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Soybean Processing and Biodiesel Production Facility

Environmental Assessment

National Biodiesel Pty Ltd

5 December 2008

Soybean Processing and Biodiesel Production Facility

Prepared for

National Biodiesel Pty Ltd

Prepared by

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5 December 2008

60042651

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Quality Information

Document Soybean Processing and Biodiesel Production Facility

Ref 60042651

Date 5 December 2008

Prepared by Rebecca Fisher

Reviewed by Craig Niles

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	24/04/08		Louisa Rebec Technical Director - Environment	Original signed
2	01/05/08		Louisa Rebec Technical Director - Environment	Original signed
3	05/12/2008		Louisa Rebec Technical Director - Environment	

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Acronym List

AAQ	Ambient Air Quality
AAT	Australian Amalgamated Terminals
ABARE	Australian Bureau of Agriculture and Resources Economics
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHPI	Australian Heritage Places Inventory
ANL	Acceptable Noise Level
AQIS	Australian Quarantine and Inspection Services
ASS	Acid Sulfate Soils
BOM	Bureau of Meteorology
bpa	Barrels per annum
bpd	Barrels per day
BTRE	Bureau of Transport and Regional Economics
CEMP	Construction Environmental Management Plan
CERA	Cambridge Energy Research Associates
CIV	Capital Investment Value
CLM Act	Contaminated Land Management Act 1997
CO_2	Carbon dioxide
CPRS	Carbon Pollution Reduction Scheme
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DEWHA	Department of Environment, Water, Heritage and the Arts
DGRs	Director General's Requirements
DoP	Department of Planning
DoS	Degrees of Saturation
DPI	Department of Primary Industries
DSRD	Department of State and Regional Development
DT	Desolventiser-Toaster
DTDC	Desolventiser-Toaster-Dryer-Cooler
DWE	Department of Water Energy
EA	Environmental Assessment
ECRTN	Environmental Criteria for Road and Traffic Noise
EIS	Energy Information Administration
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EPL	Environmental Protection License
ESCP	Erosion and Sediment Control Plan

Acronym List

ESD	Ecologically Sustainable Development
ECRTN	Environmental Criteria for Road Traffic Noise
FM Act	Fisheries Management Act 1994
GGBF	Green and Golden Bell Frog
GHG	Greenhouse Gas
GMR	Greater Metropolitan Region
HIPAP	Hazardous Industry Planning Advisory Paper
IEA	International Energy Agency
ILALC	Illawarra Local Aboriginal Land Council
INP	Industrial Noise Policy
IPCC	Intergovernmental Panel on Climate Change
IREP1	Illawarra Regional Environmental Plan No. 1
IRS	Illawarra Regional Strategy 2006-2031
LEP	Local Environmental Plan
LGA	Local Government Area
LMP	Landscape Management Plan
LoS	Level of Service
m^2	Metre squared
m^3	Metre cube
ML	Million litres
mt	Metric tonne
MWWL	Management of Waters and Waterside Lands Regulation
NB	National Biodiesel Pty Ltd
NBG	National Biofuels Group Pty Ltd
NEPM	National Environmental Protection Measures
NES	National Environmental Significance
NGA	National Greenhouse Account
NPW Act	National Parks and Wildlife Act 1974
NSW	New South Wales
NTR	National Trust Register
NV Act	Native Vegetation Act 2003
NW Act	Noxious Weeds Act 1993
OECD	Organisation for Economic Cooperation and Development
OEMP	Operation Environmental Management Plan
OHS Act	Occupational Health and Safety Act 2000
OPEC	Organisation for Petroleum Exporting Countries
PFM	Planning Focus Meeting

Acronym List

PFP	Port Freight Plan (2004)
PHA	Preliminary Hazard Analysis
PKH Act	Port Kembla Harbour Act 1898
PKPC	Port Kembla Port Corporation
PMA Act	Ports and Maritime Administration Act 1995
POEO Act	Protection of the Environment Operations Act 1997
PPE	Personal Protective Equipment
PUC	Port Users Council
QAP	Quarantine Approved Premises
QRA	Quantitative Risk Analysis
RBL	Rating Background Level
REF	Review of Environmental Factors
RO	Reverse Osmosis
RPI	Regional Pollution Index
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy (Major Projects) 2005
SHR	State Heritage Register
SMP	Safety Management Plan
SoC	Statement of Commitment
SPBP	Soybean Processing & Biodiesel Production
Sqm	Square metre
STP	Sewage Treatment Plant
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TSC Act	Threatened Species Conservation Act 1995
TWTP	Tradewaste Treatment Plant
US	United States
USDE	US Department of Energy
USGS	United States Geology Survey
VOCs	Volatile Organic Compounds
WARR Act	Waste Avoidance Resources Recovery Act 2001
WCC	Wollongong City Council
WLEP	Wollongong Local Environmental Plan
WM Act	Water Management Act 2000
WMP	Waste Management Plan

Executive Summary

Introduction

National Biodiesel Pty Ltd seeks project approval under Part 3A, Section 75J of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the construction and operation of a Soybean Processing and Biodiesel Production facility (SPBP facility) within the Inner Harbour area of Port Kembla.

On the 27th July 2007 the proposed development was declared by the NSW Minister for Planning (the Minister) as a 'Major Project' under the provisions of the EP&A Act and *State Environmental Planning Policy (Major Project) 2005*. Therefore, the project is subject to the provisions of Part 3A of the EP&A Act, with the Minister being the approval authority.

A Planning Focus Meeting (PFM), convened by the Department of Planning on the 19th May 2008, was held in Port Kembla to discuss the key issues and potential environmental impacts associated with the project. Pursuant to Section 75F of the EP&A Act, the Director-General's Environmental Assessment Requirements were issued by the Department of Planning subsequent to the PFM. These requirements were prepared by taking into consideration both the preliminary environmental assessment report and the outcomes of the planning focus meeting. Pursuant to Section 75H of the EP&A Act, an Environmental Assessment must be prepared and submitted to the Director-General to obtain approval to carry out the project. In this regard, the Director-General must be satisfied that the Environmental Assessment adequately addresses the matters raised in the Director-General's Environmental Assessment Requirements (DGRs).

This document is an Environmental Assessment prepared in accordance with the provisions of the EP&A Act and the *Environmental Planning and Assessment Regulations 2000* (Regulations) and has been prepared on behalf of National Biodiesel Pty Ltd (the proponent). The Environmental Assessment has been prepared and submitted pursuant to Section 75H with the intention of obtaining Project Approval under Section 75J of the EP&A Act.

Site context

The proposed SPBP facility is to be located in the Inner Harbour of Port Kembla, which is located in the Wollongong Local Government Area, three (3) km south of Wollongong and approximately 60km from Sydney's south western suburbs. Port Kembla is the closest specialist industrial port to Sydney, Australia's largest market. The proposed SPBP facility is bounded by Tom Thumb Road to its north, Farrer Road to its west, Berth 104 to its south and the Garungaty Waterway (commonly referred to as the Western Drain) to its east. Port Kembla is well connected with Sydney and regional NSW by an excellent road and rail system, making it an ideal base for import or export activities. The SPBP facility is to be located on four separate allotments adjoining and surrounding the existing Grain Terminal. The four allotments have a collective area of approximately 7.4 ha.

The four separate allotments have two proprietors. GrainCorp leases what is referred to throughout this report as Allotments 1 and 3, as well as Berth 104, from Port Kembla Port Corporation. Port Kembla Port Corporation owns Allotments 5 and 6. Historically, the subject allotments were created through extensive land reclamation works and remain, to this date, unimproved.

The area immediately surrounding the subject allotments is dominated by industrial land uses. To the north are Wollongong Sewage Treatment Plant operated by Sydney Water and Wollongong Golf Course. To the east is the Port Kembla Coal Terminal. To the south and west is BlueScope Steel and adjoining the site to the north and west is the Australian Amalgamated Terminals site.

Project description

The project comprises the construction and operation of a SPBP facility, which includes the processing of soybeans for the production of biodiesel as well as the co-products of consumable soy protein meal (animal feedstock), glycerine and bleaching earth. These products will be distributed from the SPBP facility to domestic, regional, national and international (such as New Zealand) markets. National Biodiesel Pty Ltd is proposing to utilise land that is considered superfluous to the needs of GrainCorp and Port Kembla Port Corporation for the purpose of producing, storing and distributing these production outputs.

The proposed project, representing an approximate capital investment value of AU$243 million entails the construction and operation of numerous interdependent components which collectively function as the SPBP facility. This will include the:

- Construction of:
  - soybean preparation and extraction plant
  - biodiesel and glycerine refining plant
  - administration and training offices
  - vehicle manoeuvring and parking areas
- Installation of:
  - a ship unloader
  - conveyor belts and a bucket elevator to facilitate the transfer and handling of raw material on the existing GrainCorp site
- Use of:
  - seven (7) silos with a ten tonne capacity, two (2) with a 5 tonne capacity and Berth 104.

The SPBP facility will utilise approximately 1.4 million tonnes of soybean per annum as raw material from which soybean meal, biodiesel and the nominated co-products would be produced. Annually, the SPBP facility will produce approximately 288 million litres of biodiesel, 1.1 million tonnes of soy protein meal, 25,450 tonnes of glycerine and 3,000 tonnes of used bleaching earth. The proposed hours of operation are 24 hours per day, seven (7) days per week.

The SPBP facility will require a construction period of approximately 70 weeks. This has taken into consideration the preparation of a Construction and Operational Environmental Management Plan, site establishment, earthworks and grading, installation of amenities, construction of the SPBP facility and the associated ancillary structures, car parking and the delivery of the first shipment of soybeans, other raw materials and final site clean-up.

Soybean processing and biodiesel production facility design layout

The proposed SPBP facility is a base layout utilising the allotments that have been made available to the proponents by GrainCorp and Port Kembla Port Corporation. The development will maximise use of currently under-utilised and unimproved land as well as existing infrastructure. The proposed SPBP facility will also contribute to the diversification of the trade base within the port.

The base layout presented in this Environmental Assessment represents National Biodiesel Pty Ltd's minimum requirements for development with respect to:

- operational and economic feasibility
- optimal land use including the inter-relationships between the allotments
- optimal use of existing under-utilised infrastructure (berth and silos)
- optimal transport infrastructure use (road, rail and sea).

Need for development

The port of Port Kembla is the closest specialist industrial port to Sydney. Traditionally a bulk goods port handling commodities such as iron ore, coal and grain, the port is currently experiencing significant modification and expansion. However, at present there is a substantial portion of under-utilised land and consequently infrastructure within the Inner Harbour.

Port Kembla Port Corporation is responsible, as manager, for the development and continued feasibility of port operations within the Inner and Outer Harbour of Port Kembla. The State government has acknowledged that the manufacturing sector is the primary economic base in the Illawarra region and Port Kembla Port Corporation's growth strategy encourages diversification and increase of the existing trade base in order to secure the port's future viability. This has resulted in a commitment to expand the port and place a stronger emphasis on introducing general and break bulk cargoes, containers and vehicle handling trades to the port. Evidence of this has been demonstrated by the undertakings of Port Kembla Port Corporation and Australian Amalgamated Terminals to expand the cargo handling facility by relocating the car import trade from Glebe Island and general cargo and container trade from East Darling Harbour in Sydney to Port Kembla. This exercise represented a $200 million capital investment value and the creation of approximately 1000 jobs, both directly and indirectly.

The Illawarra Regional Strategy 2006-2031 identifies the port of Port Kembla as a *'regionally significant key employment land'*. The Illawarra Regional Strategy recognises that the manufacturing sector remains the economic driver of the region and consequently provides that the supply and protection of regionally significant employment lands shall be reinforced through local environmental and development control plans[1]. The Vision of the Strategy is threefold, namely:

- prosperity: attract economic investment and new jobs in an expanded Port Kembla
- diversity: support the community through the provision of a range of employment
- sustainability: minimise impacts on natural and cultural assets[2].

The location of the site, and the infancy of this technology in Australia, will allow the proposed SPBP facility to become a significant regional asset that will provide employment opportunities, both direct (500 during construction, 235 in operation) and indirect (725) both up and downstream. This is consistent with the aims of the Illawarra Regional Strategy, which identifies Port Kembla as a key employment precinct and represents 3.2% of the Illawarra's job creation target for 2031[3] (excluding construction employment). By virtue of capital investment and job creation, this proposed SPBP facility is commensurate with that of the relocation of the car import industry from Glebe Island, combined with the relocation of the general cargo and container trade from East Darling Harbour.

In addition, the plant will require a diverse range of skills to operate. The skills required include business management, administration, sales and marketing, factory management, maintenance, transport and logistics, security, labourers, plant chemists, equipment operators, electricians and engineers (mechanical and chemical). The proposal will provide 3.2% of the State Government's employment target for 2031 within the Illawarra region.

The Illawarra Regional Strategy also recognises the value of rural lands of the Illawarra region as food producing lands and requires the long-term protection of those lands. The proposed SPBP facility has a demand for approximately one million tonne of soybeans per annum. The soybean market in Australia at present is relatively small and unable to meet such demand. The end result of the siting of this SPBP facility in Port Kembla will be a stimulus of rural economic growth in the domestic market. The soybean crushing capability will also present the opportunity to foster and develop a strong local soybean growing economy.

[1] NSW Department of Planning, *Illawarra Regional Strategy 2006-2031*, 2007

[2] NSW Department of Planning, *Illawarra Regional Strategy 2006-2031*, 2007

[3] NSW Department of Planning, *Illawarra Regional Strategy 2006-2031*, 2007

The operations will supply in the order of 1.1 million tonnes of domestically produced soybean meal for animal feedstock that would otherwise be imported. Of particular importance is the production capability of the proposed SPBP facility, which will supply approximately 288 million litres of biodiesel to the domestic market per annum. This magnitude of production is a significant contribution towards the Australian Federal Government's biofuel target of 350 million litres to be included in the Australian fuel mix by 2010 and demonstrates a commitment to providing an alternative and more sustainable energy source. This proposed SPBP facility will thus help Australia increase its food and energy security.

Upgrade works will be carried out on Berth 104 and on a number of the silos, which are located on the GrainCorp site to facilitate this project. The SPBP facility will take advantage of all modes of transport available at the site to conduct business (sea, road and rail). Accordingly, infrastructure upgrades, site improvements and enhanced utilisation of the port's land and existing infrastructure will be realized because of this proposal.

A number of advantages present themselves through a dual port and heavy industry location, such as access to transport infrastructure (road, rail and sea), compatibility with surrounding land use and sufficient distance from sensitive land users. On-site production of biodiesel also presents the opportunity to supply a greener and more sustainable fuel to surrounding port users. The establishment of a state-of-the-art SPBP facility will assist in meeting future national greenhouse gas abatement targets.

The cultivation of soybeans offers a series of benefits to farmers, in addition to improving the country's food security. The cultivation of soybeans in rotation systems requires 25-40% less fertiliser than maize and other crops that follow and as it returns nitrogen to the soil leading to the reduction of fertiliser run-off, as well as cost advantages for farmers. Further, the vigorous root systems of soybean plants have a natural plough effect on soil, creating conditions which improve yields of following crops by 15-30%, reduce the need for tilling and subsequently decrease the need for fertiliser by 30%. When grown in rotation, soybean crops have a lower comparative susceptibility to pests, diseases and weeds compared to wheat and maize, which reduces the need and dosage of pesticides and herbicides thereby lowering the amount of potentially harmful chemicals entering the environment and reducing farm input costs.

The time has arrived to consider feasible alternative solutions to address the predicted domestic and international depletion of non-renewable energy sources, increasing demand, vulnerability to volatile world politics and increasing import dependency.

Accordingly, the proposed SPBP facility will be contributing to the ongoing prosperity, diversity and sustainability of the Illawarra.

Environmental Assessment issues

The preliminary environmental assessment undertaken for the project identified and prioritised the potential environmental issues associated with this project. The assessment of environmental issues was based on this prioritisation. In addition, pursuant to Section 75F of the EP&A Act, the Director General's Environmental Assessment Requirements, as signed on the 30th May 2008 and issued on the 02nd June 2008, have been incorporated and addressed.

The key issues of consideration that were identified and will be addressed as part of the detailed Environmental Assessment include:

- air quality
- energy and sustainability
- hazards and risks
- traffic and transport

Other matters, which are of moderate significance with respect to environmental impact, are also assessed, comprising:

- ecological and water quality impacts
- noise emissions
- waste management
- heritage
- social impact
- visual impact
- soils (contamination, acid sulfate soils and salinity)
- water.

Air quality

An assessment of the potential impacts on air quality of the proposed SPBP facility has been undertaken for this Environmental Assessment. The emissions generated by the proposed development from point sources are expected to be below the NSW Department of Environment and Conservation (now the Department of Environment and Climate Change) assessment criteria. As such, the impact on the nearest sensitive receptors is not expected to be significant. The assessment has been based upon maximum emission levels supplied by the technology provider and as such the predicted concentrations are expected to overestimate contributions compared to what will actually occur.

Potential dust emissions are proposed to be controlled using a series of measures through the materials handling system. These controls are focussed on mitigating the potential for health and safety issues onsite and quarantine requirements, but equally provide a level of protection to the local Port Kembla users and local surrounding residential community. As such, it is expected the potential for impacts to local amenity will not be significant.

The proposed development is likely to generate a relatively small increase in road vehicle movements to and from the site and as such will not have a significant impact on air quality. Where practicable, this will be further mitigated by the use of rail and sea transportation.

The proposal utilises a suite of controls to reduce the potential air quality emissions and as a whole is considered unlikely to cause a significant impact to the local air quality or amenity.

Greenhouse gas emissions and energy efficiency

An assessment of Greenhouse Gas (GHG) Emissions from the proposed SPBP facility, supply chain and delivery chain was undertaken. This included a quantitative assessment of the potential Scope 1, 2 and 3 greenhouse gas emissions of the project, and qualitative assessment of the potential impacts of these emissions on the environment was undertaken.

The assessment found that the emissions of GHG from the proposed development would have an insignificant incremental impact relative to the global scale of climate change. Also, displacement of fossil diesel fuel by the biodiesel produced by the proposed SPBP facility is expected to produce a net reduction of approximately 6 million tonnes of GHG emissions over its life-time. It was concluded that the net impacts of GHG emissions from the proposed SPBP facility are positive compared to reliance on fossil diesel.

Hazards and risks

A Preliminary Hazard Analysis (PHA) was undertaken in accordance with Hazardous Industry Planning Advisory Paper No.6 to demonstrate that the plant is only potentially hazardous and/or offensive, as opposed to being actually offensive. The PHA assessed the project against Hazardous

Industry Planning Advisory Paper No.4, Risk Criteria for Land Use Safety Planning, and concluded that the risk criteria were not exceeded and the project is therefore permissible within the current land use zoning. The PHA recommended a number of safeguards to enhance the safety systems at the site and ensure the risks are maintained as low as reasonably practicable.

Traffic and transport

An assessment of the existing road network surrounding the site and the current traffic volumes has been undertaken for this Environmental Assessment using the 'worst case' scenario. It is acknowledged that the SPBP facility will generate additional traffic movements however, as a result of maximising the use of alternative modes of transport available, such as sea and rail, the impact of the additional road movements is considered to be negligible and consequently will not alter the existing level of service at the intersection of Tom Thumb Road and Springhill Road.

Ecological impacts

An ecological assessment (flora and fauna) was undertaken to identify potential adverse impacts to ecological elements present on the subject site. This included an assessment of the potential impact on threatened species, migratory species, threatened populations and endangered ecological communities.

The results of ecological investigations have established that the proposed works will not have a direct or significant impact on the Green and Golden Bell Frog or any other known threatened species, populations or ecological communities or critical habitats (terrestrial and aquatic) provided the recommended management measures are implemented. In addition, ecological investigations revealed that, due to the condition and suitability of the habitats on the site, no species listed as threatened or migratory, under the EPBC Act are considered likely to occur on the site.

In addition, there are no World heritage properties located on or within close proximity to the subject site and nor are there any Commonwealth, State or locally listed heritage items located on or within close proximity to the subject site. There are no Ramsar wetlands on or within the immediate vicinity of the subject site and Port Kembla Harbour is not an identified Commonwealth marine area. Finally, the proposal does not include any proposed nuclear actions or uranium mining.

Having regard to the above, the proposed SPBP facility will not have a significant impact on any matter of NES. Accordingly, referral of the proposed development to DEWHA on the basis of potential impacts on terrestrial or aquatic ecosystems is not considered necessary.

Noise emissions

An assessment of noise likely to be generated by the construction and operation of the proposed SPBP facility is presented in this report having specific regard to sensitive environmental receptors. Subject to the adoption of the recommended mitigation measures, the noise assessment concluded that the construction activities are not expected to generate significant ground borne noise. The predicted operational noise level and the subsequent noise impact at the receivers are expected to comply with the relevant environmental noise criteria.

Waste management

The proposed SPBP facility will generate both solid and liquid waste. The waste that will be generated during construction and operation is classified in accordance with the NSW DECC Waste Classification Guidelines (April 2008).

A number of liquid waste streams will be produced from the proposed SPBP facility and will include domestic and industrial wastewaters. A Tradewaste Agreement with Sydney Water will be required prior to the commissioning of the facility.

Solid waste storage will be managed by storing general waste in separate bins. Hazardous waste will be stored so as to prevent or control accidental releases to air, soil, and water resources in the area. Recommended monitoring activities associated with the management of hazardous and non-hazardous waste will be implemented to minimise risk of harm to human health or the environment.

All waste generated by the proposed SPBP facility will be managed in accordance with the NSW DECC Waste Classification Guidelines 2008.

Heritage

A Heritage Assessment was undertaken to determine any likely adverse impact the construction and operation of the SPBP facility may have on either Indigenous or European heritage. Investigations revealed that the subject site is in existence as a result of extensive land reclamation works that have incrementally occurred throughout the 19th and 20th centuries. Accordingly, it is considered unlikely that the proposed project will adversely impact on any known item of heritage significance. Notwithstanding, appropriate management measures are recommended should excavation work discover a potential item of significance.

Social impact

A review of the social impacts associated with the potential proposal indicates that construction and operation of the proposed SPBP facility will not have a significant adverse impact on the local community proximate to the proposed development. It is anticipated that the proposed development will result in a beneficial social impact for the local community through local business investment and employment generation.

The plant will require a diverse range of skills to operate including business management, administration, marketing, factory management, maintenance, transport and logistics, security and labourers and as such will offer employment opportunities across the social spectrum. In addition, the proposal will be a catalyst for significant injection into the local economy.

Visual impact

The industrial items that characterise Port Kembla Harbour can be observed from areas outside of the port precinct. Although the SPBP facility will be partially visible from various surrounding locations, it is considered that the proposed SPBP facility will integrate into the existing landscape without being visually intrusive as it is of a similar bulk and scale to that of surrounding industrial development and will be dominated by the existing Grain Terminal. Given the height and density of existing screening and the presence of other industrial operations, the SPBP facility will be consistent in character with the port and its current heavy industrial operations.

Mitigation measures such as landscaping, vegetative screening, use of non-reflective materials and recessive colours in conjunction with minimisation of light spill will ensure the proposed SPBP facility does not detract significantly from the visual amenity of the area.

Soils

URS Australia Pty Ltd (URS) was engaged to undertake an assessment of soil and groundwater conditions at the subject site to determine the presence of soil and/or groundwater contamination. The potential for the presence of saline soils and acid sulphate soils within the development site was also assessed. URS concluded that the limited soil and groundwater contamination present on the subject site do not exceed concentration criteria for industrial land use and therefore the site is suitable for development for the purposes of the proposed SPBP facility.

URS also concluded that given the proximity of the subject site to marine waters, it is likely, albeit not confirmed, that saline soils or acid sulphate soils may be present on/below the site. Consequently, soil sampling and analysis for ASS and salinity will need to be undertaken prior to the commencement of construction.

Water issues

A range of water issues were examined as part of this assessment, including receiving water quality, site stormwater management, site water use and flooding and sea level rise. The assessment concluded that pollutants contained in site runoff have the potential to affect receiving waters during the construction of the SPBP facility. Further, runoff may potentially impact receiving waters during the operation of the SPBP facility. Dust from the handling of soybeans, residues from exhaust fumes and vehicle tyres, fuel and oil spills may all affect water quality during the operation of the SPBP facility. With the implementation of the measures to minimise the likelihood and potential severity of environmental impacts the potential for degradation of aquatic ecosystems as a result of the operation of the proposed SPBP facility is considered to be low.

National Biodiesel Pty Ltd is currently working to further reduce demands and water loss through the Every Drop Counts program with Sydney Water.

The site has been incrementally reclaimed as part of the Inner Harbour port reclamation works. It does not have a flood history due to the landfill works and resulting finished ground levels. The site abuts strategic infrastructure that needs to be above flood levels including rail, road and bridge crossing, the silos and associated berths. On this basis, having regard to the most recent predictions relating to sea level rise as a result of climate change, the proposed site will remain unaffected.

Consultation

Stakeholder consultation has been undertaken prior to and during the preparation of this Environmental Assessment report. National Biodiesel Pty Ltd has conducted information meetings with various stakeholders. These information sessions have been attended by representatives of the automobile industry, government agencies, port users and lessee as well as the community members.

During the Environmental Assessment process the following agencies were consulted with:

- Illawarra Local Aboriginal Land Council
- NSW Heritage Office
- Register for the National Estate
- Department of Environment and Climate Change (Air quality modelling, Aboriginal Heritage Information Management System)
- Port Kembla Port Corporation
- GrainCorp
- The Department of Planning (Preliminary Hazard and Risk Assessment).

Statement of Commitments

A '*Statement of Commitments'* is provided in this report and describes how potential environmental, social and economic impacts will be precluded or managed through design, for both the construction and operation of the SPBP facility.

Conclusion

The proposed project involves the construction and operation of a SPBP facility, primarily for the production of soy protein meal and biodiesel. Operation of the SPBP facility will also result in the domestic production of refined glycerine and bleached earth. These products will be sold in the domestic market and will assist in decreasing Australia's import dependency for these commodities. The project will generate economic benefits for the local, regional and national economies and is likely to have a positive multiplier effect. Of particular relevance, it is estimated that the SPBP facility will produce approximately 288 million litres of biodiesel per annum. This represents a significant

contribution to the Federal Government's national target of 350ML of biofuels to be used within the domestic market by 2010.

Potential impacts associated with the SPBP facility have been identified within this Environmental Assessment report and where potential impacts may arise, appropriate avoidance and mitigation measures, as well as environmental safeguards, have been recommended. This is reflected in the Statement of Commitments.

This assessment demonstrates that the proposed project, together with relevant management strategies and mitigation measures, will not result in significant impact on the environment. In fact, the proposed SPBP facility will generate significant social and economic benefits for Port Kembla and the Illawarra region, through:

- diversification of trade
- an increase in trade
- employment opportunities
- use of currently under-utilised land and infrastructure
- reduced import dependency,
- access to a renewable and more sustainable fuel
- contribution to improved air quality
- production of a reliable, high quality soy protein meal (animal feedstock) that can be available during cyclical prolonged droughts and serve as a stimulus for domestic agricultural market growth.

In light of the assessment presented in this report and accompanying specialist studies, this application for approval under Part 3A of the EP&A Act ban be approved.

1.0 Introduction

1.1 Overview

National Biodiesel Pty Ltd (NB) seeks Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for construction and operation of a Soybean Processing and Biodiesel Production facility (SPBP facility) in the Inner Harbour of Port Kembla, close to Wollongong (refer to **Figure 1**). This document is an Environmental Assessment prepared in accordance with the provisions of the EP&A Act and the *Environmental Planning and Assessment Regulations 2000* (Regulations). This report has been prepared by Maunsell Australia Pty Ltd (Maunsell) on behalf of National Biodiesel Pty Ltd (NB). The purpose of this Environmental Assessment is to describe and assess the impacts of the proposed SPBP facility for which Project Approval is being sought.

The design presented in this Environmental Assessment represents NB's requirements for development, with respect to:

- operational and economic feasibility
- optimal land use including the inter-relationships between the allotments
- optimal use of existing under-utilised infrastructure (Berth and silos)
- optimal transport infrastructure use (road, rail and sea).

The purpose of the SPBP facility is to extract oil from soybeans to refine into biodiesel and glycerine as well as produce soy protein meal for animal feed. The proposed SPBP facility, representing an approximate capital investment value of AU$243 million (refer to **Section 4.4.4** for a detailed cost breakdown), consists of:

- Construction of;
  - soybean preparation and extraction plant
  - biodiesel and glycerine refining plant
  - administration and training offices
  - vehicle manoeuvring and parking areas
- Installation of;
  - A ship unloader
  - conveyor belts and a bucket elevator to facilitate the transfer of raw material on the existing GrainCorp site
- Use of;
  - seven (7) silos with a ten tonne capacity, two (2) with a 5 tonne capacity and Berth 104 on the existing GrainCorp site.

A detailed description of the proposed SPBP facility is provided in **Section 4.0** of this report and design layout and elevations are provided in **Appendix D**.

Figure 1 Aerial of Port Kembla

1.2 The proponent

The proponent for the proposed SPBP facility is NB. NB is a privately owned Australian company, focused on the sustainable production of soybean meal and an alternative fuel source, being soy-biodiesel. NB's parent holding company, National Biofuels Group Pty Ltd (NBG), are currently involved in the construction and future operation of a SPBP facility in South Africa and the importation of soy-biodiesel into Australia. NBG are also actively involved in renewable energy research and development with a view to developing and commercialising future biofuel technology. National Biofuels Group Pty Ltd incorporates Rainbow Nation Renewable Fuels Ltd (South Africa), Algae Energy Pty Ltd (Renewable Energy Research and Development) and the National Biofuels Group trading operations.

1.3 Project aims

In light of the current awareness and public consciousness regarding clean energy, food security and the benefits of reducing carbon emissions, the project aims at:

- substantially contributing to the Federal Government's biofuels target of 350 ML to be included in the Australian fuel mix by 2010
- providing a domestic source of a global staple protein source (soybean meal) to the Australian market to replace current imports
- providing a cleaner high quality fuel which is not only an alternative to the currently used fossil fuel, but will also be manufactured locally in an energy efficient mode using the best available technology
- providing regional community benefits and encouraging growth of the industry in Australia including, but not limited to, direct and indirect employment and generating a catalyst to create a local and domestic market (soybeans)
- maximising the use of currently under-utilised and unimproved land at the Grain Terminal as well as surrounding port land and maximising the use of under-utilised silos
- establishing a commercially viable alternative energy source to the domestic market and other port users
- establishing a state-of-the-art SPBP facility to assist in meeting greenhouse gas (GHG) abatement targets, decreasing Australia's reliance on imported fuel and increasing Australia's food security
- contributing to a solution for the 'peak oil' crisis.

1.4 Environmental assessment process

The EP&A Act and Regulations provide the framework for environmental planning in the state of New South Wales.

Part 3A applies to State government infrastructure projects, developments previously classified as State significant and any other projects, plans or programs declared by the Minister. It provides a separate streamlined and integrated development assessment and approvals regime for projects of State significance.

On 27 July 2007, the Minister for Planning declared the proposed SPBP facility to be a Major Project, in accordance with the provisions of Clause 6 of *State Environmental Planning Policy (Major Projects) 2005* (SEPP Major Projects) (refer to **Appendix A**). Therefore the project is subject to the provisions of Part 3A of the EP&A Act, with the Minister being the approval authority.

1.4.1 Director-General's requirements

Pursuant to Section 75H of the EP&A Act, an Environmental Assessment must be prepared and submitted to the Director-General to obtain approval to carry out the project. In this regard, the Director-General must be satisfied that the Environmental Assessment adequately addresses the matters raised in the Director-General's Environmental Assessment Requirements (DGRs), issued under Section 75F of the EP&A Act.

The DGRs were signed on 30 May 2008 and issued on 2 June 2008. A copy of the DGRs are attached in **Appendix B** to this Environmental Assessment and a table of compliance with the DGR's is shown in **Section 6.0** of this report. This clearly demonstrates that this Environmental Assessment has been prepared in accordance with the DGRs and Clause 8B of the Regulations.

In addition, this Environmental Assessment contains a 'Statement of Commitments' that outlines commitments for the management of environmental impacts that may arise during the construction, operation and maintenance of the project.

1.4.2 EA exhibition

Upon acceptance of this Environmental Assessment and in accordance with Section 75H of the EP&A Act, it will be made publicly available for a period of at least 30 days for review and comment. Refer to **Section 6.0** for a detailed description of consultation activated carried out in the preparation of this application.

1.5 Purpose and structure of this environmental assessment report

The purpose of this Environmental Assessment is to describe and assess the impacts associated with the proposed SPBP facility for which Project Approval is being sought whilst complying with the requirements of the EP&A Act and Regulations. Further, this Environmental Assessment identifies appropriate mitigation or management measures as well as design responses required to prevent or mitigate potential adverse environmental impacts of the development. In this regard, the Environmental Assessment will inform the community about the proposal as well as enable the Minister for Planning to make an informed decision in relation to the project.

The structure of this report is as follows.

- **Section 1.0 Introduction** – describes the background to the proposal, the proponent, project aims and the role and structure of this Environmental Assessment.
- **Section 2.0 Site and surrounds** – describes the existing site characteristics and key elements of the surrounding environment.
- **Section 3.0 Project Justification** – identifies the need for the project, alternatives considered (including the 'do nothing' option), reasons for selecting the preferred option and an assessment of the Project in light of the principles of Sustainable Development.
- **Section 4.0 Project Description** – provides a detailed description of the proposed SPBP facility, including construction and operation.
- **Section 5.0 Planning and Legislative Requirements** – describes the planning processes and legislation relevant to the proposal.
- **Section 6.0 Consultation and Identification of Issues** – describes the community and stakeholder engagement process to date and discussion of the Director General's Environmental Assessment Requirements.
- **Section 7.0 Environmental Impact Assessment** – describes the existing physical and biological environments, impacts of the proposal and mitigation measures in relation to the following matters:
  - ***Key issues**:* air quality and odour, energy and sustainability, hazards and risks, traffic and transport and soils (including contamination, acid sulfate soils and salinity)

- ***Issues of moderate significance**:* ecological and water quality impacts, noise emissions, social impact, stormwater management, waste management, visual impact, and Indigenous and European heritage.

- **Section 8.0 Statement of Commitments** – describes the environmental commitments including monitoring and provides an outline environmental management plan covering both construction and operation activities.
- **Section 9.0 Conclusion** – summarises the findings of this Environmental Assessment and reasons for approval.
- **Appendices – A to J**
  a) The Minister's Declaration of the Project
  b) Director General's Requirements
  c) Owners Consent
  d) Design Layout and Elevations
  e) Sea Wall Rectification
  f) Air Quality Dispersion Modelling Assessment prepared by C&M Consulting Engineers
  g) Traffic Impact Assessment – Alternative Scenarios Considered
  h) Heritage AHIMS Search Results & Illawarra Local Aboriginal Land Council Response Letter
  i) Visual Impact Assessment Photomontages
  j) Soil Contamination Assessment prepared by URS Pty Ltd.

2.0 Site and surrounds

2.1 Site location

The proposed SPBP facility is to be located at the Inner Harbour of Port Kembla, which is located in the Wollongong Local Government Area, 3 km south of Wollongong. Port Kembla is approximately 60km from Sydney's south western suburbs and is the closest specialist industrial port to Sydney, Australia's largest market. The proposed SPBP facility is bounded by Tom Thumb Road to its north, Farrer Road to its west, Berth 104 to its south and the Garungaty Waterway and Tom Thumb Road to its east. Port Kembla is well connected with Sydney and regional NSW by both road and rail systems, making it an ideal base for import or export activities. The SPBP facility is to be located on four separate allotments adjoining and surrounding the existing Grain Terminal and has a collective area of approximately 7.4 ha.

The area is recognised as the major industrial precinct and port within the Illawarra Region and is recognised as a key employment precinct, which significantly contributes to the Wollongong economy and to the economy of the wider Illawarra Region. The Port provides a unique opportunity for NB insofar as land availability, land use compatibility, accessibility (road, rail and sea) and access to currently under-utilised infrastructure. An aerial perspective of Port Kembla and the proposed site is shown in **Figure 1**.

Future changes to the Port area are proposed or currently underway to accommodate the transfer of cargo from Sydney and the general growth in freight. Under the State Government's *NSW Ports Growth Plan* a proportion of shipping and cargo currently handled through Port Jackson will be transferred to Port Kembla in 2008. This will mean up to an additional 400 ship visits, 15,000-20,000 containers, 240,000 motor vehicles and 120,000 tonnes of break bulk cargo (timber, machinery, steel, paper, and the like) to Port Kembla each year.

The *State Infrastructure Strategy (2006)* has confirmed that funding, in the order of $86 million, is available for the redevelopment and revitalisation of Port Kembla's Inner Harbour. Key changes occurring at Port Kembla include the development of the multi purpose terminal to accommodate the relocated car trade and other non-containerised freight from Glebe Island. The relocation of containerised freight from East Darling Harbour to Port Kembla will also be accommodated by the new terminal. Access to the new terminal for vehicles will be from Tom Thumb Road. Consequently significant works are already underway to realign Tom Thumb Road to accommodate new port operations. Plans also include the development of Berth 103 for general and break bulk cargo.

The Inner Harbour of Port Kembla is located at a sufficient distance from sensitive environmental receptors (residences) to ensure that community amenity is not affected by port operations. This precinct provides a range of employment activities and, in addition, the Port is fortunate in that it enjoys a number of purpose-built rail facilities that service each of the primary bulk terminals. In some cases, such as the grain terminal, a loop siding is provided that allows trains to be discharged on the move without the need for shunting operations.

2.2 Site description

The four separate allotments that comprise the subject site, along with the individual site details, including ownership, are described in **Table 1** and shown in **Figure 2**.

NB has entered into a tripartite agreement with Port Kembla Port Corporation (PKPC) and GrainCorp to secure leasehold entitlements over four individual allotments to accommodate the operations within the Inner Harbour area of Port Kembla. Refer to **Appendix C** for letters conveying owners consent.

Figure 2 Site identification

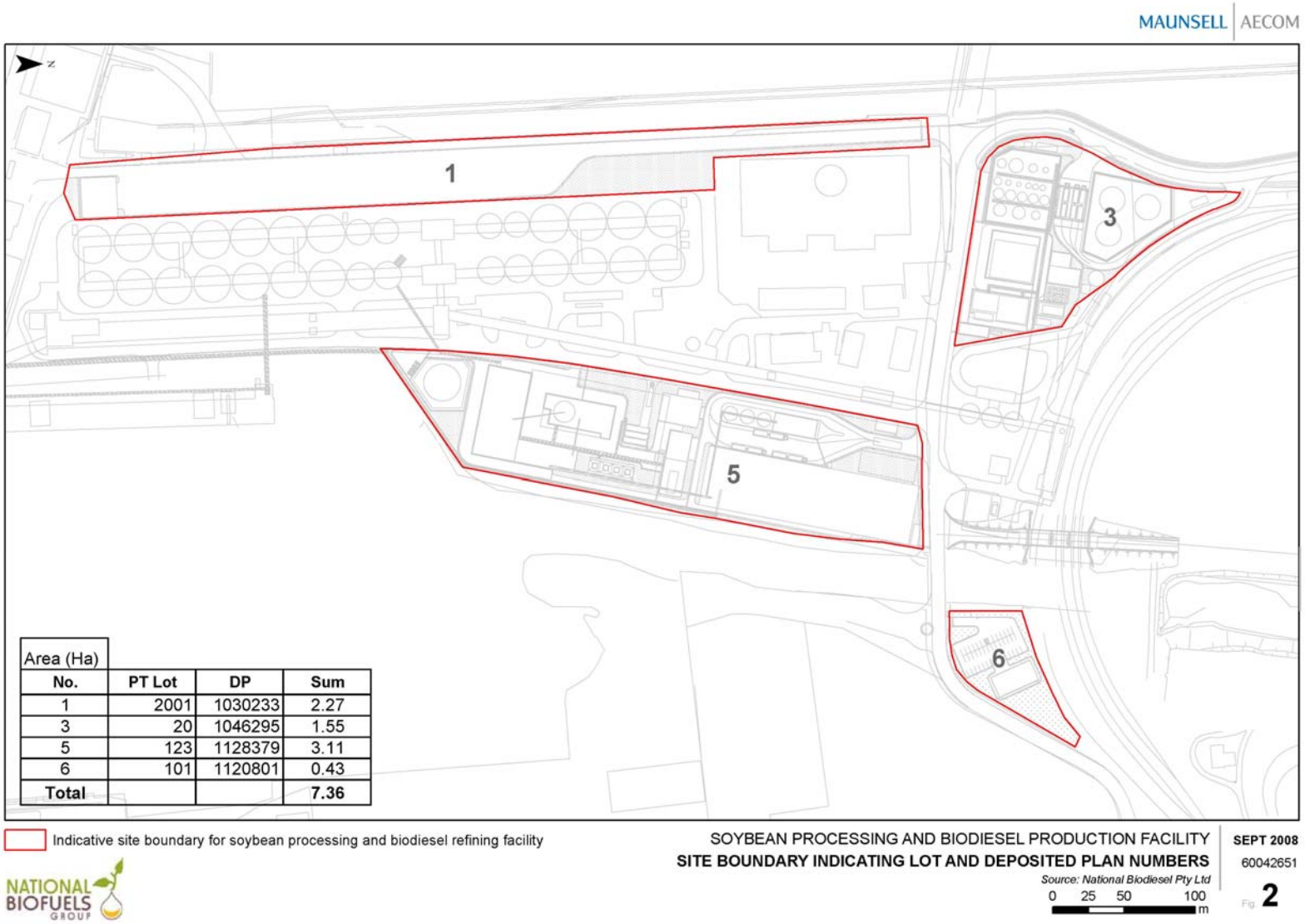


Table 1 Individual site details

Allotment	Lot & DP	Approx Area	Owner	Proposed Use
1	Pt Lot 2001 DP 1030233	22,700 sqm	GrainCorp (leased from PKPC) and PKPC	• Truck maintenance and associated parking.
3	Pt Lot 20 DP 1046295	15,500 sqm	GrainCorp (leased from PKPC) and PKPC	• Air compressor • Boiler room • Biodiesel loading bays • Biodiesel refinery and tank farm with associated bunding • Chemicals tank farm with associated bunding • Firewater tank and firewater pump-house • Glycerine refinery • Guard house • Maintenance workshop • Pre-treatment plant • Retaining wall • Stormwater detention tank • Substation • Warehouse
5	Pt Lot 123 DP 1128397	31,100 sqm	PKPC	• Boiler house • Crude soybean oil storage tank and associated bunding • Conveyor belt • Cooling Towers and Compressor Pump-house • Guard house • Hexane storage tanks • Laboratory • Maintenance workshop • Soybean Meal Storage Shed • Soybean Preparations and Extraction Facilities • Substation on this particular parcel • Warehouse
6	Pt Lot 101 DP 1120801	4,300 sqm	PKPC	• Administration and Training Building and associated parking

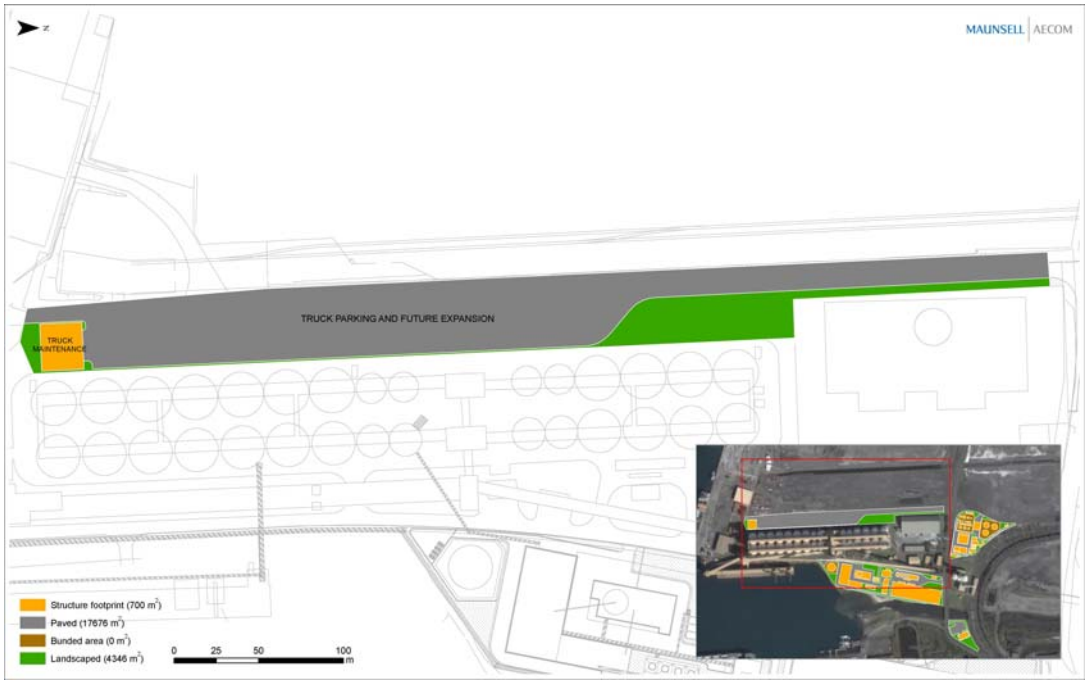
The subject site is currently vacant and contains no significant vegetation. Topographically, each allotment is relatively flat. Vehicular access to Allotments 1, 3 and 6 will be via Tom Thumb Road and Allotment 5 will be accessed via both Morton Way and Tom Thumb Road.

Allotment one (1) (refer to **Figure 3**) incorporates Farrer Road, west of the Grain Terminal and south of Tom Thumb Road. The allotment is approximately 22,700 sqm in area and can best be described as a grass verge and road pavement. It is currently bisected by cyclone fencing, which is proposed to be relocated further to the east and adjacent to the Grain Terminal silos. The allotment will accommodate parking for employees, articulated vehicles and an associated truck maintenance facility (refer to **Figure 4**). Access to Berth 105, located behind the proposed truck maintenance facility will be provided on the Australian Amalgamated Terminals (AAT) site as part the AAT site redevelopment, which is expected to be completed by late 2008.

Figure 3 Allotment one (1) looking south from Tom Thumb Road

Source: Maunsell 2008

Figure 4 Proposed layout for Allotment one (1)



Source: Maunsell 2008

Allotment three (3), previously referred to as allotments three and four in the preliminary environmental assessment, (refer to **Figure 5**) is situated north of Tom Thumb Road and is also grassed. Following the recent lot consolidation, the total area for this allotment is approximately 15,500 sqm. The allotment is devoid of any significant vegetation and has a gentle fall east to west and from north to south. Adjoining the proposed northern boundary is a weigh bridge and silos are located to the east. Allotment three (3) will contain the following structures (refer to **Figure 6**):

- air compressor
- boiler room
- biodiesel loading bays
- biodiesel refinery and tank farm with associated bunding
- chemicals tank farm with associated bunding
- firewater tank and firewater pump-house
- glycerine refinery
- guard house
- maintenance workshop
- pre-treatment plant
- retaining wall
- stormwater detention tank
- substation
- warehouse.

The biodiesel and glycerine plant will be connected to the soybean oil extraction facilities on Allotment five (5) via a pipeline which will traverse Tom Thumb Road using the existing underground servitude used by GrainCorp.

Figure 5 Allotment three (3) looking north from GrainCorp observation tower

Source: Maunsell 2008

Figure 6 Proposed layout for Allotment three (3)

Source: Maunsell 2008

Allotment five (5) is bounded by the Garungaty Waterway to the east, Morton Way and the Grain Terminal to the west, Tom Thumb Road to the north and the eastern basin / Inner Harbour to the south. The allotment has a bitumen pavement and a narrow vegetative strip along the eastern boundary which is predominantly exotic vegetation. This allotment has experienced limited landslip along the eastern boundary as a result of a broken subterranean pipeline.

Allotment 5 (refer to **Figure 7** and **Figure 8**) is the main parcel, having an approximate total area of approximately 31,100 sqm. This particular allotment will contain the following structures (refer to **Figure 9**):

- boiler house
- conveyor belt
- cooling towers and compressor pump-house
- crude soybean oil storage tank and associated bunding
- guard house
- hexane storage tanks
- laboratory
- maintenance workshop
- soybean meal storage shed
- soybean preparations and extraction facilities
- substation
- warehouse.

As noted above, the plant on this allotment will be connected to that on Allotment three (3) via a pipeline.

Figure 7 Allotment 5 looking south from Tom Thumb Road

Source: Maunsell 2008

Figure 8 Allotment 5 looking north to Tom Thumb Road from GrainCorp observation tower

Source: Maunsell 2008

Figure 9 Proposed layout for Allotment five (5)

Source: Maunsell 2008

Allotment six (6) (refer to **Figure 10**) is a residual allotment created by railway and road alignments. It is located north of Tom Thumb Road and is the eastern-most allotment. The allotment is bounded by the rail line to the north, Tom Thumb Road to the south and east and by the Garungaty Waterway to the west. The allotment contains no significant vegetation, is relatively flat and is currently occupied by a stockpile of gravel. A redundant stormwater detention basin is currently located on this allotment. The SPBP facility's administration and training building and the associated parking will be erected on this allotment (refer to **Figure 11**).

Figure 10 Allotment 6, on the eastern side of the Garungaty Waterway looking north from GrainCorp observation tower

Source: Maunsell 2008

Figure 11 Proposed layout for Allotment six (6)

Source: Maunsell 2008

2.3 Concurrent site work

Preparatory site works that will be undertaken by others include the following:

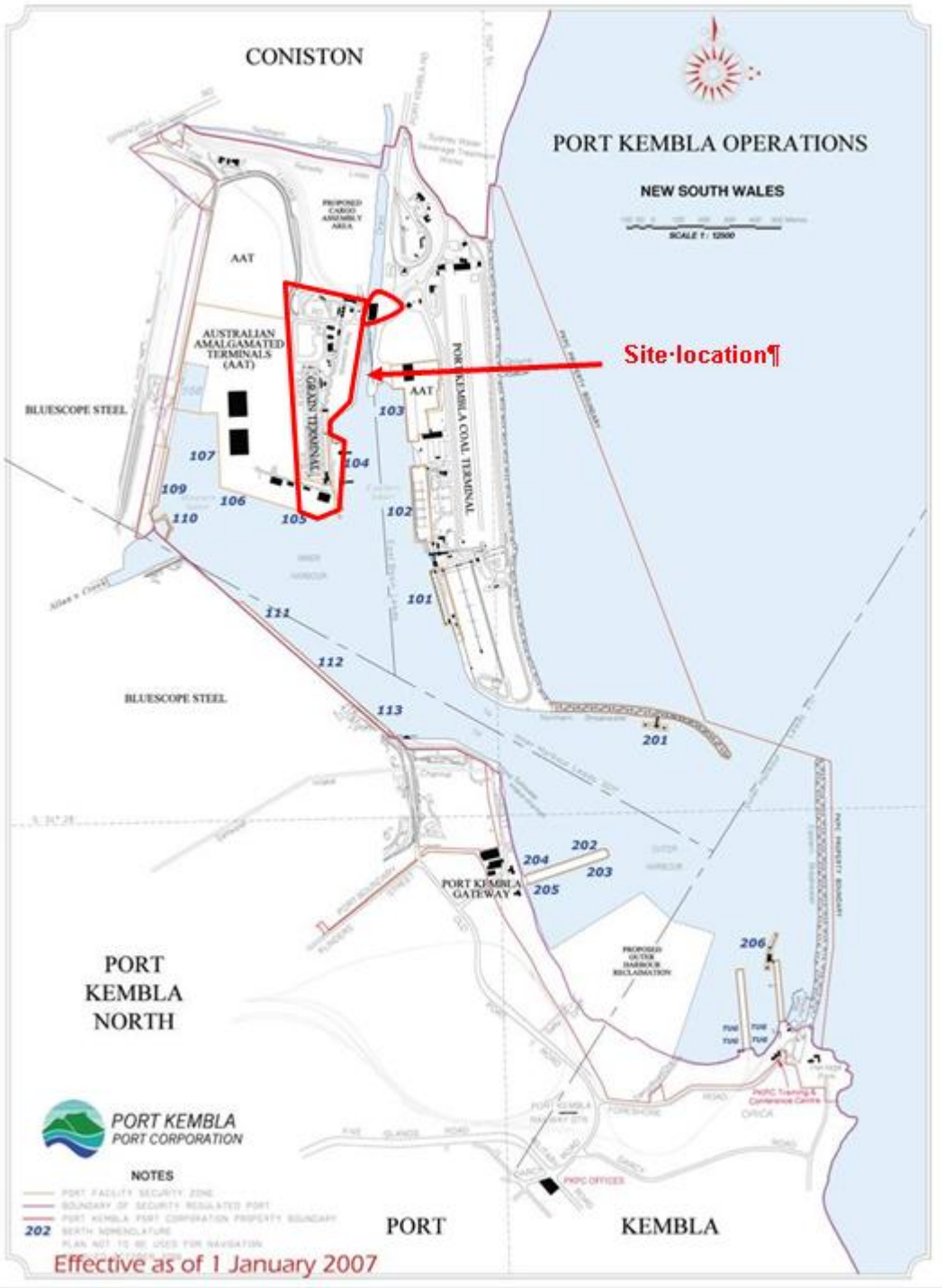
- rectification of the Seawall and associated site stabilisation works along the eastern boundary of Allotment five (5). Such works are being carried out by PKPC as part of routine maintenance and will be subject to a separate assessment and approval process in accordance with Part 5 of the EP&A Act (refer to **Appendix E**).

It is noted that the appropriate commitments have been made by the PKPC in respect of the aforementioned works.

2.4 Surrounding land uses

The major land uses surrounding greater Port Kembla include light and heavy industry, mining and extractive industry, urban development, nature and recreation reserves and manufacturing activity. The following subsections provide a summary of current activities within the immediate vicinity of the Port and the subject site, which is shown in the context of Port Kembla in **Figure 12**. For the purpose of this subsection, reference to surrounding land uses in relation to the subject site, will relate to the assemblage of allotments as a whole as opposed to the individual portions of land.

Figure 12 Port Kembla Port Operations



Source: Port Kembla Port Corporation (http://www.kemblaport.com.au/system/files/f2/o231/PORT%20KEMBLA%20OPERATIONS%20OCT%202006%20with%20note%20about%201%20Jan%202007%20rs.pdf 21 April 2008)

Immediately adjoining the site to the north (refer to **Figure 13**) is the rail line, with the proposed AAT Cargo Assembly Area on the northern side of the tracks. AAT's car handling site is also located to the north-west of site. Beyond AAT to the north and west are the BlueScope Steel operations with the Sydney Water Sewerage Treatment Works to the north-east.

The suburb of Coniston is located approximately 1.8 km north of the subject site and Wollongong Golf Course is approximately 1 km north of the subject site, with the City of Wollongong located approximately 3 km north of the subject site.

Figure 13 Land uses to the North

Source: Maunsell 2008

The Grain Terminal and the AAT site and the Inner Harbour are located to the west and south of the site. BlueScope Steel occupies an expansive area on the western and southern sides of Port Kembla Inner Harbour. The proposed Outer Harbour Reclamation Area is to the south-eastern side of Inner Harbour (refer to **Figure 14**). A master planning process is currently underway to guide the future of the Outer Harbour which includes an area of reclamation for Port uses. A preferred option was identified in mid 2008 with a view to seeking approval under Part 3A of the *EP&A Act 1979* during 2009.

Figure 14 Land uses (BlueScope Steel) looking south of Allotment 5

Source: Maunsell 2008

Immediately to the east of the southern portion of the site is Garungaty Waterway. On the eastern bank of Garungaty Waterway is vacant land which is currently being prepared for construction (refer to **Figure 15**). This construction activity is part of the general cargo handling facility project (Major Project Approval No: 05_0073). More specifically, the current works are for the construction of Berth 103 (formerly known as EB4) and associated terminal space, cargo shed and access road. This berth will handle mainly break bulk and bulk cargoes and will be operated by AAT. Operations are due to commence 17 November 2008.

Figure 15 Future AAT site currently under construction adjoining to Port Kembla Coal Terminal

Source: Maunsell 2008

The Port Kembla Coal Terminal is located further east, beyond the works currently being undertaken for the AAT site (refer to **Figure 16** and **Figure 17**). The coal flows associated with Port Kembla and associated local industrial activities are generated by mines in the Western (Lithgow) and Southern Coalfields. It should be noted that a considerable amount of volume handled by the Port is confined to the immediate Port Kembla area e.g. Coniston/ Springhill/ Cringila. Illawarra Coal's submission to the House of Representatives Standing Committee on Transport and Regional Services in early 2006 stated that three million tonnes of coking coal was fed into the steelworks. The vast bulk of this comes from the West Cliff colliery, near to Appin Road.

This section of the Port is serviced by rail lines and freight movements play a major role for the Coal Terminal's operations. Indeed, the rail line plays an integral role for many of the activities located in the Port and the SPBP facility will also utilise the railway.

Figure 16 Land uses (Port Kembla Coal Terminal) looking east from Allotment 5

Source: Maunsell 2008

Figure 17 Land uses (Port Kembla Coal Terminal & Berth 101) looking east from Allotment 5

Source: Maunsell 2008

The Grain Terminal is enveloped by the southern portion of the site. The Grain Terminal is relatively new and was built to replace the Sydney terminal (refer to **Figure 18**). However, because of recent adverse weather conditions, current volumes are only approximately 50% of the historical highs of 2.5 to 3 million tonnes. The five-year average is approximately 1.5 million tonnes per year, which has given rise to the spare capacity to accommodate NB operations.

On the western side of Farrer Road, the subject site's south-western boundary, is a significant portion of the AAT site, which is currently in the process of being upgraded. The *NSW Ports Growth Plan* provided the catalyst for the upgrade as a result of redirecting general cargo and automobiles from Port Jackson. These works are forecast for completion in 2008. Further west, the AAT site adjoins the BlueScope Steel operations.

As the primary purpose of the Port is to facilitate the movement of freight between ships and land based transport modes from suppliers, manufacturers, and producers, to their customers, Port Kembla is well connected in terms of road, rail and maritime infrastructure.

Figure 18 Land uses (Grain Terminal) looking west of Allotment 5

Source: Maunsell 2008

Beyond the port the residential suburbs of:

- Coniston and Wollongong are located to the north
- Mt Saint Thomas and Mangerton are located to the north-west
- Figtree and Unanderra are located to the west
- Cringila and Port Kembla to the south.

These are shown on **Figure 19**. In this regard, the nearest residential receiver is located approximately 1200 m from the proposed SPBP facility.

Figure 19 SPBP facility in relation to surrounding residential suburbs

Source: Maunsell 2008

3.0 Project justification

This section presents the justification for the proposed SPBP facility with regard to project need, based on biophysical, economic, social and policy considerations. In addition, this section identifies the alternatives considered that led to the site selection for the subject proposal.

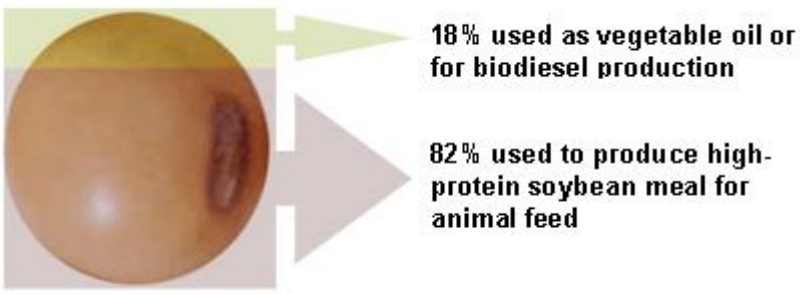
3.1 Operational sustainability

This section addresses the overarching issue of the impact of the proposed SPBP facility's operations from the source and cultivation of the soybean to issues of food security and energy efficiency.

3.1.1 Background

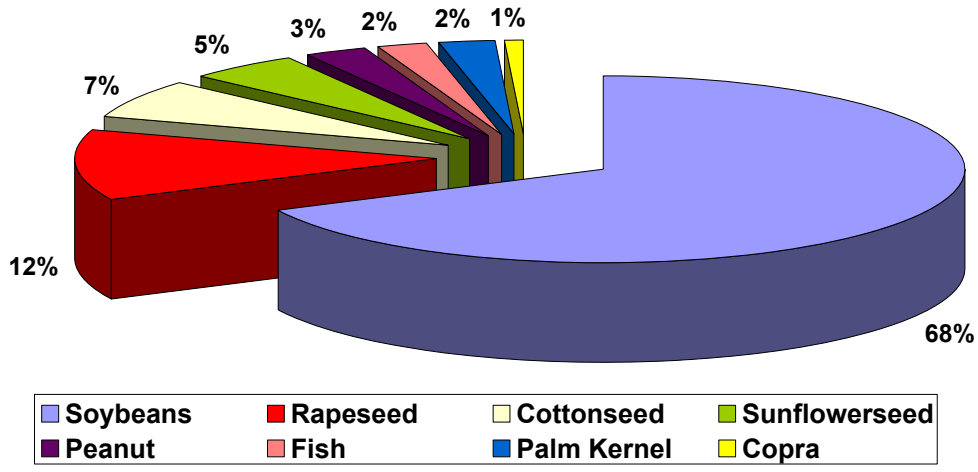
Soybean cultivation and processing is an emerging industry in Australia, but well established internationally. NB has a strong corporate commitment to ensure that all aspects of its operations are conducted in a responsible manner that ensures benefits to both the environment and society through all spheres of its supply chain and operations, which will be detailed and verified in a Procurement Plan (refer to **Section 8.3**).

Figure 20 NB's average industrial use of a single soybean



Soybeans are grown primarily for its high-protein meal and have an oil content of roughly 18%. The oil component is used in the production of biodiesel, while the remaining material (in the order of 80%) of the soybean is used in the production of soybean meal (refer to **Figure 20**). Soybean meal is the major global source of protein meal as shown in **Figure 21** and is used heavily in the poultry and piggery industries as a high quality animal feed.

Figure 21 World protein meal consumption in 2006[4]



[4] www.soystats.com. 01102008

3.1.2 Origin of soybeans

The proposed SPBP facility at Port Kembla will be able to process, at maximum production capacity, approximately 1, 400, 000mt of soybeans per year from a number of sources, including:

- NB soybean development programs in Australia
- local Australian supply
- import from soybean exporting countries such as United States of America, Argentina and Brazil.

The 2008/09 Australian soybean crop is forecast to be around 66,000mt[5]. Soybeans currently contribute approximately 6% to the Australian oilseeds crop[6]. While it is the long-term vision of the proposed SPBP facility to source a significant portion of its soybean demand from local soybean development programs, the current Australian soybean crop will only satisfy roughly 5% of NB's demand. Soybeans will therefore be imported, with the growing local soybean production industry supplying the proposed SPBP facility with an increasing portion of its demand.

NB recognises the potential damage that unsustainable and illegal agricultural operations can inflict on the environment. The company has a strong corporate and social commitment to ensure that, when making use of imported soybeans, it only sources feedstock from sustainable and responsible agricultural operations that are certified as legal in the country of origin in regard to environment, land-use, agricultural and export practices. All soybean procurement contracts will stipulate that only soybeans that are produced by these certified operations can be sourced. The company supports all local and international efforts to ensure sustainable agriculture such as the Soy Moratorium and the Round Table on Responsible Soy[7]. In addition, NB will prepare a Procurement Plan to ensure these commitments are satisfied (refer to **Section 8.3**).

3.1.3 Energy efficiency of soy-based biodiesel

Biodiesel made from soybean oil using first generation technology is a completely renewable fuel with one of the highest energy returns of all biofuels. A recent study by the United States Department of Agriculture (USDA) and the University of Idaho found that biodiesel made from soybeans yielded 3.5 units of energy for every unit of fossil energy used in the entire lifecycle (including crop planting and harvesting, transport, crushing, transesterification and transport of the final biodiesel) of the fuel[8]. The energy yield for soy-based biodiesel is more than four (4) times the yield for fossil diesel and more than double the energy yield for ethanol made from corn[9].

3.1.4 Impact on food security

The proposed SPBP facility will employ first generation technology, which involves the processing of agricultural produce. The proposed SPBP facility will process soybeans in order to improve Australia's food security in the long term. Soybeans are grown for the high-value protein meal, which significantly contribute to the global protein meal industry. Soybean meal is the major production output of the proposed SPBP facility and the capacity of the proposed SPBP facility (approximately 1.1 mtpa soybean meal) reflects the domestic and regional demand for high protein soybean mean.

The prices of many of the grain staples have increased between 50–100% since April 2007[10]. This has led to a 'food versus fuel' debate purporting that rising food prices are caused by the use of food crops to produce biofuels. However, grain and oilseed prices, and therefore the food that consumers buy, are influenced by several other drivers as described below:

[5] Australian Oilseeds Federation (AOF) *Crop Report*, November 2008

[6] AOF (www.australianoilseeds.com)

[7] http://www.responsiblesoy.org/

[8] http://nbb.grassroots.com/08Releases/EnergyBalance

[9] Mittelbach, M and Remschmidt, C, *Biodiesel: The Comprehensive Handbook*,.2004

[10] United Nations Food and Agricultural Organisation (FAO) - www.fao.org

- Strong economic growth in Asia leading to increasing meat and dairy content of diets. The demand placed on grains through the subsequent production of animal feed is significant[11, 12] .
- Barriers to trade that hamper free movement and subsequent availability of grains and food[13].
- Speculation in agricultural commodity markets leading to price inflation.
- Price of crude oil impacting on agricultural input and transportation costs.
- Climatic factors causing prolonged droughts and disruptive weather, thereby impacting on harvests.
- Failure of gains in agricultural yields to keep up with global population growth.

Irrespective of how the above factors combine to affect food prices, increasing food prices are foreseen for the near future. At present, Australia typically imports in the order of 500,000 mt soybean meal annually[14]. Establishing a large soybean processing facility in New South Wales will provide a local source of high-protein soybean meal in quantities that will virtually eliminate the need for importing soybean meal.

Biodiesel made from soybeans has a very small impact on food prices as indicated by the following.

- Globally, about 85% of the world's soybeans are crushed annually into soybean meal and oil.
- Approximately 98% of the soybean meal that is crushed is further processed into animal feed with the balance used to make soy flour and proteins[15].

In the United States for example, where a very strong biodiesel industry exists that is soy-dominated, only 12% of soybean oil is used in industrial applications. This 12% includes all industrial applications such as paints and plastics – biodiesel is but one component making up the 12%[16].

3.1.5 Benefits of soybean cultivation

In addition to improving the food security of Australia, the cultivation of soybeans in rotation systems holds many advantages to farmers, subsequent crops and the environment, as described below.

- Soybeans require 25-40% less fertiliser than maize and crops that follow as it produces and returns nitrogen to the soil leading to significant environmental benefits in the form of avoided fertiliser run-off, as well as cost advantages to farmers.
- Soybeans have vigorous root systems which have a natural plough effect on soil, thereby creating conditions which improve yields of following crops by 15-30%. In real terms this means that for a 30% decrease in fertilizer required, farmers gain an additional 15-30% increase in yield.
- In comparison to wheat and maize, soybean crops have a lower comparative susceptibility to pests, diseases and weeds, which are problematic to these other crops. This results in reducing the need and dosage of pesticides and herbicides lowering the amount of potentially harmful chemicals entering the environment and reducing farm input costs.

Peak oil

The proposed SPBP facility will have the capacity to produce up to 250,000 tonnes of biodiesel, more than one (1) million tonnes of soybean meal, approximately 25,450 tonnes of glycerin and 3000 tonnes of used bleached earth annually for sale both domestically and abroad (such as New Zealand).

[11] AOF - www.australianoilseeds.com, 01102008

[12] World Resources Institute - www.wri.org, 01102008

[13] TIME magazine, February 27, 2008

[14] AOF - www.australianoilseeds.com, 01102008

[15] www.soystats.com, 10092008

[16] www.soyatech.com, 10092008

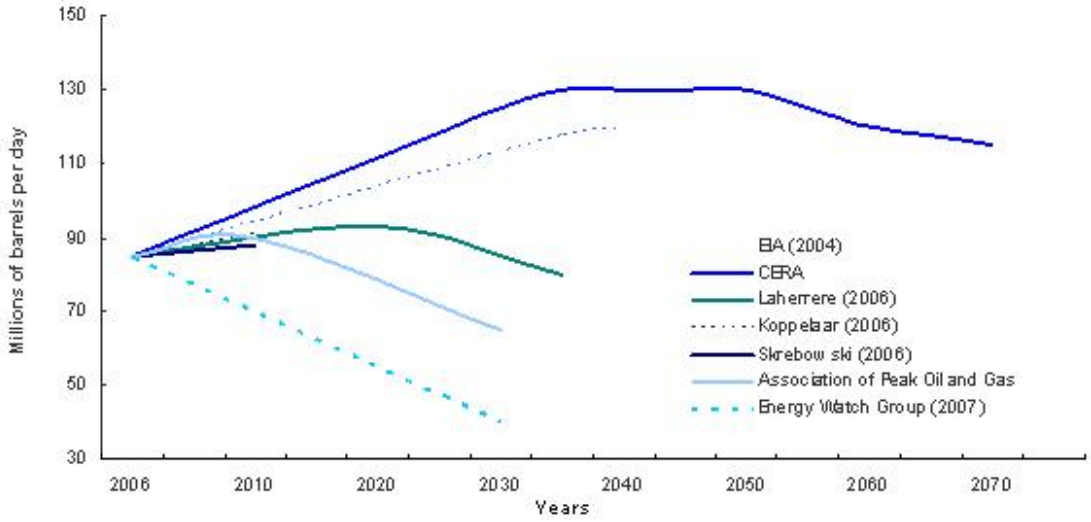
Peak oil and its implications

The theory of Peak Oil was first developed by M King Hubbert in 1956. The Hubbert model has been used to forecast the peak petroleum production of oil producing countries where production follows a bell-shaped curve. The theory assumes that oil prices rise as the world's finite reserves of oil reduce and are not sufficient to increase supply.

Under a Peak Oil scenario, a higher oil price, rather than inducing a positive supply response, would have little effect as remaining reserves are quickly depleted or oil-producing countries protect their reserves.

The timing of the peak in oil production is disputed, since its key determinants are hard to quantify. These include the estimated amount of world oil reserves, the future rate of extraction of oil reserves and the rate of growth in global demand. Different Peak Oil scenarios are summarised in **Figure 22.**

Figure 22 Various forecasts world oil production



Source: Maunsell, 2008

Figure 22 shows that the various recognised studies differ in estimating the timing of Peak Oil. In 2004 the US Energy Information Administration[17] produced 12 different scenarios to estimate the peak in oil production. These were based on three different estimates of oil resources from the United States Geological Survey[18] (USGS) and four different growth rates in world demand. The USGS was released in 2000 and provides one of the more comprehensive assessments of the world's oil and gas resources. The US Energy Information Administration estimates the peak in oil production to occur between the years 2021 to 2112, with 2037 the most likely. This is based on the USGS's mean estimate of world oil resources (three trillion barrels) and annual growth in world demand of two percent, which is similar to the present rate.

Proponents of Peak Oil theory are generally more pessimistic, arguing that the peak may have already occurred or will do so in the next two decades. These include Jean Leherrere[19] who predicts that it will occur in 2018. Leherrere questions the USGS's assessment of world reserves, which he suggests is based on extrapolating the reserve growth model from the US proved estimates of old fields to the proven plus probable new discovery of the rest of the world.

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[17]. Wood, J. H., Long, G. R., Morehouse, D.F., *Long-Term World Oil Supply Scenarios, The Future Is Neither as Bleak or Rosy as Some Assert*, http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2004/worldoilsupply/oilsupply04.html, 12082008

[18] http://certmapper.cr.usgs.gov/rooms/we/index.jsp, 12082008

[19] Laherrere, J. ASPO *When will oil production decline significantly?-* http://www.hubbertpeak.com/laherrere/EGUVienna2006.pdf

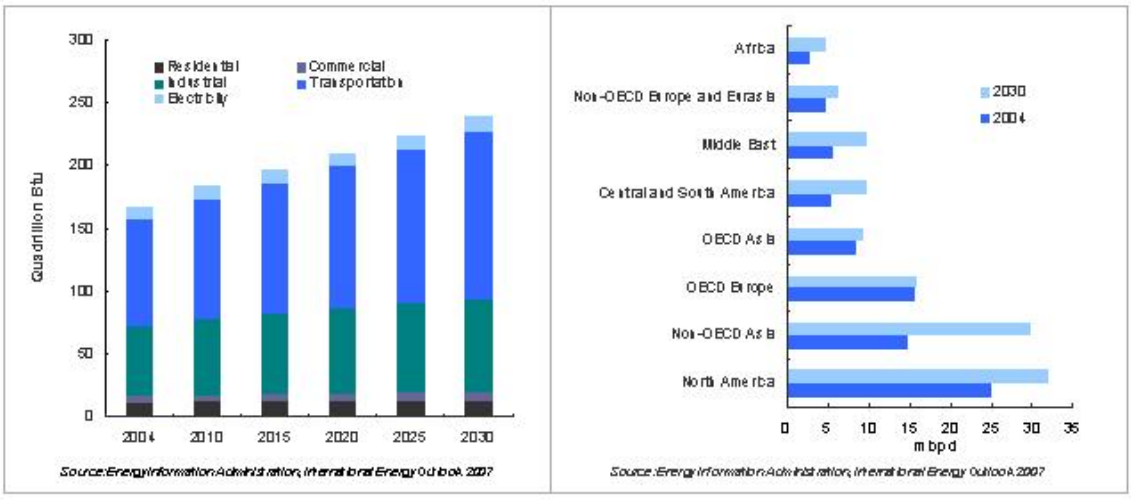
Chris Skrebowski, editor of the *Petroleum Review*[20,21], and Germany's Energy Watch Group[22] believe global conventional oil supply and demand inequities may have already begun. An alternative view is provided by the Cambridge Energy Research Associates (CERA)[23]. CERA supports an 'undulating plateau' rather than a peak in oil production.

Demand for oil

The US Energy Information Administration forecast of world oil consumption is shown in **Figure 23**. World consumption of oil was around 84 million barrels-per-day (bpd) in 2006 and is growing on average by two percent each year. The largest consumers are the United States (21 million bpd) followed by China (7.2 million bpd), Japan (5.2 million bpd), Russia (2.9 million bpd), Germany (2.7 million bpd), India (2.6 million bpd) and Canada (2.3 million bpd). Australia consumes around 886,000 bpd. The Virgin Islands is the highest consumer of oil on a per capita basis, with the United States ranked 17, Japan 35, China 136 and India 160[24].

Energy demand is distributed amongst four broad sectors: transportation, residential, commercial, and industrial. The sector with the highest probable annual growth in petroleum demand is transportation. The US Energy Information Administration is forecasting that cars and trucks will be responsible for almost 75% of the increase in oil consumption between 2004 and 2030[25].

Figure 23 EIA forecasts of world oil consumption by use and region



Much of this growth will be driven by developing economies undergoing industrialisation, in particular China and India, and world population growth. China's oil consumption has grown an average of eight percent per year since 2002 which, if maintained, would result in a doubling of its present demand to over 14 mbpd in nine years[26]. Amongst the Organisation for Economic Co-operation and Development (OECD)[27] nations, oil consumption has been growing at an average of 0.6% per year in the five years up to 2006. The average in non-OECD countries has been 3.8%. World growth in oil consumption over this time has been 1.9% per annum[28].

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[20] http://globalpublicmedia.com/chris_skrebowski_on_understanding_depletion, 12082008

[21] Energy Institute of UK, *Petroleum Review is produced by the UK's Energy Institute, http://www.energyinst.org.uk/,* 12082008

[22] http://www.energywatchgroup.org/fileadmin/global/pdf/EWG_Oilreport_Summary_10-2007.pdf

[23] http://www.cera.com/aspx/cda/public1/news/pressReleases/pressReleaseDetails.aspx?CID=8444

[24] *International Energy Outlook 2007*, Energy Information Administration http://www.eia.doe.gov/oiaf/ieo/index.html

[25] *International Energy Outlook 2007*, Energy Information Administration http://www.eia.doe.gov/oiaf/ieo/index.html

[26] *International Energy Outlook 2007*, Energy Information Administration http://www.eia.doe.gov/oiaf/ieo/index.html, 12082008

[27] The Organisation for Economic Co-Operation and Development, is an international organisation of thirty countries. It was set up originally to administer the Marshall Plan following World War II. http://www.oecd.org/home

[28] International Monetary Fund

The US Energy Information Administration projects world oil demand to climb from 85 million bpd in 2006 to 118 million bpd in 2030.[29] This relates to a 37% increase. The International Energy Agency (IEA)[30] predicts that in a 'reference scenario', world demand for oil will grow to 92 million bpd in 2010 and 115 million bpd in 2030. IEA argues that resources are adequate to meet the increasing demand providing there is adequate investment; but it concedes that '*financing the required investments in non-OECD countries is one of the biggest challenges posed by our energy-supply projections*'[31].

Oil demand in Australia

Australia consumed around 886 thousand bpd in 2006[32]. Growth in consumption has averaged 1.2% per year over the last decade. About 75% of Australia's petroleum liquids use is in transport, mostly in road transport (60%) and aviation (10%). Australia's demand for petroleum (including crude oil and condensate) is expected to rise to over 1.2 million bpd by 2029 to 2030 (an increase of almost two per cent per year over the period)[33]. On a per capita basis Australia is ranked the 31st largest consumer of oil in the world[34].

One explanation for Australia's relatively high per capita consumption of oil is that the country is 'automobile dependent'[35]. This dependency can be partly explained by land use and geography with large distances between cities and low density land use within cities making public transport inefficient.

This is supported by the fact that demand for vehicles in Australia is increasing. According to the Australian Bureau of Statistics there were 705 motor vehicles for every 1,000 people in 2007[36]. This compares to 663 vehicles per 1,000 residents in 2003, representing an increase of 12.5%. New South Wales had the largest share of the Australian fleet with 4.4 million (29.5% of the total) registered vehicles, followed by Victoria with 3.8 million (25.8%) and Queensland with 3.0 million (20.5%).

Figure 24 shows the predicted increase in the Australian population to 2050. Unless oil consumption patterns change, the expected growth in population will cause a significant increase in the demand for oil.

[29] Energy Information Administration, International Energy Outlook 2007, http://www.eia.doe.gov/oiaf/ieo/oil.html

[30] *World Energy Outlook, 2007*, International Energy Agency, http://www.iea.org, 29072008

[31] *World Energy Outlook, 2007*, International Energy Agency, http://www.iea.org, 29072008

[32] BP Statistical Review of World Energy, June 2006

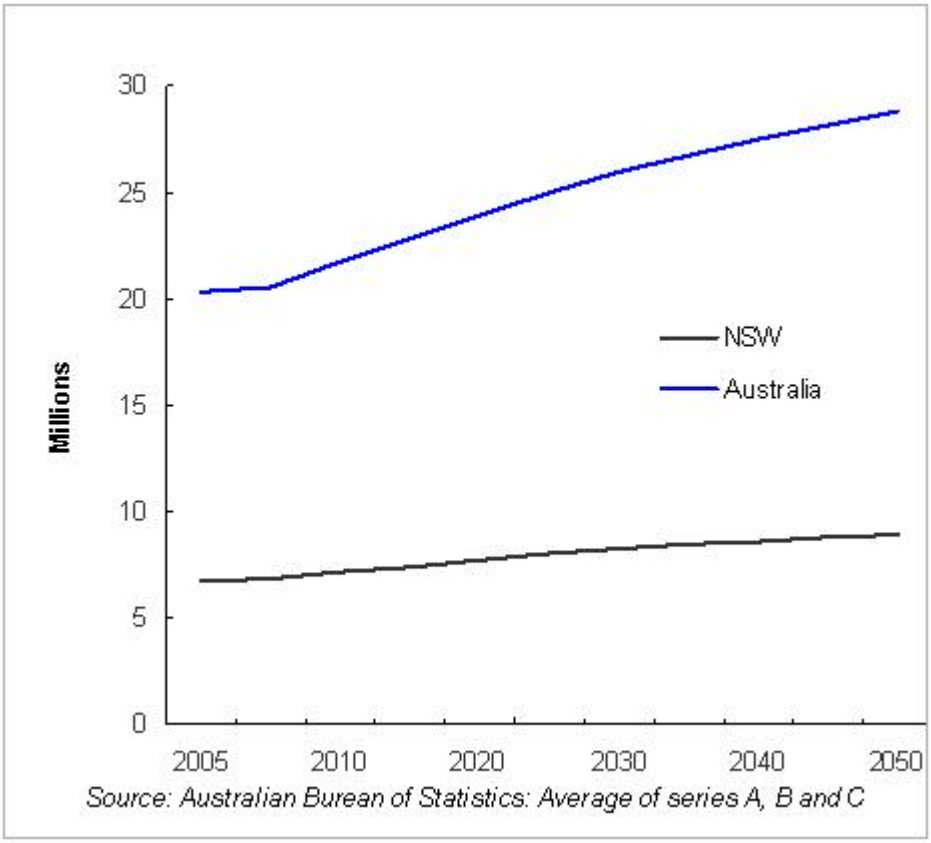
[33] Rural and Regional Affairs and Transport References Committee, Australian Senate interim report, *Australia's future oil supply and alternative transport fuels 2006,*.29072008

[34] http://www.nationmaster.com/graph/ene_oil_con_percap-energy-oil-consumption-per-capita, 26072008

[35] Newman, P and Kenworthy, J., Ci*ties and Sustainability: Overcoming automobile dependence*, Washington, D. C. : Island Press, 1999

[36] Australian Bureau of Statistics, *Motor Vehicle Census, Australia* 31 March 2006, 9309.0, , http://www.abs.gov.au/, 26072008

Figure 24 Australian population forecasts



Supply

Reserve estimates evolve with time and are subject to significant change. According to BP's *Statistical Review of World Energy*, proven oil reserves at the end of 2005 were 1.2 trillion barrels[37]. This headline figure does not account for probable and possible resources which become 'proven' due to further exploration and investment. Moreover, the headline figure does not include unconventional reserves such as the Canadian oil sands, the Orinoco tar belt and oil shale. Addition of these reserves could conceivably quadruple global stocks to 4.8 trillion barrels[38].

The percentage of global resources recovered is another important determinant of world supply. The industry recovers an average of only one out of three barrels of conventional resources underground and considerably less for unconventional sources[39]. This recovery rate is expected to improve over time as extraction technologies improve. A gain of 10% in extraction efficiency on a global scale will unlock 1.2 to 1.6 trillion barrels of extra resources, providing an additional 50 year supply at current consumption rates.

Unreliable estimation of reserves

The main concern of Peak Oil theorists is that official estimates cannot be verified and could therefore be over estimating existing oil reserves. During the Organisation of Petroleum Exporting Countries (OPEC) 'quota wars' of the 1980's, stated reserves amongst these countries increased rapidly as the

[37] BP Statistical Review of World Energy, June 2006

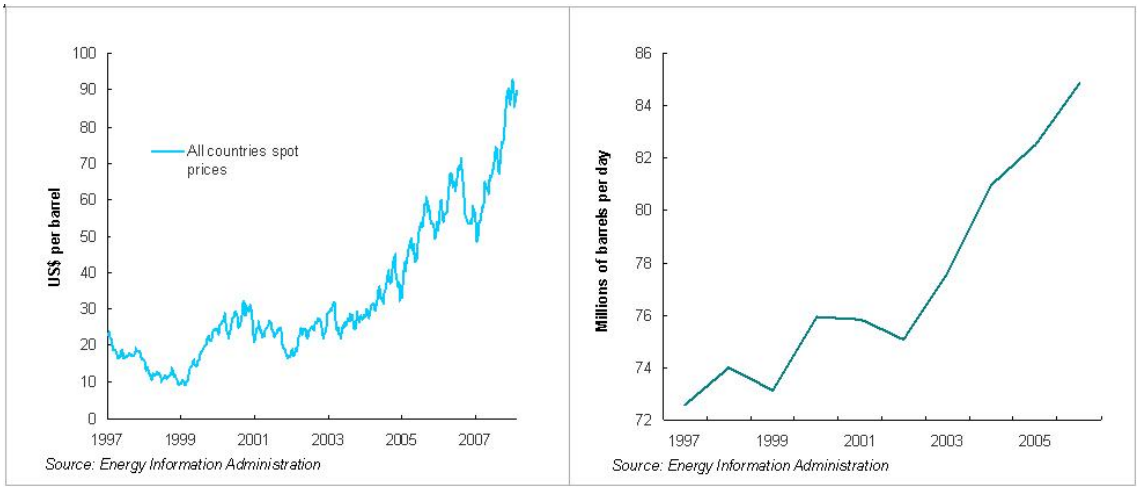
[38] Cambridge Energy Research Associates (CERA), http://www.cera.com/aspx/cda/public1/news/pressReleases/pressReleaseDetails.aspx?CID=8444, 24072008

[39] Nansen G. Saleri, *The World Has Plenty of Oil*, , March 4, 2008; Page A17, The Wall Street Journal, http://online.wsj.com/article/SB120459389654809159.html?mod=googlenews_wsj, 24072008

group attempted to control supply – thereby creating an incentive to inflate reserves. Prior to this time reserves had gone unchanged for some time.

The rate of new discoveries is not keeping pace with production. Nearly all of Earth's prolific petroleum basins are believed to have been identified and most are partially or completely explored. All or nearly all of the largest oil fields in them have already been discovered and are being produced. Production has clearly peaked and declined in some of the most prolific basins[40].
In 2000 the USGS released its study of world crude oil and natural gas[41]. It is still seen by many as one of the most comprehensive reports on these resources. It estimated that the world's total of conventional oil produced to date, including reserves that could be added by 2025, is about three trillion barrels of which only one trillion barrels have already been produced. This indicates that the peak in oil is some time away, particularly if unconventional oil reserves are included (refer to **Figure 25**).

Figure 25 World oil prices and production



Oil supply in Australia

Australia has a very small proportion of the world's oil reserves (0.3%)[42]. Oil production in Australia started at Moonie in 1964 and rapidly increased following the exploration of the Gippsland oilfields in the 1960s. The country's total consumption has been in excess of production for some time and will continue to worsen over the long term as shown in **Figure 26**. Australian Bureau of Agricultural and Resource Economics (ABARE) predicts that Australia's domestic supply of liquid fuel will decline from 78% in 2003 – 2004 to 49% in 2029 – 2030[43].

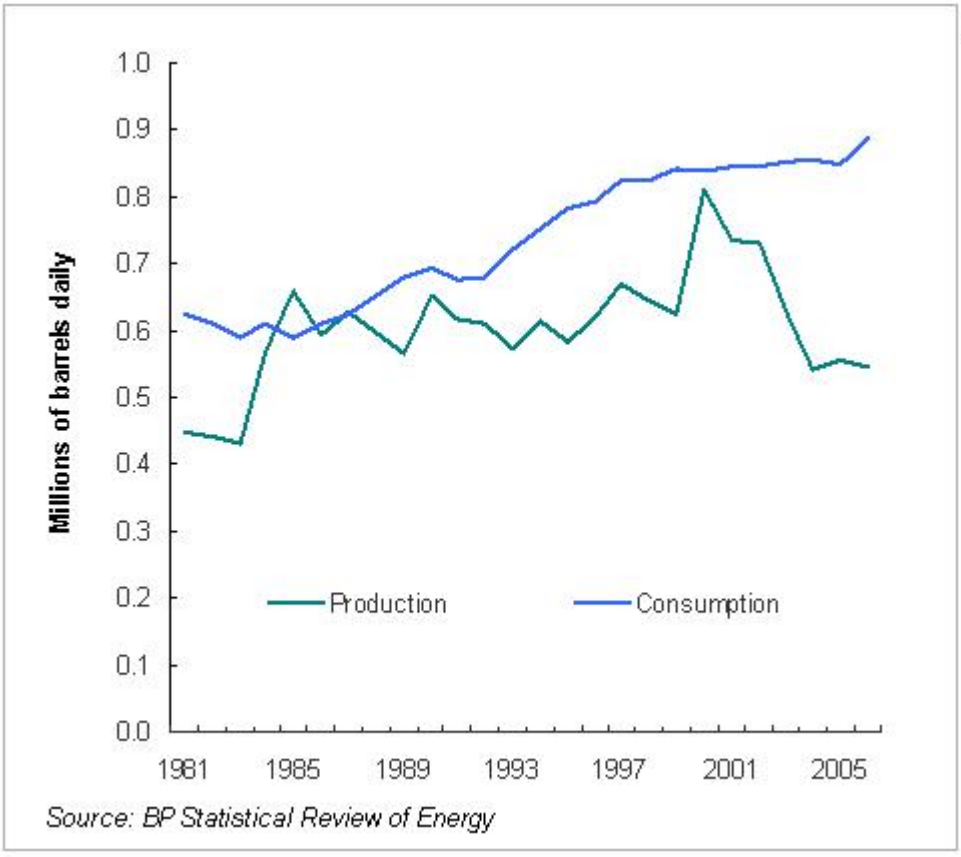
[40] Wood, J. H., Long, G. R., Morehouse, D.F., *Long-Term World Oil Supply Scenarios, The Future Is Neither as Bleak or Rosy as Some Assert*, http://www.eia.doe.gov/pub/oil_gas/petroleum/feature_articles/2004/worldoilsupply/oilsupply04.html, 12082008

[41] United States Geological Survey Petroleum Assessment 2000 – Description and Results, http://pubs.usgs.gov/dds/dds-060/, 19072008

[42] BP Statistical Review of World Energy, June 2006

[43] Rural and Regional Affairs and Transport References Committee, Australian Senate interim report, *.Australia's future oil supply and alternative transport fuels,* Rural and Regional Affairs and Transport References Committee, Australian Senate interim report.

Figure 26 Australia – consumption versus production



Australia's liquid fuel production decline began in 2000 and has been compounded by the fact that oil production is limited by oil geology. In 2006, Australia produced around 544 thousand bpd or approximately 202 million barrels-per-annum (bpa)[44] and consumed 886 thousand bpd or approximately 323 million barrels per annum. Australia therefore has a high dependency on fuel importation.

Australia is almost certain to remain dependent on supplies from other oil producing countries. Besides the threat of reduced supplies over the long term, the country is also vulnerable to short term shocks such as wars, market crises such as oil embargoes and adverse movements in exchange rates.

Prices

There is little evidence that the current rise in oil prices is caused by peaking oil supply. The sustained increase in world demand, especially from developing economies is, however, an important driver. Another important factor is the increasing role of speculation in commodity markets. Oil prices have increased from around US$28 a barrel in 2003 to US$135.35 a barrel in June 2008[45]. An increase in supply in excess of current rates will require large fixed capital investment and development. Events such as the war in Iraq, the risk that hostilities may intensify in the Middle East and OPEC's decision not to release greater supply have also contributed to higher prices over this period.

[44] BP Statistical Review of World Energy, June 2006

[45] NYMEX crude oil light, TFC Commodity Charts, www.futures.tradingcharts.com.

An ABARE study of the impact of rising fuel prices found that for each 30% rise in oil prices, Australia's Gross National Product (GNP) would be on average 0.8% lower than in the reference case at 2010. If oil prices rose to be 60% higher than in the reference case, GNP was estimated to be 1.2% lower than in the reference case at 2010[46].

Demand and supply responses

In order to increase domestic oil supply, Australia is likely to concentrate its efforts on:

- exploration aimed at conventional supplies within Australia or Australian waters. ABARE suggests that a number of offshore basins remain unexplored[47]
- encouraging alternative fuels such as biofuels and battery-power cars
- developing coal-to-oil plants (e.g. South Africa's coal-to-oil plants emerged following oil embargos)
- building a stock pile of oil which could be used in the event of a supply shock.

Efforts to control domestic demand could be concentrated on:

- increasing the fuel efficiency of vehicles
- encouraging alternative fuels for cars
- promoting greater use of rail for freight
- encouraging walking, cycling and public transport in cities and towns.

At present, road and rail have about equal shares of Australia's total freight transport task in tonne/kilometres (35% and 37% respectively), with 28% for sea and 1% for air[48]. Given present trends, it can be expected that an increasing proportion of freight will be carried by roads - even though road freight is less fuel-efficient.

Finally, a trade surplus of $1250 million in 2000/2001 from the net balance of oil imports/exports will have turned into an estimated $7.6 billion deficit per annum by 2010, (calculated at US$ 20/barrel and A$ 1= US$ 0.55; at US$50/barrel and A$=US$0.7 this would be an annual $ 14.9 billion deficit)[49].

The time has arrived to consider feasible alternative solutions to address the predicted domestic and international depletion of non-renewable energy sources, increasing demand, vulnerability to volatile world politics and increasing import dependency.

Biofuels – the greener alternative

Liquid biofuels are derived from different forms of biomass. In Australia, the two primary types of liquid biofuels are biodiesel and ethanol. The growth in the use of biofuels can be attributed to the impending exhaustion of fossil fuels, the preference for the sustainable use of renewable energy sources, political attitudinal shifts, acceptance of global climate change as well as potential environmental and public health benefits.

Biodiesel is a renewable, biodegradable fuel made from vegetable oils and animal fats as well as recycled greases. Biodiesel is produced through a chemical process called transesterification. Soybean-based biodiesel will be manufactured in the proposed facility.

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[46] Rural and Regional Affairs and Transport References Committee, Australian Senate interim report *Australia's future oil supply and alternative transport fuels,* 2006

[47] Rural and Regional Affairs and Transport References Committee, Australian Senate interim report, *Australia's future oil supply and alternative transport fuels, 2006*.

[48] Rural and Regional Affairs and Transport References Committee, Australian Senate interim report, *Australia's future oil supply and alternative transport fuels, 2006.*

[49]Rural and Regional Affairs and Transport References Committee, Australian Senate interim report, *Australia's future oil supply and alternative transport fuels, 2006*

A shift in the political climate and acknowledgement of the potential impact of global climate change has seen the mandating, amongst other things, of the use of cleaner fuels. In 2001, the Australian Federal Government announced a *'biofuel target of 350ML'* to be included in the Australian fuel mix by 2010.

In July 2003 the Commonwealth Scientific and Industrial Research Organisation, jointly with Bureau of Transport and Regional Economics (BTRE) and ABARE, were requested to investigate the appropriateness of maintaining an objective that biofuels, produced in Australia from renewable resources, contribute at least 350 ML to the total fuel supply by 2010. The joint study was initiated on 5 August 2003 with a final report required to be delivered on 19 December 2003.

On 22 December 2005, the government released the Biofuels Action Plan, which is to underpin the future of a sustainable biofuels industry in Australia.

The Australian Institute of Petroleum has consistently stated that there is a sustainable role for biofuels in the Australian fuels market provided biofuels are competitively priced, have a reliable supply and are acceptable to consumers[50].

3.2 Local considerations

3.2.1 Biophysical considerations

The proposed development will provide a net improvement to the site condition, ecology and surrounding receiving waters. This will be achieved in a number ways, as described below.

- Water run-off which is currently uncontrolled will be significantly improved through the proposed drainage concept plan
- On-site vegetation will be increased significantly and will ultimately occupy 16 000m^2 or more than 20% of the site. The site currently has little or no natural vegetation
- Soil and ground water will be improved through removal of any contaminated debris and capping and containment of areas other than vegetated and water infiltration areas
- Reduction in emissions from vehicles using a cleaner-burning fuel
- The on-site production of biodiesel affords the opportunity to supply other port users with an alternative fuel source, hence encouraging the use of a greener fuel by large consumers
- The establishment of a state-of-the-art facility will assist in meeting GHG targets by reducing GHG emissions by more than 800,000 tonnes per year (CO_2 equivalents) and decrease the country's reliance on imported fuel
- On a full life-cycle basis, biodiesel has significantly lower emissions of carbon monoxide and Volatile Organic Compounds (VOCs) compared to petroleum-derived diesel.[51] Consequently, cleaner fuels will make a substantial contribution to improved air quality.

3.2.2 Economic considerations

Numerous strategies have been developed that aim to provide a framework for the orderly expansion of the functions in Port Kembla, having particular regard to trade mix. PKPC's growth strategy aims to diversify and expand its trade base to secure the long term viability of the Port. The proposed development can be justified on a number of economic grounds. These essentially revolve around the establishment of a new value-added SPBP facility in the Illawarra region, stimulation of the soybean production industry in Australia and the associated flow on effects.

[50] www.aip.com.au/industry/biofuels.htm, 01092008

[51] Mittelbach, M and Remschmidt, C., *Biodiesel: The Comprehensive Handbook*, 2004.

As the manufacturing sector is the primary economic driver of the region[52], the specific economic benefits arising from the construction and operation of the proposed SPBP facility include the following.

- A capital investment value of approximately $243 million (refer to **Section 4.4.4** for a breakdown of costs). This magnitude of investment is consistent with both the Illawarra Regional Strategy and the State Infrastructure Strategy, which make provision for the revitalisation of the inner harbour of Port Kembla and commensurate with the strategic trade base diversification initiative of relocating the car import industry from Glebe Island and the general and bulk cargo from East Darling Harbour.
- Provision of employment opportunities, both direct (500 construction phase employment and 235 operational employment) and indirect (725 both up and downstream), representing 3.2% of the State Government's employment target for 2031 (excluding construction employment).
- Meeting market demand through provision of a source of renewable fuel with an energy yield up to four times that of fossil diesel. This will be achieved by supplying approximately 288 million litres of soy biodiesel per annum, a substantial contribution to the Australian Federal Government's target of 350 million litres per annum by 2010.
- Meeting market demand for high-protein animal feed, particularly for the poultry and piggery industries in the Sydney and regional basins. This will be achieved by supplying in excess of one million tonnes of domestically produced soybean meal per annum, which in turn will secure a substantial portion of Australia's meat source (pigs and poultry) during periods of cyclical and prolonged drought.
- Import replacement and positive contribution to Australia's annual balance of trade of $540 million for soybean meal and $400 million for imported fossil diesel[53].
- An increase of trade through Port Kembla in excess of $970 million in revenue alone[54].
- Use of existing under-utilised silos, grain terminal and wharf, transport and services infrastructure which represents significant NSW Government investment.
- Assisting the Port and Wollongong district to diversify its economic trade base to include oilseeds, renewable biodiesel energy and high value animal feed processing.
- Promoting a stronger Australian and NSW soybean agricultural sector. The current Australian soybean industry is in its infancy and can only satisfy up to 5% of the proposed SPBP facility's demand. The potential is for Australian agriculture to provide a significant portion of the required feedstock.
- Provision of soybean crushing capability/capacity in Australia, meaning that the NB crusher can stimulate the development of a strong local soybean growing economy.
- The operation of the proposed SPBP facility, upgrade works will be carried out on Berth 104 and on a number of the silos which are located on the GrainCorp site. The proposed SPBP facility will take advantage of all modes of transport available at the site to conduct business (sea, road and rail). In addition, PKPC have committed to rectify the sea wall as part of routine maintenance works. As such, infrastructure upgrade, site improvement and an enhanced utilisation of the Port's land will occur.

The location in both a port and heavy industrial area is both logical and sensible due to access (road, rail, and sea), surrounding land use compatibility and distance of sensitive land uses.

The major production output of this facility is soybean meal. Nearly 85% of soybean meal in Australia ends up in poultry and pig feed, with the poultry industry consuming approximately 50%, followed by the pig industry at 35%[55]. Australia typically produces approximately 30,000 tonnes of soybean meal annually, but the animal feed industries alone require approximately 500,000 tonnes annually. This necessarily leads to Australia being a net importer of a substantial amount of soybean meal. The

[52] NSW Department of Planning, *Illawarra Regional Strategy 2006-2031,* 2007

[53] Assumed A$496.1/mt for soybean meal and TGP for fossil diesel of A$1.388/litre

[54] Assumed A$468.1/mt for imported soybeans

[55] Australian Oilseeds Federation - www.australianoilseeds.com, 12092008

proposed soybean meal output of the proposed facility will be approximately one million tonnes per annum at full production capacity. In the long term, NB operations will thus increase Australia's food security substantially by locally producing a significant potion of its soybean meal protein needs.

Finally, public health cost savings have been projected at 5 cents per litre of biodiesel yielding a total of AU$14.4 million[56].

3.2.3 Social considerations

The proposed development will be a major employer, provide income to the NSW regional economy and diversify the local skill and innovation base by as described below.

- Providing up to 235 direct jobs and 725 indirect jobs in service and support industries (total 960 jobs). The plant will strengthen the regional employment base and assist in addressing unemployment.
- Local businesses and communities will benefit from the annual injection of up to $43 million into the economy from wages.
- The construction cost estimated at $243 million will contain a significant expenditure on local metal supply, fabrication, building trades and professional services.
- The plant in operation will have an extensive skills base in soybean processing, biodiesel and glycerine production, laboratory research and market development. This will be of positive benefit to innovation and image within the Wollongong community and its projection as a regional centre.
- Improved domestic fuel and food security.
- The plant will provide for an interesting visual improvement to this section of the Inner Harbour.

Refer to **Section 7.10** of this report for additional discussion regarding social impacts.

3.3 Assessment of alternatives

3.3.1 Alternative scenarios considered

Numerous alternative scenarios were considered prior to seeking project approval for a SPBP facility in Port Kembla. These are described in the following sections.

Importation option

The importation of biodiesel was considered in lieu of constructing a local manufacturing site. The reasons underpinning why this alternative is not appropriate are as follows.

- Local manufacturing of biodiesel is more economical when compared to importation.
- Constructing a local manufacturing SPBP facility will result in soybean meal also being available to the local market as opposed to biodiesel only.
- There is no significant soybean crushing capability/capacity in Australia, meaning that the NB crusher can stimulate the development of strong local soybean growing economy.
- Importation would not provide the magnitude of employment opportunities in comparison to that generated by a local plant (235 direct and 725 indirect positions).
- Importation would not place demand on local oilseed markets to provide, produce or stimulate rural growth in the Illawarra region.

[56] CSIRO, BTRE and ABARE *Appropriateness of a 350 Million Litre Biofuels Target* – Report to the Australian Government Department of Industry, Tourism and Resources, 2003

- Importation will not necessarily create a catalyst for ongoing innovation, research or development into alternative fuel sources for example, further investigations into the feasibility of second generation biofuels.
- The proposed capital investment of approximately AU$243 million in Port Kembla would be lost, which has further implications for the Illawarra Region.
- There would be a lost opportunity for replacing 288 million litres of imported fossil diesel with locally manufactured renewable biodiesel, meaning that Australia's import dependency would continue.
- Importation would not necessarily contribute to local economic growth in the Illawarra region.
- Importation would not contribute to land use diversification within the Port or increase the trade base.

'Do nothing' option

The consequences of not proceeding with the proposed SPBP facility in this location would include the following.

- The proposed capital investment of approximately A$243 million in Port Kembla would be lost, which has further implications for the Illawarra Region.
- No replacement of 288 million litres of imported fossil diesel with locally manufactured renewable biodiesel, meaning that this volume of fossil diesel would continue to be imported. No replacement of imported soybean meal with a domestic product, meaning that this volume would continue to be imported. This operation alone will make Australia self-sufficient in terms of soybean meal needs by producing in excess of 1 million tonnes of high-protein soybean meal per year.
- There would be no increase in the availability of an alternative and renewable energy source, namely biodiesel, to enable NSW and Australian companies to comply with corporate commitments to reduce carbon footprints. The proposed SPBP facility will be a catalyst for innovation in alternative fuel technology by promoting use of such fuels. Not developing the proposed SPBP facility may result in a loss of a more efficient fuel alternative being readily available, particularly to local Port users.
- There would be no positive contribution to Australia's trade balance. This operation will account for the import replacement of $540 million worth of soybean meal and more than $400 million for replacement of imported fossil diesel through locally produced biodiesel.
- Without the proposed SPBP facility there would be no new soybean crushing facility in NSW and Australia, which has the potential to provide opportunities to other soybean/grain producers would exist.
- Without the proposed SPBP facility, no consistent supply of high quality soy biodiesel for Port Kembla users, NSW and Australia.
- Only limited soybean meal availability options would exist for feed formulators in NSW and Australia.
- There would be a direct loss of potential trade and employment benefits to the Illawarra region as well as the associated positive multiplier effects that normally ensue following an extensive capital investment. This may also result in the loss of other associated trade revenues.
- A loss of stimulation and incentive for the soybean-growing agriculture potential of NSW and Australia would be experienced. The proposed SPBP facility will generate demand for more than one million tonnes of soybeans in the first year of operation.
- There would be a potential loss of Greenhouse Gas (GHG) abatement and no reduction in other harmful pollutants such as particulate matter and diesel smoke that would otherwise result from the replacement of fossil diesel with biodiesel.
- A loss of an opportunity to utilise currently under-utilised infrastructure (silos) would occur particularly given the compatibility between the proposed use and the current operations at the Grain Terminal.

- There would cease to an imminent impetus to undertake the sea wall rectification works which are important to manage water quality and bank stabilisation.
- There would cease to be an impetus to upgrade Berth 104.
- There would be no opportunity to diversify land uses within the Inner Harbour.
- Not proceeding would be inconsistent with the objectives of the Sydney Metropolitan Strategy, the NSW Ports Growth Plan, the Illawarra Regional Strategy, the State Infrastructure Strategy, the Illawarra and South Coast Employment Lands Study and the Wollongong LGA Economic Development Strategy (refer to **Section 6.0** of this report for further discussion of these strategies).
- The proposed SPBP facility, that would be the largest of its kind in Australia, would have to move to another state or even country.

3.3.2 Alternative sites considered

The operational requirements for the proposed SPBP facility have had a significant influence on site selection. As described in **Section 3.1.2**, the current domestic soybean market cannot meet the demand for the product that will be required for the scale of operations being proposed. Consequently, much of the raw material will be sourced internationally.

Bulk trade of soybeans and soybean meal is a fundamental component of NB's operations and as such, a location with direct port access is an essential for ongoing operations. For this reason, the siting the proposed SPBP facility inland of a port is not deemed to be feasible or economically viable. Further, a non-port location would result in excessive transport logistics between the requisite port and an inland SPBP facility location. Accordingly, the proposed SPBP facility must be located on port waterfront land.

During the concept design and layout process, a number of alternative port sites were considered for the proposed SPBP facility and these alternatives are described below.

Newcastle options

Carrington

- Encroaching residential development raised potential land use conflicts reducing the suitability of industrial operations in the area, which may conflict with plant operations.
- Insufficient waterfront land availability for the proposed operations.

Kooragang Island

- Lack of land availability with direct port access in conjunction with a lack of access to deep water berths.

Walsh Point

- An application was made to the Department of Lands for the use of public land for the proposed SPBP facility. This process concluded that no appropriate land was available to accommodate the operation.

Other sites within Port Kembla

- After consultation with the PKPC it was determined that no other suitable sites were available in Port Kembla.

3.4 Preferred option – Port Kembla

Land that is currently surplus to the needs of the Grain Terminal operations and PKPC operations was investigated, which led to the identification of the preferred option. The decision to pursue the development of the proposed SPBP facility at Port Kembla, by co-locating with the GrainCorp facility, was selected as the preferred option for the following reasons:

- Availability of a deep water port frontage location with adequate port-side facilities that meet the Australian Quarantine and Inspection Service (AQIS) requirements for handling imported soybeans.
- The collective sites offer approximately 7.4 ha of land which is sufficient for the current needs of the proposed SPBP facility.
- The site has direct port access via a deep water berth and grain storage facilities, which will be utilised by the proposed SPBP facility (on the basis of a commercial agreement between NB and GrainCorp). The use of this existing infrastructure reduces costs, GHG emissions and unnecessary use of materials produced from non-renewable resources.
- Sea, rail and road access to the site. The regional and road networks that service the Port have been partially protected through appropriate land use planning to avoid land use conflicts and to facilitate ongoing industrial operations. This will be reinforced by the adoption of the *'Three Ports State Significant Site Proposal'* and the impending Local Environmental Plan amendments to reinforce the objectives of this proposal.
- The site offers access to the freight rail network.
- Immediate availability for development and construction.
- Proximity to the industrial growth area of south west Sydney and the Illawarra region.
- Facilities to service all types of general containers, bulk and liquid cargo.
- Strong regional and community support.
- Good buffers surrounding the port, in conjunction with geographical separation, conserve residential amenity.
- To make a positive contribution to Australia's trade balance. This operation will account for the import replacement of $540 million worth of soybean meal and more than $400 million for replacement of imported fossil diesel through locally produced biodiesel.
- The Illawarra region has a substantial area of rural land. The placing of the proposed SPBP facility in Port Kembla will provide a new soybean crushing facility in the Illawarra Region, NSW and indeed Australia. This has the potential to provide opportunities for the use of the equipment otherwise unavailable to other soybean/grain producers on local, state and national level.
- There would be a direct loss of potential trade and employment benefits to the Illawarra Region as well as the associated positive multiplier effects that normally ensue following an extensive capital investment. This may also result in the loss of other associated trade revenues.
- There would be a loss of stimulation and incentive for the soybean-growing agriculture potential of NSW and Australia. The proposed SPBP facility will generate demand for more than one million tonnes of soybeans in the first year of operation.
- Locating within Port Kembla provides an opportunity to diversify the trade base which is consistent with numerous strategies developed for this key employment precinct.
- Selection of the subject site for the proposed SPBP facility encapsulates the objectives of the Sydney Metropolitan Strategy, the NSW Ports Growth Plan, the Illawarra Regional Strategy, the State Infrastructure Strategy, the Illawarra and South Coast Employment Lands Study and the Wollongong LGA Economic Development Strategy (refer to **Section 6.0** of this report for further discussion of these strategies) and as such, reconciles with the strategic vision for the Port that are advocated by government agencies.
- Locating the proposed SPBP facility in the Illawarra Region will create a catalyst in Australia for ongoing innovation, research or development into alternative fuel sources for example, further investigations into the feasibility of second generation biofuels.
- Provides a long term opportunity to replace 288 million litres of imported fossil diesel with locally manufactured renewable biodiesel.

- Commercial agreement with GrainCorp as a direct result of this site selection involves:
  - partial use of GrainCorp's under-utilised storage facilities
  - use of GrainCorp's grain ship loading facilities
  - use of GrainCorp's deep water berth docking facilities
  - use of GrainCorp's dust control facilities
  - avoids additional and unnecessary construction of storage and handling facilities for soybean.

3.5 Conclusion

The World's oil reserves are non-renewable, finite and not sufficient to meet long term demand. There are a number of different scenarios that attempt to predict when this may occur, but with world oil consumption growing on average by two percent per year, the undisputable fact is that oil reserves will deplete (possibly as soon as 2018).

On a per capita basis, Australia is the 31st largest consumer of oil in the world and Australia's demand for petroleum is expected to rise to over 1.2 million bpd by 2029/2030.

Options available to Australia for increasing its domestic oil supply include:

- exploration for currently unidentified oil reserves in Australian jurisdiction
- encouraging alternative fuels such as biofuels and electricity
- developing coal-to-oil plants
- building a stock pile of oil to be used in the event of a supply shock.

Alternately, domestic demand could be controlled by:

- increasing the fuel efficiency of vehicles
- encouraging alternative fuels for cars
- promoting greater use of rail for freight
- encouraging walking, cycling and public transport.

Liquid biodiesel is a renewable, biodegradable fuel made from vegetable oils, animal fats and recycled greases. Its production is by way of chemical process, and does not utilise fossil fuels. High quality soy-biodiesel is not currently available in Australia. Notwithstanding, a number of Australian government initiatives, such as the Biofuels Action Plan, support and encourage the future of a sustainable biofuels industry in Australia.

A number of options for the production of biodiesel were considered during the development of this proposal, leading to the key preferred option of the proposed SPBP facility. The proposed SPBP facility would produce biodiesel made from soybean oil using first generation technology. Biodiesel derived from soybean oil is a completely renewable fuel with one of the highest energy returns of all biofuels. Key outputs of the SPBP facility would be biodiesel and soybean meal. There is significant domestic demand for high-grade soybean meal.

Fossil fuels are a non-renewable resource, and their on-going use is not sustainable. It is in the public interest to facilitate the development and use of alternative and renewable fuels which will reduce the reliance on burning of fossil fuels for energy.

The proposed SPBP facility is an innovative development that has the potential to both make renewable fuel available to the Australian and broader markets and to act as a catalyst for research and development into alternative fuel technology. This would serve to reduce Australia's reliance on diminishing fossil fuels.

4.0 Project description

4.1 Introduction

This section provides a detailed description of the proposed SPBP facility within the Inner Harbour area of Port Kembla. This section discusses:

- project overview
- design origins
- design layout
- detailed project description
- detailed process description.

4.2 Project overview

In general terms, the proposed SPBP facility design and layout involves the utilisation of currently under-utilised land and infrastructure within the Inner Harbour of Port Kembla that is surplus to the needs of GrainCorp and PKPC. The proposed SPBP facility will utilise soybeans as feedstock to produce high-protein soybean meal (80%) for use in animal feed, a renewable energy source, soy methyl ester (commonly known as biodiesel) (18%), and pharmaceutical-grade glycerol (2%) as production outputs. Initially, the feedstock will be imported and as such involves access to and use of Berth 104. The proposed development is shown in drawings provided in **Appendix D** to this report. It is noted that Photomontage 3 shows two unloaders. However, there will only be one unloader that is capable of moving along the quayside.

The proposed SPBP facility data is described in **Table 2**.

Table 2 Project data overview

Component	Approximate Data
Site area	73,600m^2
Site coverage (excluding parking, manoeuvring and bunded areas)	19,810 m^2
Total floor area	23,355 m^2
Landscaped area	16,478 m^2
Parking spaces	95

4.3 Design origin

The production plant and technology will be supplied by Desmet Ballestra, an established international oilseed processing and biodiesel technology provider. Desmet Ballestra is a world leader in the industry and has:

- a global presence in the oils and fats industry
- constructed in excess of 5,700 oleo chemical plants worldwide
- constructed in excess of 70 biodiesel plants worldwide (including plants under construction).

4.4 Proposed soybean processing and biodiesel production facility design

4.4.1 Proposed works

The proposed project, representing an approximate capital investment value of A$243 million (refer to **Section 4.4.4** for a detailed cost breakdown), involves the construction and operation of numerous interdependent sections which collectively function as the SPBP facility, including:

- construction of:
  - an administration and training building with associated parking
  - biodiesel production plant
  - biodiesel tank farm and associated bunding
  - boiler house(s)
  - chemicals tank farm and associated bunding
  - cooling tower and compressor pump-house
  - crude soybean oil tanks
  - extraction plant
  - firewater tank and firewater pump-house
  - glycerine refining plant
  - guard house(s)
  - hexane storage tanks
  - laboratories
  - maintenance workshop(s)
  - pre-treatment plant
  - retaining wall
  - soybean meal storage building
  - substation(s)
  - truck maintenance shed with associated parking
  - warehouse(s).
- installation of:
  - ship unloading facilities on existing Berth 104
  - installation of conveyor belts and a bucket elevator to facilitate the transfer of raw material on the existing GrainCorp site
  - air compressor(s)
  - conveyor belts
  - hexane storage tanks.
- use of:
  - seven (7) silos with a ten tonne capacity and two (2) with a 5 tonne capacity and Berth 104 on the existing GrainCorp site.
- activities:
  - operation of the proposed SPBP facility 24 hours per day, 365 days per year and associated maintenance activities.

Figures 27-32 provide photographic examples of various elements of similar SPBP facilities located elsewhere in the world. These have been included to provide an understanding of the intended project outcomes. Proposed building heights of individual buildings have been indicated on preliminary plans and are provided in **Table 3**. Preliminary elevations of the extraction plant, glycerine refinery, pre-treatment and preparations facility and biodiesel refinery are included in **Appendix B**.

These project components are also shown in the proposed layout plan extract provided in **Figure 33**, with full version of the proposed layout plan supplied in **Appendix B**.

Table 3 Proposed building heights

Building	Proposed Building Height (Highest Point)	Indicative Floor Area	Proposed Allotment Location
Truck Maintenance Shed	12m	700m^2	Allotment 1
Biodiesel refinery	30.8m	850 m^2	Allotment 3
Pre-treatment facility	28.5m	240 m^2	Allotment 3
Glycerine	34.5m	430 m^2	Allotment 3
Warehouse	13.5m	270 m^2	Allotment 3
Maintenance workshop	13.5m	140 m^2	Allotment 3
Boiler house	9.5m	150 m^2	Allotment 3
Cooling towers	10m	N/A	Allotment 3
Air compressing unit	6m	N/A	Allotment 3
Substation (main)	5m	N/A	Allotment 3
Substation (secondary)	3.5m	N/A	Allotment 3
Tanks	22m	N/A	Allotment 3
Fire water pump house	4m	40 m^2	Allotment 3
Guard house	3m	60 m^2	Allotment 3
Preparations facility	36	9500 m^2	Allotment 5
Meal Dry/Cool pelletizer	18	1440 m^2	Allotment 5
Extraction facility	27.75	960 m^2	Allotment 5
Warehouse	15	560 m^2	Allotment 5
Substation	5	75 m^2	Allotment 5
Maintenance workshop	12	310 m^2	Allotment 5
Boiler house	12	390 m^2	Allotment 5
Soybean meal storage shed	20	6300 m^2	Allotment 5
Cooling towers	12	N/A	Allotment 5
Soyoil tank	22	N/A	Allotment 5
Hulls storage shed	15	500 m^2	Allotment 5
Pelletized hulls silos	15	N/A	Allotment 5
Guard house	3	240 m^2	Allotment 5
Administration Building	12m	900 m^2	Allotment 6
Total		23,335 m^2	

As explained in **Section 2.0** the subject works are to be carried out over four (4) separate allotments, a summary of which is detailed in **Table 4**.

Table 4 Sites and related works

Site	Area	Proposed Use
1	22,700 m^2	Truck maintenance and associated parking.
3	15,500 m^2	Air compressing unit, boiler house, biodiesel loading bays, biodiesel refinery and tank farm with associated bunding, chemicals tank farm with associated bunding, firewater tank and firewater pump-house, glycerine refinery, guard house, maintenance workshop, pre-treatment plant, retaining wall, stormwater detention tank, substation, and warehouse.
5	31,100 m^2	Air compressing unit, boiler house, conveyor belts, cooling towers and compressor pump-house, crude soybean oil storage tank and associated bunding guard house, hexane storage tanks, laboratory, maintenance workshop, soybean meal storage shed and soybean preparations and extraction facilities, substation, warehouse.
6	4,300 m^2	Administration and training building and associated parking.

4.4.2 Materials and finishes

The main processing sections (extraction, biodiesel refining, pre-treatment and glycerine) of the proposed SPBP facility will consist of proprietary equipment, piping and ducting, which are supported by structural members with concrete foundations at ground level. Access to the equipment will be provided via gangways at ascending levels, with external stairwells connecting each level. The sections will be roofed, but exposed on each side. Control rooms will be located on the first level of biodiesel and glycerine refining sections and are isolated.

Individual pieces of equipment will be of a polished metal finish, along with ducting. Structural members will be coated in non-reflective colour, with the exception of those needed for safety requirements. The roof will consist of coloured sheet metal sections, either flat or gabled.

The preparation section of the proposed SPBP facility will be identical to the other main process sections however the sides will be clad to prevent fugitive dust emissions. The cladding will be in the form of coated sheet metal i.e. Colorbond®, of a non-reflective colour.

The significant buildings on the site will be used mainly for storage and maintenance, such as warehousing, soybean meal storage, and truck maintenance. These buildings will consist of a concrete foundation with primary structural members enclosed by four main walls, and either a flat or gabled roof. The walls and roof sections will be composed of coated sheet metal, and will be of a non-reflective colour, with the exception of meal storage which will have concrete walls on three of its sides up to a height of 14 metres.

The administration building will have two levels, built on concrete foundations, and most likely have brick or concrete clad walls. The roof will be either coated sheet metal (Colorbond®) or tiled. Both the wall and roof exterior will be of a non-reflective colour.

4.4.3 Earthworks

It is envisioned that some cut and fill will be required during bulk earthworks, particularly on the northern sector of Allotment three (3). The volume of cut and fill required for the site will be determined upon completion of geo-surveying and preliminary civil design during the detailed design phase. In this regard, only clean fill will be used.

4.4.4 Capital cost

The project represents a capital investment value (CIV) of approximately A$243 million as detailed in **Table 5** however, for the purposes of the CIV, as defined in SEPP (Major Projects) 2005, the CIV is

comprised of the first four components listed in **Table 5** and the Berth 104 and GrainCorp Upgrades, totalling A$166.8 million.

Table 5 Estimated project cost breakdown

Utilisation	US$'000	A$'000
Crushing facility	57,200	62,900
Processing & Refining facility	36,400	40,000
Land, Buildings and Tank Farm	18,400	20,300
Project Management and Contingencies	16,900	18,600
Working Capital (operational)	45,000	49,500
Project Finance Interest during Construction	7,600	8,400
Reserve per Covenants	17,000	18,700
Berth 104 and GrainCorp Upgrades	22,500	25,000
Total	221,000	243,000

Figure 27 Crushing plant with silos

Source: National Biodiesel Pty Ltd

Figure 28 Crushing facility

Source: National Biodiesel Pty Ltd

Figure 29 Biodiesel plant

Source: National Biodiesel Pty Ltd

Figure 30 Biodiesel refinery

Source: National Biodiesel Pty Ltd

Figure 31 Biodiesel refinery

Source: National Biodiesel Pty Ltd

Figure 32 Out load facilities

Source: National Biodiesel Pty Ltd

Figure 33 SPBP facility layout

4.4.5 Site access and parking

Articulated and heavy vehicle parking facilities have been allocated on Allotments 1with employee parking provided on Allotments 1 and 6.

Employee parking

Based on the travel demand, it is estimated that no more than 90 car spaces and 5 articulated vehicle spaces will be required to facilitate employee parking during peak-demand periods. It is proposed that at least 40 (forty) car spaces will be located in Allotment 6 outside the Administration Building as shown on **Figure 56**. NB has negotiated with GrainCorp that 15 spaces will be provided on the GrainCorp site, west of Allotment 5. The remaining car parking spaces will be accommodated for on Allotment 1 as shown in **Figure 57**.

Heavy vehicle parking

Heavy vehicle (truck) parking is provided at allotment 1. Allotment 1 is able to accommodate at minimum 5 articulated trucks (25.0m B-Doubles) at any one time in the format shown in **Section 7.5**. The level of truck parking will depend on peak demand of employee parking. Truck parking on Allotment 1 will be clearly demarcated from employee parking, including necessary pedestrian walkways and access.

4.4.6 Biodiesel use

National Biodiesel will operate all of its fleets and diesel machinery on premium quality soy-based biodiesel produced in the SPBP facility.

4.4.7 Storage on site

The raw materials identified in **Section 4.6.2** will be stored on site. The storage specifications required for each material is presented below.

Raw material storage details

The proposed SPBP facility will store a number of raw materials on site. The following materials will be stored on Allotments 3 and 5.

- Soybeans will be stored in grain silos owned and operated by GrainCorp. Nine (9) GrainCorp silos have been allocated to NB, seven (7) of these have a storage capacity of 10,000 tonnes and two (2) have 5,000 tonne storage capacity, providing a total storage capacity of 80,000 tonnes.
- Soybean oil will be stored in three pre-treatment buffer tanks with individual storage capacities of approximately 355 m^3 each. Further, one soybean oil storage tank (to be used on an as and when needed basis) with a storage capacity of approximately 10,800m^3 will be located next to the preparations plant.
- Upon commissioning the crushing and manufacturing facility, 235 tonne of hexane will be charged into the closed production system. A separate, dedicated, secured area with appropriate exclusion zones will be used to store the remaining 325 tonne to be used as fresh stock.
- The SPBP facility has the capacity to receive methanol in lots of 1,000 tonne by shipping vessel or in bulk via road. Methanol will be stored in the chemical tank farm with appropriate exclusion zones and bunding.
- Sodium methylate, hydrochloric acid, caustic soda, sulphuric acid, and phosphoric acid will arrive in bulk via road and will be stored in dedicated tanks within the bunded tank farm.
- Citric acid (used as an aqueous solution) will be received as a powder in plastic bags and will be prepared prior to use in the facility. Appropriate storage areas will be used to store the bags.
- Silica and bleaching earth will be stored in bulk within the perimeter of the pre-treatment plant in a dedicated area.

Products storage details

Production outputs will also be stored temporarily on-site prior to distribution, which is as follows.

- Biodiesel will be stored in on-site storage tanks with individual storage capacities of approximately 6,000 m^3. The tank farm will be bunded as per industry regulations (Allotment 3).
- Soybean meal will be stored in a dedicated storage warehouse with a capacity of approximately 40,000 tonnes (Allotment 5).
- Glycerine will be stored on-site primarily as pharmaceutical-grade product in a storage tank with a capacity of approximately 1,200 m^3. A secondary grade glycerine storage tank is located within the main tank farm, and has a capacity of approximately 260 m^3. Three additional buffer storage tanks with storage capacities of around 330 m^3 each will be located in the tank farm to store crude glycerol prior to refining (Allotment 3).
- Used bleaching earth will be stored on-site within the pre-treatment building on Allotment 5.

4.5 Construction phase

The construction phase for the SPBP facility is expected to take approximately 16 months and will involve the following key construction activities:

- preparation of a construction and environmental management plan (CEMP)
- notification of the local community and other relevant stakeholders
- staged site establishment
- erection of security fencing along the working width and the installation of safety measures
- transporting of construction equipment
- site clearing and ground preparation
- construction of storage facilities for construction materials, fuel and water
- importing and installation of plant proprietary equipment and associated structures
- erection of storage facilities
- reinstatement of site fences, if required and removal of temporary construction equipment
- final clean-up.

The majority of the construction materials are expected to be sourced locally except for the plant proprietary equipment which would be supplied by Desmet Ballestra, the technology providers. Following the completion of plant installation, commissioning of the plant is expected to take approximately two months.

4.6 Operations - process description

4.6.1 Manufacturing process overview

An overview of the procedures involved in producing soybean meal and biodiesel is provided in this section.

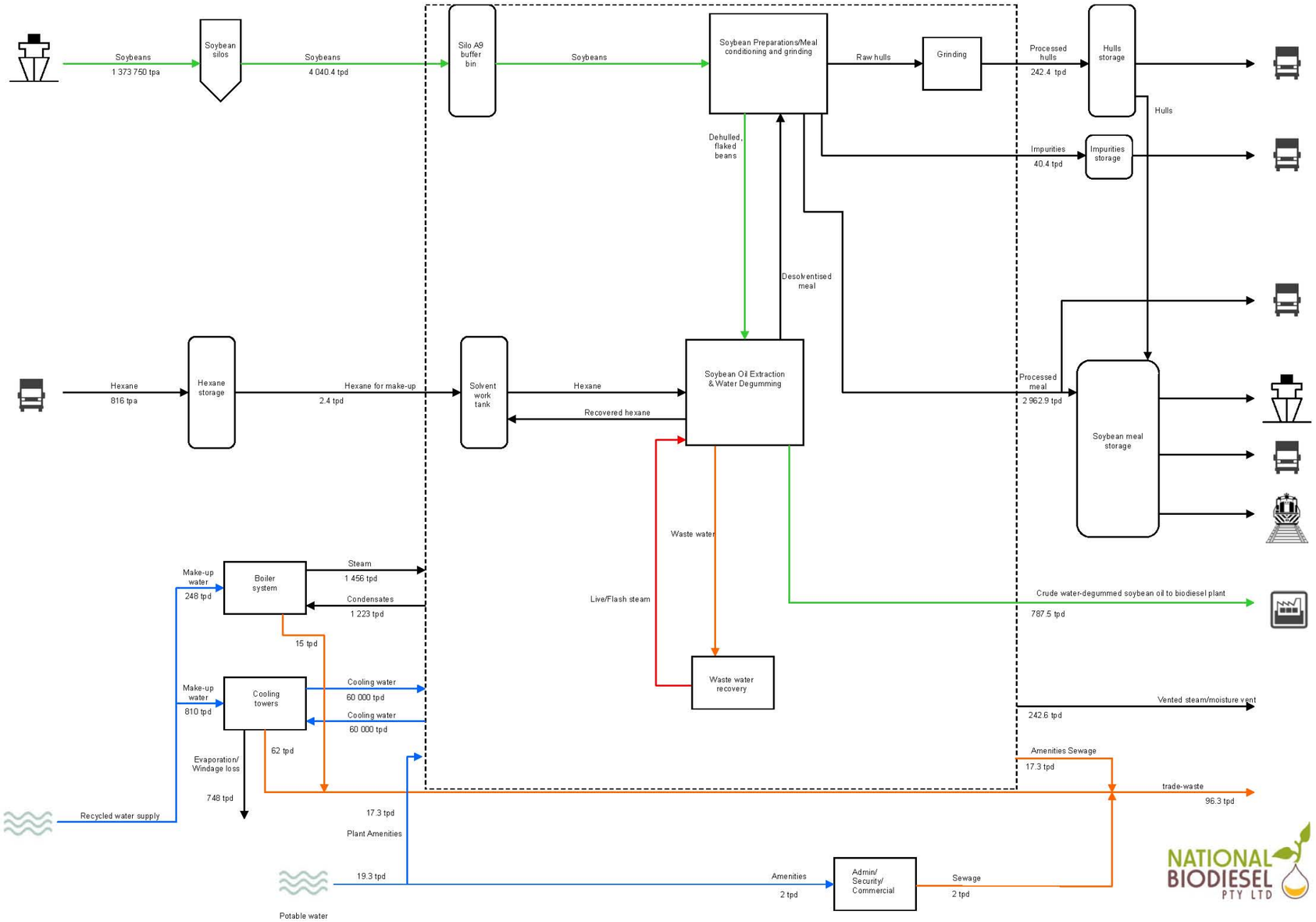
A flow diagram providing a description of the manufacturing process is shown in **Figure 34** (stage 1) and **Figure 35** (stage 2).

The production process can be divided into two distinct stages:

- **Stage 1** involves soybean preparation and soybean oil extraction from the soybeans. The products from this stage are soybean meal and crude soybean oil.
- **Stage 2** is comprised of oil pre-treatment, biodiesel refining and glycerine refining which will produce soy-biodiesel and pharmaceutical-grade glycerine.

Figure 34 Stage 1 of the production process

Figure 34. Stage 1 - Process flow crushing



Source National Biodiesel Pty Ltd

The two stages of the manufacturing process are described in detail in the following sections.

Stage 1

The soybeans will arrive in part by ship where unloading will take place at Berth 104. The raw material will then be conveyed from Berth 104 to the Grain Terminal. Soybean seeds stored in the GrainCorp silos will then be transferred to Stage 1 using an elevated belt conveyor that will deliver the soybean into a buffer bin located in the preparations building.

Feedstock Preparation

The purpose of soybean (feedstock) preparation is to modify the soybean seed into a shape and form that is suitable for fast and effective oil extraction. Preparation consists of the following operations.

- **Conditioning**: During conditioning, the soybean seeds are heated to achieve the following objectives:
  - give plasticity to the soybean seeds
  - decrease the viscosity of the oil
  - sterilise the seeds
  - adjust moisture content.
- **Seed de-hulling**: The hulls are separated from the bean to ensure a high protein and optimum fibre content in the produced soybean meal. De-hulling involves cracking (to loosen the hulls), screening, and finally gravity separation through multiple aspirators. The hulls, if required, are re-introduced in part as a fibre complement to the soybean meal.
- **Flaking**: This process reduces the thickness of the cracked bean particle to a level that is optimal for removal of entrained oil, in addition to generating a particle suitably sized for later grinding. Flaking also aims to rupture the cell structure of the broken soybean seeds to aid in oil extraction. Flaking is achieved by passing the seed between large diameter smooth rolls. The flakes are conveyed from the preparation plant to the solvent extractor.

Soybean oil extraction

The purpose of extraction is to remove most (99%) of the oil contained in the soybean seed. Oil extraction is achieved by immersing the flakes in solvent and is conducted on prepared seeds consisting of the following steps.

- **Extraction:** This process involves the physical removal of oil from the seed by immersing the flakes in the hexane solvent.
- **Desolventising and Toasting:** The post-oil extracted flakes are first removed of any residual solvent, then toasted, dried and cooled to produce high protein soybean meal. The Desolventiser - Toaster-Dryer-Cooler (DTDC) unit serves performs this task and has the added benefit of removing anti-nutritional factors from the meal.
- **Distillation and Solvent recovery**: The extracted oil is passed though a distillation process which removes the solvent hexane from the extracted oil. Recovered hexane is circulated for reuse in the extraction process. The oil is then transferred to a degumming facility before being stored prior to entering Stage 2 of the process.

The soybean meal is conveyed to storage.

Water degumming

The degumming process involves the removal of hydratable gums from the crude oil. Certain impurities like phospholipids, gums and proteins are soluble in oil in their anhydrous form, but insoluble once they are hydrated. Hydratable phospholipids are removed from the oil prior to entry into Stage 2 of the manufacturing process.

The lecithin emulsion, produced as a by-product, is transferred to a buffer tank where it can be dried into lecithin.

Meal grinding

The meal is ground by hammermills. As standard, the equipment is designed to produce meal size of 2 mm (10 mesh). Air is separated off the meal grinder and cleaned in a bag filter.

Meal pelletising

The facility will have the capacity to pelletise the soybean meal. Pelletising increases its bulk density, thus saving storage area required and making it easier to convey and ship.

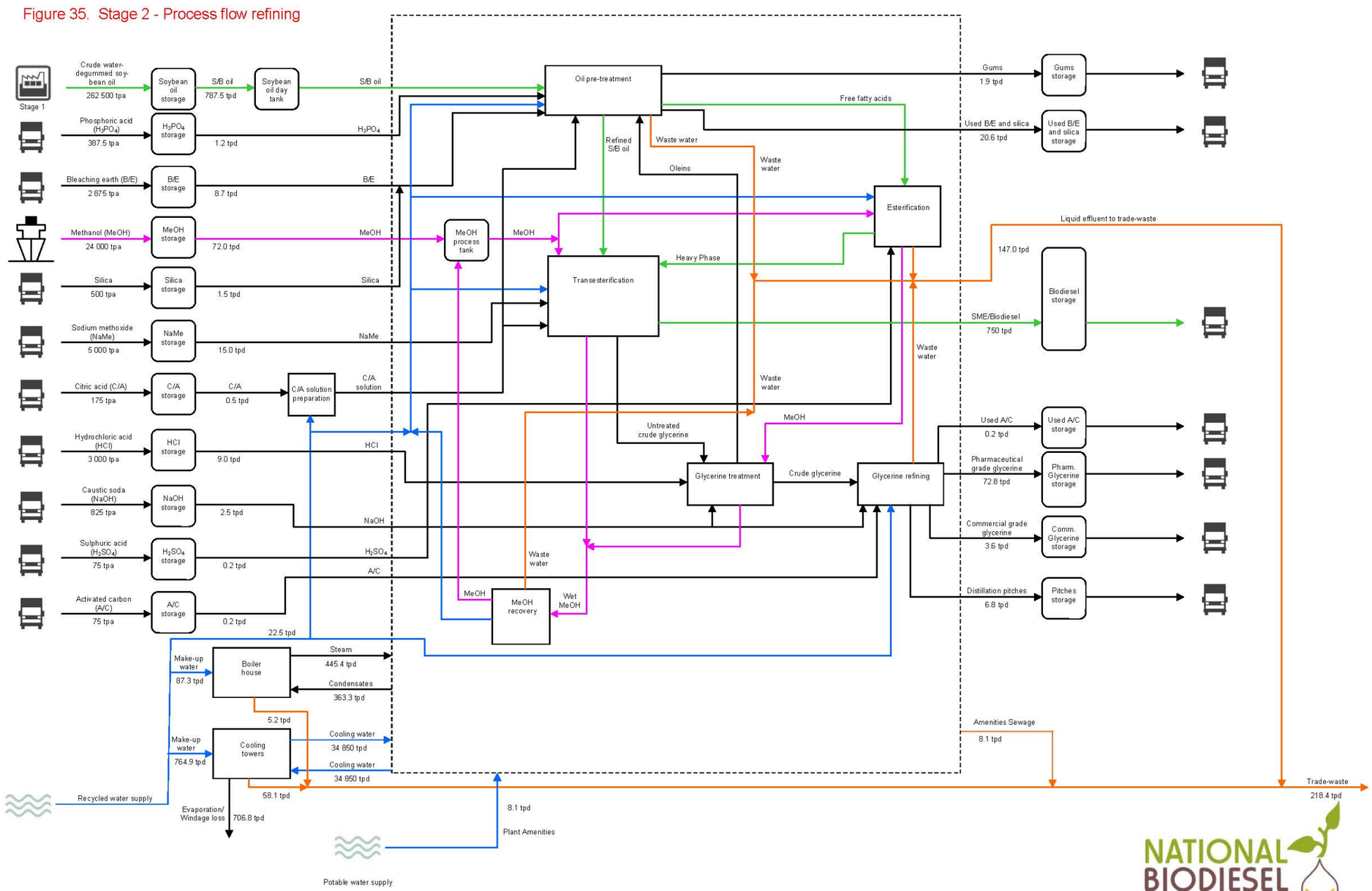
Output of stage 1

As per the process flow diagram in **Figure 34**, the primary material output of Stage 1 is soybean meal. **Table 6** details the material output levels (±1%) for Stage 1based on the inputs as identified in **Table 8**.

Table 6 Output and classification of products for stage 1

Material	Classification	Usage (tonne)			
		Per year	Per day	Per hour	%
Soybean meal	Non- hazardous	1,091,000	3,205	134	80

Figure 35 Stage 2 of the production process



Source: National Biodiesel Pty Ltd

Stage 2

Pre-treatment

When the level of gum is high in oil acid degumming is required prior dry pre-treatment. In addition, for complete elimination of all impurities and undesirable compounds, the oil is further subjected to dry pre-treatment. Complete pre-treatment is comprised of the following steps.

- **Acid degumming**: Crude oil is heated, dosed with the acid and sent to a centrifugal separator. There the gums are separated from the oil, which is sent directly to the dry pre-treatment and bleaching section. The gum phase is collected in a tank from where it will be pumped to a dryer or storage.
- **Dry pre-treatment combined with bleaching**: The oil is treated with a strong acid and bleaching earth to remove the residual of the phosphatides and also impurities and minerals from the oil. When the level of phosphatides is low, [the previous] degumming stage is not necessary. The oil can go to dry pre-treatment directly. The oil and bleaching earth mixture is sent filters. After filtration oil is recovered from the spent cake by steam blowing and the spent cake is discharged and evacuated.
- **Stripping**: The bleached oil is first de-aerated and deodorised. The process involves stripping the free fatty acids under vacuum. Pre-treatment of crude, water degummed soybean oil prior to conversion to methyl ester is essential.

Biodiesel production

The main reaction for conversion of soybean oil to methyl ester (biodiesel) is transesterification. The transesterification process is a chemical reaction during which an alcohol (methanol in this case) is reacted with the triglycerides contained in soybean oil, forming methyl ester and glycerine. The reaction requires mild heat and a strong base catalyst, such as sodium methylate.

A number of production steps are involved in the biodiesel production process and are described below.

- **Acid Esterification**: The stripped free fatty acids undergo an acid esterification process to increase the yield of methyl ester (biodiesel). The acid catalyst, sulphuric acid, is dissolved in methanol and then mixed with the free fatty acids. The mixture is heated and stirred, and the free fatty acids are converted to methyl ester (biodiesel).
- **Transesterification**: The pre-treated oil is filtered and pre-processed to remove water and contaminants and then fed directly to the transesterification process along with any products of the acid esterification process. The catalyst, sodium methoxide, is dissolved in methanol and then mixed with the pre-treated oil. Once the reaction is complete, the major co-products, methyl ester (biodiesel) and glycerine, are separated into two layers.
- **Methanol recovery**: The methanol is typically removed after the methyl ester (biodiesel) and glycerine have been separated, to help prevent the reaction from reversing itself. The methanol is recovered, dried and recycled back to the process to be used again.
- **Methyl Ester (Biodiesel) refining**. Once separated from the glycerine, the methyl ester goes through a purification process to remove excess alcohol, residual catalyst and soaps. This consists of one or more washing steps with clean water after which the biodiesel is dried and sent to storage.
- **Glycerine refining**: Water and alcohol are removed to produce 82-85% crude glycerine, with the 15-18% remaining contaminants mainly unreacted fats and oils. The glycerine is then further purified, to 99.7% or higher purity. The purified and concentrated glycerine is transferred to storage.

Output of stage 2

As shown in the process flow diagram in **Figure 35**, the material outputs of Stage 2 are biodiesel and glycerol. **Table 7** details the material output levels (±1%) for Stage 2 based on the inputs identified in **Table 8**.

Table 7 Output and classification of products for stage 2

Material	Classification	Usage (tonne)			
		Per year	Per ay	Per hour	%
Biodiesel	Non- hazardous	250,000	750	31	19
Glycerol	Non- hazardous	25,500	76	3	2

Waste generation is discussed in **Section 7.8** of this report.

4.6.2 Raw material consumption per year

The main raw material used in the process is soybean. Soybeans will be imported from sustainable, commercial agricultural regions with the Australian market supplying domestic crop. The proposed SPBP facility will increase production from around 80% in its first operating year to 100% of nameplate capacity in its fifth operating year.

Raw materials and process chemicals used in the proposed SPBP facility are listed in **Table 8**. It is expected that these chemicals would be obtained locally and transported to the site by rail or by road, except for methanol and silica/bleached earth which will likely be shipped to the site. Material consumption will vary slightly according to advances in technology and capabilities of the technology provider and the numbers given below represent a guaranteed maximum for which nominal values will be substantially lower. It should be noted that the amounts shown in **Table 8** are approximate values.

Table 8 Raw material and process chemical requirements

Material	Classification	Material Usage (tonne)		
		Per Year	Per day	Per hour
Soybeans	Non-hazardous	1,400,000	4.04	168.3
Hexane	hazardous	816	2.4	0.1
Methanol	hazardous	24,000	72	3.0
Silica	hazardous	500	1.5	0.06
Bleaching earth	Non-hazardous	2,875	8.6	0.36
Caustic soda (50%)	hazardous	825	2.5	0.1
Sodium methylates (30%)	hazardous	5,000	15	0.63
Sulphuric acid (98%)	hazardous	75	0.23	0.01
Hydrochloric acid (36%)	hazardous	3,000	9.0	0.38
Citric acid	Non-hazardous	175	0.53	0.023
Phosphoric acid (80%)	hazardous	388	1.16	0.05
Activated Carbon	Non- hazardous	75	N/A	N/A

4.6.3 Point of origin

At full name-plate capacity The proposed SPBP facility will consume more than 1.3 million tonnes of soybeans per annum through its operations in Port Kembla and will acquire its supply of soybean from numerous sources. These will be:

- local supply from Australia
- import from the USA
- import from South America (Brazil and Argentina).

It is the long-term vision of NB to source a significant portion of its feedstock supply from Australia and significant resources will be invested in establishing this domestic supply. Primarily, this will be achieved through the implementation of soybean development programs. NB projects that the volume of imported soybeans consumed in its operations will decrease from roughly 90% to 72.4% over the first five operating years.

Soybeans contributed 6% to the total Australian oilseed crop in 2006/2007 with a drop forecast for 2007/2008[57]. Consequently, until the local market can meet the facility's soybean demand, feedstock will have to be sourced from overseas. Currently there are five predominant soybean producing countries globally including the United States of America (32%), Brazil (27%), Argentina (21%), China (7%) and India (4%). Market forces, produce availability and cost optimisation strategies will determine the supplier at any given point in time. Notwithstanding, NB is committed to ensuring that its feedstock does not originate from illegal, unsustainable and/or environmentally degrading agricultural operations. As has been the case in South Africa, the commencement of construction on, and expected demand from the SPBP is likely to result in an increase in domestic soybean crops.

4.6.4 Arrival of imported soybeans

Upgrades to Berth 104 to enable efficient ship unloading will be undertaken as part of the proposed works. Berth 104 specifications are provided in **Table 9** and visually represented in **Appendix D**. The modifications involving the berth will compliment the already-existing loading facilities as shown in **Appendix D**.

Table 9 Berth 104 specifications

Component	Data
Berth Specification	• Berth 104, comprising: - **Vessel Parameters**: LOA = 300m, Bd = 50m, Draft = 16.25 + tide – 0.3m - **Berth Superstructure**: Two gantry ship loaders – combined nominal loading rate of 5,000 tonnes per hour. 260,000 tonnes storage capacity.

NB will have nine (9) (7 x 10,000 tonne and 2 x 5,000 tonne) dedicated storage silos available for use on the GrainCorp site. The silos allocated to NB are the eastern most nine (9) silos on the southern side of Row A of the Grain Terminal (refer to **Figure 33**). The soybeans will be transported from the GrainCorp facility to the soybean crushing site using an elevated belt conveyor that will drop its cargo into a buffer bin in the preparations building. This conveyor will be constructed as part of these proposed works.

In this joint operation, GrainCorp will be responsible for:

- receiving the vessel containing the soybean

[57] Australian Oilseeds Federation website (www.australianoilseeds.com)

- adhering to and satisfying the relevant AQIS import requirements with regard to storing and moving imported grain
- storage and handling of the soybeans
- transfer of soybean to the NB crushing facility
- loading of soybean meal onto outbound shipping vessels.

4.7 Air quality control measures

4.7.1 Dust control

GrainCorp is a Quarantine Approved Premises (QAP). The entire delivery path of the imported soybeans received by ship, from ship unloader to storage silos, will be isolated from the rest of the grain handling facility. Any grain dust will be collected by an AQIS-inspected dust collection system. All soybean dust will be collected as quarantine dust and disposed of according to AQIS (Australian Quarantine and Inspection Services)-approved methods.

Equipment, cracking mills, conveyors and bins are connected to a dust control system (filter system). This system collects the dust generated within the equipment and ducts in a series of filters where it is recovered. Clean air is exhausted to the atmosphere and the dust is discharged from the filter by means of the rotary lock. The dust consists mainly of loose hulls, and is sent to the hulls grinding section. The dust carried by the gases leaving the desolventiser toaster is separated in a wet dust catcher. Both the air leaving the drying section and the air leaving the cooling section have dust removed via cyclones before being released to the atmosphere.

The soybean meal conveyor path will be fitted with dust suppression units at all transfer points and directional change points.

The entire facility and dust suppression system will be designed with input from AQIS to ensure that dust emissions are reduced to insignificant levels.

4.7.2 Solvent (Hexane) and methanol recovery

Hexane: Air is vented to the atmosphere from the oil extraction unit. This air will entrain a certain amount of hexane, dependent on its temperature. The hexane is recovered by contacting the hexane-laden air with mineral (or vegetable) oil. After absorption, the oil is heated up and the hexane is distilled, then condensed and recycled to the solvent circuit for re-use on the production process. The oil, after cooling, returns to the absorber to be re-used.

Hexane will be stored in horizontal above-ground tanks with integral secondary containment. If during detail design it is determined that bunding is required, it will be designed according to appropriate standards, including AS1940 – 2004.

Hexane is recovered primarily through condensation of distilled vapours. A small amount will not be condensed and will remain entrained in extraction vent emissions. This, along with any hexane entrained in air released from pores of the material, is recovered by bringing the air in contact with oil, referred to as scrubbing. The reduction in hexane due to scrubbing is 99.6% which is re-used in extraction, along with the previously condensed hexane vapours.

Methanol: All vented gases is passed through a scrubber to reduce methanol levels to a minimum before the air is released into the atmosphere. All methanol absorbed in the scrubbing system is passed through a methanol rectification unit to ensure re-use.

4.8 Waste water recovery

NB have advised that the crushing operations will utilise a zero-effluent principle where wastewater is evaporated and recycled back to the process itself as steam. This results in a saving of at least 60 tonnes of water per tonne of soybean or 240 000 litres of water per day. The pre-treatment, biodiesel and glycerine refining sections of the plant employ an effluent reduction system. This system utilises a barometric chilling unit and halves the process water required and hence effluent emerging from the system.

4.9 Utilities

4.9.1 Electricity

The total electricity required for the process is 6MW with a projected usage of 4,700 kWh per hour.

4.9.2 Water

All attempts have been made to reduce water requirements, including re-use of waste water in the crushing section of the proposed SPBP facility, and a barometric chilling unit in pre-treatment, however some water is still lost and needs to be replaced. Water demands are primarily to compensate for the water loss occurring largely due to evaporation from the process cooling towers, and steam not returned as condensate. Reliance on potable water will be minimised through the use of recycled water, where possible, from Wollongong Sewerage Treatment Plant (Wollongong STP). The water demands and supply sources of the various processes of the proposed SPBP facility are summarised in **Table 10**.

Table 10 Water demands and supply sources

Process	Potable Water Demand (kL/d)	Recycled Water Demand (kL/d)
Stage 1 Crushing	19.3	1,058.0
Stage 2 Refining	8.1	874.7
Total Demands (kL/d)	**27.4**	**1,932.2**

A recycled water supply main from Wollongong STP currently runs under Allotment three (3). Subject to the finalisation of upgrade works and execution of the supply agreement, this main will most likely provide the connection point for the supply of recycled water to the proposed SPBP facility.

4.9.3 Gas

Natural gas has been selected as the energy source for the two steam boilers used in the proposed SPBP facility. After evaluation of coal-fired, gas-fired and electrode boilers, gas was chosen due to its low emissions compared with coal, high efficiency, and reliability of supply. The gas requirements of the proposed SPBP facility are estimated in **Table 11**.

Table 11 Gas requirements

Process	Natural Gas Demand (MJ/hr)
Stage 1 Boiler	135,000
Stage 2 Boiler	135,000
Total Demands (MJ/hr)	**270,000***

**the two boilers have different steam demands, and hence gas requirements, however the numbers used are conservative and represent a value larger than the expected nominal demand*

Currently no gas is supplied into the inner harbour, with the closest high pressure main running along Springhill Road. Provision has been made for the supply of natural gas via a main of suitable specification to the proposed SPBP facility, and will supply to both Allotment's 3 and 5.

4.9.4 Raw material transportation

Both soybeans and process chemicals will need to be received on site. These materials will be delivered via ship, rail and road. The outputs of the production process – soybean meal, biodiesel and glycerine – will have temporary on-site storage prior to delivery or pick-up. These products will be transported from the subject site via ship, rail and road.

Shipping: The bulk of the soybeans will be received by means of HandyMax ships. These shipping vessels carry 35,000 – 40,000 tonne per load, leading to inbound shipping vessel movements of between 32 and 36 ships per year. This corresponds to one inbound shipping vessel movement approximately every 10-11 days.

Rail: The site will be serviced with a dedicated rail line. NB will ensure that where possible, local soybeans will be received by rail. Soybeans that cannot be moved by rail will be transported to the SPBP facility by road. It is assumed that one cargo carriage will hold 32 to 40 tonnes.

Road: Most of the chemical inputs needed for oil extraction, oil treatment and biodiesel production will be received by road. The assumed carrying capacity is 30 to 45 tonne per load.

The DGRs requested the analysis of three scenarios with regards to the transportation of materials to and from the proposed plant. Accordingly, three alternative soybean transportation scenarios have been identified in **Tables 12, 13 and 14**. However, for the purposes of this Environmental Assessment, Scenario two (2), the worst case scenario, has been assessed.

Scenario one (1) consists of the supply of soybeans arriving via road, rail and sea. Scenario two (2) consists of the soybeans (100%) arriving to the site via road/rail and Scenario three (3) consists of the soybeans (100%) arriving by sea only. All other materials will be transported by all modes of transport in each scenario which are reflected in **Table 12**, **Table 13** and **Table 14** Detailed calculations to produce the total minimum and maximum ship, rail and truck movements are provided in **Appendix G**. A summary of total traffic movements by each mode for each scenario is provided below.

Table 12 Scenario 1 Total inbound and outbound movements

Rate	Min ship	Max ship	Min rail	Max rail	Min truck	Max truck
Per year	85	121	315	394	7,186	10,779
Per day	0.233	0.333	0.9	1.1	19.7	29.5
Per Hour	0.011	0.015	0.039	0.049	0.895	1.3

Table 13 Scenario 2 Total inbound and outbound movements

Rate	Min ship	Max ship	Min rail	Max rail	Min truck	Max truck
Per year	53	85	1262	1578	10,238	15,358
Per day	0.146	0.233	3.5	4.3	28.1	42.1
Per Hour	0.007	0.011	0.157	0.2	1.275	1.9

Table 14 Scenario 3 Total inbound and outbound movements

Rate	Min ship	Max ship	Min rail	Max rail	Min truck	Max truck
Per year	88	124	232	290	7,186	10,779
Per day	0.240	0.340	0.6	0.8	19.7	29.5
Per Hour	0.011	0.015	0.029	0.036	0.895	1.3

4.10 Employment

It is estimated that approximately 500 jobs will be created during the construction phase of the proposed SPBP facility, which is estimated to commence early 2009. Approximately 235 permanent jobs will be created directly when the proposed SPBP facility is in full production, which is estimated to be in early to mid 2010. In addition, an estimated 725 jobs will be created indirectly in upstream and downstream industries.

4.11 Concurrent external works

Site works that are fundamental to the completion and operation of the proposed SPBP facility, but which fall outside the scope of this application includes the following:

- rectification of the Seawall and associated bank stabilisation works along the eastern site boundary. These works are being carried out by PKPC as part of a routine maintenance program (refer to **Appendix J**).

5.0 Planning and Legislative requirements

The purpose of this section is to identify the applicable planning controls and legislative requirements as they relate to the proposed SPBP facility as well as to convey their level of importance (Commonwealth, State and Local tiers). This section is structured by way of initially identifying the planning policy under which approval must be obtained, namely *State Environmental Planning Policy (Major Projects) 2005* and the EP&A Act, followed by the legislative framework that outlines the approvals process. The planning framework outlines the key strategic and statutory considerations that must be addressed within the EA to facilitate the issuing of approval for the construction and operation of the proposed SPBP facility (including appropriate agency consultation where relevant).

5.1 Approval process

5.1.1 State Environmental Planning Policy (Major Projects) 2005

State Environmental Planning Policy (Major Projects) 2005 (SEPP Major Projects) was gazetted on 25 May 2005 and duly amended on 1 August 2005. It replaces all previous provisions related to former State significant development in planning instruments, directions and declarations.

On 27 July 2007, the Director General of the Department of Planning, as delegate of the Minister for Planning, declared that the proposed works for the Port Kembla SPBP facility are defined as a major project, pursuant to the provisions of Clause 6 of SEPP Major Projects. Notwithstanding, for the purposes of this assessment, the definition of the SPBP facility falls within the following groups of Schedule 1 to SEPP Major Projects:

Schedule 1 – group 1

The proposed SPBP facility satisfies the criterion for '*agricultural produce industries…'* as specified under Schedule 1 of SEPP Major Projects. To be considered as a major project under SEPP Major Project an agricultural produce industry must possess the following requisite elements.

> *"Development that employs 100 or more people or has a capital investment value of more than $30 million for any of the following purposes:*
> *(a) abattoirs or meat packing, boning or products plants; milk or butter factories; fish packing, processing, canning or marketing facilities; animal or pet feed; gelatine plants; tanneries; wool scouring or topping; rendering plants, or*
> *(d) any purpose that the Minister considers constitutes an agricultural produce industry or food and beverage processing".*

In this regard, the proposed SPBP facility will produce in excess of 1,000,000 tonne of animal feedstock per annum in the form of soy protein meal, will employ approximately 235 people and has a capital investment value of approximately AU$243 million. Accordingly, the proposed facility satisfies this criterion.

Schedule 1 - group 3

The proposed SPBP facility satisfies the criterion for '*chemical, manufacturing and relate industries…'* as specified under Schedule 1 of SEPP Major Projects. To be considered as a major project under SEPP Major Project a chemical, manufacturing or related industry must possess the following requisite elements.

> *"(1) Development that employs 100 or more people or with a capital investment value of more than $20 million for the purpose of the manufacture or reprocessing of the following (excluding labelling or packaging):*
>
> *(f) oils, fuels, gas, petrochemicals or precursors".*

In this regard, the proposed SPBP facility will be producing approximately 288 million litres of biodiesel (fuel) per annum, employing approximately 235 people and has a capital investment of AU$243 million and as such meets this criterion.

Section 6(1) of SEPP Major Projects states that development that, in the opinion of the Minister, is development of a kind described in Schedule 1, is declared to be a project to which Part 3A of the EP&A Act applies. Accordingly, the proposed SPBP facility satisfies two groups of projects that are identified as a major project under SEPP Major Projects.

Schedule 2 – specified sites

Additionally, the proposed works satisfy another criteria under Schedule 2 of SEPP Major Projects. Schedule 2 details specified sites that are subject to the provisions of Part 3A as a result of their location:

Section 1 Coastal Areas, in part states:

> *"(1) Development within the coastal zone for any of the following purposes:*
>
> *(g) buildings or structures (other than minor alterations or minor additions to existing buildings or structures) that are:*
>
> *(i) greater than 13 metres in height, in the case of buildings or structures wholly or partly within a sensitive coastal location."*

The proposed SPBP facility is located within the NSW coastal zone and is considered to be within a sensitive coastal location, which is defined as *"land within 100m above the mean high water mark of the sea, a bay or an estuary"*. Port Kembla Harbour falls within the definition of an estuary under the *Water Management Act 2000*, which defines an estuary as *"any lake or other partially enclosed body of water that is periodically or intermittently open to the sea"*. Port Kembla Harbour falls within the meaning of this definition and accordingly satisfies this additional criterion under Section 1, Schedule 2 – Coastal Areas.

Clause 6 declaration

On 27 July 2007, pursuant to Clause 6 of SEPP Major Projects, the Minister for Planning declared the project to be development of a kind that is described in Group 3, Section 10 of Schedule 1. Therefore, the proposal will be assessed in accordance with the provisions of Part 3A of the EP&A Act (refer to **Appendix A** for the Department of Planning Clause 6 Declaration).

5.1.2 Environmental Planning and Assessment Act 1979

The EP&A Act and the Regulation provide the framework for the assessment and approval of proposed developments in NSW.

Part 3A of the EP&A Act consolidates the assessment and approvals process for all major projects requiring approval of the Minister for Planning, which were previously assessed under Parts 4 and 5 of the Act. Part 3A applies to State Government infrastructure projects, developments previously classified as State significant and any other projects, plans or programs declared by the Minister. It provides a separate streamlined and integrated development assessment and approvals regime for projects of State significance.

Clause 75(B)1 of the EPA&A refers to Part 3A and states that *"This part applies to the carrying out of development that is declared under this section to be a project to which this part applies…by a State environmental planning policy"*.

Under Section 75D, the Minister is the approval authority for Part 3A projects. Section 75D provides that:

> *"(1) A person is not to carry out development that is a project to which the Part applies unless the Minister has approved the carrying out of the project under this Part.*
> *(2)The person is to comply with any conditions to which such an approval is subject".*

Section 75E of the EP&A Act provides that a proponent may apply for approval from the Minister to carry out a major project. This document supports NB's Project Application for the SPBP facility. Accordingly, the application will be subject to assessment by the Director General of the Department of Planning and determination by the Minister for Planning in accordance with the EP&A Act.

It is noted that under Section 75J(3) of the EP&A Act, the Minister cannot approve the proposed development if it is wholly or in part, prohibited under an Environmental Planning Instrument (EPI). The proposed SPBP facility is not prohibited under any relevant EPI, being SEPP Infrastructure and the Wollongong Local Environmental Plan 1990 (WLEP) (refer to **Sections 5.1.3** and **5.1.4**). The approval process under Part 3A of the EP&A Act is shown in **Figure 36** and the relevant planning framework is addressed in the following sections.

5.1.3 State Environmental Planning Policy (Infrastructure) 2007

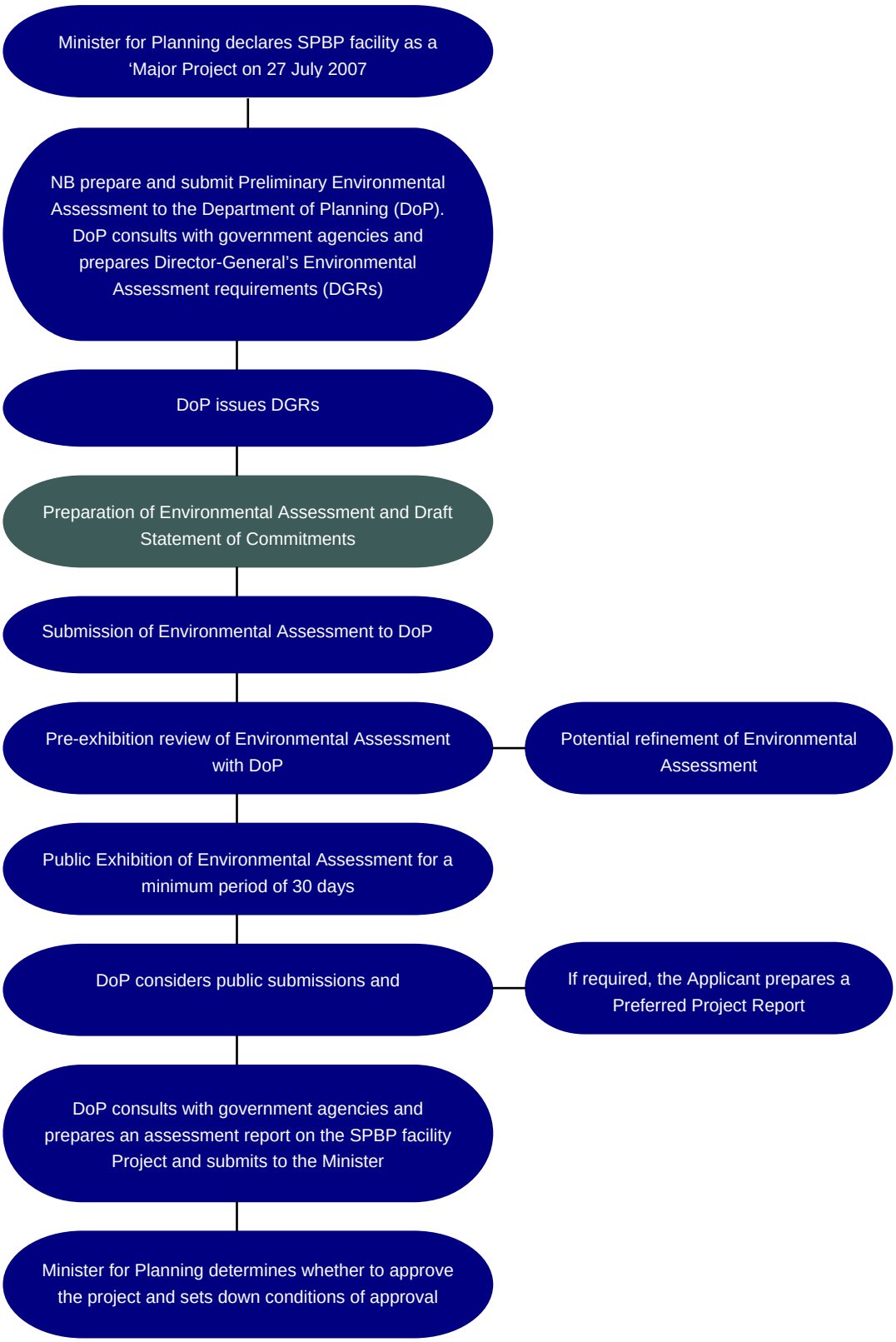
State Environmental Planning Policy (Infrastructure) 2007 (SEPP Infrastructure) came into effect on 1 January 2008 and establishes the planning approvals path for infrastructure. In the event of any inconsistency between SEPP Major Projects and SEPP Infrastructure, SEPP Major Projects prevails to the extent of the inconsistency. The proposed redevelopment of the unloading facility on Berth 104 and the conveyor system falls under Clause 69 of SEPP Infrastructure, which states:

> *"(1) Development on land within a port facility or within a public ferry wharf, being development:*
> *(a) for the purpose of the erection, reconstruction, alteration or use of a structure associated with retail premises, business premises or industrial premises that are not directly related to the operation of the Port, and*
> *(b) that is not development of a kind referred to in Clause 68,*
>
> *may be carried out by any person with consent on land in a prescribed zone or on unzoned land."*

Accordingly, the unloading facility on Berth 104 and the conveyor system are permitted with consent.

Clause 104 of SEPP Infrastructure in conjunction with Schedule 3 identifies criteria for a traffic generating development, which requires a referral to the Roads and Traffic Authority (RTA). The proposed SPBP facility is deemed to be a traffic generating development under Schedule 3 as it has a total gross floor area in excess of 20,000sqm and will require referral to the RTA during the assessment process. In this regard, a comprehensive Traffic Study was undertaken and is detailed in **Section 7.5** and detailed in **Appendix G** of this report which concludes that the proposal will not generate significant impacts on the road network.

Figure 36 Part 3A approval process



Source: Maunsell 2008

5.1.4 Wollongong Local Environmental Plan 1990

The site is subject to the provisions of *Wollongong Local Environmental Plan 1990* (WLEP). In accordance with Section 75R(3) of the EP&A Act, Local Environmental Plans do not apply to approved projects under Part 3A of that Act.

This section provides a discussion of the permissibility and general principles of development control imposed under WLEP that is currently in force.

Land use zoning

The subject site is zoned as '*5a Special Uses – Port'* under WLEP (refer to **Figure 37** for land use zoning map extract). In accordance with Clause 15 of WLEP, development within the 5a zone may be carried out only with development consent for the purpose specified on the map.

The proposed SPBP facility falls within the definition of a 'port', under WLEP, which is defined as:

> *"being a building or place used for:*
> *"(a) the loading of goods onto ships and the unloading of goods from ships,*
> *(b) the storage of goods that are mainly to be loaded onto ships or that have been mainly unloaded from ships,*
> *(c) industry that produces mainly goods to be loaded onto ships or that uses mainly goods that have been unloaded from ships, and*
> *(d) any other purpose that is ancillary to or compatible with any of the purposes referred to in paragraph (a), (b) or (c)".*

As described in Chapter 4.0 of this report, the primary source of origin for a large portion of the raw material will be from overseas destinations and as a result will be imported via ships. The soybean meal and the biodiesel will be produced from the imported material and following processing, will be distributed throughout Australia by rail, road and sea.

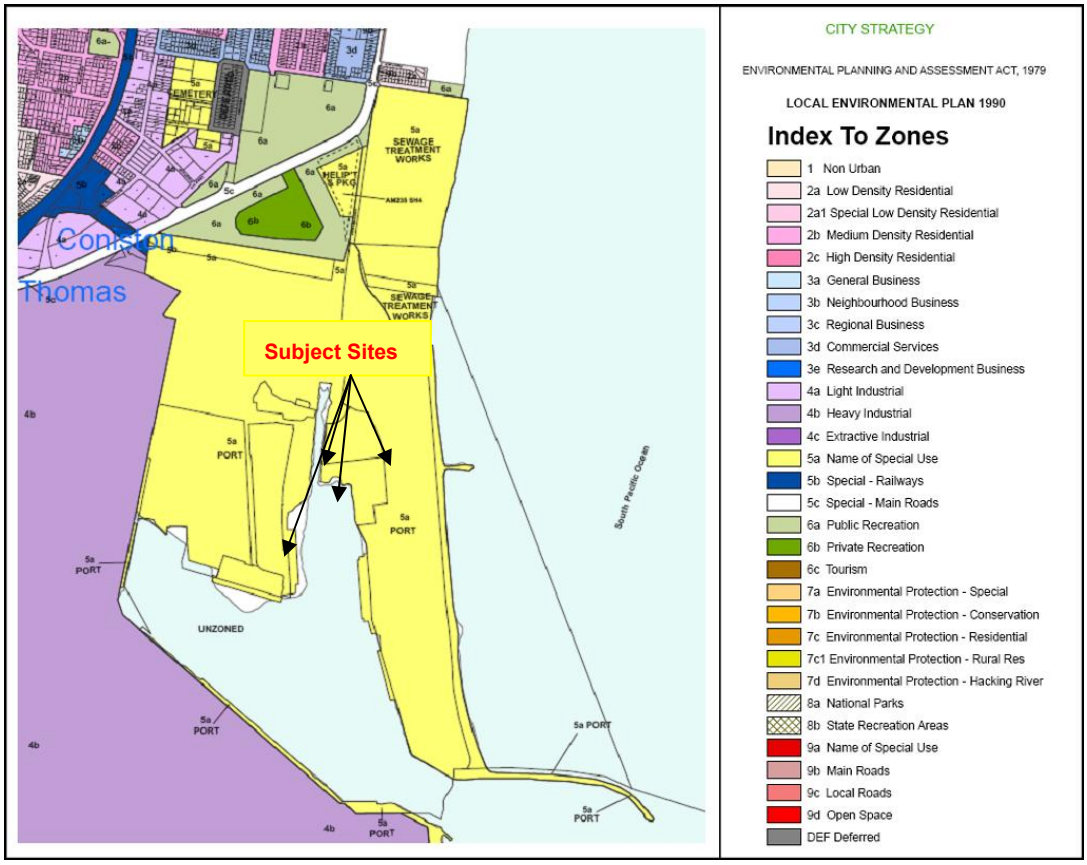
The proposed SPBP facility falls within the meaning of 'port' as it involves loading and unloading goods from ships and associated industry. The proposed SPBP facility, including a range of ancillary activities is permissible with consent in the 5a zone.

Principal Local Environmental Plan

Wollongong City Council's strategic planning officer (personal comment) has advised that work is progressing on the preparation of revised planning controls for Port Kembla as part of the pending release of the new principal Local Environmental Plan (LEP) and Development Control Plan. The draft planning controls will be publicly exhibited when the Director-General has issued the Section 65 Certificate under the provisions of the EP&A Act. Wollongong City Council's Duty Planner advised that the draft LEP has incorporated the principals contained in the 'Three Ports State Significant Sites Proposal'[58] as they relate to the port of Port Kembla. This proposal will protect the ports and associated nearby transport corridors from encroaching residential and commercial land uses and spot rezonings that may limit their operation. Refer to **Section 5.6** for further discussion on the 'Three Ports State Significant Sites Proposal'.

[58] NSW Department of Planning, *'Three Ports State Significant Site Proposal: for NSW Major Ports of Newcastle, Botany and Port Kembla'*, May 2008.

Figure 37 Wollongong LEP zone plan



Source: http://www.wollongong.nsw.gov.au/

5.2 Commonwealth Legislation

5.2.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) governs the Commonwealth environmental assessment process and provides protection for matters of National Environmental Significance (NES), which include:

- Nationally threatened species and ecological communities
- Australia's World heritage properties
- Ramsar wetlands of international importance
- Migratory species listed under the EPBC Act (species protected under international agreements)
- Commonwealth marine areas
- Nuclear actions, including uranium mining
- National heritage.

The EPBC Act defines proposals that are likely to have a significant impact on a matter of NES as a "controlled action". A proposal that is, or may be, a controlled action is required to be referred to the Commonwealth Minister for the Department of Environment, Water, Heritage and the Arts (DEWHA) for a determination as to whether or not the action is a controlled action.

The subject site has been incrementally created over the past two centuries through extensive land reclamation works and is located within a heavy industrial precinct. Notwithstanding, on 21 May 2008, the Green and Golden Bell Frog was cited on the Port Kembla Coal Terminal site which is identified as a nationally threatened species. The results of ecological investigations have established that the proposed works will not have a direct or significant impact on the Green and Golden Bell Frog or any other known threatened species, populations or ecological communities or critical habitats (terrestrial and aquatic) provided the recommended management measures are implemented. In addition, ecological investigations revealed that, due to the condition and suitability of the habitats on the site, no species listed as threatened or migratory, under the EPBC Act are considered likely to occur on the site. Refer to **Section 7.6** of this report for further discussion regarding ecological investigations and **Section 7.13** for Water Quality.

There are no World heritage properties located on or within close proximity to the subject site. Furthermore, there are not any Commonwealth, State or locally listed heritage items located on or within close proximity to the subject site. Refer to **Section 7.9** of this report for a detailed discussion on the heritage characteristics of the subject site and surrounding lands.

Further, investigation into the location of Ramsar wetlands established that none occur on or within the immediate vicinity of the subject site. Port Kembla Harbour is not an identified Commonwealth marine area. The proposal does not include any proposed nuclear actions or uranium mining.

Having regard to the above, the proposed SPBP facility will not have a significant impact on any matter of NES. Accordingly, a referral to the Commonwealth DEWHA is not necessary.

5.3 NSW State Legislation

5.3.1 Contaminated Lands Management Act 1997

The primary purpose of the *Contaminated Land Management Act 1997* (CLM Act) is to establish a process for investigating and (where appropriate) remediating land areas where contamination presents a significant risk of harm to human health or some other aspect of the environment. The Act sets out criteria for determining whether such a risk exists and gives the DECC the power to:

- declare an investigation site and order an investigation
- declare a remediation site and order remediation to take place
- agree to a voluntary proposal to investigate or remediate a site.

The location of the subject site within a heavy industrialised port means it is subject to the provisions of the CLM Act. Contamination investigations have been undertaken, the results of which are detailed in **Section 7.12** of this report. The *Contamination Assessment Report*, prepared by URS Australia Pty Ltd September 2008, concluded that the site is suitable for the proposed use in its current state. Therefore, the remaining provisions of the CLM Act do not apply.

5.3.2 Environmental Planning and Assessment Act 1979 and Environmental Planning and Assessment Regulation 2000

The *Environmental Planning and Assessment Act 1979* (EP&A Act), in part, encourages ecologically sustainable development (ESD) and the Environmental Planning and Assessment Regulation 2000 (Regulation) provides the principles of ESD that must be considered when justifying the carrying out of a development or activity. In this regard, the following addresses each of the ESD principles as they relate to the proposed SPBP facility.

> ***The precautionary principle****, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

There are no threats of serious or irreversible environmental damage. The proposed SPBP facility technology is well-known and proven around the world for the cultivation and processing of soybean.

NB has a strong corporate commitment to ensure that every aspect of its entire operation is conducted in a responsible manner that ensures benefits to both the environment and society, in all spheres of its supply chain and operations.

> ***Inter-generational equity,*** *namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*

The proposed SPBP facility can positively enhance the welfare of future generations in a variety of ways:

- provision of up to 960 jobs (direct and indirect) - many in new skills and technologies
- reduction in GHG emissions through biodiesel replacing fossil diesel, especially in sectors such as transport
- promotion of renewable energy feedstock and technologies, toward advancing Australia's fuel independence
- meeting Australian and NSW Government medium and long term policy objectives such as the proposed Carbon Pollution Reduction Scheme (CPRS), reducing balance of payments deficit and attracting produce investment in rural and regional areas as well as significantly contributing to the Australian Federal Government's *'biofuel target of 350ML'* to be included in the Australian fuel mix by 2010.

Refer to **Section 7.10** of this report for further discussion on the economic and social benefits of the proposed SPBP facility.

> ***Conservation of biological diversity and ecological integrity****, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.*

The proposed SPBP facility design, construction and operation will incorporate a number of net benefits to biological diversity and ecological integrity including:

- significantly improved water quality run-off to the inner harbour and Garungaty Waterway
- net increase of native vegetation cover on the site of roughly 16 000m^2 or more than 20% of the site
- sourcing of soybean feedstock from compliant certified international sources
- promotion of domestic soybean cultivation in Australia with attendant soil benefits and reduction in fertilizer, pesticide and weed control farm inputs, compared to other crops.

Refer to **Sections 7.6** and **7.13** of this report for further discussion on ecology and water matters.

> ***Improved valuation, pricing and incentive mechanisms****, namely, that environmental factors should be included in the valuation of assets and services.*

The proposed SPBP facility's asset valuation, construction costs, operation costs and product charges will include environmental factors and externalities such as:

- site water quality treatment and discharge and vegetation management measures
- input energy costs and product pricing will allow for future carbon charges associated with the CPRS

- biodiesel production and pricing will reflect the increasing competiveness of renewable energy compared to fossil fuels as carbon emissions are included in price structures
- the proposed SPBP facility has a minimum waste policy recognising that any waste discharge, whether solid, liquid or gaseous represents a cost to production and an opportunity loss to income (refer to **Section 7.8**).

5.3.3 Fisheries Management Act 1994

The NSW *Fisheries Management Act 1994* (as amended) (FM Act) aims to conserve, develop and share the fishery resources of the State for the benefit of present and future generations and applies in relation to all waters that are within the limits of the State. In particular, the objectives of the FM Act are:

- to conserve fish stocks and key fish habitats
- to conserve threatened species, populations and ecological communities for fish and marine vegetation
- to promote ecologically sustainable development
- the conservation of biodiversity.

Further, the FM Act provides for the protection of certain aquatic habitats and species, the preparation of recovery plans and threat abatement plans and the regulation of certain activities that have the potential to impact aquatic habitats. Under the FM Act, approval is required from NSW Department of Primary Industries (DPI) - Fisheries for activities involving dredging and reclamation, blockage of fish passages and development of certain waterfront land.

The proposal does not seek approval for dredging activities or land reclamation and consequently will not result in the blockage of fish passages or damage to marine vegetation, such as seagrasses, mangroves and the like.

Although there are various plant and animal species that are known to occur in the Inner Harbour area, there have been no threatened aquatic flora or fauna species recorded in the Inner Harbour since 2004 (refer to **Section 7.6**). Recent reviews of available data on fish and other aquatic species have been conducted to determine the presence of threatened species in the vicinity. Accordingly, it would be unlikely that the proposed development would have an adverse impact on fish or threatened species.

5.3.4 Heritage Act 1977

The purpose of the *Heritage Act 1977* (Heritage Act) is to protect and conserve the State's natural and built heritage.

The subject site has been reclaimed over a period of time and is situated in a highly disturbed environment and, is unlikely to contain any in-situ relics. The heritage investigations have established that the proposed development will not impact on any known heritage items of State significance and therefore, notice to the Heritage Council will not be required. Further, a detailed search of the local register revealed that there were not any items of local significance on or within close proximity to the proposed development site.

Accordingly, the heritage investigation has established that the proposed development will not disturb any known non-indigenous heritage. A summary of the heritage context of the area, including the subject site, is contained in **Section 7.9** of this report.

5.3.5 Management of Waters and Waterside Lands Regulation – NSW

The *Management of Waters and Waterside Lands Regulation – NSW* (MWWL Regulation) was made under the *Maritime Services Act 1935*. Clause 67 of the MWWL Regulation states that:

"*A person shall not use drags, grapplings, or other apparatus for lifting any object or material from the bed of a special port, or otherwise disturb such bed in any way, except with the written permission of the harbour master and in accordance with the conditions attaching to such permission*"

Pursuant to Clause 4 of the MWWL Regulation, Port Kembla is deemed to be a 'special port'. In this regard, the proposed SPBP facility, including the upgrade works to Berth 104 (conveyor belts) and the installation of an unloader on that Berth, will not affect the bed of Port Kembla. Accordingly, permission is not required from the harbour master.

5.3.6 National Parks and Wildlife Act

The *National Parks and Wildlife Act 1974* (NPW Act), in part, provides for the conservation of objects, places or features of cultural value within the landscape, including places, objects and features of significance to Aboriginal people as well as places of historic significance.

Searches of the appropriate registers, including DECC's Aboriginal Heritage Information Management System as well as consultation with the Illawarra Local Aboriginal Land Council have been undertaken and are discussed in detail in **Section 7.9** of this report.

5.3.7 Native Vegetation Act 2003

The *Native Vegetation Act 2003* (NV Act) provides for the protection from clearing of native vegetation, primarily within regional areas of NSW. No terrestrial native vegetation will be affected by the proposed development as there are no significant tracts of vegetation on any of the subject allotments. Accordingly, this Act does not apply to the proposed development.

5.3.8 Noxious Weeds Act 1993

The *Noxious Weeds Act 1993* (NW Act) establishes a system for the identification and control of noxious weeds in NSW. Under the NW Act, the Minister for Agriculture may declare a plant to be a noxious weed.

Responsibility for the control of noxious weeds lies with the owner and/or occupier of private land and Crown land, as well as local councils and other public authorities on land they occupy. The obligation can be enforced by the issue of weed control notices by the Minister and local control authorities.

One noxious weed species was recorded on the site. This species would likely be removed prior to the development during the construction of the sea wall, which is outside the scope of this assessment. Ongoing control of noxious weeds would be required during the construction and operation of the proposed SPBP facility.

5.3.9 Occupational Health and Safety Act 2000

The *Occupational Health and Safety Act 2000* (OHS Act), administered by NSW WorkCover, includes notification and storage requirements where substances classified as dangerous goods are kept. Where quantities exceed the manifest amounts, WorkCover must be advised through a notification system. There will be large quantities of dangerous goods handled at the SPBP facility, in excess of those quantities specified in the *Occupational Health and Safety Regulation 2001* and as such WorkCover will be notified in accordance with the provisions of the OHS Act.

5.3.10 Ports and Maritime Administration Act 1995

The *Ports and Maritime Administration Act 1995* (PMA Act) established State Owned Corporations to operate major port facilities within the State of New South Wales. Pursuant to Section 7 of PMA Act, the Port Kembla Port Corporation was constituted to manage the port of Port Kembla. Under the PMA Act, NSW Maritime's functions and responsibilities for the management of specific waterways are detailed, which includes the ownership of land below the mean high water mark in Port Kembla.

As stated in **Section 4.11** of this report, the concurrent sea wall rectification works are not within the scope of this application and are being carried out by the PKPC. Further, the upgrade works to Berth 104 will not require any work below the mean high water mark. Accordingly, owner's consent from NSW Maritime, in accordance with the PMA Act, is not required.

5.3.11 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) relates to pollution management and waste disposal in NSW. Under Section 48 of the POEO Act, premise-based activities (as defined in Schedule 1 of the Act) require an Environment Protection Licence (EPL). The proposed SPBP facility falls within the following activities of Schedule 1 of the POEO Act.

- Agricultural produce industries that process agricultural produce (including seeds, fruit, vegetables or other plant material) and that crush, juice, grind, gin, mill or separate more than 30,000 tonnes of produce per year.
- Chemical storage facilities that store or package chemical substances in containers, bulk storage facilities, stockpiles or dumps with a total storage capacity exceeding … 2,000 tonnes of any chemical substances.
- Shipping facilities (bulk) for loading or unloading, in bulk, agricultural crop products, rock, ores, minerals or chemicals into or from vessels (but where any material is wholly contained within a shipping container), being wharves or associated facilities with an intended capacity exceeding 500 tonnes per day or 50,000 tonnes per year.
- Crude oil production and petroleum products whether by means of (a) refining for any production capacity or (c) esterification (such as the production of biodiesel) for the capacity to produce more than 100 tonnes of petroleum products or fuel per year.

Having regard to the above, the SPBP facility will produce in excess of 30,000 tonnes of soybean meal per annum, ship in over 50,000 tonne per year of raw material and produce approximately 288 million litres of biodiesel per year. Accordingly, an EPL will be required for the construction and operation of the SPBP facility.

Section 47 of the Act specifies that an EPL is required for development of premises for the purpose of scheduled activities but not for the scheduled activity itself. However, this application is for both a development that is designed to enable a scheduled activity as well as the operation of the scheduled activity. Accordingly, an EPL is required pursuant to Section 48 of the POEO Act. Notwithstanding, referral of this application to DECC will enable the determination of appropriate licence requirements.

5.3.12 Roads Act 1993

The *Roads Act 1993* (Roads Act) aims to set out:

- rights in relation to road use and use of abutting land
- road function and classification
- the function of the RTA to regulate the carrying out of various activities on public roads.

Pursuant to Section 138 of the Roads Act consent is required from the relevant roads authority to dig up or disturb the surface of a public road, remove or interfere with a structure, work or tree on a public road or connect a road (whether public or private) to a classified road.

Road upgrade works are required to Tom Thumb Road, which provide vehicular access to Allotments 3, 5 and 6 from Tom Thumb Road. In addition, access upgrade works will be required to Tom Thumb Road which will affect Allotment 5, to facilitate appropriate turning circles and adequate lines of sight for articulated vehicles, including B-Doubles (refer to **Section 7.5** of this report for a description of the proposed road/intersection upgrade works). However, Tom Thumb Road is a private road, in the ownership of PKPC and BlueScope Steel. PKPC have advised that there is an agreement between Bluescope Steel and themselves to ensure that there is unimpeded access to the port by port users over the section of road owned by BlueScope Steel. Accordingly, consent under the Roads Act is not required for the proposed road upgrade works to Tom Thumb Road.

5.3.13 Soil Conservation Act 1938

The *Soil Conservation Act 1938* is administered by the DECC for the purposes of conserving soil and water resources and mitigating soil erosion. Section 15A of the Act provides for Notices that would allow the DECC to prescribe measures for soil erosion and sediment control that must be adopted. Notices can be issued before construction begins or can be issued to halt an offending activity until appropriate erosion and sediment controls measures are implemented. The DECC can also undertake the specific works if it discovers that the Section 15A Notice is not complied with.

The DECC would be consulted to determine whether a pre-construction notice would be issued to prescribe measures for soil erosion and sediment control. Rectification works on the sea wall of Allotment 5 are currently being undertaken by PKPC (refer to **Appendix E**) to facilitate use of the subject site by the proponent. The implementation of a Soil and Water Management Plan in conjunction with the completion of the sea wall will markedly reduce the likelihood of the erosion of the subject site. As such the site is not considered to be in an area of high sedimentation and erosion risk. This Plan would be prepared to minimise sediment and erosion impacts associated with construction and would form part of the overriding CEMP.

5.3.14 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) provides for the conservation of threatened species, populations and ecological communities of animals and plants and identifies key threatening processes.

Qualitative ecological investigations were undertaken on the terrestrial and aquatic ecology of the site to determine the presence of threatened species in the vicinity and the potential impact of the proposed works. The results of those investigations, are summarised in **Section 7.6** of this report and have indicated that there are patches of coastal salt marsh vegetation in the northern end of Tom Thumb Lagoon, which is listed as an endangered ecological community under the *Threatened Species Conservation Act 1995* (TSC Act). However, investigations have indicated that there is minimal likelihood of significant impacts on this endangered ecological community provided the recommended management measures are implemented. As such no permits or approvals are required under the TSC Act.

5.3.15 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) aims to encourage, in line with ESD principles, the most efficient use of resources, to reduce environmental harm and to provide for the continual reduction in waste generation.

The waste that is generated from the proposed SPBP facility will be managed in accordance with NSW DECC Waste Classification Guidelines 2008. Additionally, the waste that is generated from the proposed development will be required to consider the hierarchy of resource management referred in the WARR Act. This is considered in further detail in **Section 7.8** of this report.

5.3.16 Water Management Act 2000 and Water Management (General) Regulation 2004

The *Water Management Act 2000* (WM Act) provides that certain types of development and activities that are carried out within 40m of a river, lake or estuary are controlled activities. A controlled activity includes the following:

- the erection of a building or the carrying out of a work (within the meaning of the EP&A Act), or
- the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
- the deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
- the carrying out of any other activity that affects the quantity or flow of water in a water source.

Section 344(1)(a) requires that "*a person must not carry out a controlled activity in, or under waterfront land otherwise than in accordance with a controlled activity approval*". Port Kembla Harbour falls within the meaning of an estuary under the WM Act. The WM Act defines an estuary as:

> *"any lake, or other partially enclosed body of water that is periodically or intermittently open to the sea".*

A substantial portion of the works to be carried out on Allotments 5 and 6 are within 40m of a water body open to the sea. Accordingly, the proposed works will be carried out adjacent to Port Kembla Harbour, which triggers the requirement for a controlled activity approval.

Subsection 5(7) of the Act provides the following criteria that should be considered in relation to controlled activities:

> *"(a) the carrying out of controlled activities must avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, acidity, water-logging, decline of native vegetation or, where appropriate, salinity and, where possible, land must be rehabilitated, and*
> *(b) the impacts of the carrying out of controlled activities on other water users must be avoided or minimised."*

Although there are no direct impacts expected to any protected waters as a result of the proposed works, it is expected that a controlled activity approval from the Department of Water and Energy (DWE)will be required to carry out the proposed works adjacent to Port Kembla Harbour.

5.3.17 Approvals summary

There are three (3) approvals required for the proposed project:

- project approval under Section 75J of the EP&A Act for the proposed project
- EPL under the POEO Act to carry out Scheduled activities
- WM Act – controlled activity approval.

5.4 State Environmental Planning Policies

5.4.1 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

The objectives of *State Environmental Planning Policy No 33 – Hazardous and Offensive Development* (SEPP 33) include that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account. The provisions of SEPP 33 apply to the proposed SPBP facility and the development has been assessed in accordance with the Department of Planning (DoP) Hazardous Industry Planning Advisory Paper (HIPAP) Numbers 4 and 6. Refer to **Section 7.4** of this report for further discussion of the risks and hazard analysis.

5.4.2 State Environmental Planning Policy No. 55 – Remediation of Land

The objectives of *State Environmental Planning Policy No 55 – Remediation of Land* (SEPP 55) include the promotion of remediation of contaminated land for the purpose of reducing the risk to human health or another aspect of the environment.

Clause 7 of SEPP 55 requires a consent authority to consider whether the land is contaminated and whether it is suitable (or can be made suitable) for the proposed development. The results of the contamination investigation have concluded that the subject site is suitable in its current state for the proposed works.

Refer to **Section 7.12** of this report for further discussion on soils.

5.4.3 State Environmental Planning Policy No. 71 – Coastal Protection

Planning and development within the coastal zone is subject to *State Environmental Planning Policy No 71 – Coastal Protection* (SEPP 71*)* and the *NSW Coastal Policy*.

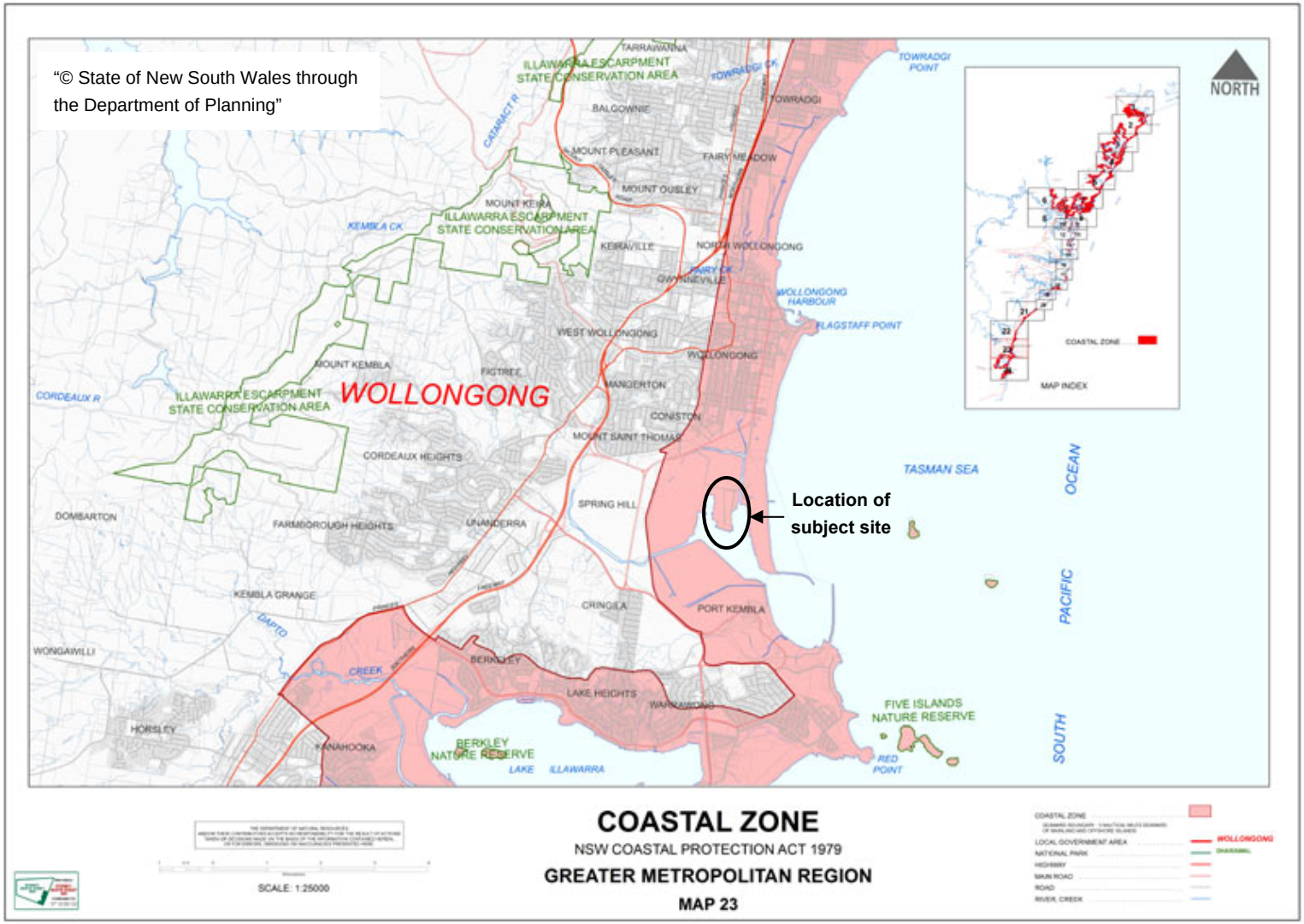
SEPP 71 commenced on 1 November 2002 with the aim of ensuring that:

- development in the NSW coastal zone is appropriate and suitably located
- there is a consistent and strategic approach to coastal planning and management
- there is a clear development assessment framework for the Coastal Zone.

The DoP prepared a series of maps to identify those areas within the Greater Metropolitan Region (GMR) declared to be part of the NSW Coastal Zone. **Figure 38** below, is GMR Map 23 within that series and it clearly establishes that the Inner Harbour, and subsequently the subject site, are located within the declared NSW Coastal Zone. Accordingly, the proposed development is subject to consideration under the provisions of SEPP 71.

Pursuant to Clause 7 of SEPP 71, the matters for consideration as detailed in Clause 8 of the SEPP are to be taken into account by a consent authority when it determines a development application within a coastal zone. As the Project is subject to assessment under Part 3A of the EP&A Act, and a development application is not being submitted, assessment against matters for consideration in Clause 8 is not required. Although not a regulatory requirement, Clause 8 matters for consideration have been discussed and documented in **Table 15**.

Figure 38 Greater Metropolitan Region (GMR) coastal zone map



Source: http://www.planning.nsw.gov.au/plansforaction/images/coastalzonemap23.jpg 08.09.2008

Table 15 SEPP 71 matters for consideration

Clause 8 - Matters for consideration	Response
(a) the aims of the Policy set out in clause 2,	The aims set in Clause 2, including consideration of the natural, cultural, recreational and economic attributes of the NSW coast have been considered throughout the development of the project. The economic benefits of the proposed development would be substantial and would include benefits from employment generation to the diversification and expansion of trade for Port Kembla Harbour.
(b) existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved,	Port Kembla Harbour is an operational Port and as such does not provide public access to the foreshore within the inner harbour. The subject proposal will not alter this existing access arrangement.
(c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability,	Allotment 5 is the only portion of the subject site that has direct access to the harbour and connectivity with Berth 104. Given the sensitive nature of the proposed operations and the operational requirements of the proposed SPBP facility in terms of floor space, site coverage, buffer zones and the number of vehicle movements, there is no opportunity to provide new public access along the harbour foreshore, as a result of land use, building configuration and placement and commercial sensitivity.
(d) the suitability of development given its type, location and design and its relationship with the surrounding area,	The development is considered suitable given the industrial nature of the proposed facility and its location within an operational industrial port. The major land uses surrounding the subject site within the Port Kembla harbour include heavy and light industries, as well as mining and extractive industries. The proposed development is considered suitable within the proposed location and is consistent with surrounding land uses and make use of currently under-utilised land.
(e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,	Allotment 5 is adjacent to the Garungaty Waterway, which will accommodate a number of buildings. Allotment 3 (adjacent to Tom Thumb Road north-west of Allotment 5) will also accommodate various buildings. However, as this site is directly behind the GrainCorp site it is unlikely that there will be a significant loss of views north of Allotment 3. While it is expected that the proposed facility will marginally alter existing views between water and land, the immediately adjoining GrainCorp site dominates the proposed development, in terms of height, bulk and scale. Due to the dominant industrial nature of Port Kembla Harbour, visual impacts are not a key issue for consideration as part of this assessment. Refer to **Section 7.11** for a more detailed visual impact assessment.
(f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities,	As outlined in row (e).
(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and	Aquatic and terrestrial ecological assessments have been undertaken and are detailed in **Section 7.6** of this report. Appropriate management measures, which

Clause 8 - Matters for consideration	Response
their habitats,	include the introduction of native vegetation on the subject site have been recommended.
(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part) and their habitats,	As outlined in row (g)
(i) existing wildlife corridors and the impact of development on those corridors,	There are no wildlife corridors within the subject site.
(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,	An assessment of the potential for flooding as a result of climate change has been addressed in **Section 7.13**. The proposal is not likely to generate a significant impact on coastal processes and hazards after the implementation of all management measures recommended in this EA.
(k) measures to reduce the potential for conflict between land-based and water-based coastal activities,	Water based activity within the Harbour includes cargo movements and other general port operations. These operations are not deemed to be in conflict with what is occurring on land or in berthing areas, as both operations are inherently linked.
(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals,	An indigenous heritage assessment was undertaken to determine any potential adverse impact upon an item or place of indigenous significance. This included a search of all relevant registers, consultation with the DECC in relation to data contained on the Aboriginal Heritage Information Management System and liaison with the Illawarra Local Aboriginal Land Council. These investigations established that no known sites would be affected (refer to **Section 7.9**). This is further supported by the fact that the subject site has been incrementally reclaimed over the past two centuries. Identification of new sites or relics during construction is considered unlikely.
(m) likely impacts of development on the water quality of coastal water-bodies,	Water quality impacts have been assessed using existing water quality data, which concludes that the Inner Harbour is affected by urban and industrial runoff with elevated levels of metals and organic pollutants and moderate turbidity. Water quality assessment concludes that impacts of the development can be managed by careful drainage design and provided the recommended management measures are implemented during construction and operation. Refer to **Section 7.13** for a detailed assessment.
(n) the conservation and preservation of items of heritage, archaeological or historic significance,	A non-indigenous heritage assessment concluded that the proposed SPBP facility would not impact upon items of heritage significance (refer to **Section 7.9**).
(o) only in cases in which a development application in relation to land to which this Policy applies, the means to encourage compact towns and cities,	Not applicable.
(p) only in cases in which a development application in relation to proposed development is determined: *(i) the cumulative impacts of the proposed development on the environment, and* *(i) measures to ensure that water and energy usage by the proposed development is efficient.*	Not applicable.

5.5 Illawarra Regional Environmental Plan No 1

5.5.1 Objectives

Illawarra Regional Environmental Plan No 1 (IREP 1) commenced on 30 June 1998 and applies to land within the Cities of Shoalhaven, Wollongong, Kiama, Shellharbour and Wingecarribee local government areas but excludes land to which the *Jervis Bay Regional Environmental Plan 1996* applies. The aims of IREP 1 that are relevant to the proposed development are described in Clause 3 and include:

> *"maximising the opportunities for the people of the region and the State to meet their individual and community economic and social needs with particular reference to the way in which these needs are related to the allocation, availability, accessibility and management of the region's land resources having regard to the objectives specified in Parts 2-16 by:*
>
> *(a) identifying regional planning issues and provisions applicable or potentially applicable:*
>
> *(i) to actual development which may be carried out on land within the region, and*
>
> *(ii) to the overall planning of the region consistent with the policies for draft local environmental plan preparation specified in Part 2-16,*
>
> *(c) establishing parameters and controls relating to development, particularly as they relate to the environmental quality and social well-being of residents of the region".*

The objectives of Part 6 of IREP 1 that are relevant to the proposed development are provisions that relate to industry, which are as follows:

> *"(a) to ensure that there is sufficient industrially zoned land to meet industrial requirements,*
> *(b) to encourage industries and other enterprises to locate within the region to diversify the economic base or act as stimuli to the local economy or both, and so provide new employment opportunities, and*
> *(c) to locate industrial land where it will meet the particular requirements of industry while having a minimal adverse impact on the natural environment and the amenity of living areas".*

The objectives of Part 10 of the IREP 1, that are relevant to the proposed development as they relate to ports and harbours, are as follows.

> *"(a) to strengthen and expand the existing economic and functional roles of the port of Port Kembla,*
> *(b) to ensure that the conflict in the use of recreation and fishing harbours is minimised without reducing their potential enjoyment by a wide section of the community."*

The proposed SPBP facility is the first industry of its kind to locate within the Illawarra Region and the port, which will significantly contribute to the diversification of the trade base of the region. The proposed SPBP facility will generate approximately 500 construction jobs, 235 direct and 725 indirect jobs. Refer to **Section 7.10** for further discussion on the economic and social benefits of the proposed SPSB facility.

Consistent with the relevant considerations under IREP 1, the objectives are achieved by:

- siting of the plant within an operational port that is not in the immediate vicinity of sensitive environmental receptors as the closest sensitive (residential) receptor is approximately 1200 m from the proposed site
- proximity to a deep water operational berth
- proximity and access to the rail line and the regional transport corridor
- strengthening and expanding the existing economic and functional role of Port Kembla
- stimulating the local economy
- minimising environmental impacts

- providing employment opportunities while meeting the particular needs of the proposed SPBP facility due to the site's high accessibility.

5.5.2 High rise buildings

Part 17 of IREP 1 describes the objectives regarding high rise buildings are:

> *"(a) to enhance the amenity and design quality of the Wollongong urban centre and of buildings within that centre, and*
> *(b) to preserve the landscape quality of coastal and foreshore land by encouraging the erection of buildings which are designed in harmony with that landscape".*

Clause 139(2)(b) of IREP 1 requires the concurrence of the Director-General for development applications that propose structures of a height in excess of 11 m within the Wollongong Plain sub-region. As detailed in **Table 3** the proposed SPBP facility includes a number of buildings and structures with a height exceeding 11 m. Further, Clause 139(3) states *that "in deciding whether to grant concurrence to a development application in respect of development referred to in sub-clause (2), the Director shall consider"* the matters listed in **Table 16**.

Section 75J(3) of the EP&A Act states that in deciding whether or not to approve the carrying out of a project under Part 3A of the Act, the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of section 75R) apply to the project if approved[59].

Accordingly, as the Project is subject to assessment under Part 3A of the EP&A Act, and a development application is not being submitted. Assessment against matters for consideration in Clause 139(3) of IREP 1 is not required. Although the matters for consideration under Clause 139(3) of IREP 1 are not a regulatory requirement, they have been considered and are addressed in **Table 16**.

[59] Note: Section 75R(3) of the EP&A Act provides that environmental planning instruments (other than State environmental planning policies) do not apply to or in respect of an approved project.

Table 16 IREP 1, sub-clause 139(3) Director-General's matters for consideration

Subclause 139(3) - Matters for consideration	Response
(a) the height, scale, bulk and density of the proposed building	There are a number of structures proposed that exceed 11 m however, highest building point of the proposed development occurs at Allotment 5 (Preparations Facility), at 36 m (refer to **Table 3**). While the height threshold of 11 m is exceeded by a number of structures, which would otherwise require Director-General concurrence, the height of the structures and the overall bulk and scale of the proposed facility is consistent with adjoining infrastructure and specifically the Grain Terminal. Refer to **Section 7.11** for a more detailed discussion on the visual impact of the proposed SPBP facility.
(b) the external appearance and materials used on the exterior of the proposed building	The walls and roof elements of the buildings will be composed of coated sheet metal and will be of a non-reflective colour, with the exception of meal storage which will have concrete walls on three of its sides. Recessive colours will be used on the building exteriors to ensure the structures blend with the surrounding environment.
(c) the relationship of the proposed building to the streetscape or landscape	The proposed building will be appropriately setback from the road reservation and the immediate foreshore. The area will be landscaped with native vegetation to soften the visual impact of the proposed built form. Refer to **Sections 7.6 and 7.11** for landscaping recommendations.
(d) the effect of the proposed building on public amenity, including pedestrian amenity	The Port Kembla Inner Harbour area is located a substantial distance from sensitive land uses (1200 m). Given the industrial nature of the subject site and there being no pedestrian or foreshore walks around Port Kembla Harbour, public amenity will not be affected by the proposed development.
(e) the effect of the proposed building on wind patterns and wind velocity in public places	The proposed structures are not likely to increase wind velocity as adequate spacing between buildings is provided and structure heights vary.
(f) the effect of the proposed building on overshadowing of public places	Public places within the Port Kembla Inner Harbour area are limited, land being predominantly operational industrial land. Any overshadowing that may occur as a result of the proposed structures will not occur in areas that are reserved over public places.
(g) the effect of the proposed building on views from public places	Key viewpoints to the development include views from the Garungaty Waterway, Tom Thumb Road, Mount Keira and Mount Bulli. . The proposed structures will be visible from the public lookout at Mount Keira. However, due to the industrial nature of development that currently characterises the port, public views will not be any less impeded by the proposed facility. The visual impact of the proposed SPBP facility has been assessed and considered to be of minor significance. For a detailed visual impact assessment refer to **Section 7.11** of this report.
(h) the effect of the proposed building on any item of the environmental heritage in the vicinity	There are no items of environmental heritage in the immediate vicinity of the proposed subject site. A heritage assessment has been undertaken to identify heritage items within the Port Kembla area. Refer to **Section 7.9** for an assessment of indigenous and non-indigenous heritage in the Port Kembla Harbour area.
(i) the effect of reflections from the exterior of the proposed building on roads, public places and buildings in the vicinity.	The minimal use of glass will reduce reflexivity and will not create a traffic hazard or reflection issue for buildings within the vicinity or from a public place or road. As detailed in **Section 4.4.2,** a recessive colour scheme will be used.

5.6 Planning strategies

5.6.1 Port Kembla Land Use Strategy (2006)

Wollongong City Council, Port Kembla Port Corporation and the Department of Planning have jointly developed a land use strategy for Port Kembla. The *Port Kembla Land Use Strategy* (The Strategy), which encompasses the port area as well as surrounding industrial lands, aims to provide direction for planning and development of the study area over the next 20 years in response to the substantial growth and diversification in cargo types and volumes to be handled through Port Kembla in the future.

Stage 1 and 2 of The Strategy identifies strengths, weaknesses, opportunities and threats to the achievement of the vision and objectives. A structure plan has been developed based on precincts to provide direction on the desired future for Port Kembla. The structure plan identifies potential and improved road and rail links to provide access to and between the precincts.

The land use strategy identifies that regional transport and access are key elements of the implementation of the strategy. Lack of sufficient transport infrastructure is considered to be a major threat to the future growth and competitive advantages of Port Kembla.

To ensure development of Port Kembla is not limited by lack of access and strategic actions and responsibilities have been identified to address regional transport issues. These issues are generally outside the scope of The Strategy, but are critical to the achievement of its objectives. The actions include:

- preparation of a freight transport plan
- participate in future strategic planning for upgrading of regional road links
- lobby State Government to include Port Kembla in strategic planning for intermodal facilities
- establish links between The Strategy and the *'Illawarra and South Coast Freight Study'*
- investigate the need for westerly road freight connections
- monitor capacity and performance of key links including Mt Ousley Road
- assess and plan for improved rail connections including the Maldon-Dombarton rail link and South Coast line connection
- assess and plan for new road infrastructure to connect Port Kembla with Sydney
- prepare a traffic, transport and access plan for the study area to ensure transport infrastructure is sufficient to cater for future demand and to manage conflicts between transport modes
- maintain and improve existing private and public rail network in the study area
- consider need for extensions to rail lines to provide access to key sites
- retain and improve road and rail connections between Port Kembla and West Dapto
- review need for public transport improvements as growth in Port activities occurs.

The main outcome of The Strategy will be a framework for management of development in the area. The strategy outlines strategic actions for five discrete precincts within Port Kembla. The Inner and Outer Harbour are defined as Precinct 2. The objective for Precinct 2 that relate to the proposed operation is:

- *to retain grain export capabilities within Port Kembla through the retention of the existing Grain Terminal.*[60]

The proposed facility, by making use of the currently under-utilised infrastructure on the Grain Terminal, ensures the longevity of grain import and export from the Grain Terminal in conjunction with

[60] Sinclair Knight Merz (SKM) 2007. *Port Kembla Land Use Strategy*. *Final Report*, prepared for Port Kembla Port Corporation and Wollongong City Council, February 2007

GrainCorp's current operations and NB's proposed operations. In this regard, the siting of the new facility in this location will assist in realising the aforementioned objective.

5.6.2 Sydney Metropolitan Strategy (2005)[61]

The *'Sydney Metropolitan Strategy'* identifies initiatives that are directly relevant to freight at Port Kembla. The Metropolitan Strategy affirms previous NSW Government plans for a greater role for Port Kembla in cargo handling. Port Kembla is envisaged to take over most general cargo activities currently being undertaken in Port Jackson. General cargo and car stevedoring operations from East Darling Harbour and Glebe Island are in the process of being transferred from Port Jackson to Port Kembla, facilitated by a $140 million upgrade of Port Kembla. Operations are expected to be transferred to Port Kembla by late 2008.

The *'Sydney Metropolitan Strategy'* seeks to maximise the efficient movement of freight through Sydney, whilst seeking to mitigate the impacts associated with road freight movements in terms of air quality and noise effects on local communities and provide sufficient port capacity to cater for future growth. As such, The Strategy places emphasis on encouraging the greater use of rail for movements to and from the Port. The *'Sydney Metropolitan Strategy'* identifies the need for further investigations into the movement of domestic inter-modal freight, construction materials and bulk fuel.

The proposed SPBP facility operations will involve utilisation of the rail line servicing the site, which will contribute to the feasibility and business case for the Maldon-Dombarton rail completion.

The proposed use of the land within the port is considered to be consistent with The Strategy as it reinforces the primary function of Port Kembla as a major NSW Port and will take advantage of its high accessibility in terms of product distribution (road, rail and sea). It should also be noted that the proposed facility is not located on land identified for the portion of the cargo and automobile industry to be transfer from Port Botany.

5.6.3 Illawarra Regional Strategy 2006-31

The Illawarra Region is bounded by Sydney, the South Coast and the Southern Highlands and encompasses the Wollongong, Shellharbour and Kiama local government areas. The Illawarra currently boasts a population of over 281,000 people and specialists have forecast a population growth of 47,000 and job growth of 30,000 within the next 25 years[62]. The *'Illawarra Regional Strategy 2006-31'*, in part, aims to facilitate economic growth, generate local job and housing opportunities and attract new business investment to meet the needs and demands inherently associated with to such growth.

Port Kembla is identified as a key employment precinct within the region and the commitment for its expansion, facilitated through the *NSW Port Growth Plan*[63] and Port Kembla Port Corporation's future strategies, provides a significant opportunity to support investment and employment in this precinct. Further, support to facilitate increased investment and employment generation is offered through the protection of strategic transport corridors from inappropriate development, which is reinforced by the draft *'Three Ports State Significant Site Proposal'*[64,65].

The siting of the proposed facility in the Port is consistent with the *'Illawarra Regional Strategy 2006 – 2031'* insofar as it is a new business investment locating in the region, which provides employment opportunities (direct and indirect). NB also has an intention to stimulate growth in the rural market through its development programs.

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[61] NSW Department of Planning, Sydney Metropolitan Strategy: City of Cities – A Plan for Sydney's Future, December 2005

[62] NSW Department of Planning, *Illawarra Regional Strategy 2006-203*1, 2007

[63] http://www.maritime.nsw.gov.au/ports_plan.html, 10082008

[64] NSW Department of Planning, *Illawarra Regional Strategy 2006-203*1, 2007

[65] NSW Department of Planning*, 'Three Ports State Significant Site Proposal: for NSW Major Ports of Newcastle, Botany and Port Kembla'*, May 2008.

5.6.4 NSW Port Growth Plan (2003)

On 5 October 2003, the *NSW Ports Growth Plan* was announced by the NSW Government. The Plan provides a framework on how port capacity in NSW is to be managed to ensure future capacity is available to cater for anticipated growth, with the ultimate goal of distributing the benefits of port growth more equitably between Sydney, the Hunter and Illawarra regions of NSW. Of particular relevance for the Illawarra Region is the core directive of the Plan to progressively relocate containers, general cargo and car stevedoring from Port Jackson to Port Kembla.

The transfer of general cargo and car import activities from Sydney Harbour to Port Kembla is anticipated to generate every year:

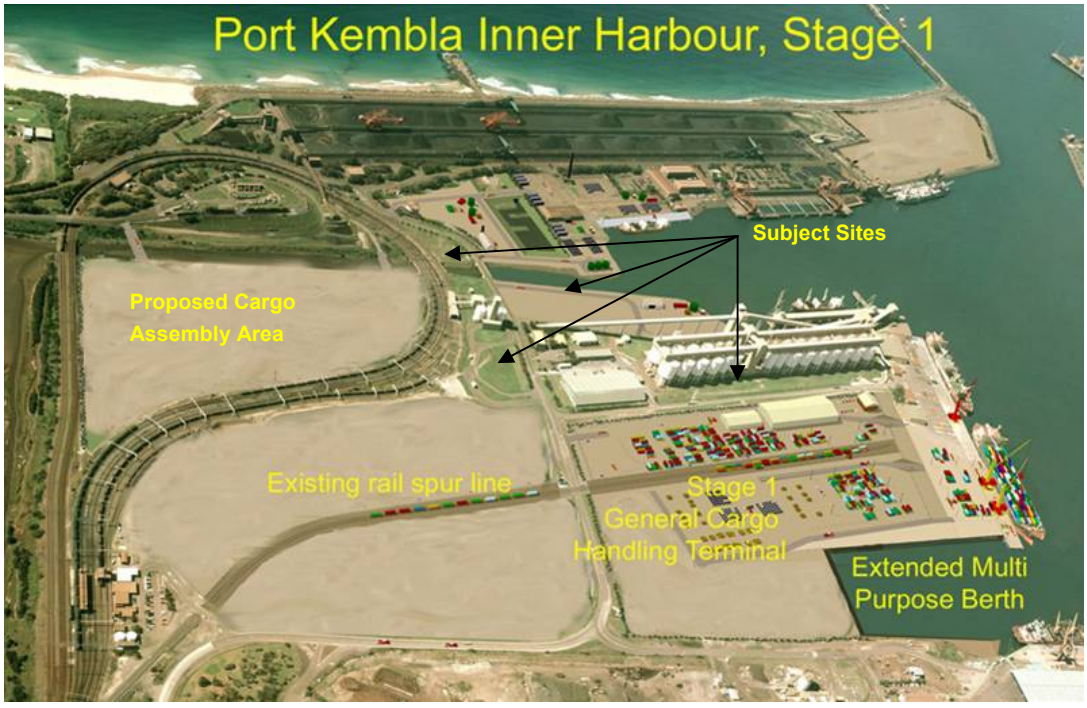
- an additional 400 ship movements
- up to 30,000 additional containers
- 125,000 tonnes of break bulk cargo (timber, machinery, steel, etc) and
- 240,000 vehicle imports.

In response, PKPC has formulated its strategies to cater for the anticipated transfer of activities from Sydney Harbour. The additional trade will be catered through the development of a new multi-purpose terminal in the Inner Harbour as demonstrated in **Figure 39** with an expected completion date of late 2008.

In the medium to long term, PKPC has identified the possible future development opportunities in the Outer Harbour and has commissioned the preparation of a Master Plan to establish the strategic framework for its future development. At this stage, it is envisaged that an extensive area is to be reclaimed, allowing for the construction of three new berths.

The allotments which are the subject of this application are not sites identified to take the cargo assembly areas identified above, indeed they are residual and unused allotments that will utilise this currently under-utilised portion of the Port. The proposal to construct the SPBP facility is consistent with the *NSW Ports Growth Plan*.

Figure 39 Port Kembla inner harbour, stage 1 and the biodiesel production facility location



Source: http://www.waterways.nsw.gov.au/ports_plan.html

NB: The existing rail spur line referred to has been removed and Tom Thumb Road has been realigned to follow the rail line.

5.6.5 State Infrastructure Strategy (2006)

The *State Infrastructure Strategy (2006)* outlines planned financial outlays for infrastructure projects in NSW for the 10 years to 2015-16. The State Infrastructure Strategy has been aligned with planning strategies such as the *Sydney Metropolitan* and *Illawarra Regional Strategies*. The Strategy confirms that funding is available for the future development of Port Kembla, allowing for:

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

The decision to inject $86 million into the redevelopment of the Inner Harbour demonstrates a commitment to the revitalisation of the Port. Positioning of a new state-of-the art industry in the Port is consistent with such an initiative and will compliment the upgrade works whilst utilising what is currently under-utilised land.

5.6.6 Port Freight Plan (2004)

The *Port Freight Plan (2004)* (PFP) was announced in 2004. Its primary objective is to divert road freight onto rail. Although the Plan focuses on freight movements in the Sydney metropolitan area, the Plan enunciates the need to develop an overarching policy regarding the management of freight movements within NSW. The operation of the SPBP will involve utilising up to two rail freight movements per day, which requires approximately 25 carriages per day (inbound and outbound). In this regard, the proposed operations reconciles with the objectives of the PFP.

5.6.7 Port User and Port Related Industry Study (2004)

Objectives of the *Port User and Port Related Industry Study (2004)* were to identify businesses that may redirect cargo through Port Kembla, to understand their cargo consolidation and forwarding needs and predict their potential use of Port Kembla in the future. The study area included the Illawarra, South Coast, Southern Tablelands, Outer Western Sydney (Liverpool to Camden) and parts of the Sutherland Shire.

A survey of firms in these areas revealed that business activity requiring sea freight was high. However, the amount of trade linked to the Illawarra Region and South Coast is lower in comparison to the opportunities presented by firms located in the Outer Western Sydney region. These results suggest that strategies to develop a sea cargo business at the Port Kembla must target potential customers in both the Illawarra and Outer Western Sydney regions.

NB operations, at this stage, necessarily require sea freight for the importation of their primary processing product. NB's selection of Port Kembla for its soybean processing operations is consistent with the future direction recommended by the *Port User and Port Related Industry Study*.

5.6.8 Illawarra and South Coast Freight Study

The *Illawarra and South Coast Freight Study* was commissioned by the NSW Department of Planning to identify and prioritise freight issues affecting the Illawarra and South Coast region. The study included an assessment of the current and future demand for freight in the region as well as method of transportation. This analysis has been incorporated into the assessment of the proposed facility where appropriate.

In addition, the study highlighted a number of issues, which currently inhibit freight operations in the region including:

- review of SEPP 7 (now repealed) which restricts coal freight road transport deliveries to the coal terminal to day light hours (curfew between 6pm and 7am)
- reconsideration of the business case for the Maldon-Dombarton rail line
- review and develop incident management plans for road transport, in particular, to assess the proportion of the road network without reasonable alternative routes for heavy vehicles.

There is currently interest in undertaking a feasibility study for the completion of the Maldon - Dombarton rail line in association with the expansion of the Outer Harbour. This is in addition to Infrastructure Australia's concern about improving strategic transport access to ports. The NB proposal would assist feasibility investigations by potentially generating freight traffic for this line.

5.6.9 Illawarra and South Coast Employment Lands Strategy (2006)

This *Illawarra and South Coast Employment Lands Strategy 2006*[66] comprised the development of an employment lands strategy for the Illawarra and South Coast Region to make certain that there will be sufficient employment opportunities for future populations within the region. The strategy was undertaken in three stages including an audit of employment lands in the region; identification of the region's current and future economic and employment prospects; and the implications for regional planning. The study included an action plan and recommendations regarding Local Environmental Plan (LEP) amendments to ensure consistency across the LGA's. Port Kembla is recognised by this study as regionally significant employment land.

The study aims to promote the orderly planning and development of employment land in the region. Employment land is broadly defined as land that could be used for employment generating activities including land zoned for industrial purposes. The Illawarra and South Coast Employment Lands Study and the Illawarra Regional Strategy identify Port Kembla as a key employment precinct. NB's site selection for the proposed SPBP facility assists in achieving the aims enshrined in the *Employment Lands Guidelines for the Illawarra* by promoting the orderly development of residual allotments in a cohesive and coordinated manner while generating significant employment opportunities, both directly and indirectly.

5.6.10 Employment Lands Guidelines for the Illawarra (2008)

The *Employment Lands Guidelines for the Illawarra* have been prepared to support the Illawarra Regional Strategy 2006-2031 and more specifically to promote and monitor the orderly planning, placement and development of employment lands.

The principles of particular relevance to the proposed SPBP facility include:

- *"Cluster businesses and industries with similar environmental impacts and business synergies to reduce land use conflicts, improve business efficiency and identity*
- *Preserve lands of regional significance for employment generating use, including the ports, rail corridors, airport lands and highway intersections that service them*
- *Protect heavy industrial employment clusters from encroachment by incompatible land uses*
- *Preserve and enhance the buffers that protect the impact of heavy industry on incompatible surrounding uses."*

The proposed SPBP facility is located within the industrial employment precinct of Port Kembla Inner Harbour and is compatible with surrounding land uses. The synergy between GrainCorp operations and the proposed SPBP facility is evident through the utilisation of currently under-utilised infrastructure and access to and use of the deep water berth for the delivery and distribution of the SPBP facility's products. This is further reinforced through the ability of the proposed SPBP facility to utilise the rail network. The Inner Harbour benefits from the existing buffer between port operations and sensitive environmental receptors and this is expected to continue. Accordingly, the location of

[66] NSW Department of Planning, *'Illawarra and South Coast Employment Lands Strategy'*, 2006

the proposed SPBP facility is consistent with the aim of the *Employment Lands Guidelines for the Illawarra.*

5.6.11 West Dapto Economic and Employment Study

Wollongong City Council has commissioned an Economic and Employment Study for the West Dapto Release Area which covers 3,080 hectares of farming land. An optimum development scenario has been identified for West Dapto of approximately 19,400 dwellings and a population of 46,560 by 2049.

The employment study estimates that 10,000 on-site jobs will be generated through the provision of employment land within West Dapto. A further 12,000 jobs are expected outside of the release area through the multiplier effect. This employment relies on demand from new residents, selling to external markets, and jobs associated with the construction process.

A strategic framework has been developed to realise the anticipated employment yield. The framework includes: reinventing Wollongong's future; encouraging an entrepreneurial culture; offering a sustainable environment and excellent quality of life; and ensuring an inclusive community. The siting of the plant in Port Kembla will assist in realising the objectives of this study through employment generation, both directly and indirectly, by the proposed SPBP facility as well as any multiplier effect it generates through growth in the rural market to cultivate oilseeds.

5.6.12 Draft Three Ports State Significant Site Proposal

The NSW Department of Planning has recently exhibited the 'Three Ports State Significant Site Proposal' (Three Ports Proposal)[67], which proposes to identify the major ports within NSW at Port Kembla, Port Botany and Newcastle as being of State significance and incorporate the precincts into Schedule 3 of SEPP Major Projects. Identification of the port of Port Kembla as a site of State significance under SEPP Major Projects will acknowledge its key role in the economy of the State and the Illawarra region and will refine the planning framework for future development of the port. The proposed SPBP facility, representing a capital investment value of A$243 million, is consistent with this draft proposal.

[67] NSW Department of Planning*, 'Three Ports State Significant Site Proposal: for NSW Major Ports of Newcastle, Botany and Port Kembla'*, May 2008.

6.0 Consultation and identification of issues

6.1 Consultation with stakeholders and other relevant authorities

This section details the consultation that has been undertaken during the preparation of the Environmental Assessment.

Port Kembla automobile industry consultation meeting – April 2007

A meeting was convened in conjunction with the PKPC to address possible concerns of the automobile industry regarding the impact of NB's proposed SPBP facility on their operations in Port Kembla. Major automobile handling and stevedoring operations are located close to and/or adjacent to the proposed SPBP facility and these stakeholders sought to understand NB's proposed operations and any likely impacts such operations may have upon them.

NB conducted a presentation covering all aspects of the proposed facility, the process technology that would be installed and the nature of the entire manufacturing process. The properties and nature of the main production inputs and outputs were also discussed. The opportunity to ask questions regarding any aspect of the proposed operation was afforded to all attendees.

Particular concerns that were discussed and addressed were as follows:

- any possible air emissions (VOCs and dust) from the proposed facility. NB explained that it was acquiring a production plant utilising low-emissions technology at a premium and that similar plants were located very close to residential areas in some major European cities with strict environmental controls. Furthermore, NB advised that the air emissions of a virtually identical plant in South Africa have been modelled previously and emission levels were found to be extremely low (refer to **Section 7.2** of this report for further discussion on air quality).
- the volume and nature of traffic that would be generated (refer to **Section 7.5** of this report for further discussion on Traffic and Transport).
- the possibility of biodiesel coming into contact with vehicles via atmospheric discharge. It was explained that soy biodiesel is a non-volatile liquid (boiling point in excess of 300°C) and that no danger of explosion existed since the material has a flashpoint of greater than 100°C and more typically 160°C. Furthermore NB explained that the entire manufacturing process occurs in a closed system under ambient pressure with no leakage/accidental discharge being possible.

The meeting was attended by NB, PKPC, GrainCorp Operations, the Federal Chamber of Automotive Industries, Honda Australia, Mazda Australia, Toyota Australia, Ford Australia, Australian Amalgamated Terminals (AAT), Holden, Nissan Motor Corporation Australia, PrixCar, CEVA Logistics, Patrick and AutoNexus.

This meeting was held on the 30th of April 2007.

Planning focus meeting – May 2008

The Planning Focus Meeting (PFM) is a formal component of the Part 3A environmental assessment process. The PFM presented an opportunity to stakeholders to familiarise themselves with the proposed development, the development site and to formulate and address project and site-specific issues.

Invitations to attend the meeting were extended by the NSW Department of Planning to the Department of Environment and Climate Change (DECC), Wollongong City Council (WCC), the Department of State and Regional Development (DSRD), NSW Maritime, Roads and Transport Authority (RTA), NSW Fire Brigade and the Department of Environment, Water, Heritage and the Arts (DEWHA).

The NSW Department of Planning convened the PFM on-site on 19 May 2008. The PFM was attended by representatives of NB, Maunsell, GrainCorp Operations, Wollongong City Council, Port Kembla Port Corporation and the Department of Environment and Climate Change.

A number of issues were discussed regarding the operation and the proposed location of the proposed SPBP facility and attendees were given an opportunity to tour the proposed location as well as the existing GrainCorp facilities. The issues that were raised and discussed were formalised in the form of the Director-General's Requirements (DGRs) for the full Environmental Assessment (refer to **Table 17** and **Appendix B**).

This meeting was held on the 19th of May 2008.

Preliminary Environmental Assessment – June 2008

The Preliminary Environmental Assessment report for the proposed SPBP facility was placed on the NSW Department of Planning's Major Projects Register in June 2008.

Article in Illawarra Mercury – June 2008

An article describing the proposed NB development and its social and economic impact on the region appeared on the front page of a leading local newspaper. The article raised awareness in the community regarding the nature and location of the proposed development, as well as the economic impacts such as job creation in the area.

This article appeared on the 6th of June 2008.

PKPC Outer Harbour development consultation meeting – August 2008

NB attended this meeting which was convened by PKPC as a consultation forum regarding the Port Kembla Outer Harbour expansion project. NB was invited to address the attendees as an entity separate from the Outer Harbour plans in order to share information with a wider stakeholder base.

The following stakeholders were invited to attend the meeting: Representatives from Minister Campbell's Office, Noreen Hay MP, NSW Department of Premier and Cabinet, DSRD, Regional Development Australia-Illawarra (formerly Illawarra Area Consultative Committee), Australian Business Chamber (represented by the Illawarra Business Chamber), WCC, Wingecarribee Shire Council, NSW Department of Planning, Premier's Department and the RTA.

This meeting was held on the 13th of August 2008.

Port Kembla Harbour Environmental Group (PKHEG) meeting – September 2008

The Port Kembla Harbour Environmental Group[68] has been meeting regularly since 1990 and consists of representatives from the PKPC, local universities, local and state authorities, port users, the local community and other interested parties.

NB volunteered to address this forum regarding the nature and scope of its intended operations. Particular matters that were discussed upon conclusion of the NB presentation were as follows:

- potential air emissions from the proposed SPBP facility. NB explained that it was acquiring a low-emissions plant at a premium and that similar plants were located very close to residential areas in some major European cities. Furthermore, the air emissions of a virtually identical plant in South Africa have been modelled previously and emission levels were found to be within acceptable levels (refer to **Section 7.2** of this report for further discussions on air quality).

[68] http://www.pkharbour.org/, 27062008

- nature and volume of traffic generated by the proposed SPBP facility (refer to **Section 7.5** of this report for further discussion on Traffic and Transport).
- impact on the existing ethanol industry. It was explained that soy biodiesel and ethanol do not compete for the same market, since ethanol is blended with petrol and soy biodiesel is used in diesel engines and equipment. The proposed SPBP facility would have a negligible economic impact on the existing local ethanol facility.
- direct and indirect job creation in the community and region (refer to **Section 4.10** and **Section 7.10** for further discussions on the economic and social benefits of the proposed project).
- introduction of foreign species through imported soybeans and shipping vessels (refer to Section 7.6 of this report for further discussion on Ecology).
- water consumption of the proposed SPBP facility (refer to **Section 7.13** of this report for further discussion of water consumption).

The meeting served as a means to provide the local community with information regarding all aspects of the proposed development as well as providing a forum for community representatives to put questions to the proponent.

The following parties attended the meeting: NB, GrainCorp Operations, PKPC, University of Wollongong, University of NSW, WCC, DECC, BlueScope Steel, Port Kembla Coal Terminal Ltd, Australian Amalgamated Terminals and a number of representatives from the local community.

This meeting was held on the 3rd of September 2008.

Port users council executive meeting

PKPC facilitated a meeting between NB and the Executive of the Port Users Council (PUC). The following parties attended the meeting: NB, PKPC, GrainCorp Operations, Australian Amalgamated Terminals, BlueScope Steel, Port Kembla Gateway and Port Kembla Coal Terminal.

Of particular interest to the attendees were:

- traffic generation from the proposed SPBP facility (refer to **Section 7.5** of this report)
- impact on ambient air quality in Port Kembla (refer to **Section 7.2** of this report)
- possible impact of neighbouring users on the operations of NB (refer to **Section 7.2 – 7.13** of this report)
- general impact of the proposed SPBP facility on the Port (refer to **Section 7.2 – 7.13** of this report).

Attendees were given an opportunity to ask questions to NB and invited attendees to view all documents regarding the proposed development that are already on display on the Major Project register of the NSW Department of Planning, and reminded the attendees that a full Environmental Assessment will be displayed on the register.

This meeting was held on the 16th of September 2008.

All issues that were raised during the consultation process to date are addressed as part of this Environmental Assessment report (refer to **Chapter 7.0**).

6.2 Environmental assessment requirements

This Environmental Assessment has been prepared in accordance with Part 3A of the EP&A Act and associated Regulation. Part 3A of the EP&A Act ensures that the potential environmental effects of a proposal are properly assessed and considered in the decision making process.

As discussed in **Section 6.1**, a PFM was held with relevant stakeholders and government agencies. This provided a constructive forum where issues of concern could be discussed. The matters raised informed the Director-General as to what matters required further analysis and subsequently informed the DGRs.

In accordance with the provisions of Section 75F of the EP&A Act the DGRs have been addressed. The key matters identified by the Director-General to be addressed in the Environmental Assessment are detailed in **Table 17**. **Table 17** also provides a cross reference to the section(s) of this Environmental Assessment report that address the issues. The full version of the DGRs are provided in **Appendix B**.

Table 17 Director-General's environmental assessment requirements

Key Issues	Reference in EA
Air Quality	
• Assess emissions of air pollutants from all sources during construction, operation and from road, rail and sea transport, including any potential volatile organic compounds, oxides of nitrogen and dust emissions. • Determine impacts on human health, nearest residences, the environment and other port users (i.e. car import facility). • Detail measures to control emissions from production processes, material handling, storage and transfer, and assess their effectiveness.	**Section 7.2 and Appendix F**
Greenhouse Gas	
• A quantitative assessment of the potential scope 1, 2 and 3 greenhouse gas emissions of the project, and qualitative assessment of the potential impacts of these emissions on the environment. • A detailed description of the measures that would be implemented to ensure that the project is energy efficient.	**Section 7.3**
Transport and Access	
• Prepare a traffic impact study in accordance with relevant guidelines, including an assessment of capacity, safety, key intersections, site accesses, internal roadways and parking. • The traffic assessment shall consider various scenarios including 100% of soybeans arriving to the site via road/rail from domestic markets and 100% arriving to the site via sea from imports. • Demonstrate how the use of sea and rail transport will be maximised.	**Section 7.5** and **Appendix G**
Hazards and Risk	
• A Preliminary Hazard Analysis (PHA) of the project. • Details of receipt, transfer and storage of chemicals such as methanol and hexane. • Detailed assessment of the potential off-site risks.	**Section 7.4**
Water	
• Detail water supply volumes including a breakdown of potable and non-potable sources, including investigation of using recycled water from the Wollongong Sewage Treatment Plant. • Assess options to reduce water losses from cooling towers. • Detail the proposed stormwater management system during	**Section 7.8** and **Section 7.13**

Key Issues	Reference in EA
construction and operation, including a drainage concept plan. • Assess impacts of flooding, with consideration of climate change. • Detail wastewater volumes and measures to treat, reuse and/or dispose of wastewater. • Assess potential impacts on surface water bodies, including the Garungaty Waterway.	
Soil	
• Detail proposed erosion and sediment controls during construction. • Consideration of potential salinity and acid sulphate soil impacts. • Identify and assess any soil or groundwater contamination and provide details of measures to manage and/or remediate.	**Section 7.12** and **Appendix J**
Waste	
• Identify, classify and quantify the likely waste streams that would be generated by the project during construction and operation, and describe what measures to be implement to avoid, reuse, recycle and/or dispose of this waste.	**Section 7.8**
Noise	
• Noise generated by construction and operation. • On-site and off-site road and rail noise impacts.	**Section 7.7**
Flora and Fauna	
• An assessment of any impacts on critical habitats, threatened species, populations or ecological communities and their habitats in the region.	**Section 7.6**
Visual	
• Assess the visual impact of design and siting of the buildings, landscape, lighting and any signage.	**Section 7.11** and **Appendix I**
Heritage	
• Assess both Aboriginal and non-Aboriginal heritage impacts.	**Section 7.9 and Appendix H**
Social and Economic	
• Provide a justification of the use of first generation biofuel technology and consideration of potential conflict with food crop.	**Section 1.0**

This EA addresses all relevant requirements of the DGRs as described in **Table 17**.