQMP) (Major Project Approval Conditions C36 and C37). Soil and sediment controls would be installed prior to construction and would be designed to minimise soil erosion. The controls would be designed with reference to the design and construction criteria in the Managing Urban Stormwater: Soils and Construction guidelines (Landcom, 2004) (Major Project Approval Conditions B9, C18 and C19). The SWQMP included in the CEMP would establish a suitable management framework for excavation works applicable to establishment of the new road link from Christy Drive, which would include identifying impacted soils based on visual and odour observations and through detailed soil sampling analysis, if required. ~~SMP prior to the commencement of construction to manage excavation works and to address the following:~~ ~~- Contamination 'hotspots' based on visual observations and through detailed soil sample analysis if required.~~ ~~- Appropriate management of soil and groundwater contamination including selective excavation (to minimise quantities), stockpiling, characterisation and disposal (likely to an off-site soil remediation facility) assuming that the material is not suitable for inclusion within the reclamation area.~~ - ~~Develop a~~The Proponent would continue to implement a groundwater monitoring program to be conducted at the site prior to the commencement of the works and ~~annually~~ as frequently as necessary thereafter, to the satisfaction of P&I and NSW Office of Water. This program will be designed and undertaken so as not to impede construction or operation of the development. In developing the groundwater monitoring program ~~PKPC~~the Proponent will review and utilise the results for the existing groundwater monitoring program being undertaken for the Outer Harbour, and any other relevant investigations undertaken by ~~PKPC~~the Proponent within the	The proposed amendments are based on additional information that has become available since the publication of the previous Environmental Assessment, as detailed in **Section 13.0** of this environmental assessment, and having regard to the rail infrastructure works proposed as part of the modification.

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	Issue	Environmental Commitment	Reason for Amendment(s)
		project footprint. The Proponent would ensure that direct contact with groundwater is managed and minimised for intrusive ground maintenance and construction workers. Contamination investigations would be conducted in accordance with the relevant guidelines, prior to the commencement of land-based excavation activities and would be documented in a Soil and Groundwater Contamination Report. The report would identify a remediation strategy, if required. If remediation is not required it would recommend measures to identify, handle and manage contaminated soil (Concept Plan Approval Condition 2.5 and Major Project Approval Condition B22). More specifically, future contamination investigations will focus on the areas of: - the train bulk unloader facilities - additional rail loops and sidings - Old Port Road/rail level crossing - potential areas of acquisition - the proposed road link from Christy Drive to the multi-purpose terminals. Investigations would be conducted as per Section 13.4 of this EA. In the instance that detailed design for rail or road infrastructure determines that interception of groundwater would occur, PKOPL would apply for an appropriate licence from the NSW Office of Water for dewatering during construction, if deemed necessary. An *Acid Sulfate Soil Management Plan* (ASSMP) would be prepared for the proposed modification. The ASSMP would ensure that any construction activities in identified areas of ASS risk are undertaken in accordance with the *Acid Sulfate Soil Manual* (ASSMAC) (Major Project Approval Condition C21). Given that asbestos impacted soils were identified in numerous areas of the modification area, an Asbestos Management Plan (AMP) in accordance with the *Work Health and Safety Act* 2011, would be prepared as part of the CEMP for the proposed construction works. ~~*South Yards*~~ *Phase Two Environmental Site Investigation* A ~~Limited~~ Phase Two Environmental Site Investigation will be undertaken at excavation locations prior to the commencement of ~~works at the proposed site~~ land based excavation activities ~~for the extension of the railway siding at the South Yard~~ to assess potential soil and groundwater contamination issues ~~in this area~~.	

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6	Human Health and Ecological Risk	*Dredging and Reclamation Environment Management Plan* Prior to commencing dredging a further qualitative assessment will be undertaken to address potential risks to ecological receptors associated with contaminated sediment dispersal. The assessment will consider the following: - Potential indirect effects or risks to marine ecosystem or communities outside the heavily impacted PKOH area. - Potential indirect risks to human health due to toxic dinoflagellate blooms or bioaccumulation of contaminants into edible fish or shellfish. - The extent to which protected or recreationally important species are present within the PKOH. This assessment should be based on detailed design of the dredging works and specific environmental management safeguards aimed at minimising and containing contaminated sediment dispersal. Recommendations and mitigation measures that arise from the additional assessment will be incorporated into the DREMP. ~~PKPC~~The Proponent will prepare a HSMP for construction of Stage 1 that will address the following: - Handling of oils and fuels and the washing of all equipment, including all concreting equipment, in accordance with the EPA ~~DECCW~~ Bunding and Spill Management Guidelines documents: *Storing and Handling Liquids: Environmental Protection - Participants Manual* and *Environmental Compliance Report: Liquid Chemical Storage, Handling* and *Spill Management - Part B Review of Best Practice and Regulation.* - Disposal of any pollutants trapped in bunded areas in accordance with the waste management section of the CEMP and EPA ~~DECCW~~ waste guidelines. - Any fuel spillage will be reported, documented and immediately remediated. *Refuelling Management Plan* ~~PKPC~~The Proponent will prepare a Refuelling Management Plan (RMP) which will address on site refuelling if required and which will identify appropriate refuelling locations, proximity to infrastructure, bunding required, location, use of spill kits and monitoring.	These amendment are proposed to be consistent with the Major Project (Stage 1) approval and to reflect the agency name changes since 2010.
7	Flora and Fauna	*Compensatory Measures* Compensatory measures to offset the loss of soft substrate habitat in the Outer Harbour and the sandy beach area of Red Beach are proposed for Stage 1. A summary of these measures is presented below: - Hard substrate habitat in the form of new berth faces, pile-supported desk areas and rock revetments will be increased as a result of the development. Habitat features that will be incorporated into the design of the hard structures will include: • Boulder-sized rocks placed without cement to offer	These amendments are proposed to be consistent with the Major Project (Stage 1) approval and to clarify the referenced document.

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		crevices in the inter-tidal and sub-tidal zones for the use of fish and invertebrates • Artificial rock pools in revetments to provide habitat for species such as sea-hares, sea urchins and octopus • Objects such as concrete knobs, or similar, attached to vertical wall structures to add texture and form for the benefit of colonising organisms. - Soft substrate habitat measures will be implemented as part of habitat improvement projects proposed for Tom Thumb Lagoon and Garungaty Waterway (refer Section 16.0 and Appendix G of the Environmental Assessment (AECOM, 2010) for additional detail). The measures proposed are intended to complement the existing restoration programs in these areas by increasing fish passage, tidal exchange and promoting estuarine communities such as saltmarsh, mangroves and seagrass. The measures are consistent with Wollongong Council's *Estuary Management Plan* (2007) and the *Plan of Management* prepared for Conservation Volunteers Australia in 2006. The habitat improvement projects will be undertaken over the next 10 years and will include ongoing monitoring and maintenance to ensure that effective habitat outcomes are achieved and sustained on the site. *Dredging and Reclamation Environment Management Plan* The DREMP will address the following: - Ways in which the generation of shockwaves through the water column associated with underwater rock blasting can be reduced as far as it is practicably achievable. - Measures to reduce or minimise negative impacts on marine mammals ~~will be included in the DEMP and will be~~ based on available and relevant guidelines. - ~~Protection of~~ Measures to protect migratory marine mammals. Specific mitigation measures may include a marine mammal observer program to be implemented and stop blasting provisions if whales are sighted within specified distances from the development area. *Green and Golden Bell Frog Management Plan* Prior to any works which involve the clearing of vegetation and debris within the development area of Stage 1, a suitable and targeted survey will be undertaken by an ecologist in order to allow for the detection of any GGBF. If GGBF are detected, no clearing works will commence until the GGBF response provisions in the GGBFMP have been implemented. A comprehensive GGBFMP will be prepared prior to the commencement of construction works for Stage 1. The GGBFMP will be prepared by a suitably qualified ecologist and in consultation with OEH ~~DECCW~~ and will be in accordance with the following plans and previous studies: - Draft Recovery Plan: Green and Golden Bell Frog (Lesson 1829) Recovery Plan (DECCW, 2005)	

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		- Best Practice Guidelines: Green and Golden Bell Frog Habitat (DECCW, 2008) - The Green and Golden Bell Frog Key Population at Port Kembla Management Plan (DECCW, 2007) - Assessment of Habitat, Dispersal Corridors and Management Actions to Conserve the Port Kembla Key Population of Green and Golden Bell Frog 2007-2008 (Gaia Research, 2008). The GGBFMP will include the following as a minimum: - Program of works and timeline for all key components of Stage 1. - ~~Undertake a~~A conservation assessment ranking for any known or likely GGBF habitats in the study area, including but not limited to, identification and assessment of breeding, shelter, foraging, and movement habitat components. - ~~Identify~~Identification of any actual or potential threats from construction and operations, including but not limited to: • Habitat loss, modification and disturbance • Fragmentation and isolation of habitat • Water quality and pollutant issues • Road mortality • Exotic weed control and application of herbicides containing glyphosate • Slashing and mowing • Invasion by *Chrysanthemoides monilifera* • Predation and disease (refer detailed mitigation measures below). - ~~Identify~~Identification of appropriate actions to present or minimise these actual or potential threats, including, but not necessarily limited to: • Scheduling works to coincide with activity cycles where practicable • Construction of any compensatory habitat prior to proposed habitat loss • Frog fencing • Engaging a suitably qualified ecological consultant to be on site during construction • Development of response protocols in the event that frogs are found in the active construction areas • Signage • Measures outlined in the frog hygiene protocol. - Include details of how the proponent will monitor and report on the ongoing effectiveness of the GGBFMP including, but not necessarily limited to: • ~~Including the o~~Objectives of the monitoring program • Method of monitoring • ~~•~~ Data return to OEH ~~DECCW~~ • Licensing • Reporting framework • Duration • Frequency. - A program of works and timeline for planting and landscaping in	

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		appropriate areas with vegetation suitable for GGBF foraging and shelter as well as installing structures (such as logs and concrete pieces) to facilitate movement and over wintering habitat. Mitigation measures to minimise the spread of deadly pathogens and disease to the GGBF include the following: - Frog exclusion fencing will be installed around construction sites in close proximity to known or potential GGBF breeding habitats. - The construction works site and any open trenches within the development area should be checked each morning during construction for the presence of any frogs which should be released into nearby ground cover. Handling the species should be minimised. Frog Hygiene Protocol (NPWS, 2001) should be followed to avoid the spread of chytrid spores or other pathogens between aquatic habitats and frog sites. - If necessary, earth-working equipment and vehicles will be cleaned of excess soil by brushing or hosing when they enter and exit the site in order to minimise the likelihood of the spread of weed seeds and plant pathogens. - If it is likely that vehicle tyres will result in mud and water being transferred to other bodies of water or frog sites, they should be sprayed with a disinfecting solution as per the Frog Hygiene Protocol (NPWS, 2001). This should be carried out at a safe distance from water bodies, so the disinfecting solution can infiltrate the soil instead. - The importation of water should avoid known areas of breeding habitat in close proximity to construction activities (such as Site 18). - The use of imported mulch or compost should be avoided in any rehabilitation works in the vicinity of known breeding areas and associated dispersal avenues.	
8	Rail	During reclamation activities, ~~PKPC~~The Proponent will review the need to install a material handling system to unload fill from trains at the area dedicated to stockpiling of imported fill material. For any rail infrastructure works located outside of the rail reservation under its control, ~~PKPC~~The Proponent will continue to consult with landowners as detailed design of these works is progressed, to secure landowner agreements prior to the commencement of construction works for Stage 1. ~~THE PROPONENT will provide the Department of Planning and Infrastructure with updates regarding the demand for rail freight to/from the port and the progress of planned regional rail infrastructure upgrades prior to commencing the later stages (i.e Stage 1b and 1c) of the dredging and reclamation works.~~	The proposed amendments are to reflect the assessment and recommendations presented in **Chapter 9.0** of this report.
9	Traffic	*Traffic Management Plan* ~~PKPC~~The Proponent will prepare a TMP in accordance with Traffic Control at Worksites (RTA, 2003), prior to construction and operation of Stage 1 in order to minimise impact on pedestrian and vehicle	The amendments are proposed to reflect the proposed removal of specific sub-

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		movements. The TMP will outline and manage the transportation routes to the site for heavy vehicles during construction of Stages 1 ~~1a, 1b and 1c~~ of the Major Project. The TMP will also include: - Access arrangements for heavy vehicles to the site. - Procedures for the delivery and dispatch of products. - Preference for the use of larger trucks in order to minimise vehicular movements. - Haulage routes to and from the site. - Driver protocols including a Code of Conduct to encourage safe driving practices. - Use of truck turnaround areas. - Financial penalties. - Truck movements per hour restrictions. Car park facilities will be established within dedicated construction areas internal to the site. Car parks will be designed to cater for the number of construction vehicles to reduce or avoid potential overflow impacts on the local road network, such as Foreshore Road. All roads constructed as part of the development will be designed to accommodate the number and type of vehicle movements projected, will satisfy relevant design standards and will consider local guidance publications including the Wollongong City Council *Subdivision Policy for Road Construction.* *Sources of Fill Material* Prior to the commencement of filling operations for the container terminal ~~for Stages 1b and 1c~~, ~~PKPC~~the Proponent will provide detail of the sources of the fill material which is to be imported to the site for the reclamation, including the method of transport, for approval by the Department of Planning and Infrastructure.	stages, to accurately reflect the traffic movement restrictions, as well as agency name changes that have occurred since 2010.
10	Noise	*Construction Noise and Vibration Management Plan* A Construction Noise and Vibration Management Plan (CNVMP) will be prepared by ~~PKPC~~the Proponent prior to the commencement of construction of Stage 1 in line with the Interim Construction Noise Guideline (DECC, 2009) ~~DECCW "Draft Construction Noise Guidelines"~~ in order to minimise the noise impact at sensitive receivers. The CNVMP will include: - Notification of and maintaining regular contact with noise-affected neighbours. - Maintaining a complaints register and complaints handling. - Operating plant in a quiet and efficient manner. - Adoption where practicable of alternative work practices which generate less noise. For example, the use of hydraulic rock splitters instead of rockbreakers, or electric equipment instead of diesel or petrol powered equipment, amongst other management measures. ~~PKPC~~The Proponent is committed to the selection of acoustically considerate plant where possible and the use of noise reducing measures such as silencers, multi-frequency reversing alarms, visual system reversing warnings, enclosures and shrouds.	The proposed amendments are to reflect the correct reference to the noise guideline, the updated assessment for the modification in this report, and the additional scope of construction activity associated with the rail infrastructure upgrades.

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	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		The construction noise level emission and the potential annoyance to sensitive receptors will depend on the final selection of equipment, type of operation, activity duration and the time of day at which works are conducted. Additional noise impact assessment will be carried out if the construction plant to be used on site differs significantly from that assumed for modelling purposes in the revised Noise and Vibration Assessment prepared by AECOM and dated November 2013 ~~20 September 2010~~). *Rock Blasting* ~~PKPC~~The Proponent will ensure that site specific data gathered during trial blasts (to refine and determine methods for the blasting of bedrock) is used to refine and calibrate the calculations prior to any blasting taking place. *South Yard* The need for mitigation measures to address construction noise associated with rail upgrades in the South Yard ~~rail siding upgrade~~ will be carefully considered at the construction planning stage. Potential mitigation measures may include review of the construction schedule, working hours, type of plant used and the use of temporary noise barriers.	
11	Air Quality	*Air Quality Management Plan* ~~PKPC~~The Proponent will prepare an AQMP and mitigation measures will include but not be limited to: - Transport loads and materials will be covered to avoid generating wind-blown dust. - Site surfaces will be wetted down during dry weather including excavation sites, haul roads, spoil stockpiles and other exposed areas. - Vehicular access will be confined to designated access roads. - Shaker pad facilities will be provided for construction trucks and machinery leaving site. - Instantaneous dust monitoring will be undertaken at the site boundary. Regular checks on exhaust emissions from construction equipment, trucks, plant and machinery will be undertaken. - Construction site speed limits will be implemented. The AQMP will include a dust monitoring program designed to assess the impact of particulate emissions from construction works undertaken as part of Stage 1. Monitoring will be undertaken in accordance with Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.	
12	Landscape and Visual Amenity	*Landscape Management Plan* ~~PKPC~~The Proponent will prepare a LMP for construction of Stage 1 which includes site specific measures and controls including: - Projection of lighting used for evening and night time work will be downward and toward site works to minimise light spill on adjacent areas.	

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	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		- Clear definition of materials storage areas, compounds and construction areas and boundaries. - Construction timing will be programmed to minimise period of disturbance.	
13	Heritage	*Archival photographic recording* An archival photographic recording will be prepared prior to demolition of No. 3 and No. 4 Jetties (part of Stage 1) and a comprehensive history of the jetty prepared. *Historical Shipwrecks* Should any evidence of shipwreck material be encountered during dredging or other activities during Stage 1, works in the immediate vicinity will cease, the Heritage Branch will be contacted immediately and a suitably qualified maritime archaeologist will be contacted to assess the discovery and provide advice on mitigation and recording. *Other Heritage Items or Archaeological Relics* Should unidentified European heritage items and/or archaeological relics be encountered during Stage 1 construction, works in the immediate vicinity will cease, the Heritage Branch will be contacted immediately and a suitably qualified heritage consultant will be contacted to assess the discovery and provide advice on mitigation and recording.	
14	Waste	*Waste Management Plan* ~~PKPC~~ The Proponent will ensure that appropriate general and hazardous waste identification, handling, storage, transportation, disposal and monitoring measures, to be followed on site during construction for Stage 1 are included in a WMP which is to form part of all relevant CEMPs. ~~PKPC~~The Proponent will ensure these management measures as well as on site waste management activities are undertaken in accordance with the relevant NSW and Commonwealth Regulations and Guidelines. *Demolition Management Plan* The DMP for Stage 1 will include appropriate management measures for the dismantling, removal and disposal of structures and materials from No. 3 and No. 4 Jetties.	
Operation Phase			
15	Hydrology and Water Quality	*Operation Environment Management Plan* The OEMP will include the following measures to ensure the appropriate management of materials handled at the first multi-purpose berth: - A control system to ensure that bulk material stockpiles and materials within handling areas are contained on site, through the use of covered bulk unloader facilities, enclosed conveyors, storage sheds, containment walls, bunding, stormwater and dust controls.	The amendments are proposed to reflect the inclusion of conveyors and storage sheds as part of the proposed modification.

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		- ~~Any~~ Containment of any excess sediment laden runoff ~~will either be contained~~ within the bunded storage areas or directed to a land based treatment area. - Implementation of a program of regular monitoring and maintenance of the storage and handling of bulk materials will be implemented. - Measures to minimise excess materials being deposited off-site during loading and transportation of bulk materials from the material handling area. - Implementation of controls such as vehicle shaker pads, use of vacuum road sweepers, covering loads during transport and dust suppression. - Inclusion of emergency spill response procedures in the ERP. - Inclusion of pollution control devices on the future paved surfaces of the development. *Water sensitive urban design* WSUD will be utilised where ever possible to reduce the volume, velocity and contaminants associated with stormwater runoff. *Integrated Water Cycle Management Plan* ~~*Stormwater Management Plan*~~ A STMP will be prepared to appropriately manage the accumulation of surface water from rainfall, storm events and stockpile watering. The STMP will outline the management of surface water for operation of Stage 1 ~~(central portion of the multi-purpose terminals)~~ and measures for treatment such as a first flush stormwater capture system. Management of surface water will be considered and confirmed during detailed design but is likely to include harvesting of water from roofs of buildings and other roofed structures. On the central portion of the multi-purpose terminal stormwater management infrastructure would include a HumeCeptor® system, or equivalent, to treat water to meet water quality targets prior to discharge into surrounding waters. Water quality controls on the central portion of the multi-purpose terminal would include operation of spill containment pit. ~~PKPC~~The Proponent will also investigate the potential for the treatment and recycling of wash down water from conveyors and other sources for beneficial re-use within the Project operations.	This amendment is proposed to reflect the additional commitment concerning the investigation of potential beneficial capture, treatment and re-use of wash down water at Stage 1. It is also proposed to change the name of this plan to reflect the Major Project approval Condition B13
16	Potential Hazards	*Emergency Response Plan* ~~PKPC~~The Proponent will prepare an ERP in accordance with the HIPAP No.1 Emergency Planning Guidelines as part of the OEMP for the multi-purpose terminal. *Hazardous Substance Management Plan* ~~PKPC~~The Proponent will prepare a HSMP as part of the OEMP that will be implemented during the operation of the first berth including as a minimum, the following measures to prevent and respond to spills: - A system to ensure that all staff involved in the handling of	This amendment is to reflect the recommendations of the risk and hazards assessment (**Section 21.1**) of this report.

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	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		chemicals are suitably qualified and trained in emergency spill response procedures. - Diagrams and descriptions of access and unloading locations and procedures for drivers of vehicles delivering chemicals. - A program of regular monitoring and maintenance of equipment used in the transportation and handling of chemicals. - A register of equipment, responsibilities and procedures for responding to spills. - A program of monitoring of the condition of bunding. - Procedures for maintenance activities for the sulphuric acid pipeline that will be relocated from Berth 206. *Coal Dust Accumulation* ~~PKPC~~The Proponent will consider design options to prevent the accumulation of coal dust within conveyor and handling systems, as well as mitigation and management responses (such as cleaning and the working of stockpiles) to minimise the risk associated with the accumulation of coal dust within these structures.	
17	Flora and Fauna	*Green and Golden Bell Frog Master Plan* A GGBF Master Plan will be prepared to provide a strategic framework on how GGBF and its habitat will be managed across the Port Kembla Outer Harbour area. The GGBF Master Plan will be prepared prior to commencement of operations of Stage 1. ~~PKPC~~The Proponent will consult with ~~DECCW~~ OEH during preparation of the GGBF master plan.	This amendment is to reflect changes to agency names since 2010.
18	Traffic	*Traffic Management Plan* A TMP will be included in the site OEMP. The Plan will address work practices on site, designated haulage routes to and from the site, driver protocols (including a Code of Conduct to encourage safe driving practices), financial penalties and hours of operation amongst other measures. *Old Port Road Railway Level Crossing* Prior to the commencement of any rail freight movements associated with Stage 1, the Proponent will identify and implement the selected treatment option for Old Port Road railway level crossing (be it a temporary or permanent option). The selection of the treatment option will be determined in consultation with RMS and Transport for NSW. The options include (but are not limited to): - Temporary closure of the at-grade crossing with rail scheduling and the redirection of traffic. - Permanent closure of the at-grade crossing, with traffic diverted to Five Islands Road or the new port access road (local traffic). - Grade separation of the at-grade crossing (road over rail). To inform the selection option, the Proponent will undertake additional investigations, design work and consultation with affected stakeholders (including directly affected businesses).	The proposed amendments are to reflect the recommendations of **Chapter 10.0** relating to the implementation of treatment option(s) for the Old Port Road railway level crossing.

Ref	Major Project		
	Issue	Environmental Commitment	Reason for Amendment(s)
		The trigger for the transition period between a temporary option and a permanent option will be determined in consultation with RMS. The Proponent will ensure that any selected option will maintain access for over-dimensioned vehicles (on prior arrangement where possible) to properties located between the level crossing and current rail bridge on Old Port Road.	
19	Rail	~~Recommendations for rail infrastructure upgrade and arrangements for network paths for construction and operation of Stage 1 are as follows:~~ To accommodate the rail movements associated with Stage 1 rail infrastructure upgrades would be progressively constructed as bulk cargo volumes and train volumes increase over time. This includes two additional bulk rail loops parallel to existing balloon loop, additional bulk sidings in the North and South Yards, two bulk unloading facilities on the eastern side of the bulk loops and an upgrade of the rail bridge over Old Port Road to accommodate the additional bulk loops. ~~in the South Yard required for operation of Stage 1 will comprise extension of siding No. 13 by 120m to 780m and turnout installation and removal.~~ ~~Agreement will be sought from ARTC to allow the use of five train paths per day, in each direction on the Unanderra Line.~~ The Proponent will consult with other existing users of the Outer Harbour rail infrastructure and the rail operator regarding the proposed bulk rail operations for Stage 1 to ensure that their existing operations are suitably accommodated. The Proponent will continue to consult with rail infrastructure providers and rail agencies to promote the planning for, and timely delivery of, regional rail network capacity to service customers seeking rail access to the Outer Harbour Development. ~~PKPC~~The Proponent will provide the Department of Planning and Infrastructure with updates regarding the demand for rail freight to/from the port and the progress of planned regional rail infrastructure upgrades as bulk rail movements increase as part of Stage 1. ~~prior to commencing the later stages (i.e. Stage 1b and 1c) of the dredging and reclamation works.~~	The proposed amendments are to reflect the rail assessment and recommendations undertaken for the proposed modification.
20	Noise	*Operational Noise and Vibration Management Plan* ~~PKPC~~The Proponent will prepare an ONVMP as part of the OEMP, prior to the commencement of operation of the proposed development. The ONVMP ~~should~~ be prepared in accordance with the relevant EPA ~~DECCW~~ guidelines and ~~should~~ incorporate best practice mitigation measures. The ONVMP will recommend noise mitigation measures required to address operational noise and sleep disturbance impacts arising from increased rail movements associated with Stage 1 of the project. This may include an acoustic barrier in the South Yard, enclosure of the southern break bulk area, the selection of acoustically considerate plant (where possible) and use of noise reducing measures such as silencers, shrouds and	The proposed amendments are to reflect the updated noise and vibration assessment and recommendations undertaken for the proposed modification.

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
		enclosures. The ONVMP would identify stages of operations where the development would exceed the criteria and require mitigation measures. Noise level in the area would be regularly audited through the Noise Verification Monitoring program. Based on these levels mitigation measures would be planned for implementation when levels approach the project criteria. Each noise source would be taken into consideration, with mitigation measures being investigated for the higher noise contributors. The feasibility of providing an acoustic barrier along the South Yard will be investigated further prior to the first rail movement associated with Stage 1. This will consider the location, height, effectiveness, constructability matters and the visual impact of the barrier. The Proponent will also consult with landowners in the immediate vicinity of the acoustic barrier, if determined to be reasonable and feasible. To mitigate the potential sleep disturbance impacts associated with the use of train horns in Stage 1, ~~PKPC~~the Proponent will commit to use shorter train horn toots rather than standard longer train horn blasts. ~~PKPC~~The Proponent will carry out an additional noise impact assessment, if it is found, after detailed design and operations planning, that the finalised operational scenario differs significantly from that used for modelling purposes in the revised Noise and Vibration Impact Assessment by AECOM and dated November 2013 ~~20 September 2010~~.	
21	Air Quality	*Air Quality Management Plan* ~~PKPC~~The Proponent will ensure that the AQMP includes appropriate site specific mitigation measures for the management of particulate emissions during the operation of the proposed development such as: - Sealing roads and areas susceptible to windblown dust impacts. - Covering of transport loads. ~~- Watering and/or using surfactants on stockpiles.~~ ~~- Covering of bulk cargo stockpiles (where necessary practicable).~~ - Instantaneous dust monitoring at the boundary of the site most affected by dust impacts. - Reclaimed areas for future terminal development to be covered with suitable compacted materials to ensure fugitive dust emissions are minimised. - Site specific mitigation measures for the management of particulate emissions during the operation of the proposed development~~'s night time operation~~. The Proponent will obtain a site specific silt loading factor for the internal port access road once Stage 1 is operational, and will be used to inform any management measures, if required, to reduce particulate emissions from internal roads.	The proposed amendment is to reflect the use of enclosed storage sheds and conveyors during Stage 1 as a result of the proposed modification.

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
22	Landscape and Visual Amenity	*Landscape Management Plan* ~~PKPC~~The Proponent will ensure that the LMP includes appropriate site specific measures and controls to mitigate potential visual impacts on the immediate, local, and regional landscape including: ~~THE PROPONENT will prepare a LMP which includes:~~ - Lighting for the portion of the dry bulk/multi-purpose terminal that will be operational as part of Stage 1 and other operational areas, including the new road link and rail infrastructure, will be carefully selected to minimise light spill on surrounding areas outside the terminal boundaries and minimise visual impact when viewed from adjacent premises. - Selection of suitable colours and materials for the terminal pavement, buildings and other structures to minimise reflectivity and contrast. The design of any acoustic barriers would also have consideration to visual amenity impacts.	The amendments are proposed to reflect the scope of Stage 1, as modified.
23	Sustainability	As per Concept Plan	
24	Climate Change	As per Concept Plan	
25	Waste	*Waste Management Plan* ~~PKPC~~The Proponent will ensure that appropriate general and hazardous waste identification, handling, storage, transportation, disposal and monitoring measures, to be followed on site during operation of the proposed development, are included in a WMP which is to form part of the OEMP. ~~PKPC~~ The Proponent will ensure these management measures as well as on site waste management activities are undertaken in accordance with the relevant NSW and Commonwealth Regulations and Guidelines. The WMP will include measures to comply with biosecurity legislation, including ballast water management. ~~The following measures will be included as a minimum in the WMP:~~ - Incoming vessels to the Port will be subjected to assessment in accordance with the Quarantine Act 1908 or future biosecurity legislation requirements. Australian Quarantine Inspection Service (AQIS) manages quarantine controls at Australian borders to minimise the risk of exotic pests and diseases entering the country. Incoming vessels will have to apply to the AQIS: form s20AA Permission to Enter an Australian Non-Proclaimed First Port of Entry and/or Application for s33 Permission to Enter Subsequent Ports of Call. - The OEMP should incorporate requirements as in the National Ballast Water Management Arrangements under the Australian National System for the Prevention and Management of Marine Pest Incursions.	The *Quarantine Act 1908* is due to be repealed. The suggested amendments will enable the WMP to reflect the correct legislative requirements.

Ref	Major Project		
	Issue	**Environmental Commitment**	**Reason for Amendment(s)**
26	Socio-Economic	~~PKPC~~The Proponent will ensure that access to the existing small boat harbour and associated facilities is not affected during either the construction or operational phase of Stage 1. ~~PKPC~~The Proponent will include appropriate measures in a Safety Management Plan for Stage 1 to ensure that safe access is provided for recreational boaters entering and exiting the small boat harbour, particularly during reclamation and dredging activities. ~~PKPC~~The Proponent will continue to liaise with affected businesses and local community groups during Stage 1 to inform them about project status and timing for construction key project components.	

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25.0 Conclusion

25.1 Proposed Modification

The proposed modification would enable the Port to handle an increase in the total volume of bulk cargo, from 4.25 Mtpa to 16 Mtpa. All additional bulk cargo volumes (14 Mtpa) would be transported by rail. To facilitate the increase in bulk trade, the modification includes:

- An enlarged operational land area for the multi-purpose terminal.
- Increased number of ship movements and larger ships to cater for the increase in bulk cargo volumes.
- Minor changes to the approved dredging and land reclamation footprint between the multi-purpose and container terminals to cater for larger ships.
- Introduction of covered conveyors and enclosed storage sheds to handle the movement of bulk product.
- Increased train movements to facilitate delivery of larger volumes of bulk cargo and associated rail infrastructure to facilitate these increased movements.
- Changes to road infrastructure to accommodate the increase in train movements, including assessment of options for the treatment of the railway level crossing on Old Port Road.
- An increase in the volume of fill material temporarily stockpiled on-site for land reclamation purposes.
- A slight increase in construction traffic due to the increase in construction activity under Stage 1.
- A revised alignment of the Salty Creek extension on a more direct route through the reclamation area.

25.2 Strategic Justification and Benefits

The proposed modification responds to changes in the commercial and strategic context of the Port. It takes into account changes in market demand and the State policy framework relating to ports and the movement of freight by rail which have occurred since the original approvals for the Outer Harbour Development were issued.

The *Draft NSW Freight and Ports Strategy* confirms the role of regional ports, including Port Kembla, in exporting bulk commodities from regional NSW. It also confirms the role of Port Kembla in accommodating the State's growing container trade to augment the capacity of Port Botany when required in the future.

The Strategy also confirms the need to improve rail infrastructure to support the movement of freight by rail to service Port Kembla. This includes specific recognition of the Maldon-Dombarton Rail Link as a strategic rail freight corridor and a recommendation to further advance the investigations for this project.

The modification would result in the more efficient use of proposed Port infrastructure, enabling Port Kembla to meet projected trade growth and customer demand. By introducing enclosed conveyors and storage sheds, the modification also presents the opportunity to mitigate the environmental impacts associated with the storage of bulk materials in open stockpiles, as previously approved.

The proposed modification would also provide additional employment associated with expanded bulk capacity of the multi-purpose terminal in Stage 1. There would also be indirect economic benefits to the Port Kembla area and broader Illawarra region arising from the additional employment that is created.

25.3 Overview of Environmental Impacts

The Environmental Assessment is focused on assessing the environmental impacts associated with the modified elements of the Outer Harbour Development. Environmental impacts associated with elements of the approved development which are not proposed to be modified have not been included in the assessment.

Based on the DGRs, and the consultation undertaken by PKOPL, the key issues identified as the focus of the Environmental Assessment included rail traffic, road traffic, noise and vibration, and air quality. A range of other environmental issues associated with the modification have been assessed as required by the DGRs. These issues include soils and groundwater, surface water quality and hydrology, harbour sediment quality, qualitative human health and ecological risk, aquatic and terrestrial ecology, coastal hydrodynamics and visual amenity.

The Environmental Assessment has identified the following potential environmental and social impacts associated with the construction and operation of the modified Outer Harbour Development:

- Increase in rail traffic associated with the larger bulk cargo volumes proposed for the multi-purpose terminal.
- Relatively minor increase in road traffic during construction and operation of the multi-purpose terminal.
- Traffic impacts associated with the potential treatment of the at-grade railway crossing on Old Port Road.
- Increased noise and air quality impacts during construction and operation as a result of the larger operational area for the multi-purpose terminal, increase in fill stockpile areas during construction, development of enclosed storage sheds and conveyors for bulk cargo handling, additional train movements and construction of associated rail infrastructure.
- Disturbance of contaminated sediments and associated potential impacts on water quality as a result of the changes to the dredging footprint and volumes.
- Disturbance of contaminated soil and groundwater as a result of the additional land based construction works proposed for the Major Project (Stage 1).
- Minor impacts to surface water quality and hydrology as a result of additional construction works and a larger operational area for the multi-purpose terminal.
- Minor impacts to terrestrial and aquatic ecology during the construction and operational phases of the development.
- Minor changes to hydrodynamic environment of the Outer Harbour and Inner Harbour as a result of the changes to the dredging footprint and volumes.
- Minor changes to visual setting of the Outer Harbour as a result of additional rail and terminal infrastructure proposed and as a result of increased train and shipping movements.
- Modest direct and indirect economic benefits for the economy of the local Port Kembla area and the Illawarra region arising from an increase in employment associated with the multi-purpose terminal.

25.4 Mitigation and Management Measures

The existing approval conditions for the Major Project and Concept Plan provide a detailed framework for the management of potential environmental impacts associated with the proposed modification during both the construction and operational phases.

Where appropriate, the Environmental Assessment has identified proposed changes to approval conditions to address the impacts associated with the modification. The existing Statement of Commitments for the approved Major Project and Concept Plan have also been updated to address the potential environmental impacts associated with the proposed modification.

The existing Concept Plan approval requires further environmental assessments to be prepared as part of the project applications for Stages 2 and 3. This requirement provides a further opportunity for detailed assessment of environmental impacts and development of specific management and mitigation measures for Stages 2 and 3 at an appropriate time.

The residual environmental risk analysis indicates that the proposed modification presents an overall negligible to moderate risk to the surrounding environment and receivers in relation to each of the identified environmental issues. This assumes that the recommended mitigation and management measures are implemented.

25.5 Summary of Findings

The findings of the Environmental Assessment indicate that the proposed modification has a strong justification for proceeding. Potential impacts associated with the modification can be managed and mitigated to an acceptable level of risk. On this basis the proposed modification is considered suitable for approval.

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PORT KEMBLA OUTER HARBOUR DEVELOPMENT MODIFICATION

Environmental Assessment Document

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