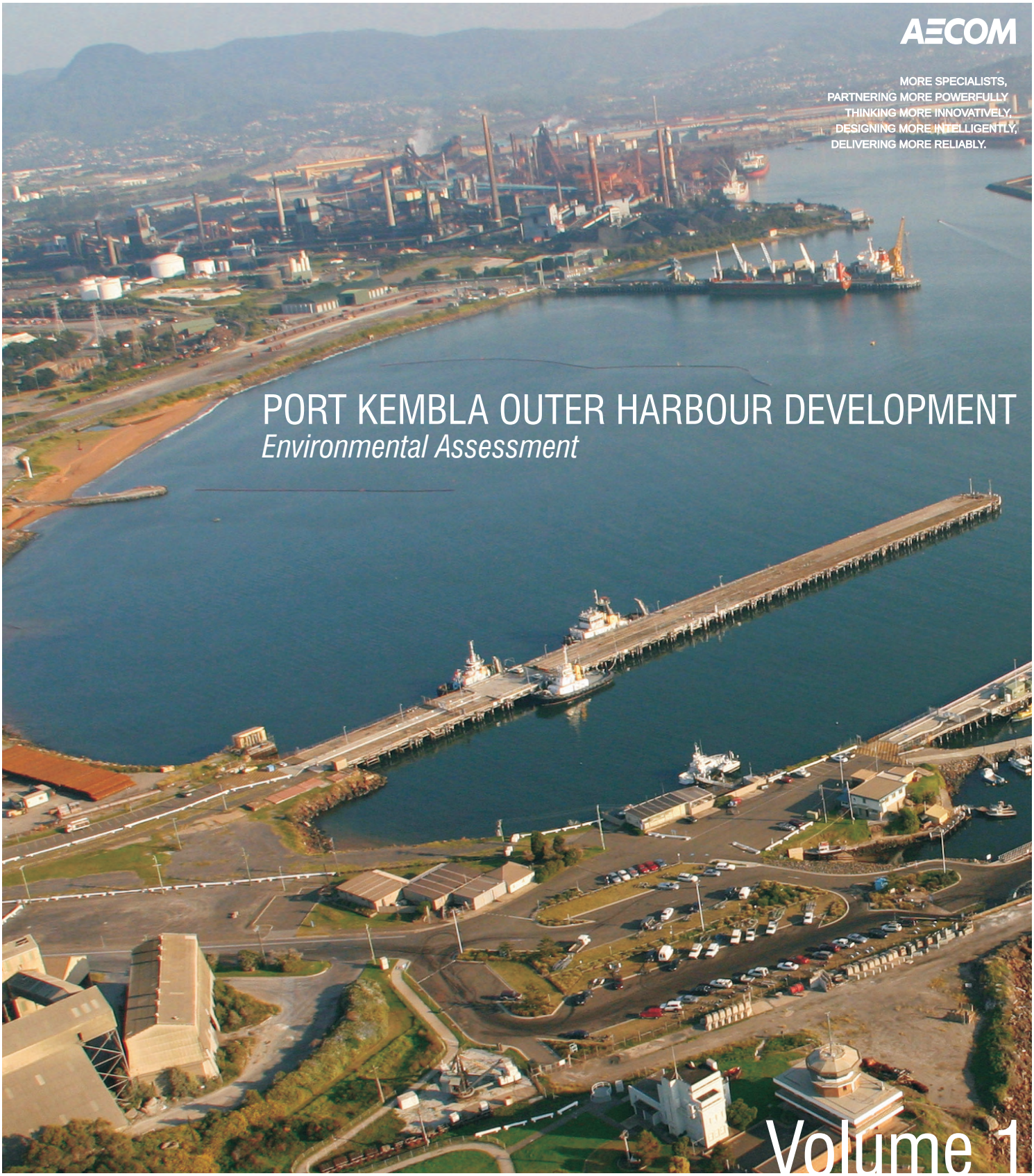

PORT KEMBLA OUTER HARBOUR DEVELOPMENT

Main Environmental Assessment Document and
Appendix A: Consultation Supplementary Documentation

Prepared for
Port Kembla Port Corporation

March 2010

PORT KEMBLA
PORT CORPORATION

FINAL

Port Kembla Outer Harbour Development

Environmental Assessment

Port Kembla Outer Harbour Development

Environmental Assessment

Prepared for

Port Kembla Port Corporation

Prepared by

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Port Kembla Outer Harbour Development

Environmental Assessment

Submission of Environmental Assessment

Prepared under the Environmental Planning and Assessment Act 1979, Section 75H

Environmental assessment prepared by:		
Name	Andrew Cook	Deborah Bowden
Qualifications	Associate Director/Workgroup Leader	Principal Environmental Scientist
Address	Bachelor of Town Planning and Regional Planning (University of Melbourne)	Bachelor of Science (Env. Geography), Master of Science (Coastal Resource Management)
	AECOM Level 8, 17 York Street Sydney, NSW, 2001	AECOM Level 8, 17 York Street Sydney, NSW, 2001

In respect of:

Project to which Part 3A applies	
Applicant name	Port Kembla Port Corporation
Address	Maritime Centre 91 Foreshore Road Port Kembla NSW 2505
Land to be developed	
Proposed development	Expansion of Outer Harbour, Port of Port Kembla (Construction and Operation of Terminals and Berths, Dredging and Reclamation)

Environmental assessment An environmental assessment is attached

Certificate

I certify that I have prepared the contents of this document and to the best of my knowledge:

- It is in accordance with the requirements of Part 3A;
- It contains all available information that is relevant to the environmental assessment of the development to which it relates; and
- The information contained in the document is neither false nor misleading.

Signature:		
Name:	Andrew Cook	Deborah Bowden
Date:	17th March, 2010	17th March, 2010

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Abbreviations & Acronyms

Abbreviations

Etc.	Etcetera meaning 'and so on'
cm	Centimetres
Concept Plan	Total development including Stages 1, 2 and 3
dB(A)	A-weighted decibel
e.g.	Example
et al.	Et alii meaning 'and others'
ha	Hectares
kV	Kilovolt
m	metres
Mtpa	Million tonnes per annum
Major Project	Stage 1 development only
Master Plan	Master plan for development of Outer Harbour
Outer Harbour	The Outer Harbour of Port Kembla
Outer Harbour Development	The proposed Outer Harbour development which is the subject of the Environment Assessment
Part 3A	Part 3A of the *Environmental Planning and Assessment Act 1979*
State Plan	NSW State Plan: A New Direction for NSW
The amending Act	*Contaminated Land Management Amendment Act 2008*
The Port	The Port of Port Kembla
V	Volt

Acronyms

AAT	Australian Amalgamated Terminals
ABL	Assessment Background Level
AHIMS	Aboriginal Heritage and Information Management System
ALARP	As Low As Reasonably Practicable
AN	Ammonium Nitrate
ANZECC	Australian and New Zealand Environment Conservation Council
AQIA	Air Quality Impact Assessment
AQIS	Australian Quarantine Inspection Service
AQMP	Air Quality Management Plan
ARI	Average Recurrence Interval
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ARTC	Australian Rail Track Corporation
AS	Australian Standards
ASMS	Australian Steel Mill Services Pty Ltd
ASS	Acid Sulfate Soil
ASSMAC	Acid Sulfate Soil Manual

ASSMP	Acid Sulfate Soil Management Plan
BGS/bgs	Below Ground Surface
BHD	Backhoe Dredger
BOM	Bureau of Meteorology
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CIRA	Competition and Infrastructure Agreement
CLM Act	Contaminated Land Management Act 1997
CMP	Conservation Management Plan
CO	Carbon Monoxide
COAG	Council of Australian Governments
CONCAWE	Conservation of Clean Air and Water in Europe
CoPC	Contaminants of Potential Concern
CSD	Cutter Suction Dredger
CVA	Conservation Volunteers Australia
DAFF	Department of Agriculture, Fisheries and Forestry
DCP	Development Control Plan
DDG	Dust Deposition Gauge
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment and Climate Change and Water
DEMP	Dredging Environmental Management Plan
DEWHA	Department of Environment Water Heritage and the Arts
DGs	Dangerous Goods
DGRs	Director General Requirements
DoH	Department of Health (Western Australia)
DIN 4150	*DIN Standard 4150 - Part 3 - Structural Vibration in Buildings - Effects on Structures*
DMP	Demolition Management Plan
DNR	Department of Natural Resources
DoP	Department of Planning
DP	Deposited Plan
DPI	Department of Primary Industries
DoS	Degree of Saturation
DoT	Department of Transport
DUAP	Department of Urban Affairs and Planning
dwt	Dead Weight Tonnes
EA	Environmental Assessment
ECRTN	Environmental Criteria for Road Traffic Noise
EEC	Endangered Ecological Community
EMP	Environmental Management Plan
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 2000

EPHC	Environment Protection and Heritage Council
EPL	Environment Protection Licence
ERA	Environmental Risk Analysis
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development
FCAI	Federal Chamber of Automotive Industries
FM Act	Fisheries Management Act
FTE	Full Time Equivalent
GD	Grab Dredger
GGBF	Green and Golden Bell Frog
GHG	Greenhouse Gas
GIS	Geographic Information System
GLC	Ground Level Concentration
GRP	Gross Regional Product
GSP	Gross State Product
HAT	Highest Astronomical Tide
HCFC	Hydrochlorofluorocarbon
HIPAPs	Hazards Industry Planning Advisory Papers
IA	Infrastructure Australia
IBCs	Intermediate Bulk Containers
ICNG	Interim Construction Noise Guidelines
ICOLL	Intermittently Closed or Open Lake or Lagoon
IGANRIP	Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects
IMDG	International Maritime Dangerous Goods
INP	Industrial Noise Policy
IPCC	Intergovernmental Panel on Climate Change
IRATE	Illawarra Residents Against Toxic Environments
ISGOTT	International Safety Guide for Oil Tankers and Terminals
ISQG	Interim Sediment Quality Guidelines
JNCC	Joint Nature Conservation Committee
LBI	Land Based Investigation
LEP	Local Environment Plan
LEP 1990	Wollongong LEP 1990
LGA	Local Government Area
LMP	Landscape Management Plan
LOR	Limit of Reporting
MHD	NSW Maritime Heritage Database
MFN	Metropolitan Freight Network
MVA	Megavolt Ampere
NATA	National Association of Testing Authorities, Australia
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NES	National Environmental Significance
NMP	Noise Management Plan
NO_x	Nitrogen Oxides (reported as NO_2)

NP&W Act	National Parks & Wildlife Act 1974
NPWS	National Parks and Wildlife Service
NRA	National Reform Agenda
NSD	National Shipwreck Database
NSW	New South Wales
NSW WARR	NSW Waste and Resource Recovery Strategy 2007
O_3	Ozone
OCP	Organochlorine Pesticides
OEMP	Operational Environmental Management Plan
pa	per annum
PAH	Polycyclic Aromatic Hydrocarbon
PASS	Potential Acid Sulfate Soil
PCB	Polychlorinated Biphenyl
PEA	Preliminary Environmental Assessment
PHA	Preliminary Hazard Analysis
PIANC	Permanent International Association Navigation Congress
PKHD	Port Kembla Harbour Datum
PKHEG	Port Kembla Harbour Environmental Group
PKPC	Port Kembla Port Corporation
PKPM	Port Kembla Pollution Meeting
PM_{10}	Particulate Matter (particles less than 10 µm in diameter)
$PM_{2.5}$	Particulate Matter (particles less than 2.5 µm in diameter)
PN	Pacific National
POEO Act	Protection of the Environment Operations Act 1997
PPV	Peal Particle Velocity
RBL	Rating Background Level
REP	Regional Environmental Plan
RID	Regional Illegal Dumping
RL	Relative Level
RMP	Refuelling Management Plan
RTA	Roads and Traffic Authority
SAC	Soil Assessment Criteria
SCA1	Sensitive Catchment Area 1
SCA2	Sensitive Catchment Area 2
SEPP33	State Environmental Planning Policy No 33 – Hazardous and Offensive Development
SEPP 71	State Environmental Planning Policy No 71 – Coastal Protection
SEWR	Significant Enough to Warrant Regulation
SI	Sediment Investigation
SILs	Soil Investigation Levels
SLR	Sea Level Rise
SMP	Safety Management Plan
SO_2	Sulfur Dioxide
SPBP	Soybean Processing and Biodiesel Processing Facility
SPOCAS	Suspension Peroxide Oxidation Combined Acidity and Sulfate
SoC	Statement of Commitments

SWMP	Soil and Water Management Plan
SSFL	South Sydney Freight Line
TBT	Tributyltin
Tc	Time of concentration
TCLP	Toxicity Characteristic Leaching Procedure
TEU	Twenty-foot Equivalent Units
TMP	Traffic Management Plan
TPH	Total Petroleum Hydrocarbon
TSC Act	Threatened Species Conservation Act 1995
UCL	Upper Confidence Limit
UNSW	University of New South Wales
US FWS	United States Fish and Wildlife Service
VDV	Vibration Dose Value
VENMs	Virgin Excavated Natural Materials
VOC	Volatile Organic Compounds
WCC	Wollongong City Council
WMP	Waste Management Plan
WOLSH	Wollongong Shellharbour
WSUD	Water Sensitive Urban Design

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Executive Summary

Introduction

Port Kembla Port Corporation, a State Owned Corporation under the *Port and Maritime Administration Act 1995*, proposes to develop additional portside and landside facilities in the Outer Harbour of the Port of the Port Kembla to attract new trades as well as increasing the volume of existing cargoes.

Development of the Port would involve a relatively long timeline, anticipated to occur between 2010 and 2037. As a consequence, Port Kembla Port Corporation is seeking planning approval for a staged development to enable reclamation and berth construction. The development would need to have seed infrastructure in place, for example road, rail and the reclamation footprint, to attract new trades and clients.

In accordance with advice provided by the Department of Planning, Port Kembla Port Corporation is seeking concurrent Concept Plan Approval and Major Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979*.

Concept Plan Approval would be sought for the entire development, providing certainty for government stakeholders and the community about the long term plans for development of the Outer Harbour. It would also provide Port Kembla Port Corporation with a greater level of certainty and confidence in securing trades and future customers for components of the development in later stages, while retaining flexibility for refinement of the design.

Major Project Approval would allow Port Kembla Port Corporation to commence reclamation and dredging for the multi-purpose and container terminals and operate the first portion of the multi-purpose terminal.

Subsequent programs of work under the Concept Plan are anticipated to be conducted over the next 27 years, and would be subject to applicable environmental approvals prior to commencing.

Background

Land within the Inner Harbour is almost fully occupied and growth in trade is constrained by lack of suitable port facilities. To develop the potential of the existing port, Port Kembla Port Corporation needs to create new port facilities through dredging, reclamation and the construction of new berths. The Outer Harbour is the only remaining area in the Port where this can be accommodated. A Master Plan to guide the future development in the Outer Harbour of the Port was completed in 2008.

Two of the guiding principles behind the Master Plan were to maximise the available land area and to provide the maximum number of berths suitable for container handling, bulk trades and general cargo. In satisfying these principles, Port Kembla Port Corporation proposes to develop the Outer Harbour in a series of three discrete stages to:

- Cater for growing port needs and regional development.
- Meet the needs of prospective customers.
- Increase the potential to address the needs of new industry.

Constraints to development of the Outer Harbour were identified during the master planning process. Constraints included limited land area for onshore facilities and adverse wave conditions for vessels at berth during ocean storms. These constraints were relieved by designing a reclamation footprint that mitigated adverse wave conditions while increasing the land area available for port facilities. Other key considerations during the master planning process included:

- Trade forecasting and terminal type feasibility.
- Capital investment requirements and return forecasts.
- Ship operation and navigation issues.
- Environmental issues (including site characteristics and surrounding land uses, contamination, hydrology and water quality, aquatic and terrestrial ecology, heritage and socio-economic).
- Geotechnical considerations.
- Landside road and rail infrastructure.
- Tug facilities (existing and future).

Site Description

The Outer Harbour is located in the south eastern extent of the Port of Port Kembla which is located within the Wollongong Local Government Area. The area that is defined by the Outer Harbour development extends from Port Kembla Gateway in the north to existing rail sidings to the west, Foreshore Road to the south and the boat harbour to the east.

The Outer Harbour is characterised by a mix of both natural and built environment features including:

- Three jetties located off the southern and western foreshores.
- A flammable liquids berth located on the northern breakwater.
- A recreational boat harbour and boat ramp located adjacent to the eastern breakwater.
- Cleared short term lease storage areas on the foreshore (current uses include pipe storage and mobile concrete crushing plant).
- Commercial and industrial operations on the foreshore including Brick and Block manufacturing structural masonry products, Morgan Cement, PKPC Headquarters, PKPC Training and Conference Centre, Orica, BlueScope Steel and BHP Billiton.
- Rail network (including rail corridor and sidings) located between Darcy Road and Foreshore Road, Old Port Road and Five Islands Road, recently acquired by PKPC.
- Darcy Road Drain, a concrete lined stormwater drain, located adjacent to lots currently occupied by Brick and Block and Sydney Water.
- Salty Creek, which extends from an area adjacent to the Port Kembla railway station and flows via culvert under Old Port Road and discharges in the Outer Harbour.
- Port Kembla Heritage Park located on the southern headland of the Outer Harbour, south of the eastern breakwater. Heritage Park has been developed to conserve military, cultural and historic heritage in the area.

Land surrounding the proposed area of development within the port precinct is zoned heavy industrial. Other land uses proximate to the Outer Harbour include commercial and residential properties located 600 metres to the south and south west, Wollongong sewage treatment and recycling plant located two kilometres north and an extensive network of local and arterial roads including Foreshore Road, Old Port Road, Christy Drive, Darcy Road, Five Islands Road and Masters Road.

Strategic Context

The Port is one of the closest specialist industrial ports to Sydney, Australia's largest market, and is well connected with Sydney and regional NSW by virtue of a well established road and rail network, making it an ideal base for import and export activities. The Port processes the greatest volume of steel exports and is the second largest exporter of grain from Australia.

The Port is primarily a bulk commodities port servicing the coal mining industry and the adjacent BlueScope Steel steelworks. Commodities handled at the Port include coal, iron ore, steel, and wheat. The Port also has facilities to handle bulk liquids.

In the 2007/08 period, the Port had a record throughput of 27 million tonnes of exports and imports, due in part to increased coal exports and the introduction of car imports. Trade was up 6.3% on the 2006/07 period. In 2008/09 total trade through the Port reached 26.4 million tonnes. The major cargoes handled comprised 13 million tonnes of export coal and 8 million tonnes of steel related products.

Under the *NSW Ports Growth Plan* a proportion of shipping and cargo previously handled through Port Jackson has been transferred to Port Kembla Inner Harbour. Recent development in the Inner Harbour has occurred to accommodate the transfer of some cargo from Sydney and the general growth in freight. This represents up to an additional 400 ship visits, 240,000 motor vehicles and 120,000 tonnes of break bulk cargo (timber, machinery, steel, paper etc) to the Port each year. The Port is now the State's major centre for importation of cars following the closure of the Glebe Island operation in November 2008. The increase in trades would be accommodated within the Inner Harbour.

This growth means that there is very little available land in the Inner Harbour to accommodate future growth. Consequently, if the Port is to continue to attract new trades as well as increasing the volume of existing cargoes, additional portside and landside facilities will need to be provided. This is the primary driver for the proposed Outer Harbour development (Maunsell AECOM, 2008).

Expansion of the Port through the development of the Outer Harbour would provide a significant opportunity to support investment in manufacturing, which is the main economic driver of the Illawarra region. The trickle down or multiplier effect of Port growth would have a significant economic impact on output, employment and earnings in the Illawarra, South Coast region and the State. The Port expansion would act as both a short term and long term stimulus to the local and regional economy.

The proposed Outer Harbour development would be consistent with a number of current policies and strategies for both ports and the region including the NSW Ports Growth Plan, Metropolitan Strategy, State Plan: A New Direction for NSW, and Illawarra Regional Strategy 2006-2031.

Alternatives Considered

A total of nine development options (optimal layouts) for the Outer Harbour were considered and compared during preparation of the Master Plan. The preferred option, the subject of this environmental assessment (EA), was selected due to its ability to accommodate potential future container trade, flexibility to accommodate other trades in the future and the improvement it made to mooring conditions at the berths.

The preferred option which forms the Concept Plan remains essentially the same as that determined in the Master Plan. However, minor changes to staging, primarily around construction timing for operational facilities, have occurred subsequent to completion of the Master Plan. The EA provides the project description, with specialist studies assessing the activities to be undertaken as part of the Concept Plan Application and Major Project Application.

Project Description

Key Concept Plan and Major Project Components

The Concept Plan provides a framework for the progressive completion of the Outer Harbour development and comprises creation of at least 42 hectares of land dedicated to port activity. The reclaimed land would be divided into two main areas, one devoted to the import and export of dry bulk, break bulk and bulk liquid cargoes (multi-purpose terminals) and one devoted to container trade (container terminals).

Dredging of rock and sediments from the Outer Harbour would be completed over a series of dredging campaigns and the dredged material used for part of the reclamation. Additional fill would be imported to the site for the balance of the fill required to complete the reclamation.

A total of seven new berths would be created as part of the Concept Plan, four container berths and three multi-purpose berths designed to handle dry bulk, break bulk and bulk liquid. New road and rail infrastructure and existing infrastructure upgrades would be constructed to support the expansion.

Major Project Approval is being sought to construct and operate Stage 1 of the Concept Plan. The Major Project application sits within, and is part of, the overarching Concept Plan. The Stage 1 construction phase is proposed to occur between 2010 and 2018. Major Project Approval would allow PKPC to commence reclamation and dredging for the multi-purpose and container terminals and construct and commence operations for the first multi-purpose berth.

Physical features of the Major Project (Stage 1) include the following:

- Dredging and land reclamation for multi-purpose terminals and container terminals (excluding northern portion of the multi-purpose terminals and expansion of ship turning circle).
- Construction and operation of the central portion of the multi-purpose terminals (with pavements, services and drainage) including the first multi-purpose berth.
- Construction of the berthing facilities for the first container berth.
- Road and rail infrastructure including new road link from Christy Drive and upgrade of rail infrastructure in South Yard to service the first multi-purpose berth.

Staging and Project Timing

The development of the Outer Harbour is intended to maximise available land area and to provide a maximum number of berths suitable for container handling, bulk trades and general cargo. As such, the development must be staged appropriately to meet the needs of prospective customers, to cater for growing port needs and regional development, and to increase the potential to address the needs of new industry for 30 years into the future.

Preliminary designs and modelling prepared for the Master Plan would guide detailed design of each of the three key stages of the Concept Plan. Subsequent project applications would provide the necessary detail for assessment of each stage of the development, within the overall Port context and the framework of the Concept Plan. Project timing for all development activities associated with the Concept Plan has been determined based on current trade projections outlined in the Master Plan, and are anticipated to be completed by 2037.

The Concept Plan would be progressively developed, each stage of development being subject to individual approvals processes. Each of the stages of the Concept Plan would comprise a suite of sub-stages.

Subject to Major Project Approval, construction of Stage 1 of the Concept Plan would commence in 2010, and be completed by 2018. Three sub-stages are programmed under the Major Project referred to as Stage 1a, Stage 1b, and Stage 1c. Key components of Stage 1 include dredging, reclamation, road and rail infrastructure, and terminal and berth construction, including drainage, services and pavements. At the completion of Stage 1 the central portion of the multi-purpose terminals would be operational (refer to **Section 6** for details).

Stage 2 would commence in parallel with completion of Stage 1 and would be constructed between 2014 and 2025. Key components of Stage 2 comprise the extension of a dedicated port road, new rail infrastructure and existing infrastructure upgrades, reclamation and terminal and berth construction, including drainage, services and pavements. At the completion of Stage 2, the western container facility (first and second container berths) and the second multi-purpose berth would be operational (refer to **Section 5** for details).

Stage 3 would commence at the completion of Stage 2 and would be constructed between 2026 and 2037. Key components of Stage 3 comprise the completion of the dredging and reclamation, terminal and berth construction, including landside pavements. The eastern container facility (third and fourth container berths) and the third multi-purpose berth would be operational as part of Stage 3 (refer to **Section 5** for details).

Capacity

The Master Plan assessed the potential throughput of cargo from Port Kembla Port Corporation trade forecasts to determine the required capacity to service likely demand into the future. The capacity required for the proposed activities to be undertaken as part of the Major Project and Concept Plan is shown in the Table below.

Preferred option capacity for Major Project and Concept Plan

Type of Approval	Dry Bulk / Multi-purpose Terminals		Container Terminals		Total number of operational berths in Outer Harbour
	No. of operational Berths	Capacity (Mtpa)	No. of operational Berths	Capacity ('000 TEU)	
Concept Plan	3	6.25	4	1,200	8 (seven new berths plus retained flammable liquids berth)
Major Project	1	4.25	0	0	4 (one new berth plus three existing berths; two at Port Kembla Gateway and flammable liquids berth)

Detailed Design Elements

The detailed design for elements of the Major Project would commence in 2010. A preliminary design has been developed based on the Master Plan. Edge structures for the reclamation that are proposed to be undertaken as part of the Major Project include both permanent edge structures, suitable for vessel berthing, and temporary edge structures.

A combination of dredging types would be employed for the dredging campaigns for the Concept Plan and would include cutter suction, backhoe dredging and/or grab dredging. A combination of cutter suction and backhoe dredging is likely to be used to dredge the soft sediment materials while hard rock material would be drilled, blasted and excavated using a grab dredge. The location for each type of dredging would be confirmed during detailed design and following a review of geotechnical testing results.

Wharf structures would be constrained by bedrock in shallow depths. In these cases, land reclamation with permanent edge structures comprising mass gravity structures such as precast counterfort units, circular cell cofferdam units or caisson units would be considered at the proposed vessel berthing locations along the perimeter of the reclamation. Rubble mound revetment structures would be used for all temporary edge structures along the perimeter of the reclamation.

Land Reclamation

The majority of land reclamation associated with the Concept Plan would be undertaken during the Major Project (Stage 1). An estimated 5,300,000 m^3 would be required for the reclamation works for the Concept Plan with part of the required fill sourced from the Outer Harbour dredging and the balance sourced from external sources.

Statutory Controls and Approvals

Under Clause 6 of the Major Development SEPP, development that, in the opinion of the Minister is of a kind that is described in Schedule 1 or 2, or is "described in Schedule 3 as a project to which Part 3A of the Act applies" is declared to be a project to which Part 3A of the Act applies. The proposed Concept Plan constitutes development for the purpose of shipping berths and wharf-side facilities which are listed in Schedule 1 of the Major Development SEPP.

Accordingly, the proposed Outer Harbour development falls under the provisions of Part 3A of the Environmental Planning & Assessment Act 1979. Part 3A applies to development that is declared by the Minister to be a 'Major Project'.

Under Part 3A, a proponent can seek a Major Project Approval or a Concept Plan Approval. In accordance with the provisions of Part 3A of the Environmental Planning & Assessment Act 1979, Port Kembla Port Corporation is seeking concurrent Concept Plan Approval and Major Project Approval for Stage 1 which includes land reclamation and associated dredging, construction and operation of the central portion of the multi-purpose terminals, berthing facilities, and road and rail infrastructure for the proposed Outer Harbour Development.

Port Kembla is declared to be a State Significant site under State Environmental Planning Policy (Major Development) Amendment (Three Ports) 2009 which highlights the importance of the Port to the NSW economy. The zoning of the area of proposed works is located predominantly within the SP1 (Special Activities) zone, with a small site where the proposed rail siding extension would occur in the Pacific National Southern Yard located within the IN3 (Heavy Industrial) zone. Under Clause 10 (IN3 zone) and Clause 11 (SP1 zone), of Part 20, 'port facilities' are permitted with development consent. The proposed works fall within the definition of 'port facilities'.

This EA has considered the impacts of all components of the project for Concept Plan and provides specific details to enable commencement of all components forming part of the application for Major Project Approval.

Consultation and Identification of Issues

The community and stakeholder consultation strategy is designed to be undertaken in two phases of engagement. Engagement within phase one comprised a Planning Focus Meeting, Port Kembla Port Corporation Industry Forum and a targeted stakeholder briefing. Key issues raised at each of the events have been recorded and addressed where possible within the EA.

Phase Two seeks community and stakeholder feedback upon public exhibition of the completed environmental assessment. This phase includes the provision of information, and opportunities for community and stakeholders to engage with project team members and provide feedback.

Environmental Assessment

The environmental impacts associated with the construction and operation of the proposed development has been assessed and details are provided within **Sections 9-28** and in the **Appendices**. A summary of the key environmental issues is provided in the Table below. An Environmental Risk Analysis for the project is presented in **Section 30**.

Summary of key environmental issues

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Contamination (including Geology and Soils)		
Mobilisation of potentially contaminated fill during land based excavation activities i.e. road/rail construction.	Disturbance of fill materials would be controlled by a CEMP that will be prepared to manage excavations, identify hotspots; and manage contamination, stockpiles and disposal of spoil. Preparation of a Soils and Water Management Plan with reference to the *Managing Urban Stormwater: Soils and Construction Guidelines* (Landcom, 2004) to minimise soil erosion, sedimentation, and mobilisation of contaminated sediments resulting from construction and operation. Preparation of a Site Management Plan. Refer to **Sections 10** and **11**.	Negligible
Disturbance of areas within the Outer Harbour where contaminated sediments have been placed from Inner Harbour dredging campaigns.	Dredging, placement and encapsulation of sediments to be managed by a Dredging Environmental Management Plan, Spoil Management Plan and Soil and Water Management Plan, to minimise mobilisation of sediments and turbidity resulting from dredging. Refer to **Sections 10, 11** and **14**.	Short term residual impact during particle settling post-blasting and dredging activities
Demolition of jetties and berths.	Preparation of a Demolition Management Plan, which would outline environmental control devices to reduce the impacts of demolition e.g. on water quality. Refer to **Sections 14** and **27**.	Negligible
Erosion and sedimentation and spread of contaminants off-site and/or into the harbour as a result of land based excavation works.	Management of erosion, sedimentation and identified 'hotspots' would be controlled by a CEMP. Implementation of a Contamination Site Management Plan and Soils and Water Management Plan, with reference to the *Managing Urban Stormwater: Soils and Construction Guidelines* (Landcom, 2004), to minimise soil erosion, sedimentation, and mobilisation of contaminated sediments resulting from excavation and construction. Refer to **Sections 10, 11** and **14**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Creation of preferential pathways between contaminated fill materials and aquifer beneath Port Kembla Harbour as a result of excavation activities associated with road/rail construction.	Groundwater contamination in the vicinity of the site is a regional issue that is not specific to the development. Notwithstanding, groundwater was not encountered during the investigation and, based on the Douglas Partners (2009) investigation, is not expected to be encountered during excavation works associated with construction of the proposed road/rail infrastructure given the recorded depth of the groundwater and the limited depth of the excavation works. Therefore, specific groundwater management measures are not likely to be required as part of the land based redevelopment works. Refer to **Section 11**.	Negligible
Migration of contaminated groundwater to the Outer Harbour.	Groundwater contamination in the vicinity of the site is a regional issue that is not specific to the development. Impact on groundwater flow regime by the reclamation area is not likely to be significant in terms of groundwater flow or quality. It is recommended the reclamation area 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. Groundwater monitoring to assess potential exposure pathways and migration of regional groundwater contamination. Preparation of a Soils and Water Management Plan. Refer to **Section 11**.	Negligible
The release of sulphuric acid from disturbed land based ASS, which may drain into the harbour/stormwater system.	Land-based excavation activities will be of limited depth and are unlikely to extend beyond imported fill depth. As such, it is highly unlikely that excavation activities will expose potential land-based ASS. Preparation of an Acid Sulfate Soil Management Plan to minimise the risk of disturbance of potential acid sulfate soils during land based construction. Refer to **Section 11**.	Negligible
Imported potentially contaminated soils to be used as reclamation fill.	Determination of the suitability of imported fill sources for reclamation activities will be conducted prior to use as reclamation fill. Refer to **Section 11**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Erosion and sedimentation resulting from movement of construction machinery and excavation activities associated with road/rail construction and reclamation activities. Mobilisation of soils may result in the release of sediment laden surface water off-site and/or into the harbour.	A surface water management system, including pollution control devices, to control sedimentation and runoff, is proposed for the reclamation areas during construction and for the terminals during operation. Preparation of a Soils and Water Management Plan to outline measures to minimise the volume of sediment and polluted water entering the Outer Harbour. Water quality and biological monitoring programs will ensure Water Quality Objectives of the Outer Harbour are not compromised. Refer to **Sections 14 and 16**.	Negligible
Exposure and/or mobilisation of soils creating dust which may extend beyond the boundaries of the development.	Preparation of a Soils and Water Management Plan and Air Quality Management Plan to manage dust generated by construction and operation activities. Refer to **Section 22**.	Negligible
Sediment accumulation in stormwater drains, drainage lines and natural surface depressions.	A surface water management system, including pollution control devices, to control sedimentation and runoff, is proposed for the reclamation areas during construction and for the terminals during operation. Preparation of a Soils and Water Management Plan to control sedimentation and runoff. Refer to **Section 14**.	Negligible
Sedimentation and increased turbidity of water bodies including Salty Creek, Darcy Road Drain, and the Outer Harbour.	All dredging and placement of sediments to occur within the water column to avoid exposure of sediments to oxygen. A surface water management system, including pollution control devices, to control sedimentation and runoff, is proposed for the reclamation areas during construction and for the terminals during operation. Preparation of a Soils and Water Management Plan to control sedimentation and runoff. Refer to **Section 14**.	Short-term turbidity resulting from blasting and dredging activities would be confined to area within silt curtains in Outer Harbour.
Potential exposure of dredged ASS to oxygen during movement and/or disposal of sediments.	Preparation of an Acid Sulfate Soils Management Plan, in accordance with ASSMAC, to be incorporated into a Dredging Environmental Management Plan to minimise exposure of, and manage, potential ASS. Refer to **Section 10**.	Negligible where sediments remain below water level, as proposed.
Hydrology and Water Quality (including Hydrodynamics and Coastal Processes)		
Alteration to flow regime, geomorphology and discharge of Salty Creek as a result of reclamation area.	Installation of energy dissipater to reduce the potential for localised impacts on bed morphology. Design of a box culvert will ensure tidal and flood discharge conveyances would be maintained and could provide a benefit through the introduction of regular tidal flushing of Salty Creek. Refer to **Sections 14** and **16**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Disturbance to bed of Salty Creek from rail construction activities.	Salty Creek is a highly disturbed waterbody and rail construction works in the vicinity of the area will be limited and likely to have limited impacts. Preparation of a Soils and Water Management Plan. Refer to **Section 14**.	Negligible
Change to harbour hydrodynamics as a result of the creation of new multi-purpose and container terminals.	Reclamation levels have been designed to accommodate future sea level rise. Freeboard and finished pavement level will result in the final level of the terminals being suitable to cater for predicted future sea level rise. Long wave processes and tidal discharge of the Inner Harbour would not be significantly affected. The project would have no significant impact on tidal velocities and predicted ship movements at berth would be well within guideline standards. Reclamation design would ameliorate adverse impacts of harbour seiching. Refer to **Section 15**.	Negligible
Degradation of water quality during construction through re-suspension of contaminated sediments and increased turbidity.	Preparation of a Soils and Water Management Plan and Dredging Environmental Management Plan to minimise mobilisation of sediments and turbidity resulting from dredging. Preparation of an Acid Sulfate Soils Management Plan, in accordance with ASSMAC, to be incorporated into a Dredging Environmental Management Plan to minimise exposure of, and manage, potential ASS. Refer to **Sections 10** and **14**.	Short term impact on water quality due to suspended sediments and turbidity during dredging. Impact likely to be localised and managed by the use of silt curtains.
Impacts on natural drainage processes associated with sedimentation.	The drainage function of Salty Creek and Darcy Road Drain would be maintained. Preparation of a Soils and Water Management Plan, including pollution control devices, to control sedimentation and runoff. Design of a surface water management system is proposed for the reclamation areas during construction and for the terminals during operation. Refer to **Section 14**.	Negligible
Traffic and Transport		
Increase in traffic on local road network during construction due to volume of material to be transported to and from site. Impact would be subject to mode of transport available for spoil movement (e.g. barge and rail availability).	Use of barge and/or rail to transport spoil to and from site would be a preferred option. The local road network has sufficient capacity to accommodate increased traffic movements associated with construction. Preparation of a Traffic Management Plan to minimise impacts on pedestrian and vehicle movements during construction. The TMP would include, as a minimum, haulage routes, driver protocols and hours of construction. Refer to **Section 18**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Impact on local and regional rail network during construction.	Obtain agreements for use of road and/or train paths on various networks with Pacific National, RailCorp, and ARTC. Refer to **Section 19**.	Negligible
Increase in traffic on local and regional road network during operation from increased trade and associated transport of containers, dry bulk, break bulk and general cargo.	The preferred mode of operational transport is by rail, although the local road network has sufficient capacity to accommodate increased traffic movements during operation. Construction of a new road link to Christy Drive to provide access to terminals. Upgrades to local roads recommended. Preparation of a Traffic Management Plan to include, as a minimum, haulage routes, driver protocols and hours of operation. Refer to **Section 18**.	
Impact on local and regional rail network during operation for the transport of containers, dry bulk, break bulk and general cargo.	Upgrade of the rail network and local rail infrastructure upgrades would be undertaken to ensure sufficient capacity and to minimise impacts on the rail network. Federal government is funding a feasibility study to be carried out in 2010 for the completion of the Maldon – Dombarton rail link. Refer to **Section 19**.	Impact on local and regional rail network during operation would depend on the type of activities and provision of support infrastructure (e.g. Maldon to Dombarton rail link)
Impact on state transport infrastructure provision during construction and operation.	No grades required to state road network as a result of the project. Federal government is funding a feasibility study to be carried out in 2010 for the completion of the Maldon – Dombarton rail link. Preparation of a Traffic Management Plan. Refer to **Section 19**.	Impact on local and regional rail network during operation would depend on provision of support infrastructure (e.g. Maldon to Dombarton rail link)
Aquatic and Terrestrial Ecology		
Loss of habitat (marine and shoreline) due to dredging and reclamation.	Preparation of a Dredging Environmental Management Plan to manage potential impacts on aquatic habitats and fauna. New hard substrate habitat, in the form of wharf face, pile supported decks and rock revetments would be designed with enhanced features to provide expanded aquatic habitat values to those that already exist in the Outer Harbour.	Loss of existing soft substrate habitat Creation of new hard substrate habitat (refer to **Section 16**)

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
	Biological monitoring would be undertaken to monitor the effects of dredging on larval settlement on the existing and newly created hard substrate. PKPC will seek a long term partnership arrangement with Council and Conservation Volunteers Australia to fund habitat improvement works and ongoing monitoring and maintenance, to ensure that effective habitat outcomes are achieved and sustained on the site. Compensatory measures proposed for loss of soft substrate habitat. Refer to **Section 16**.	
Impacts on macroalgae and other marine vegetation during construction.	Limited marine vegetation in footprint of dredging and reclamation. Preparation of a Dredging Environmental Management Plan. Refer to **Section 16**.	Negligible
Impact on fish and marine species during construction.	Preparation of a Dredging Environmental Management Plan. Preparation of a Marine Mammal Management Plan for Construction by Blasting to limit the impact on fish and marine mammals. Refer to **Section 16**.	Negligible
Potential for a toxic bloom from disturbance of dinoflagellate cysts in sediment.	Preparation of a Dredging Environmental Management Plan, including measures such as installation of a silt curtain. Water quality monitoring during dredging works. No toxic blooms have been created by other dredging campaigns in the Inner and Outer Harbours. Preparation of an Algal Bloom Contingency Plan for the construction phase of the project. Refer to **Sections 14 and 16**.	Negligible
Impact on Green and Golden Bell Frog community due to destruction of habitat, degradation of water quality and increased mortality during construction.	Proposal will have limited impact on Green and Golden Bell Frog habitat. Preparation of a Green and Golden Bell Frog Management Plan. Preparation of a Soils and Water Management Plan, including pollution control devices, to control sedimentation and runoff. Refer to **Section 17**.	Negligible
Impacts on threatened terrestrial species other than the Green and Golden Bell Frog.	The site does not provide shelter, breeding areas or habitat for most of the threatened flora and fauna species that would potentially occur on the site. Refer to **Section 17**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Removal of Coastal Saltmarsh (listed as an endangered ecological community under the TSC Act).	The medium to long-term viability of this community within this particular location is severely limited irrespective of development activities, as the existing saltmarsh is highly fragmented and degraded. PKPC would continue to support off-site compensatory habitat programs in more viable patches of saltmarsh community within the region. Refer to **Section 17**.	Negligible
Socio-economic		
Impacts on landscape and visual amenity.	Preparation of a Landscape Management Plan to control visual impacts from lighting, machinery, plant and stockpiles. Refer to **Section 23**.	Limited visual impact in the context of existing Port and industrial development in Port Kembla.
Job creation during construction.	This is a significant opportunity for the project as discussed in **Section 20**.	Positive
Job creation during operation.	This is a significant opportunity for the project as discussed in **Section 20**.	Positive
Community concern regarding degradation of air quality, increased noise and traffic movements associated with both the construction and operation phases.	Refer to community and stakeholder consultation discussed in **Section 8**. Air quality, noise and traffic impacts and mitigation measures are discussed in **Sections 22, 21** and **18** respectively.	Negligible
Investment in local and regional economy.	This is a significant opportunity for the project as discussed in **Section 20**.	Positive
Noise and Vibration		
Noise and vibration disturbance to sensitive receivers in surrounding area during construction, including blasting, reclamation and dredging activities.	Predicted exceedences from South Yard construction works. Delayed detonation of charges to minimise excessive vibration. PKPC is committed to acoustically sensitive plant where possible and the use of noise reducing measures. Careful planning of construction schedule, working hours and plant to be used. Preparation of a Construction Noise Management Plan to minimise noise impacts at sensitive receivers. Refer to **Section 21**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Noise disturbance to sensitive receivers in surrounding area during operation of the first multi-purpose berth.	There are no predicted exceedences of noise environmental criteria for sensitive catchments. The sounding of train horns is predicted to result in exceedence of the sleep disturbance criteria and mitigation measures are proposed. Preparation of an Operational Noise Management Plan. Refer to **Section 21**.	Negligible
Noise disturbance along transport routes during operation.	Stabling yard activities are predicted to comply with night-time intrusiveness criteria at all noise sensitive receivers. Predicted increases in noise levels from road and rail traffic are within relevant noise criteria eg. for road traffic (ECRTN+2dB(A)). Preparation of an Operational Noise Management Plan and Traffic Management Plan to minimise impacts of noise on sensitive receivers. Refer to **Section 21**.	
Air Quality		
Construction related impacts on air quality.	Preparation of an Air Quality Management Plan and Soils and Water Management Plan to minimise impacts of fugitive dust emissions during excavation and reclamation activities. Refer to **Section 16** and **22**.	Negligible
Concurrent construction and operational air emissions impacting on air quality, i.e. truck, rail, and shipping emissions.	Short term localised increases in pollutant emissions during construction. Site specific 'best practice' dust mitigation measures would be incorporated into the Air Quality Management Plan for both construction and operation phases. CEMP to include specific measures such as sealing of roads, wetting down of site surfaces, covering of loads and sealing of exposed surfaces of the reclamation area. Refer to **Section 22**.	Short term localised particulate and NO_2 impacts from construction and operational activities.
Atmospheric pollution once the terminals are operational with the potential to result in degradation of air quality.	Operations predicted to cause short term localised increases in fine particulates. Site specific 'best practice' dust mitigation measures would be incorporated into the Air Quality Management Plan for operation phase. Berth design to include allowance for alternative marine power. Possible adoption of Green Award program to offer incentives for less polluting vessels to call at Port Kembla. Refer to **Section 22**.	Permanent but localised and short term increases in particulate matter and NO_x.

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Landscape and Visual Amenity		
Construction and operation impacts on immediate, local and regional landscape.	Preparation of a Landscape Management Plan to control visual impacts from lighting, machinery, plant and stockpiles. Refer to **Section 23**.	Limited visual impact in the context of existing Port and industrial development in Port Kembla.
Visual amenity impact on residents with a view of the Port (e.g. lighting and surface cover).	Preparation of a Landscape Management Plan to control visual impacts from lighting, machinery, plant and stockpiles. Suitable colours and materials to be selected for terminal pavement, buildings and structures to minimise reflectivity and contrast. Refer to **Section 23**.	Limited visual impact in the context of existing Port and industrial development in Port Kembla.
Heritage		
Damage or removal of Aboriginal artefacts or places as a result of reclamation and land based infrastructure (e.g. road/rail).	No evidence of recorded or unrecorded Aboriginal sites within the footprint of the development. There is considered to be little or no likelihood of intact or undisturbed subsurface Aboriginal heritage material within the study area. Refer to **Section 24**.	Negligible
Detrimental physical or visual impact upon items of non-indigenous heritage significance as a result of reclamation and land based infrastructure (e.g. road/rail).	Limited impacts during construction on listed heritage items such as the Historical Military Museum and associated pill box. To be managed by sympathetic road design and landscaping. Impacts are in the context of surrounding extensive modern development and low significance of heritage items. Demolition of jetties which are not listed heritage items but have been assessed as having low local heritage significance. Archival recording of jetty structures recommended. Prepare Conservation Management Plan for the Mobile Block Setting Steam Crane. Very low likelihood of encountering shipwrecks during dredging works but mitigation measures recommended. Refer to **Section 24**.	Negligible
Sustainability		
Use of resources (energy, materials, spoil, fuel).	Refer to Natural Resource Reduction Plan 2005-2010 (PKPC). Investigations of options to achieve energy savings will be carried out. Re-use of dredged and fill materials in reclamation area.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
	Positive environmental benefits to be provided through the promotion of renewable energy generation, design of marine habitat friendly structures and use of Water Sensitive Urban Design initiatives where feasible. Refer to **Section 25**.	
Increased CO_2 emissions during construction and operation.	Refer to Natural Resource Reduction Plan 2005-2010 (PKPC). Investigations of options to achieve energy savings and emission reduction will be carried out. Preparation of a Sustainability Management Plan. Refer to **Section 25**.	CO_2 emissions will be generated during construction and increased for ongoing operations
Climate Change		
Impact of changed average climatic conditions on materials, structures and infrastructure of Port (i.e. increased average temperatures and changes in runoff).	Extension or intensification of current climate change mitigation and adaptation strategies currently implemented by PKPC to manage the impacts of a variable climate and extreme weather conditions. Refer to **Section 26**.	Implementation of mitigation measures and adaptations would reduce impacts on infrastructure from climate change
Impact of extreme climatic events infrastructure of Port (i.e. extreme and more frequent storm events, sea level rise).	Management of impacts would occur through maintenance regimes that would be detailed in OEMP(s) prepared for the operation of the terminals. Proposed reclamation levels and finished terminal levels have taken climate change impacts into account and provide for sea level rise beyond the 100 year design life. Refer to **Section 26**.	Implementation of mitigation measures would reduce impacts on infrastructure from climate change. Consequences from extreme events will be less frequent with adaptation measures implemented.
Waste Management		
Handling of solid waste generated during the project e.g. waste generated by employees, port maintenance waste, dredging waste and hazardous waste.	Preparation of a Waste Management Plan and Hazardous Substance Management Plan which would set out waste identification, handling, storage, transportation, disposal and monitoring measures to be implemented during operation. Refer to **Section 27**.	Negligible
Waste management during construction.	Preparation of a Waste Management Plan which would set out waste identification, handling, storage, transportation, disposal and monitoring measures to be implemented during construction. Refer to **Section 27**.	Negligible

Environmental Issue	Assessment and Mitigation Measure	Residual Impact
Potential contamination of land and water as a result of inappropriate handling of waste.	Preparation of a Waste Management Plan which would set out waste identification, handling, storage, transportation, disposal and monitoring measures to be implemented during operation. Refer to **Section 27**.	Negligible
Hazard and Risk		
Exposure of employees to risks and hazards associated with construction activities (e.g. handling of contaminated soils) and future operations (e.g. increased handling of dangerous goods).	Preparation of the following environmental management plans as part of the CEMP and OEMP, to minimise construction hazards and risks: Site Management Plan Hazardous Substance Management Plan Emergency Response Management Plan Fire Management Plan Safety Management Plan Refuelling Management Plan Further assessments to be conducted as part of future project applications. Refer to **Section 13**.	Negligible
Exposure of surrounding land uses/population to risks and hazards associated with construction activities and future operations (e.g. increased handling of dangerous goods).	Preparation of the following environmental management plans as part of the CEMP and OEMP, to minimise construction hazards and risks: Site Management Plan Hazardous Substance Management Plan Emergency Response Management Plan Fire Management Plan Safety Management Plan Refuelling Management Plan Further assessments to be conducted as part of future project applications. Refer to **Section 13**.	Negligible

Cumulative Impacts

Cumulative impacts were examined on the basis of knowledge and research of existing and planned projects in the region. While there are likely to be cumulative impacts primarily in relation to environmental issues such as traffic and transport, noise and air quality resulting from the construction and operation of the major projects in the area around Port Kembla, the impacts would generally be minor and manageable, assuming the appropriate mitigation measures are implemented. Mitigation measures proposed in this EA and other environmental impact assessments have been designed to control impacts of individual projects and cumulative impacts.

All planned major developments to be undertaken in the vicinity of the Outer Harbour, including the Outer Harbour development, are in line with the existing land use and activities within the area. Cumulative positive socio-economic benefits would be expected as a result of the projects, by promoting increased employment opportunities, improved self-containment of employment, significant investment in the Illawarra Region and more efficient use of existing infrastructure.

Statement of Commitments

Environmental Management Plan (EMP) Framework documents will be developed for each project within the Concept Plan to guide environmental management in accordance with the conditions of approval and Statement of Commitments for the Concept Plan.

Each discrete phase of construction activity will have its own Construction Environmental Management Plan (CEMP). Similarly, discrete operating units (e.g. terminals) will each have their own Operations Environmental Management Plan (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 the project.

The inclusion of appropriate environmental assessment and management measures into the planning, construction and operation of the proposed development will minimise adverse impacts on the environment. Adoption of the relevant measures identified in the draft SoCs into environmental assessments for this and future project applications and Environmental Management Plans will be an important component of the proposal and will reiterate the commitment of the proponent and any contractors to the mitigation of environmental impacts identified in this assessment.

The focus of the SoC for the Concept Plan is on what should be undertaken as part of future project applications for Stages 2 and 3 to ensure the environmental assessments for these stages are comprehensive and robust. In addition, the SoC for Concept Plan incorporates broad measures to avoid, minimise, manage, mitigate, offset and/or monitor impacts associated with the total development.

The draft SoC for Major Project (Stage 1) incorporates measures to avoid, minimise, manage, mitigate, offset and/or monitor impacts identified in this EA but to a level of detail suitable for implementation during the construction and operation of Stage 1.

Tables 29-1 and **29-2** describe the commitments identified by this EA to avoid or minimise adverse impacts on the environment during the Concept Plan and Major Project (Stage 1), respectively.

Conclusion and Justification

The proposed development would allow the Port to build on its competitive strength by enabling it to complete more effectively on the wider market but also better service the needs of wide range of businesses in the local and wider region. The Port expansion, through the development of the Outer Harbour, would act as both a short term and long term stimulus to the local and regional economy.

In a strategic context, the proposed development of the Outer Harbour is consistent with all relevant Government policies and strategies and addresses future trade projections for the Port.

A comprehensive environmental assessment has been undertaken and key environmental impacts associated with the development include:

- Increase in road and rail traffic during construction and operation of both Concept Plan and Major Project (Stage 1).
- Increase in noise and air quality impacts during construction and operation of both Concept Plan and Major Project (Stage 1).
- Impacts on terrestrial and aquatic ecology, including Green and Golden Bell Frog habitat as part of the Concept Plan and Major Project (Stage 1)
- Disturbance of existing contaminated sediments in the Outer Harbour during dredging campaigns as part of the Concept Plan (all stages) and disturbance of existing contaminated soils on land during construction of new road and rail infrastructure for the Concept Plan (all stages).
- Impacts to the local hydrology and water quality in the Outer Harbour associated with dredging and reclamation during the Concept Plan and Major Project (Stage 1).
- Impacts on listed local heritage items as part of the Concept Plan (Stage 2).

Appropriate mitigation measures to avoid or ameliorate these impacts have been recommended to reduce the impacts to an acceptable level of environmental risk. Whilst the project would have some residual impacts, the EA demonstrates that the project, in conjunction with relevant management strategies and mitigation measures, would not result in significant impacts on the environment and would generate significant social and economic benefits to the Illawarra region and the State of NSW.

1.0 Introduction

1.1 Background

Port Kembla Port Corporation (PKPC) proposes to develop additional port side and landside facilities in the Outer Harbour of the Port of Port Kembla (the Port) to attract new trades as well as increasing the capacity to handle increasing volumes of existing cargoes. AECOM has been engaged to undertake an environmental assessment for a proposed port expansion (the Outer Harbour development) on behalf of PKPC.

PKPC has received formal notification on 10 October, 2008, from the Director-General of the Department of Planning (DoP), that the Outer Harbour development is subject to Part 3A of the *Environmental Planning and Assessment Act* (*EP&A Act*). This Environmental Assessment (EA) has been prepared for submission to the DoP to satisfy provisions under Part 3A of the EP&A Act.

The *Port Kembla Outer Harbour Master Plan* (the Master Plan), a guide to the future development in the Outer Harbour of the Port, has recently been completed (Maunsell │ AECOM, 2008). Land within the Inner Harbour is almost fully occupied and growth in trade is constrained by lack of suitable port facilities. To develop the potential of the existing port, PKPC needs to create new port facilities through dredging, reclamation and the construction of new berths. The Outer Harbour is the only remaining area within the Port where this can be accommodated.

Two of the guiding principles behind the Master Plan were to maximise the available land area and to provide the maximum number of berths suitable for container handling, bulk trades and general cargo. In satisfying these principles, PKPC proposes to develop the Outer Harbour in a series of discrete stages to:

- Cater for growing port needs and regional development.
- Meet the needs of prospective customers.
- Increase the potential to address the needs of new industry.

As part of the Master Plan it was identified that significant constraints to development of the Outer Harbour included limited land area for onshore facilities and adverse wave conditions for vessels at berth during ocean storms. These constraints were relieved by designing a reclamation footprint that mitigated the adverse wave conditions while increasing the land area available for port facilities.

A number of development options for the Outer Harbour were considered and compared during preparation of the Master Plan. The preferred option was selected due to its ability to accommodate potential future container trade, flexibility to accommodate other trades in the future and the improvement it made to mooring conditions at the berths.

In accordance with advice provided by the DoP, PKPC is seeking concurrent Concept Plan Approval and Major Project Approval for Stage 1 of the Concept Plan.

Concept Plan Approval is being sought for the entire Outer Harbour development which would be constructed in three discrete stages over three decades with an estimated completion date of 2037. Concept Plan Approval would provide certainty for government stakeholders and the community about the long term plans for development of the Outer Harbour. It would also provide PKPC with a greater level of certainty and confidence in securing trades and future customers for components of the development in later stages, while retaining flexibility for refinement of the design.

Physical features of the Concept Plan include the following:

- At least 42 hectares of hard stand, to accommodate new multi-purpose terminals and new container terminals (hardstand area would comprise approximately 40 hectares for reclamation and two hectares for a piled structure).
- Dredging would be completed over a series of dredging campaigns for:
    - basins between multi-purpose terminals and container terminals
    - basin east of the container terminals
    - all container berth boxes and approach channels
    - extend existing ship turning basin

- 1770 metres total new berth length.
- A total of seven new berths, including:
  - four container berths
  - three multi-purpose berths designed to handle dry bulk, break bulk and bulk liquid (including relocation of existing berths located at Port Kembla Gateway Jetty)
- Retention of the existing oil berth on the northern breakwater of the Outer Harbour.
- Berthing basins and approaches with up to -16.5m water depth below Port Kembla Harbour Datum (PKHD) for new berths.
- Road and rail infrastructure to support the expansion.

Major Project Approval is being sought to construct and operate Stage 1 of the Concept Plan. The Major Project application sits within, and is part of, the overarching Concept Plan. The Stage 1 construction phase is proposed to occur between 2010 and 2018. Major Project Approval would allow PKPC to commence reclamation and dredging for the multi-purpose and container terminals and construct and commence operations for the first multi-purpose berth.

Physical features of Stage 1 of the development (Major Project) include the following:

- Dredging and land reclamation for multi-purpose terminals and container terminals (excluding northern portion of the multi-purpose terminals and extension of the ship turning area).
- Construction and operation of the central portion of the multi-purpose terminals (with pavements, services and drainage) including the first multi-purpose berth.
- Construction of the berthing facilities for the first container berth.
- Road and rail infrastructure including new road link from Christy Drive and upgrade of rail infrastructure in South Yard to service the first multi-purpose berth.

Major Project Approval for subsequent stages of the Concept Plan (i.e. Stages 2 and 3) would be subject to separate applications for approval at a later date.

1.2 Port of Port Kembla

The Port is one of three main international trade ports in NSW, the others being Port Botany in Sydney and the Port of Newcastle. Historically, the Port was primarily a bulk commodities port servicing coal, grain and other mineral exports, steel production and export and smaller volumes of bulk solids and liquids including fertilisers, cement clinker, sulphuric acid and fuel oil. In 2008/09 total trade through the Port reached 26.4 million tonnes. The major cargoes handled comprised 13 million tonnes of export coal and 8 million tonnes of steel related products (iron ore imports and steel product exports).

PKPC has sought to diversify the mix of cargoes traded through the Port to service a broader range of customers and maximise growth opportunities for the business and the Port. The Port has in recent years received a portion of shipping, cargo and car stevedoring previously handled through Port Jackson in Sydney Harbour as part of the State Government's *NSW Ports Growth Plan*. The transfer of general cargo and car import activities from Sydney Harbour is anticipated to generate an additional 400 ship visits, 240,000 motor vehicles, 120,000 tonnes of break bulk cargo (timber, machinery, steel, paper, etc.) and a small volume of containers through Port Kembla each year. Car imports to Port Kembla commenced in October 2007, with the bulk of the car imports relocated to Port Kembla by November 2008. The relocated trades have been accommodated at the Port Kembla Inner Harbour within a newly built general cargo handling facility (refer to Major Projects Approval No. 05_0073). Further development of pre-delivery inspection facilities for imported motor vehicles has occurred in the Balloon Loop area of the Inner Harbour since motor vehicle imports commenced.

Other existing activities in the Inner Harbour include the BlueScope Steel steel precinct, grain and coal exporting facilities. Additional approved developments for the precinct include:

- Soybean processing and biodiesel production facility;
- Warehouse for the receipt and distribution of imported timber.

The current and proposed facilities for the Inner Harbour will take up all available port development land in that precinct.

In the Sydney metropolitan area, general freight has been growing by approximately 7% per annum (pa) between 1995 and 2002. Historically, containerised freight at Port Botany has also displayed a similar growth pattern at 7% pa (although higher growth has been seen recently with 8% average growth in the past five years).

Consequently, if the Port is to continue to attract new trades as well as cater for increasing volumes of existing cargoes, additional landside facilities at the Outer Harbour are needed. The Outer Harbour is largely underutilised compared with the Inner Harbour and has capacity to manage additional shipping movements and land based operations based on trade forecasts over the next 20 to 30 years (Maunsell │ AECOM, 2008). This is the primary driver for the proposed Outer Harbour development.

1.3 The Proponent

The Port is managed by PKPC, which is a State Owned Corporation under the *Ports and Maritime Administration Act 1995*.

The legislated objectives of PKPC under the *Ports and Maritime Administration Act 1995* are:

(a) to be a successful business and, to this end:

(i) to operate at least as efficiently as any comparable businesses, and

(ii) to maximise the net worth of the State's investment in the Port Corporation, and

(iii) to exhibit a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate these when able to do so, and

(b) to promote and facilitate trade through its port facilities, and

(c) to ensure that its port safety functions are carried out properly.

PKPC aims to achieve these objectives through the following key functions:

- Facilitating business growth in the Port by planning, marketing and promoting services and facilities.
- A proactive approach to the provision of port infrastructure which is cost effective and relevant to the needs of current and prospective customers.
- Providing port shipping management, security and safety services, including vessel movement scheduling, navigation services, port security and channels.
- Providing pilotage services.
- Providing unload and load facilities such as berths and equipment for private sector tenure or common use.
- Providing onshore facilities such as land, sheds and access to enable the movement and storage of cargo or the development of port related industries.
- Managing and maintaining assets, including land, berths and wetland areas.
- Operating in a commercial and sustainable manner.
- Leading the development of efficient, effective and reliable services in the Port.
- Providing corporate services for the above activities and ensuring the business remains financially viable.

The proposed Outer Harbour development is consistent with the legislated objectives of PKPC as a State Owned Corporation.

1.4 Environmental Assessment

This EA has been prepared in accordance with Part 3A of the *EP&A Act* by AECOM, on behalf of PKPC. The EA supports and forms part of PKPC's application under Part 3A for concurrent Concept Plan Approval and Major Project Approval.

The purpose of this EA is to provide sufficiently detailed information about the project and appropriate analysis of its environmental impacts. The EA identifies relevant approvals and permits that may need to be secured and discusses appropriate methodologies required to mitigate or minimise any significant environmental impacts. The EA also outlines the consultation that has been undertaken to date with the local community and other identified stakeholders.

A *Preliminary Environmental Assessment* (PEA) was prepared previously for the proposed development by Maunsell │ AECOM (5 December, 2008). The PEA provided to the DoP, relevant agencies and stakeholders, outlined the key elements of the proposed development so that project-specific "Director-General's Requirements" (DGRs) could be formulated. The PEA identified the key issues for further assessment and included a risk assessment of each potential environmental impact, as part of an overall process to identify whether an issue was potentially of high, medium or low environmental significance.

DGRs for the proposed development were issued on 27 January 2009 and included the requirements of all relevant NSW State government agencies, as well as the requirements of the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA). The DGRs are the basis for the preparation of this EA document for the proposed development. The DGRs and relevant sections of the EA where DGRs are addressed are presented in **Table 1-1**.

Table 1-1 Statutory Director General's Requirements

Key Issues	Where addressed in EA
An executive summary	
An executive summary	Executive summary
A detailed description of the project including (but not limited to):	
• Location, site description and planning context (including previous, existing, future, and surrounding land uses and operations);	**Section 2** **Section 3** and **Section 7** (Statutory Controls and Approvals)
• Project components and design elements (including site layout); and	**Section 5** and **Section 6**
• Project and component staging and timing.	**Section 5** and **Section 6**
An assessment of the key issues, with the following aspects addressed for each key issue (where relevant): • Describe the existing environment; • Assess the potential impacts of the proposal at both construction and operation stages, in accordance with relevant policies and guidelines. Direct, indirect and cumulative impacts must be considered (including regard to other existing and proposed development and activities in the locality); • Identify how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment and/or in developing management/mitigation measures;	Key issues have been assessed in **Sections 9** through **28**
• Document the types of activities that will require licensing and how licensing will be applied under relevant legislations; and	

Key Issues	Where addressed in EA
• Describe measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor the impacts of the project and any residual impacts.	
A draft Statement of Commitments (SoC). The SoC must incorporate other otherwise capture measures to avoid, minimise, manage, mitigate, offset and/or monitor impacts identified in the impact assessment sections of the EA and ensure that the wording of the SoC must be achievable, measureable (with respect to compliance), and time specific, where relevant.	**Section 29**
Certification by the author of the EA that the information contained in the Assessment is neither false nor misleading.	Prior to table of contents
Key Issues	
Strategic and Project Justification – describe the strategic need, justification and objectives for the project. Identify alternatives to the preferred project considered and justify the project taking into consideration the objectives of the Environmental Planning and Assessment Act 1979; and its consistency with the aims and objectives of relevant State policies and plans (NSW State Plan, NSW Ports Growth Plan, State Infrastructure Strategy, Illawarra Regional Strategy) and project objectives.	**Sections 3, Section 4** and **Section 5**
Hydrology and Water Quality – including but not limited to: • Hydrodynamics of the entire Port Kembla harbour, including Inner Harbour flushing, tidal flow, wave dynamics and bank erosion; surface water, stormwater, groundwater and acid sulfate soils management, including demonstration of how the project will be designed, constructed and operated to protect the water quality of water courses and of Port Kembla harbour, taking into account the *Managing Urban Stormwater: Soils and Construction (Landcom)* guidelines and the *Acid Sulfate Soil Manual (ASSMAC)*; • Dredging and spoil management, including sediment dispersion and resuspension, dewatering and options for disposal (e.g. sea dumping, suitability of material for emplacement into the proposed berths); • Disturbance of dinoflagellate cysts and potential toxic bloom; and • Impacts on the project and surrounding land uses and development resulting from climate change, sea level rise, storm surges and coastal inundation.	For hydrology and water quality and hydrodynamics, refer to **Sections 14** and **Section 15**. Also refer to **Sections 9** and **Section 10**. **Section 10** **Sections 12** and **16** **Sections 15** and **Section 26.0**

Key Issues	Where addressed in EA
Contamination – including but not limited to: • Potential contaminated land, sediments and groundwater and their disturbance, future emplacement, reuse and identification of the need for remediation; • Characterisation of the distribution of contamination (illustrated on maps) in accordance with the *Sediment Quality Guidelines (CSIRO Handbook 2000)*; and • Where remediation is required, presentation of a Remedial Action Plan in accordance with relevant DECCW (EPA) guidelines.	For contamination generally, refer to **Sections 10** and **11** The requirement for a Remedial Action Plan would be determined based on the outcomes of further qualitative risk assessment, refer to **Section 10**
Hazards and Risks – including but not limited to: • A Preliminary Hazard Analysis (PHA) prepared in accordance with the Department of Planning's *Hazardous industry Planning Advisory Paper No. 6: Guidelines for Hazard Analysis*. The PHA shall address the following: - Potential impacts associated with storing and handling dangerous goods on-site, and transporting such goods to and from the port. The hazard identification must include transit cargo (dangerous goods) on board ships in harbour; - Historical Port Kembla data on the quantities and classes of dangerous goods, where available. If reliable data is unavailable, representative data from other NSW ports may be used; and - Demonstrate that off site risks do not exceed the NSW risk criteria set out in the Department of Planning's Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Landuse Safety Planning.	For hazards and risks generally, refer to **Section 13**
Ecology – including but not limited to: • Assessment of threatened terrestrial and aquatic species, populations, and ecological communities and/or critical habitat consistent with the *Draft Guidelines for Threatened Species Assessment (DEC & DPI, 2005)*; • Comprehensive survey of the Green and Golden Bell Frog, and aquatic species and marine vegetation within the proposed harbour expansion area, and habitat enhancement where relevant.	For ecology generally, refer to **Sections 16** and **17**
Traffic and Transport – including but not limited to: • Transport demand and the modal split between materials transported by truck and rail, taking into account the *Draft Interim Guidelines on Transport Management and Accessibility Plans (DoT/RTA)*;	For traffic and transport generally, refer to **Sections 18** and **19**
• The growth of freight train movements to and from the expanded facility, including network operational and infrastructure implications of the development in the medium and long term;	**Section 19**

Key Issues	Where addressed in EA
• Traffic impacts during the construction and operational phases of the project, including the cumulative impact of the development on the existing local and regional road network, taking into account the *RTA Guide to Traffic Generating Developments*. TRACKS network modelling must be undertaken to assess the cumulative impacts of both the Inner and Outer Harbour development, including recommendations for required infrastructure upgrades as a result of the development;	**Section 18**
• Interaction and integration with existing and planning transport infrastructure (e.g. Maldon to Dombarton rail link) and services; and • Impacts (direct and indirect) on navigation and access to recreational fishing in the area (e.g. boat ramp and foreshore access, restrictions on boat movements).	**Section 19** **Sections 5, 6** and **18**
Noise and Vibration – including but not limited to: • Noise and vibration from all activities and sources during both construction and operation, and impacts on receivers, taking into account the NSW *Industrial Noise Policy* (DECC) and the *NSW Environmental Criteria for Road Traffic Noise* (EPA) and the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (DECC/DoP). The noise assessment must consider the impact from the project in isolation and in a cumulative context with relevant existing and approved development.	For noise and vibration generally, refer to **Sections 21** and **28**
Air Quality – including but not limited to: • Air pollutants, including an assessment of dust deposition, total suspended particulates, PM_{10} and any other atmospheric pollutants of concern for local, regional and inter-regional air quality, from fugitive and point sources, taking into account of the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)*. • Potential odour from the dredge spoil and proposed odour control.	For air quality generally, refer to **Section 22**
Environmental Risk Analysis	
Notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of this additional key environmental impact must be included in the EA.	**Section 30**

Key Issues	Where addressed in EA
Consultation	
You should undertake an appropriate level of consultation with relevant parties during preparation of the EA, including (but not limited to): Local, State or Commonwealth government authorities such as: - Department of Environment and Climate Change - Department of Primary Industries (Fisheries) - Department of Water and Energy - Roads and Traffic Authority - NSW Maritime - Wollongong City Council • Service and infrastructure providers such as: - RailCorp - Sydney Water - Integral Energy • Specialist interest groups including Local Aboriginal Land Councils. • The public, including adjoining and affected landowners. The EA must describe the consultation process, document consultation undertaken and identify the issues raised (including where these have been addressed in the EA).	**Section 8**

1.5 Environmental Assessment Report Structure

This EA has been prepared with appropriate consideration given to the key issues associated with the Outer Harbour development, in conjunction with concerns and feedback provided by relevant stakeholders throughout the consultation process. It has been structured to present the findings of the environmental assessment and consultation processes employed during this project.

The EA is presented in seven volumes.

Main Report - Volume 1

- **Section 1 – Introduction** provides an introduction and context for the proposal, outlines the project objectives, describes the key attributes of the proposal and presents an overview of the DGRs and lists the sections within the EA that address each of the DGRs.
- **Section 2 – Site and Surrounds** describes the historical development of the Outer Harbour, the site location, and both on site and surrounding land uses.
- **Section 3 – Strategic Context** describes the trade activities within the Port and provides an economic and political context for the future growth of the Port and region.
- **Section 4 – Analysis of Alternatives** describes the project need, provides further justification for the project, information about its significance, and the consideration of other options. This section provides background to the need for facility expansion at Port Kembla, within the context of NSW Port requirements.

- **Section 5 – Concept Plan -** describes the proposed full development and details the concept design, staging, and operation.
- **Section 6 – Major Project –** describes the staging and methodology for construction and operational activities to be undertaken as part of Stage 1 of the Outer Harbour development.
- **Section 7 – Statutory Controls and Approvals** provides the statutory and non statutory planning framework considered relevant to the proposal, including consideration of the strategic context of the project. Relevant Environment Protection Licences are also listed.
- **Section 8 – Consultation and Identification of Issues** describes the consultation process undertaken with key stakeholders, in accordance with the requirements of the *EP&A Act* and provides details of the issues raised during this process.
- **Sections 9 to 28 – Environmental Impact Assessment** describes the existing environment, outlines the methodology undertaken for assessment, outlines potential environmental impacts resulting from the construction and operation of the proposal including cumulative impacts, and presents appropriate mitigation measures to avoid or ameliorate potential impacts.
- **Section 29 – Statement of Commitments** provides a draft Statement of Commitments by PKPC for the proposal.
- **Section 30 – Environmental Risk Appraisal** provides an Environmental Risk Assessment for the proposal including an assessment of risk for each environmental issue both pre and post mitigation.
- **Section 31 – Conclusion** and **Justification** summarises the report and describes the main findings of the EA.
- **Section 32 – References** provides a list of the reference documents used in this EA.

Appendices – Volumes 1 to 7

Appendices to the EA are contained within Volumes 1 to 7. Appendices include copies of final reports of all specialist studies that were undertaken as part of the EA process. Results and findings of the specialist studies have been summarised within relevant sections of this EA document.

Volume 1	Appendix A	Consultation Supplementary Documentation
Volumes 2 and 3	Appendix B	Contamination: Sediment Quality
Volume 4	Appendix C	Contamination: Soils and Groundwater Quality
	Appendix D	Qualitative Human Health and Ecological Risk Assessment: In Situ Sediment and Groundwater Contamination
Volume 5	Appendix E	Preliminary Hazard Analysis
	Appendix F	Coastal Hydrodynamic Processes
	Appendix G	Aquatic Ecology
Volume 6	Appendix H	Terrestrial Ecology Supplementary Documentation
	Appendix I	Traffic and Transport
	Appendix J	Noise and Vibration
	Appendix K	Air Quality
Volume 7	Appendix L	Landscape and Visual Amenity
	Appendix M	Heritage
	Appendix N	Climate Change

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2.0 Site and Surrounds

2.1 Historical Development of the Outer Harbour

Port Kembla was first developed in the late 1800's as a result of a booming coal industry in the Illawarra region. The first jetty was constructed on Five Islands Point in 1883 to service coal loading for the Mt Kembla Coal and Coke Company. At the request of local businesses and coal companies, the Government passed the *Port Kembla Act* in 1898 which formally proclaimed the area as a port. Work commenced on breakwater construction a few years later and the breakwaters were completed in 1937.

The ensuing port evolved into two distinct areas – the Inner Harbour, where most development since 1960 has been concentrated, and the Outer Harbour, which by comparison was at its peak of activity in 1960, and has experienced a general decline in activity since then.

By 1960 six jetties had been constructed in the Outer Harbour to service local coal mining, steel works and other industry. To serve the growing export requirements of the coal industry, coal handling was transferred to the Inner Harbour in the early 1960's when Coal Loader No. 1 was constructed, and the coal jetties were redeployed and modified as follows:

- No.1 and 2 Jetties were demolished.
- No. 3 Jetty was strengthened and modified in 2000 to allow its continued use as a tug berth, against which all tugs in the port berth.
- No.4 Jetty (Berth 206) underwent major modifications in 1999 to make it suitable for the import and export of non-flammable bulk liquids.
- No. 6 Jetty (Port Kembla Gateway) is under a long term lease to Port Kembla Gateway and the wharf structure has undergone major strengthening works over the past 15 years. The berth is currently used for import and export of dry bulk and other cargoes.

A flammable bulk liquids jetty was constructed in 1930's on the lee side of the northern breakwater (Berth 201). The jetty was upgraded in the 1980's with new berthing dolphins (refer **Figure 2-3**).

Historically, land use surrounding the Outer Harbour has included a range a heavy industries including Incitec (fertiliser production), Port Kembla Copper (copper smelter) as well as cokeworks, steel production, steel coating, scrap metal storage and a power station. The main industrial operations currently active are Brick and Block, Morgan Cement, BlueScope Steel, Orica and BHP Billiton.

A small boat harbour and recreational boat ramp, constructed in 1998 is located at the south east corner of the Outer Harbour, adjacent to the eastern breakwater.

In the 1990's PKPC established a dredge spoil emplacement area in the Outer Harbour which involved placing material originating from various Inner Harbour development dredging projects along and out from the south western foreshore area.

2.2 Location

The Outer Harbour is located in the south eastern extent of the Port which is located within the Wollongong Local Government Area (LGA). The Outer Harbour lies approximately 3km south of the Wollongong central business district (CBD) and is in the order of 80km south of Sydney CBD and 60km from Sydney's south western suburbs.

The Port is approximately 100km from Sydney, Australia's largest market, and is well connected with Sydney and regional NSW by virtue of a well established road and rail network, making it an ideal base for industrial import or export activities.

The Port Kembla area is recognised as the major industrial precinct within the Illawarra Region and is a key employment precinct, which contributes significantly to the Wollongong economy and to the economy of the wider Illawarra Region.

The location of the Port in the Metropolitan Sydney context is shown in **Figure 2-1**.

Figure 2-1: Regional Location of the Port of Port Kembla

2.3 Site Description

The Outer Harbour consists of a body of water enclosed on the south and west by the natural foreshore, and on the north and east by man-made breakwaters. The seaward opening between the breakwaters provides the port entrance to both the Inner Harbour and Outer Harbour through which all ships access the port. Ships enter the port through the entrance from the northeast and once inside the breakwaters make a right hand turn to access the Inner Harbour. There is a well defined channel through the Outer Harbour for this purpose. Key features of the Port, including the Outer Harbour, are illustrated in **Figure 2-2** and **Figure 2-3**.

Figure 2-2: Port of Port Kembla

Figure 2-3: Port Kembla Outer Harbour

2.3.1 Existing Land Use

The Outer Harbour is characterised by a mixture of both the built environment and natural features. Key features include:

- Three jetties to the south and west (No. 3, 4 and 6 Jetties) and a flammable liquids berth (Berth 201) located on the northern breakwater.
- A recreational boat harbour and boat ramp located adjacent to the eastern breakwater.
- Cleared short term lease storage areas on the foreshore (current uses include pipe storage).
- A number of commercial and industrial operations on the foreshore and adjacent sites outside the port boundary including Brick and Block manufacturing structural masonry products, Morgan Cement, PKPC Headquarters, PKPC Training and Conference Centre, Orica, BlueScope Steel and BHP Billiton.

- The rail network (including rail corridor and sidings) located between Darcy Road and Foreshore Road, Old Port Road and Five Islands Road, owned by PKPC.
- A concrete lined stormwater drain, known as Darcy Road Drain, located adjacent to property currently occupied by Brick and Block, Orica and Sydney Water.
- Salty Creek, which extends from a location adjacent to Port Kembla railway station and flows via a culvert under Old Port Road and discharges to the Outer Harbour.
- Port Kembla Heritage Park located on the southern headland of the Outer Harbour, south of the eastern breakwater. The Heritage Park has been developed to conserve military, cultural and historic heritage, and
- A local road network including Foreshore Road, Old Port Road, Flinders Street, Christy Drive and Darcy Road in the area.

2.3.2 Surrounding Land Uses and Operations

The land surrounding the Port is zoned heavy industrial in the Wollongong Zoning Map 1990. Other land uses proximate to the Outer Harbour include:

- Commercial and residential properties located to the south and south west of the Outer Harbour at Port Kembla village. The closest residential and commercial properties are located to the south west of the Outer Harbour along Wentworth Road, approximately 400m from the intersection of Old Port Road and Foreshore Road. Housing is also located to the south along Electrolytic Street, approximately 600m south of Foreshore Road.
- Wollongong sewerage treatment and water recycling plant located approximately 2km north of the northern breakwater. The 1km long discharge pipe for the plant extends in a south eastern direction toward the breakwaters. The Port Kembla storm sewage treatment plant is located on Red Point, approximately 2km south of the Outer Harbour.
- A network of arterial roads including Five Islands Road and Masters Road which connect with the Southern Freeway and Princes Highway.

2.3.3 Legal Description

The wet land below mean high water mark of the Outer Harbour is owned by NSW Maritime who will retain ownership of this area following reclamation.

The parcel of dry land between the Port property boundary and the shoreline is identified as Part Lot 1 DP 1141088 and is owned by NSW Maritime. Negotiations are underway to transfer title for this parcel of land to PKPC and the land transfer will likely take place early 2010.

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3.0 Strategic Context

3.1 Port Trade Context

The Port processes the greatest volume of steel exports and is the second largest exporter of grain from Australia. Newcastle is one of the largest coal export ports in the world and Port Botany is currently one of Australia's leading container ports.

The Port is primarily a bulk commodities port servicing the coal mining industry and the adjacent BlueScope Steel steelworks. Commodities handled at the Port include coal, iron ore, steel and wheat. The Port also handles bulk liquids, cars and break bulk cargo.

Total trade through the Port in 2008/09 was 26.4 million tonnes which was 4% below the record throughput of the previous year. Trade volumes are expected to grow in coming years as global economic conditions improve and new trades are attracted to Port Kembla.

3.1.1 Inner Harbour

Under the State Government's *NSW Ports Growth Plan,* a proportion of shipping and cargo previously handled through Port Jackson has been transferred to the Port. Recent development in the Inner Harbour has occurred to accommodate the transfer of some cargo from Sydney and the general growth in freight. The transfer of general cargo and car import activities from Sydney Harbour is anticipated to generate an additional 400 ship visits, 240,000 motor vehicles, 120,000 tonnes of break bulk cargo (timber, machinery, steel, paper, etc.) and a small volume of containers through Port Kembla each year. The Port is now the State's major centre for the importation of cars following the closure of the Glebe Island operation in November 2008.

Additional approved developments for the Inner Harbour which have not yet commenced operations include:

- Soybean processing and biodiesel production facility approved in May 2009;
- Warehouse for the receipt and distribution of imported timber.

As a result of the development activities described above there is now very little available land in the Inner Harbour to accommodate future trade growth. Consequently, if the Port is to continue to attract new trades as well as increasing the volume of existing cargoes, additional portside and landside facilities will need to be provided. This is the primary driver for the proposed Outer Harbour development (Maunsell │ AECOM, 2008).

3.1.2 Building on its Competitive Strength

Over time, the Port has shown a degree of flexibility to be able to receive goods that otherwise would have been processed elsewhere. Investing in infrastructure would enable the Port to compete more effectively on the wider market but, more importantly, to service the needs of a wide range of businesses in the local and wider region. It would also enable PKPC to attract a range of investment that maximises the potential of the Port and reflects the trade needs of Port users.

3.1.3 Port Expansion

Port expansion is particularly critical to industries that rely on Port services to deliver goods to, or receive goods from, the international market. This investment would enable the Port to service bulk trades from the near hinterlands and to compete for bulk trades from the more distant region. Also, it would provide a much needed injection of optimism to the regional economy, generating jobs in regional NSW, particularly in the Illawarra.

According to the *Illawarra Regional Strategy 2006 - 2031*, manufacturing is the main economic driver of the region ($6 billion annual turnover). Consequently the expansion of port operations would provide a significant opportunity to support investment and employment in this sector. Furthermore, expansion of port activities would provide the opportunity to develop corporate support services in Wollongong, for example, establishment of corporate offices for port-related businesses. This supports one of the key objectives in the region, which is to increase employment self containment (Maunsell AECOM, 2008).

In addition, development of the Port would enhance the potential for regional specialisation, enabling the South Coast region to become more specialised in a range of economic activities associated with export and import related industries, where it has a comparative advantage over other areas.

3.1.4 Economic Effect

The 'trickle down' or 'multiplier effect' of Port growth would have a significant economic impact on output, employment and earnings in the Illawarra, South Coast region and the State. The Port expansion, through the development of the Outer Harbour, would act as both a short term and long term stimulus to the local and regional economy. In the short term, it is expected that construction activities associated with land reclamation and the subsequent fit out of terminal facilities would generate many jobs, as well as contributing added value to the economy.

In the longer term, the operation of the Outer Harbour would generate direct employment at the Port as well as indirect employment in supporting services and ancillary activities in the local economy.

A recent economic study undertaken for the Port estimated that each ship call contributes $434,000 to the Illawarra region and $511,000 to the NSW economy in a representative year (EconSearch, 2009).

3.1.5 Infrastructure Needs

To deal with the predicted growth in imports and exports the Port needs to be better integrated with road and rail infrastructure and freight terminal facilities to ensure freight can be moved quickly and efficiently with minimal social and environmental impact.

Failure to meet the infrastructure needs to handle the trade forecasts of between 3% pa (low growth) and 7% pa (high growth), may constrain forecast growth substantially. In addition the Port would not have the capacity to meet future trade volumes and would remain highly dependent on a limited range of cargo that are subject to fluctuations in international demand.

It is critical to the success of the Port that it maintains its competitive position through improvements which enhance its capacity and capitalises on these opportunities, providing the much needed economic benefit to the local and wider region.

3.2 Policy Context

3.2.1 NSW Ports Growth Plan

The *NSW Ports Growth Plan* released in 2003, provides strategic direction for ports to ensure NSW continues to benefit from strong future trade levels by expanding port capacity to meet demand in a more integrated way. The Plan includes the relocation of containers, general cargo and car stevedoring from Port Jackson to Port Kembla. The Plan recognises that the transfer of significant volumes of imports to Port Kembla and Newcastle will likely have a long term positive impact on the competitive environment for NSW ports.

3.2.2 Metropolitan Strategy

The Metropolitan Strategy *City of Cities: A Plan for Sydney's Future* was released in December 2005. It supports continuing economic growth within the Sydney Region for 25 years, while balancing social and environmental impacts.

The transport component of the Strategy includes a number of specific objectives relating to freight including:

- *Maximise the efficiency of freight transport and increase the proportion transported by rail.*
- *Develop transport plans to facilitate the relocation of vehicle importation from Glebe Island and White Bay to Port Kembla.*
- *Facilitate the upgrading of the metropolitan rail freight network. Plan for the provision of sufficient freight transport capacity in key corridors. Protect corridors and land for freight related activities in the future.*
- *Reduce noise and air impacts of freight operations.*

3.2.3 Competition and Infrastructure Agreement

In February 2006, the Council of Australian Governments (COAG) committed to the *National Reform Agenda (NRA)* which includes competition, regulation and human capital reforms aimed at increasing the nation's productivity and workforce participation. At that meeting, the NSW Government committed to the *Competition and Infrastructure Agreement* as part of the NRA.

The *Competition and Infrastructure Agreement* (Parts 4.1 and 4.2) establishes a national framework for the regulation of nationally significant infrastructure. Only those ports defined as 'significant' were required to be reviewed under the *Competition and Infrastructure Agreement*. Port Kembla's Inner Harbour and Outer Harbour, including the handling and storage facility operations at the Port, were defined as 'significant'.

The review conducted by Price Waterhouse Coopers recommended, among other things, that the State government explore options to streamline the planning process for projects that are not assessed under Part 3A of the *EP&A Act,* and are greater than $5 million in value, and to consider whether port corporations should be the consent authority for investments over $5 million under specified circumstances.

The State Government supported these recommendations and enacted *State Environmental Planning Policy (Infrastructure) 2007* and on 28 July 2009 further enacted the *State Environmental Planning Policy (Major Development) Amendment (Three Ports) 2009* which declared Newcastle, Botany and Port Kembla as State Significant Sites to highlight their importance to the NSW economy.

3.2.4 State Plan: A New Direction for NSW

The *NSW State Plan: A New Direction for NSW (State Plan)* released in November 2006, sets out priorities for Government action over a ten year time span. The State Plan, with 34 priorities and 60 targets, was designed to deliver better services and improve accountability across the public sector.

Consultation with the local community and stakeholders during preparation of the State Plan identified the key challenges for the Illawarra as:

- Fostering business growth and ensuring a skilled workforce.
- Planning for infrastructure to support the growing population.
- Balancing development and the needs for business land with protection of the environment.

A *Regional Business Growth Plan* - Illawarra Region (Priority P6 of the State Plan) was released in July 2006 to determine key actions to promote economic growth and increase the level of employment in the region. It identified key opportunities and actions required to attract investment to the region and increase the number of local jobs.

The proposed Outer Harbour development has been defined as a high priority action and fits well with the priorities being set for employment generation in the region. The State Plan refers to simplifying the planning process and improving access to industrial/employment lands, which when developed could increase demand for port facilities to satisfy increased import/ export requirements.

3.2.5 State Infrastructure Strategy (2006)

The *State Infrastructure Strategy* outlines planned financial outlays for infrastructure projects in NSW for a period of 10 years to 2015-16. The State Infrastructure Strategy has been aligned with planning strategies such as the *Sydney Metropolitan Strategy* and *Illawarra Regional Strategy 2006 - 2031*.

The *State Infrastructure Strategy* confirms that funding is available for the future development of the Port, allowing for:

- purchase of Outer Harbour land ($1.5 million).
- construction of a bridge to access 10 ha of land within the balloon loop in the Inner Harbour ($4 million).
- redevelopment of the Inner Harbour ($86 million).
- staged redevelopment of the Outer Harbour ($25 million).

3.2.6 Illawarra Regional Strategy 2006 - 2031

The *Illawarra Regional Strategy* 2006 - 2031 released in January 2007 applies to the local government areas of Kiama, Shellharbour and Wollongong and represents an agreed NSW Government position on the future of the Illawarra to be reviewed every five years.

Implementation of the Regional Strategy is underpinned on a whole-of-government basis through the Action Plans outlined in the *State Plan.*

The primary purpose of the Regional Strategy is '*to ensure that adequate land is available and appropriately located to sustainably accommodate the projected housing and employment needs of the Region's population over the next 25 years*'.

The Regional Strategy incorporates the specific regional infrastructure requirements identified in the *State Infrastructure Strategy 2006–07 to 2015–16,* and has been developed to inform future infrastructure investment priorities for the Illawarra.

The Strategy provides for 47,600 new residents and 30,000 new jobs by 2031, concentrating growth around existing centres, with Wollongong as the Regional Centre and supported by existing infrastructure. It identifies manufacturing as the main economic driver in the region with a turnover of $6 billion annually. The Outer Harbour development is seen as a '*significant opportunity to support infrastructure and employment in this sector*'.

The Strategy also states that '*in addition to identifying lands to support port-related activities, transport infrastructure and corridors necessary to support freight links to Sydney markets and export opportunities can be seized'.*

The Strategy clearly identifies the challenges ahead to strengthen the region's links to Sydney and other regional markets and to ensure the capacity and connectivity is available within the transport network.

The Port and its contribution to the economy of the area is clearly seen as part of a '*prosperous, diverse and sustainable future for the Illawarra'*. Key employment lands include Port Kembla and these should be developed to increase job opportunities locally and to reduce the reliance of the workforce on areas outside the region. Currently 15.8% of the workforce commutes to work outside the region.

Management of efficient freight networks is identified as a priority, in particular the:

- Princes Highway and proposed alignments.
- Illawarra Highway.
- Northern Distributor/Bulli Pass.
- Maldon to Dombarton rail corridor.
- Moss Vale to Unanderra rail line.
- F6 transport corridor.

3.2.7 Maldon and Dombarton Rail Link

In August 2008, a public forum on transport for the Illawarra agreed on key project ideas to be submitted to the *Commonwealth Infrastructure Fund* including the completion of the Maldon and Dombarton rail link and upgrades to Picton Road and the Princes Highway. Stakeholders agreed on the need for the Outer Harbour development to be supported by efficient transport links.

Construction of the rail link commenced in the early 1980s to service the then burgeoning coal exports from the Port. Construction of the line ceased in the late 1980s due to the down turn at the time in the coal market. With the more recent growth in coal exports and general growth in trade through the Port, the Federal Government committed $300,000 in 2008-09 to undertake a pre-feasibility study of the Maldon and Dombarton Rail Link to review the engineering, economic and environmental requirements for the rail line, to assess the work completed to date, and to determine the suitability of the rail link for the proposed rail freight task. The pre-feasibility study has recently been completed and concluded the line could:

- Provide a strategic alternative to the current Moss Vale-Unanderra and Illawarra line for freight trains.
- Support the Port's expanding commercial activities.
- Generate considerable local construction employment.

The Federal Government is currently funding a $3M study to look at business drivers behind the Maldon and Dombarton Rail Link. The study, due for completion mid 2011, will address detailed planning and engineering work needed to obtain firm costing and determine the viability of this project.

3.3 Conclusion

The current landside facilities are at maximum capacity imposing constraints on economic growth in the Port. The expansion of operations at the Port is a key component of regional and state planning strategies. The development of additional land in the Outer Harbour is crucial to ensure the current regional and State economic and employment functions of the Port continue well into the future.

Concept Plan Approval for the total development would provide certainty to government stakeholders that the Port is able to accommodate trade growth and contribute to economic growth over an extended 20-30 year period, in line with regional and state planning strategies. The Major Project Approval (Stage 1) would provide the foundation for subsequent stages of the Concept Plan and enable operation of the first multi-purpose berth in the short to medium term.

In a strategic context, the proposed development of the Outer Harbour is consistent with all relevant Government policies and strategies and addresses future trade projections for the Port.

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4.0 Alternatives Considered

4.1 Key Project Requirements

There are several future trades under consideration by PKPC, as well as opportunistic trades which PKPC will continue to pursue. To be able to cater for imminent and future growth, PKPC needs to develop new port facilities. This would give PKPC the ability to react at short notice to commercial requests for extra land and berths in the Port, in a coordinated, pre-planned manner.

The Port would be progressively developed over three decades. As a consequence, PKPC is seeking planning approval for a staged development, and approval of the first stage would enable the commencement of reclamation and berth construction. Completion of the total development in stages would enable land to be created now when appropriate fill sources become available, or immediately upon agreement with future lease-holders to provide new land.

PKPC also needs to have seed infrastructure, for example road, rail and the reclamation footprint, in place wherever possible to attract new trades and clients. Above all, PKPC wants to minimise its capital outlay and maximise its return on investment not only for the benefit of the Port's shareholders, but also so that costs for operators are kept at competitive levels, thus rendering the Port attractive for future operators.

Alternative options to meet PKPC's needs are addressed below including the options considered as part of the Outer Harbour Master Plan (Maunsell │ AECOM, 2008)

4.2 Development of Other Existing or New Ports

Port Botany is presently the largest container port in NSW and services the needs of the immediate Sydney market in particular. The Port Botany expansion was approved by the Minister for Planning on 13 October 2005 with limits on the capacity of the Port throughput of 3.2 million Twenty-Foot Equivalent Units (TEUs) of containers per annum. The current and recent trends in freight growth rates indicate that this capacity may be reached much sooner than first expected.

To manage this growth, the State Government, through the NSW Ports Growth Plan, has identified a role for Port of Port Kembla and Port of Newcastle in meeting subsequent demand. Port of Newcastle dominates the NSW coal export market and has been earmarked as also having potential to increase capacity for container operations. It is becoming increasingly evident that there is a role for all three ports in meeting the growing container freight demand.

The role of Sydney Harbour as an industrial and cargo handling port continues to diminish with increasing demand for foreshore land for residential and a variety of commercial and recreational uses. As a consequence Port of Port Kembla, Port of Newcastle and Port Botany have been nominated as the three key trading ports for NSW into the future as all have, to varying degrees, the capacity to accommodate increased trade and the potential to expand, or are currently in the process of expanding, operations.

While the three ports provide opportunities to accommodate increased freight levels, there is little impetus to establish new ports, owing to the substantial investment required in port and ancillary infrastructure. In addition the shipping industry has shown that fewer points of call on international shipping routes are a preferred outcome (URS, 2003).

4.3 Alternatives within Port Kembla

4.3.1 Considerations

Virtually all land within the Inner Harbour is now tenanted and there are no large areas available to locate new trades and operators. The Outer Harbour is the only remaining area within the Port that provides the potential to accommodate future business development.

In recognition of the long lead times in port infrastructure planning, and to take advantage of an offer of excess blast furnace slag, planning for Outer Harbour reclamation development commenced in the 1990's. The *Port Kembla Port Corporation Environmental Impact Statement – Outer Harbour Development Project Draft – For Discussion Purposes Only* (CH2MHill, 1999), and preliminary Master Plan drawings were prepared in 2001. Reclamation engineering was further investigated in 2004 and as part of the Inner Harbour development, dredge material was placed in selected areas of the Outer Harbour.

A Master Plan for the Outer Harbour was completed in mid 2008 which identified options available for the development of the Outer Harbour. Selection of the preferred development option was an iterative process involving consideration of a range of Port planning issues, opportunities and constraints. This process identified key areas within the Port that are open or subject to change, that are subject to some possible modification or that cannot be modified. Other key considerations in this process included:

- Trade forecasting and terminal type feasibility.
- Capital investment requirements and return forecasts.
- Ship operation and navigation issues (including hydrodynamic considerations and the impact of seiching).
- Environmental issues (including site characteristics and surrounding land uses, contamination, hydrology and water quality, aquatic and terrestrial ecology, heritage and socio-economic).
- Geotechnical considerations.
- Landside road and rail infrastructure.
- Tug facilities (existing and future).

4.4 Options Considered

The options investigated in the Master Plan included:

- Options 1 and 1A, which maximise the reclamation area and number of berths attainable within the existing port layout, with a similar mix of trades to the existing Inner Harbour.
- Option 2, which expands the reclamation area of Option 1 by moving the breakwaters and shipping channel to the north east.
- Options 3, and 3A to 3E, which optimise the Outer Harbour layout for a container terminal operation.

The key components of the options considered are summarised in **Table 4-1** and are illustrated in **Figures 4-1** to **4-9**.

Table 4-1: Alternative Options Summary

Option	Summary Description	Berths	Reclamation Area
Option 1 (**Figure 4-1**)	Maximum creation of land is targeted, with berths provided where considered feasible and economical. The emphasis is on trade types and customer types similar to the Inner Harbour minor trades, including break-bulk/general cargo, niche bulk, cars and bulk liquids. 450m diameter swing basin.	2,100m new berth length (excl Gateway Berths): • 3 bulk solids / liquids • 4 container • 2 multi-purpose (at Port Kembla Gateway) • 1 bulk liquid / oil	51ha
Option 1A (**Figure 4-2**)	As for Option 1 except reclamation area is further increased by filling westward to the Port Kembla Gateway Berths. Additional land is created at the expense of the loss of 3 berths in the Outer Harbour compared to Option 1.	2,180m new berth length (including Port Kembla Gateway Berths): • 3 bulk solids / liquids • 2 container • 1 multi-purpose (at Port Kembla Gateway) • 1 bulk liquid / oil	59ha
Option 2 (**Figure 4-3**)	450m diameter swing basin moved north to allow new berths to have minimal rock dredging. Re-alignment / extension of breakwaters is required.	2,020m new berth length: • 2 bulk solids / liquids • 2 container • 1 multi-purpose (at Port Kembla Gateway) • existing oil berth	64ha
Option 3 (**Figure 4-4**)	450m diameter swing basin moved north to allow new container berths. Re-alignment / extension of breakwaters is required.	2,400m new berth length: • 2 bulk liquids / solids • 4 container • 3 multi-purpose (1 at Port Kembla Gateway) • existing oil berth	62ha
Option 3A (**Figure 4-5**)	450m diameter swing basin moved north to allow new container berths. Re-alignment / extension of breakwaters is required. Reclamation shifted eastward with loss of east side bulk berths.	1,830m new berth length: • 4 container • 3 multi-purpose (1 at Port Kembla Gateway) • existing oil berth	44ha
Option 3B (**Figure 4-6**)	450m diameter swing basin shifted south to avoid modifications to breakwaters.	1,770m new berth length: • 4 container • 3 multi-purpose • existing oil berth	42ha
Option 3C (**Figure 4-7**)	450m diameter swing basin shifted west to avoid modifications to breakwaters and to reduce rock dredging requirements.	1,800m new berth length: • 4 container • 3 multi-purpose • existing oil berth	42ha

Option	Summary Description	Berths	Reclamation Area
Option 3D (**Figure 4-8**)	**Preferred Option** As for 3C with berth alignments rotated anticlockwise to reduce wave penetration into docks.	1,770m new berth length: • 4 container • 3 multi-purpose • existing oil berth	42ha (total hardstand area) 40 ha reclamation 2 ha piled structure
Option 3E (**Figure 4-9**)	As for 3D with 450m diameter swing basin moved slightly north to allow new container berths. Re-alignment / extension of breakwaters is required.	1,770m new berth length: • 4 container • 3 multi-purpose • existing oil berth	42ha

Figure 4-1: Option 1

Figure 4-2: Option 1A

Figure 4-3: Option 2

Figure 4-4: Option 3

Figure 4-5: Option 3A

Figure 4-6: Option 3B

Figure 4-7: Option 3C

Figure 4-8: Option 3D – (Preferred Option)

Figure 4-9: Option 3E

4.5 Do Nothing Option

The 'do nothing' option involves maintaining the status quo and continuing current port operations at existing levels. Maintaining the status quo would present considerable difficulties to PKPC when operating in an increasingly competitive environment by constraining opportunities for growth.

Key reasons why the 'do nothing' option is not favourable include:

- The Port would be unable to cater for future trade growth beyond the current Inner Harbour developments as the Inner Harbour is now fully occupied.
- Future trades currently under consideration require additional berths. Without the development of the Outer Harbour, additional berths would not be available to accommodate these trades.
- Additional pressure would be placed on other NSW Ports to handle anticipated growth in trade.
- Opportunistic trades PKPC would like to attract would be lost. PKPC needs to have infrastructure in place where possible to attract new trades and clients.
- Significant opportunity to support investment in manufacturing a key regional economic driver (*Illawarra Regional Strategy 2006 - 2013*) would be lost. In addition one of the key objectives in the *Illawarra Regional Strategy 2006 – 2013* relating to regional employment self containment could also be detrimentally affected.
- Would be contrary to government policy as outlined in the New South Wales *Three Ports Strategy*.
- There would be lost opportunity of short term stimulus (during construction phase) and ongoing long term stimulus (during operation phase) to the local and regional economy in particular.
- The Port would become capacity constrained in the next decade and not be able to react to forecast growth in international shipping trade and cargoes.

4.6 Preferred Option

Trade and return forecasting along with capital investment requirements have determined that only the highest value cargoes, the container trade, are likely to generate sufficient revenue to justify the required capital investment in the Outer Harbour and provide a positive return on investment in a reasonable time.

The alternatives looked at maximising berthing facilities while mitigating long wave activity in the Outer Harbour. Option 1 induced excessive long wave activity. Options 2, 3, 3A and 3E optimised both land development and minimised long wave action as a result of an extension of breakwaters in the design. However, financial constraints reduced the feasibility of breakwater extensions required under each of these options. While there are subtle variations in Option 3B, 3C and 3D, Option 3D maximised land development, provided flexibility to handle other trades, and long wave activity was minimised.

Based on the overall assessment of the options, Option 3D (**Figure 4-8**) has been selected as the preferred option for development of the Outer Harbour. Concept Plan Approval is being sought for all development outlined in Option 3D as described in **Section 5**. This option has the demonstrated capability to best accommodate potential future container trade and the flexibility to accommodate other future trades such as gypsum, iron ore, limestone, coke, clinker, woodchips, granulated slag, bulk liquids and bulk cargo generally.

The proposed development as detailed in the Concept Plan Approval remains essentially the same as that developed for Option 3D of the Master Plan. However, minor changes to staging, primarily around construction timing for operational facilities, have occurred subsequent to completion of the Master Plan. PKPC is seeking approval for the Concept Plan (full development) and Major Project approval for Stage 1 of the Concept Plan. The EA outlines the project description for both the Concept Plan and Major Project in **Sections 5** and **6** respectively.

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