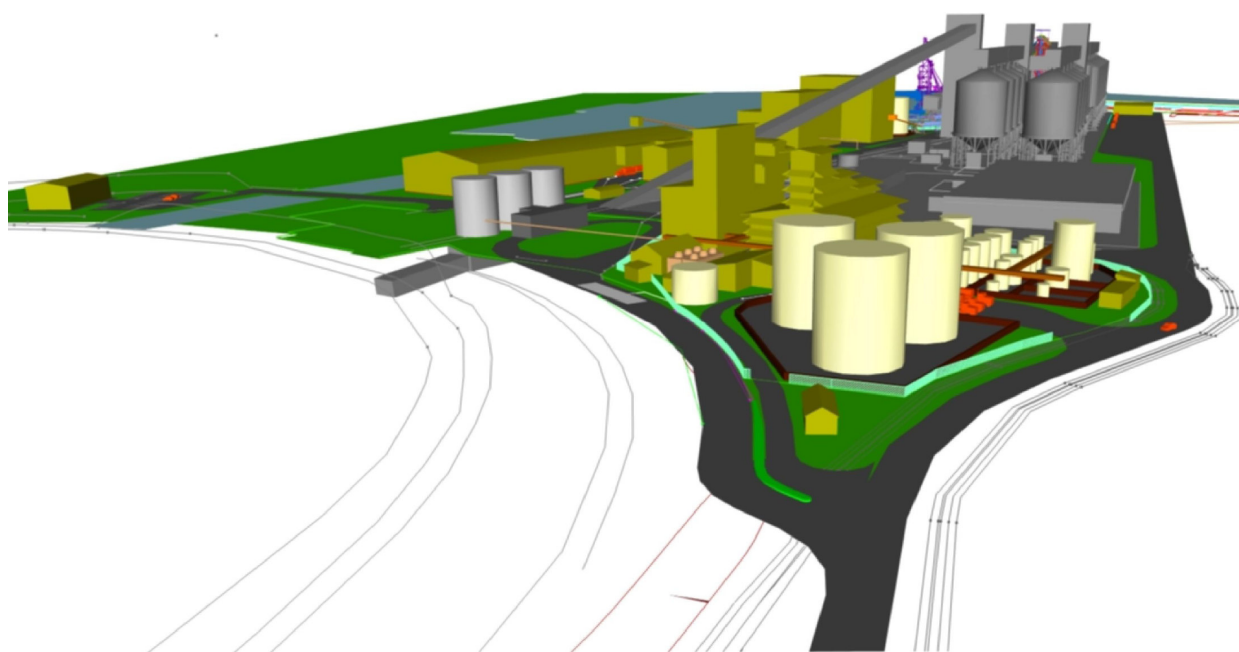




NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Port Kembla Soybean Processing and Biodiesel Project



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2009

Cover photo: Artists impression of the project

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EXECUTIVE SUMMARY

National Biodiesel Pty Ltd proposes to establish a soybean processing and biodiesel plant at Port Kembla. The new plant would be established on four separate lots around the existing Graincorp Terminal within the port complex.

These lots are surrounded by industrial development, including the Port Kembla Coal and Car Terminals and the Bluescope Steelworks. The closest resident is located in Coniston, about a kilometre from the site.

The new plant would process soybeans to produce 1.1 million tonnes of soy protein meal (animal feedstock) a year and 288 million litres of biodiesel a year. The project has a capital investment value of \$166.8 million and would employ 235 people once operational.

The proposal constitutes a 'major project' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and consequently the Minister is the approval authority for the project.

During the exhibition period the Department received seven submissions on the project, all from public authorities. None of these authorities object to the project.

The Department has assessed the merits of the project (see attached Director-General's report).

This assessment has found that the environmental impacts of the project can be managed to ensure an acceptable level of environmental performance.

This assessment has also found that that the project would have substantial social and economic benefits for the region, and assist with the delivery of the State Plan, as it would:

- optimise the use of existing infrastructure at Port Kembla, including the Graincorp Terminal;
- attract \$166.8 million worth of investment to the region; and
- create at least 235 jobs in Wollongong.

Consequently, the Department believes that the project is in the public interest, and should be approved subject to conditions.

1. PROPOSED PROJECT

1.1 Project Description

National Biodiesel proposes to establish a soybean processing and biodiesel production facility in the inner harbour of Port Kembla (see Figure 1).

The project would occupy four separate lots off Tom Thumb Road, owned by the Port Kembla Port Corporation. These sites are located adjacent to the existing GrainCorp Terminal, which would be used by project to receive and store goods.

The four lots (see Figure 2) would be used for:

- a soybean preparation and extraction plant;
- a biodiesel and glycerine refining plant;
- an office and car park; and
- a truck parking area.



Figure 1: Regional Context (with project site outlined in red)

The major components of the project are summarised in Table 1, and depicted in Figures 2 to 4. The project is described in full in National Biodiesel's Environmental Assessment (EA) (prepared by Maunsell/Aecom), which is attached as Appendix F.

Table 1: Major components of the project

Aspect	Description
Project Summary	Construct and operate a soybean processing and biodiesel production facility and associated infrastructure
Soybean preparation and extraction plant (see Figure 3)	<ul style="list-style-type: none"> • Soybean preparation plant - used to heat and then flake 4,040 tonnes of soybeans per day, using rollers; • Oil extraction and water degumming plant - where hexane is used as a solvent to extract the oil; • Soybean meal plant - used to toast, dry, grind and cool the meal; and • Pelletising plant.
Biodiesel and glycerine refining plant (see Figure 4)	<ul style="list-style-type: none"> • Biodiesel plant – used to produce 750 tonnes of biodiesel per day and crude glycerine which is pumped to the glycerine refining unit. • Glycerine Refining Unit – to produce pharmaceutical and commercial grades of glycerine.
Associated structures	<ul style="list-style-type: none"> • Wastewater treatment plant; • Tank farm; • Boilers; • Cooling towers; • Office and amenities building; • Warehouse building; • Ship unloaders; and • Conveyor belts.
GrainCorp facilities	<ul style="list-style-type: none"> • Use of GrainCorp shipping terminal for receiving soybean imports; • Use of 9 unused GrainCorp silos for storage of soybeans.
Transport	<ul style="list-style-type: none"> • Up to 42 heavy vehicle, 4.3 rail, 0.34 ship and 230 car trips per day
Hours of operation	<ul style="list-style-type: none"> • 24 hours, 7 days per week
Production capacity	<ul style="list-style-type: none"> • 1.1 million tonnes of soy protein meal; • 288 million litres of biodiesel; • 25,450 tonnes of glycerine; and • 3,000 tonnes of used bleaching earth.
Capital Value	<ul style="list-style-type: none"> • \$166.8 Million
Jobs	<ul style="list-style-type: none"> • Construction – 500 • Operation - 235
Parking	<ul style="list-style-type: none"> • 90 car parking spaces • 5 truck parking spaces
Construction duration	<ul style="list-style-type: none"> • Approximately 15 months.

1.2 Production Process

Soybean handling, preparation and meal production

The project would receive shipments of soybeans at the existing GrainCorp shipping terminal. Soybeans would be transferred via conveyor and stored in up to nine of GrainCorp's existing silos. Soybeans would then be transferred to the soybean preparation and extraction plant, where they would be heated and then flaked, using rollers. The flakes would then be immersed in hexane solvent to extract the oil. The hexane would be removed from the flakes before they are toasted, dried and cooled to produce high protein soybean meal. Meal would then be ground and pelletised.

Biodiesel and glycerine production

The extracted soy oil would be distilled to remove the solvent and then undergo a process of degumming to remove impurities. Biodiesel and glycerine would be produced from the soy oil through a process of transesterification. The biodiesel would then be washed in water to remove catalysts, soaps and excess alcohol and separated from the water prior to transfer to storage tanks. The glycerine would also be refined and purified to at least 99.7% prior to storage.

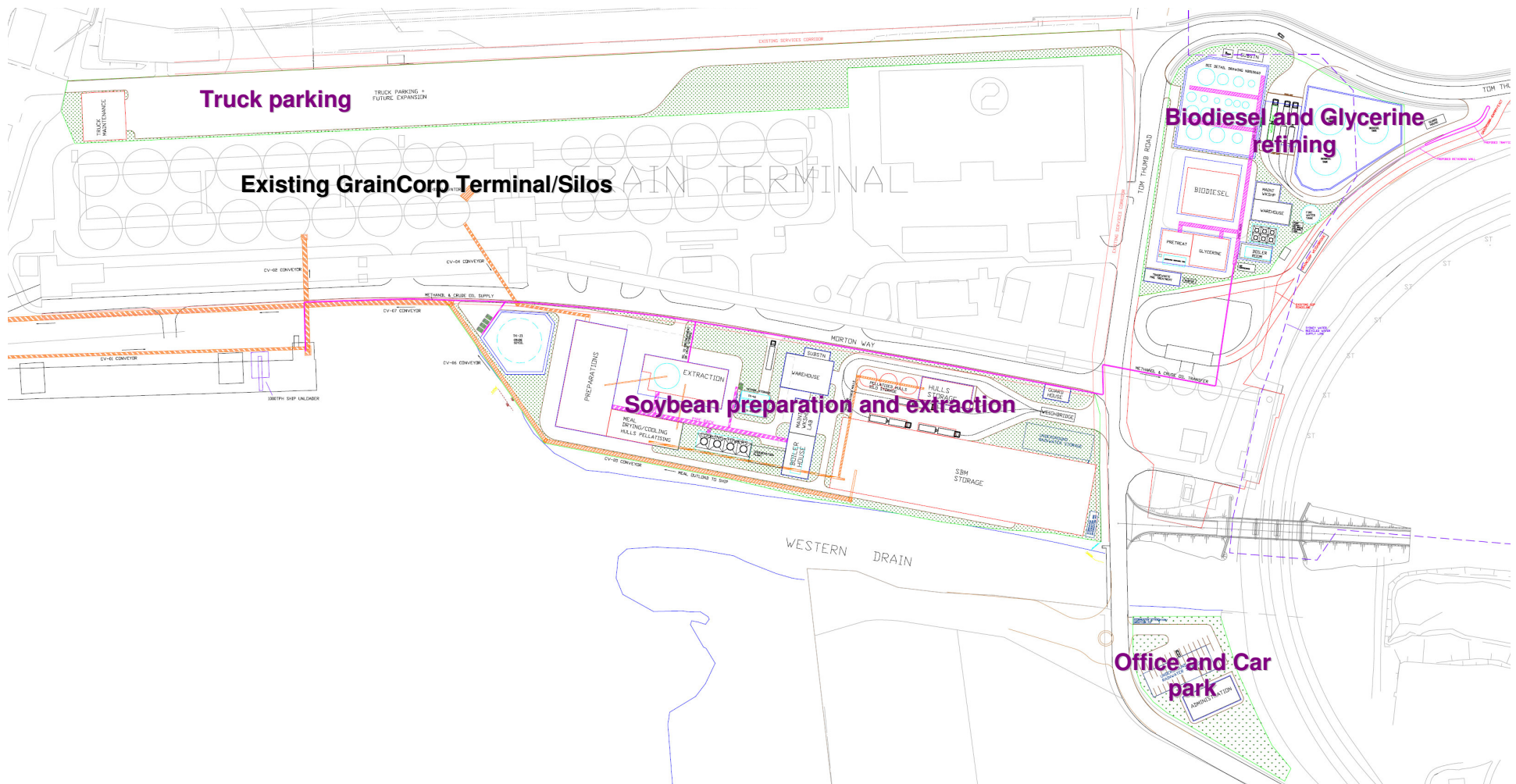


Figure 2 – Project layout

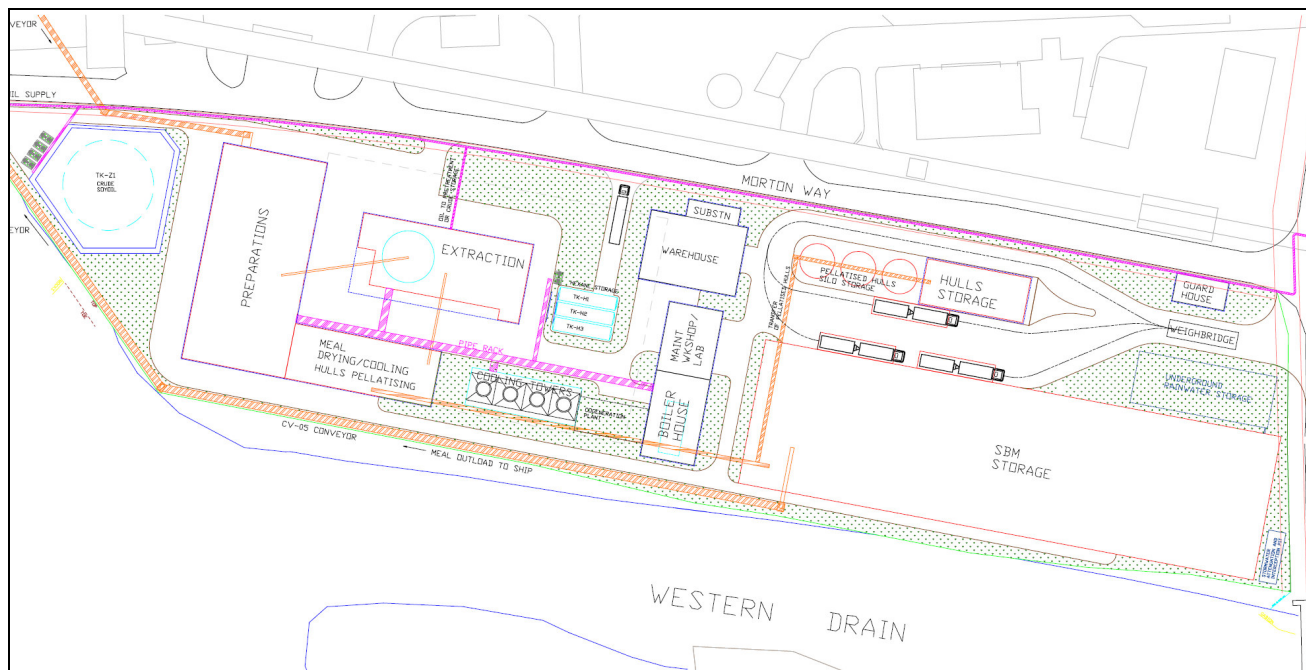


Figure 3 – Soybean preparation and extraction

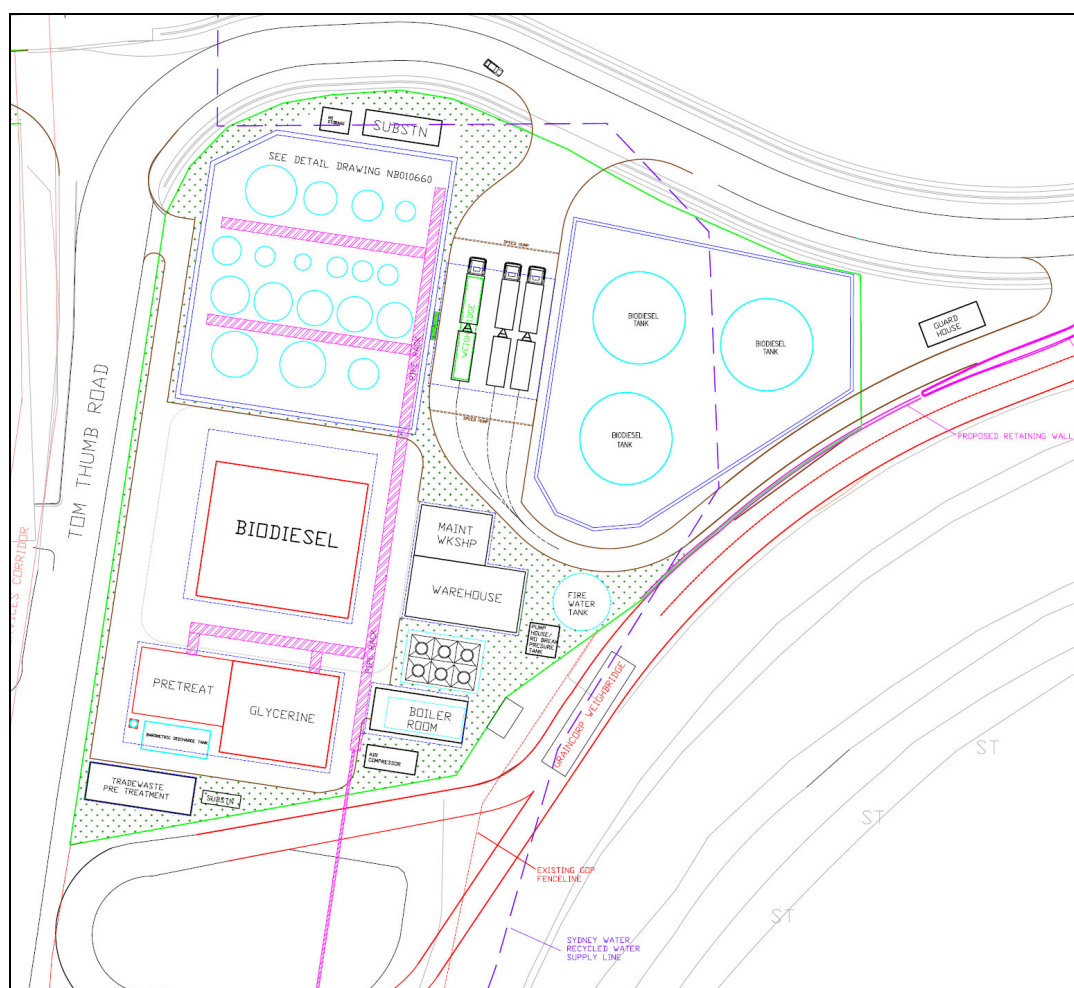


Figure 4: Biodiesel and glycerine refining

1.3 Project Setting

The project would be located in the Port Kembla inner harbour adjacent to the existing GrainCorp facilities. The four sites are surrounded by other industrial and port uses including the Coal Terminal, Car Terminal and BlueScope Steelworks (see Figure 5). The nearest residences are located over a kilometre to the north west of the site.

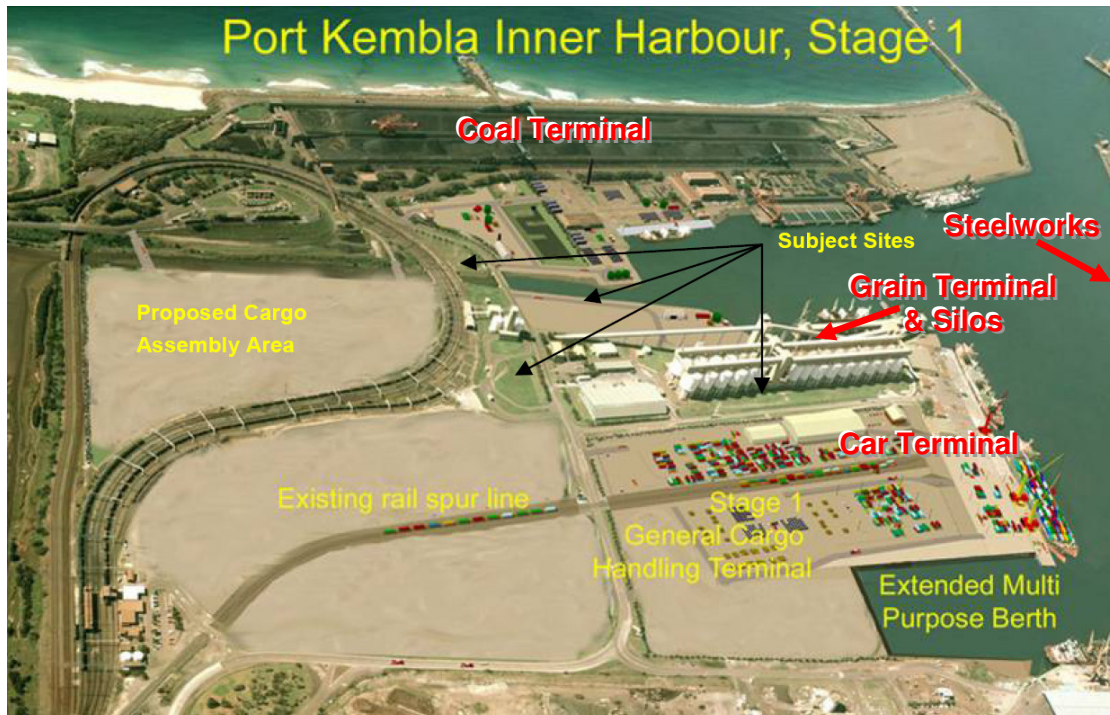


Figure 5 – Port Kembla Inner Harbour

1.4 Project Need

The project would produce soy protein meal for use as animal feed and would also extract the oil component (approximately 18%) to produce 288 million litres of biodiesel a year. The biodiesel produced would help establish a biofuels market in Australia, and contribute towards the Commonwealth Government's target for the production of 350 ML of biofuel by 2010.

The biodiesel would also reduce reliance on limited fossil fuel supplies and reports indicate that emissions from the combustion of biodiesel have reduced health impacts (less particulates, sulphur dioxide and carbon monoxide) when compared to diesel derived from crude oil.

The project's location adjacent to the grain terminal would allow imported soybeans to be received by ship and would minimise the transport and handling of soybeans prior to processing. National Biodiesel considered a number of alternative sites in Newcastle, however the availability of vacant land around the Port Kembla Grain Terminal made this site a preferred option for the project.

1.5 State Plan and Illawarra Regional Strategy

The project is consistent with a number of priorities of the State Plan and Illawarra Regional Strategy. The project would provide increased business investment in regional NSW (priorities P1 and P6) and would increase local job opportunities, providing jobs closer to home (priority E5).

The Illawarra Regional Strategy identifies job creation, especially local jobs, as a key economic challenge for the region. The project would generate 500 jobs during construction and 235 jobs once operational, consistent with the goals of the Illawarra Regional Strategy.

2. STATUTORY CONTEXT

2.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of manufacturing oils and fuels, that would employ 235 people, with a capital investment value of \$166.8 million, and therefore triggers the criteria in Clause 10 of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*.

Consequently, the Minister for Planning is the approval authority for the project.

2.2 Permissibility

The site is zoned 5(a) Special Uses (Port) under the *Wollongong Local Environment Plan 1990*. The project can be characterised as an “industry”, and is therefore permissible with development consent in this zone.

2.3 Exhibition and Notification

Under Section 75(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) of a project publicly available for at least 30 days.

After accepting the EA for the project, the Department:

- made it publicly available from 12 December 2008 until 6 February 2009:
 - on the Department’s website; and
 - at the Department’s Information Centre, Wollongong City Council’s Offices and the Nature Conservation Council Offices;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Wollongong City Council by letter; and
- advertised the exhibition in the Illawarra Mercury.

This satisfies the requirements in Section 75H(3) of the EP&A Act.

During the assessment process the Department also made a number of documents available for download on the Department’s website. These documents included the:

- project application;
- Director-General’s environmental assessment requirements;
- EA; and
- Response to submissions.

2.4 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General’s report is to include a copy of or reference to the provisions of any:

- *State Environmental Planning Policy* (SEPP) that substantially govern the carrying out of the project; and
- environmental planning instrument that would (but for Part 3A) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project.

The Department has considered the project against the relevant provisions of several environmental planning instruments (including *State Environmental Planning Policy (Major Projects) 2005*, *State Environmental Planning Policy (Infrastructure) 2007*, *State Environmental Planning Policy No. 71 – Coastal Protection*, *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*, and the *Wollongong Local Environment Plan 1990*).

The Department is satisfied that, subject to the implementation of the recommended conditions of approval, the proposal is generally consistent with the aims and objectives of these instruments (see Appendix C).

2.5 Objects of the Environmental Planning and Assessment Act 1979

The Minister's consideration and determination of the application must be consistent with the relevant provisions of the EP&A Act, including the objects set out in the Act's section 5. The objects of most relevance to the Minister's decision on whether or not to approve the proposed project are found in section 5(a)(i), (ii), (iv), (vi) and (vii). They are:

The objects of this Act are:

(a) *to encourage:*

- (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
- (iv) *the provision of land for public purposes,*
- (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
- (vii) *ecologically sustainable development".*

The Department has fully considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the application.

The assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment.

National Biodiesel has also considered a number of alternatives to the proposed project (including the alternative of not proceeding), and considered the project in the light of the principles of ESD.

2.6 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements with respect to the project.

The Department is satisfied that the environmental assessment requirements have been complied with.

3. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received a total of seven submissions on the project, all from public authorities (the Department of Environment and Climate Change (DECC), the Department of Water and Energy (DWE), Wollongong City Council (Council), the Roads and Traffic Authority (RTA), Sydney Water, the NSW Fire Brigade and NSW Maritime).

A summary of the issues raised is provided below and a full copy included in Appendix E.

3.1 Public Authorities

The key issues raised by public authorities include:

- Management of dust (DECC);
- Stormwater, flooding and sea level rise impacts (Council);
- Riparian corridor, sediment and erosion controls (DWE);
- Provision of green and golden bell frog habitat (DECC); and
- Cumulative traffic impacts in the Port area (RTA).

3.2 Response to Submissions

National Biodiesel has provided a response to the issues raised in submissions (see Appendix D). This has been made publicly available on the Department's website.

The Department has considered the issues raised and the Proponent's response in its assessment of the project and has incorporated appropriate conditions of approval to manage the key issues.

4. ASSESSMENT

4.1 Air Quality

Dust

The project has the potential to generate dust during unloading and transfer of soybeans from the shipping terminal, via conveyor to the storage silos and the soybean preparation and extraction plant. The control of dust from these activities is particularly important to:

- Maintain compliance with quarantine requirements;
- Minimise potential hazard risks associated with dust explosions; and
- Minimise impacts on the adjacent car import terminal.

The DECC requested that the conveyor system used to transfer soybeans be fully enclosed to minimise dust dispersion. National Biodiesel has investigated various options for enclosure of the transferred material including enclosure of the gantry, provision of a conveyor hood or construction of a fully enclosed aerobelt. The preferred enclosure option will be finalised during detailed design of the facility.

The DECC and the Department are satisfied that any of these options would adequately contain dust emissions and have therefore incorporated a condition requiring the enclosure of material transferred via conveyor. The DECC have also requested that contingency measures be developed and implemented in the event that dust is still generated from the enclosed system.

Air Pollutants

The project would generate emissions of hexane, methane and oxides of nitrogen from production processes and the use of gas-fired boilers.

Dispersion modelling of these pollutants carried out as part of the EA concluded that:

- NO₂ from the boilers would just meet the limit of 350mg/m³ specified in the *Protection of the Environment Operations (Clean Air) Regulation 2002* (Regulations); and
- Predicted hexane emissions of 37.1mg/m³ would just meet the limit of 40mg/m³ specified in the Regulations.

The Department notes that these emissions have been estimated from design values supplied by the technology provider and are likely to be conservative. However, the Department and DECC believe National Biodiesel should be required to validate that the actual emissions of the plant are within the limits prescribed by the Regulation once the plant is operational, and to carry out routine monitoring program to ensure on-going compliance. These requirements have been incorporated into the recommended conditions.

The Department is satisfied that air emissions from the project can be adequately managed.

4.2 Greenhouse Gas Emissions

A greenhouse gas assessment was undertaken as part of the EA for the project. The assessment quantified the scope 1, 2 and 3 (direct and indirect) emissions from the project and a summary of the predicted emissions is provided in Table 2.

Table 2: Predicted greenhouse gas emissions as tonnes of carbon dioxide equivalent (CO_{2-e}) per year

Source	Scope 1	Scope 2	Scope 3	Total
Agriculture (diesel fuel, fertiliser emissions)			295,396	295,396
Freight to site (sea, rail and truck)			39,673	39,673
Soybean crushing and oil extraction		37,473	7,386	44,859
Biodiesel, glycerine and methanol production		8,484	50,473	58,957
Plant boilers	113,905		35,692	149,597
Delivery to customer	2,048		152	2,200
Total	115,953	45,957	428,772	590,682

In summary, the project would generate:

- Direct emissions of 160,000 tonnes of CO_{2-e}/year from production processes on site; and

- Indirect emissions of 430,000 tonnes of CO₂-e/year from agricultural production of soybeans and the end use of biodiesel.

The quantity of emissions is less per unit of production than other similar projects, such as the approved Vopak biodiesel production facility at Port Botany. National Biodiesel has achieved a reduced emission output through design of the facility using best available technology. In addition National Biodiesel is participating in the Commonwealth Government's Energy Efficiency Opportunities Program which requires on-going investigation of energy efficiency measures.

The EA provides a comparison of the emissions associated with production of an equivalent quantity of petroleum diesel concluding:

- Biodiesel = 0.54 tonnes of CO₂ per kL produced;
- Petroleum diesel = 2.3 tonnes of CO₂ per kL produced.

The Department is satisfied that direct emissions from the project would be minimised and notes that the emissions would be considerably less than those used to produce an equivalent quantity of petroleum diesel. The Department requires via the recommended conditions that National Biodiesel investigate and report on energy efficiency measures, which would ultimately further reduce emissions to ensure on-going reduction of emissions.

In relation to indirect emissions, the Department does not consider it to be reasonable or desirable to require National Biodiesel to offset or try to minimise these emissions, principally because:

- these emissions are the Scope 1 and 2 emissions of other industries/activities, and should be considered in the assessment of these industries/activities rather than National Biodiesel's activities; and
- National Biodiesel, as a supplier and distributor of fuel, has limited power to influence the generation of indirect emissions from the agricultural production of soybeans or the end use of biodiesel. These emissions should be regulated through a broad based emissions trading scheme rather than the conditions of approval for individual projects.

4.3 Hazards and Risks

A Preliminary Hazard Analysis (PHA) was prepared, to assess the hazards from the production, storage and distribution of biodiesel. The PHA identified the facility as a potentially hazardous industry as it would store a number of dangerous goods on site including fuels, meal and spent bleaching earth. The facility is relatively distant from sensitive receivers such as residential areas, and the assessment found that risks to the public would not be significant.

An assessment of incidents with the potential for off site impacts found:

- thermal radiation levels from a bund fire may cause some impacts beyond the boundaries of the site, however due to the location of the site, in an industrial area, these impacts would be unlikely;
- toxicity effects from combustion would only be significant in close proximity to the fire and under most atmospheric conditions, there would be minimal effect at ground level;
- an explosion involving methanol and sodium methylate tanks would have the potential to impact on neighbouring facilities, however the likelihood and risk of fatality are below the relevant criteria for industrial areas; and
- the risk of injury or fatality at residential areas would be negligible due to the distance from the site.

The Department is satisfied the PHA adequately addressed the hazards and risks associated with the project and that off site risks would be negligible. Other industrial facilities in the area are not considered to be particularly hazardous and cumulatively the hazards risk in the area would not be unacceptable.

The Department has recommended conditions of approval requiring hazard related studies to be prepared and implemented, with ongoing monitoring and auditing, to ensure appropriate safety measures are incorporated into the project. The Department considers these measures would ensure hazards and risks would be monitored and managed to acceptable levels.

4.4 Other issues

The following issues were also assessed and a number of conditions are proposed to ensure adequate management of these issues.

Table 3: Other Issues

Issue	Consideration	Recommendation
Sustainability	<ul style="list-style-type: none"> Biofuels have been criticised for diverting food sources into fuel production. Soybeans are typically used as animal feed and for soy related products. The Project requires around 1.4 million tonnes per annum of raw soybean product. Oils extracted from the soybean would produce the biodiesel. This represents 18% of the total raw product used by the project. In addition, some 1.1 million tonnes of high protein soybean meal would also be produced and then pelletised for use as an animal feed. The high protein meal represents some 82% of the overall use of the raw soybean product. Glycerine is also a bi-product of the proposed process which also has applications for the food industry, such as a sweetener and preservative. World wide, high protein soybean meal is the principle source of protein for the livestock industry such as for cattle feedlots, piggeries and poultry farms. Australia produces some 30,000 tonnes per annum of high protein meal for the feed industry and imports around 356,000 tonnes (primarily from the US). Australia is therefore a major importer of this feed. As such, the meal produced by this project would be an important source of feed for the stock industry, which ultimately becomes a food source. National Biodiesel would import soybeans from the United States, Argentina and Brazil and has committed to ensuring that their feedstock originates from responsible, sustainable and legal agricultural operations. In the longer term it is anticipated that the project would encourage Australian production of soybeans. The Department is satisfied that the project would not significantly affect food supply or lead to deforestation for increased crop production. The project is also consistent with the Government's mandate on biofuel production. 	<ul style="list-style-type: none"> Implementation of a Soybean Procurement Plan to ensure soybeans are obtained from environmentally and socially responsible sources.
Traffic	<ul style="list-style-type: none"> The project would generate approximately 230 car, 42 heavy vehicle, 4.3 rail and 0.34 ship trips per day; The existing road network has adequate capacity to accommodate this traffic and ship numbers would be insignificant in the context of the broader port operations; The RTA raised concerns that the cumulative impacts of this project and other development in the Port would need to be assessed, however they acknowledge that cumulative traffic modelling currently being undertaken would not be available to inform assessment of this project. 	<ul style="list-style-type: none"> Implement a Transport Management Plan aimed at minimising road traffic impacts.
Coastal Processes	<ul style="list-style-type: none"> The project could experience impacts from sea level rise and increased coastal erosion, however this issue would affect Port Kembla as a whole and would require coordinated assessment and management; The Department is satisfied that the project represents an appropriate use of coastal land, given that it involves an industrial facility utilising existing industrial land. 	<ul style="list-style-type: none"> Ensure the project is designed in accordance with the DECC's draft Sea Level Rise Policy Statement.

Issue	Consideration	Recommendation
Flora and Fauna	<ul style="list-style-type: none"> Green and Golden Bell Frogs have been recorded in the area and the site contains potential habitat, however no species were found on the site during targeted surveys. 	<ul style="list-style-type: none"> Preparation of a Green and Golden Bell Frog Management Plan including measures to incorporate suitable habitat in site landscaping and riparian revegetation works.
Soil and Water	<ul style="list-style-type: none"> A conceptual Water Management Plan provided in the EA includes measures to treat stormwater prior to discharge and capture rainwater for use on site. The facility would produce up to 316 kL of wastewater per day which would be treated and then disposed of under a trade waste agreement with Sydney Water. 	<ul style="list-style-type: none"> Implement erosion and sediment controls; Prepare and implement stormwater and wastewater management plans; Maximise the use of recycled wastewater.
Visual	<ul style="list-style-type: none"> The project would have a maximum height of 36m and would be visible from many areas around Wollongong. However, in the context of the surrounding facilities of similar height, such as the BlueScope steelworks, Port Kembla Coal Terminal and GrainCorp silos, the Department is satisfied that the visual impacts of the project would be minimal. 	<ul style="list-style-type: none"> Recommended conditions are included to manage lighting, signage and fencing.

5. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B), and summarised these conditions in Appendix A.

These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

6. CONCLUSION

The Department has assessed the merits of the project (see attached Director-General's report).

This assessment has found that the environmental impacts of the project can be managed to ensure an acceptable level of environmental performance.

This assessment has also found that that the project would have substantial social and economic benefits for the region, and assist with the delivery of the State Plan, as it would:

- optimise the use of existing infrastructure at Port Kembla, including the Graincorp Terminal;
- attract \$166.8 million worth of investment to the region; and
- create at least 235 jobs in Wollongong.

Consequently, the Department believes that the project is in the public interest, and should be approved subject to conditions.

7. RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, under section 75J of the Environmental Planning and Assessment Act 1979; and
- sign the attached project approval (see Appendix B).

David Kitto
Director
Major Development Assessment

Chris Wilson
Executive Director
Major Project Assessment

Sam Haddad
Director-General

APPENDIX A: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 2: Administrative Conditions		
Limits of approval	5	Limits the processing capacity of the project to 1.4 million tonnes of soybeans per annum.
Schedule 3: Specific Environmental Conditions		
Air	12 – 16	Requires dust and air emissions to be minimised.
	17	Requires an Air Quality Validation and Management Report.
	18	Prohibits the emission of offensive odour.
Noise	19 – 21	Includes construction and operation hours, noise limits and Noise Compliance Validation.
Soil and Water	22 – 23	Provides requirements for erosion and sediment controls and stormwater management.
	24	Requires floor levels to be designed in accordance with the DECC's <i>draft Sea Level Rise Policy Statement</i> .
	27 – 28	Requires wastewater to be managed and lawfully disposed of.
Hazards	29 – 30	Requires various hazard and safety studies prior to construction, commissioning and during operations.
Flora and Fauna	31 – 33	Provides requirements for the management of flora and fauna, including riparian vegetation.
Traffic	39 – 40	Requires the use of road transport to be minimised and the implementation of a sustainable travel plan.
Soybean Procurement	41 - 42	Requires soybeans to be sourced responsibly.
Water and Energy Efficiency	43 – 44	Requires water and energy efficiencies to be implemented in accordance with industry best practice.
Schedule 4: Environmental Management, Monitoring Auditing and Reporting		
Management and Reporting	45 – 55	Requires environmental management, monitoring, auditing and reporting