Soybean Processing and Biodiesel Production Facility

(Approval No. 08_0083)

Section 75W Modification Application

November 2012

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1 Overview of Proposed Changes

1.1 Background

National Biodiesel Limited (NBL) submitted an Environmental Assessement (EA) in December 2008 for the development of a 4000t/day Soybean Processing and Biodiesel Production (SPBP) facility, divided onto four Land plots totalling 7.36 Ha at Port Kembla. The Project was approved by the Minister of Planning on 5th May, 2009 under Part 3A of the *Environmental Planning and Assessment Act 1979*, approval number 08_0083. This Approval will lapse if the building work has not substantially commenced by 5th May 2014.

The requirement to establish a marketing and distribution network in the local marketplace prior to commencing construction of the plant resulted in a delay in progress on the project until Q4 2011. Despite executing and then servicing a Deed over the Land plots as a protection against any other use of the Land plots during that time, one of the smaller Land plots (Plot 3, 1.55 Ha) approved under the original Project was allowed to be developed by the Port Kembla Port Corporation (PKPC) without National Biodiesel Limited's proper knowledge or consent. In order to remedy the situation, PKPC has substituted some nearby adjacent land as part of the reparations.

This has resulted in a change to the physical location of Plot 3, the Biodiesel & Glycerine Refinery site, to a new site approximately 250m east of the original Approved location.

The process and production capacity of the overall plant remains unchanged.

As the new Plot 3 is larger than the old Plot 3 (1.8 Ha vs. 1.55 Ha) it is proposed to slightly increase the storage capacity of biodiesel on this site, as well as move and increase soy oil storage on this site too.

In addition to the change in land allotment, a two stage construction methodology is now proposed for the Project, with the first stage consisting of the construction of the bulk storage and loading facility for the plant. This will allow for commencement of distribution operations on the site whilst the main Soybean Processing and Biodiesel Production facilities are completed during the lengthy second stage of construction, and will bring forward the associated benefits of employment and economic activity in the local area. To enable this early commencement of operations, a liquid bulk unloading facility from Berth 104 is required to allow importation of biodiesel for distribution.

The last major change that is proposed for the site is the addition of four bulk soybean silos and a truck dump station for storage of soybeans at the Crushing Facility site (Approved Plot 5), rather than using the existing GrainCorp facilities as previously proposed. This will provide security of operations for National Biodiesel Limited as the plant will not be restricted by the availability of GrainCorp's existing assets.

A minor change that has occurred following utility plotting of the Administration site is a change in the orientation of the office building and site parking, to avoid disturbing underground HV cables.

On the 16th May, 2012 the Department of Planning advised that approval for these modifications could be sought via a Section 75W modification application.

1.2 Site Location

The Approved Soybean Processing and Biodiesel Production (SPBP) facilities are located in the Inner Harbour precinct at Port Kembla, NSW. The existing environment is generally described as a regionally significant industrial precinct on the coastal plain, which is characterised by foreshore port facilities and industrial operations.

The SPBP facility is surrounded by the following industrial sites within the Inner Harbour precinct:

- Sydney Water Corporation's Wollongong Sewerage Treatment Plant (North)
- AAT car storage area (North)
- Port Kembla Coal Terminal (North, East and South)
- BlueScope Steel Port Kembla Steel Works (South)
- GrainCorp (West)
- AAT car terminal (West)

Figure 1 on the following page details the location of the Approved facilities and the proposed change in the land allotment for Plot 3, relative to the sensitive receptors and neighbouring industrial land users identified in the original Maunsell-AECOM (2008) EA, as listed in Table 1 below.

Receptor No.	Description	Sensitive Receptor / Industrial Land User
1	Swan St, Wollongong	Sensitive Receptor
2	Kiera St, Wollongong	Sensitive Receptor
3	Gladstone Ave, Coniston	Sensitive Receptor
4	Masters Rd, Coniston	Sensitive Receptor
5	Five Islands Rd, Cringila	Sensitive Receptor
6	Five Islands Rd, Port Kembla	Sensitive Receptor
7	AAT Car Terminal	Industrial Land User
8	GrainCorp	Industrial Land User
9	AAT Car Storage Area	Industrial Land User
10	Port Kembla Coal Terminal	Industrial Land User

Table 1 – Sensitive receptors and neighbouring industrial land users

The new Plot 3 is approximately 250m east of the previous Plot 3, moving it slightly further away from the sensitive receptors on the western side. The distance to the nearest sensitive residential receptor, Swan St Wollongong, which lies to the north, is unaffected and is still over 1200m away from the proposed facilities as assessed in the original EA for the development.

With regards to the neighbouring industrial land users, the change in the location of Plot 3 means that the Biodiesel & Glycerine Refinery site is now adjacent to the Port Kembla Coal Terminal, and approximately 250m further east from GrainCorp grain storage and handling site and the main AAT car terminal and car storage facilities.

Figure 1 – Site location

1.3 Summary of Proposed Changes

The proposed changes to the development outlined in this report are summarised in Table 2 below, and are shown graphically in Figures 2 & 3 on the following pages.

Change No.	Description	Original Project Approval (Approval No. 08_0083)	Proposed Change
1	Location and size of Plot 3, Biodiesel plant site	PT lot 20, DP1046295, 1.55 Ha land area	PT lot 2, DP 1125445, 1.8 Ha land area, located approximately 250m east of original Plot 3
2	Staged Construction of Plant	Plant to be built in a single stage	Plant to be built in two stages; Stage 1: liquid bulk storage and loading facilities Stage 2: Soybean Processing and Biodiesel Production facilities
3	Additional Bulk Storage Capacity for Biodiesel and Soybean Oil on Plot 3	3 x 5,600m^3 Biodiesel storage tanks located on Plot 3. 1 x 10,800m^3 ML Soybean Oil storage tank located on Plot 5.	3 x 6,000m^3 ML Biodiesel storage tanks located on Plot 3. 2 x 6,000m^3 Soybean Oil storage tanks located on Plot 3.
4	Liquid Bulk Unloading Facility at Berth 104	Ship unloading facilities at Berth 104	Addition of liquid bulk unloading facilities at Berth 104
5	Soybean Storage Silos and Truck Dump Station	Use of GrainCorp's existing facilities; 7 x 10,000t silos, 2 x 5,000t silos and a truck dump station	Construction of 4 x 20,000t soybean silos, truck dump station and associated conveyors on Plot 5.
6	Change in orientation of Administration Building and car parking	Admin building faced East/West, and car park located on Western side of the building	Admin building facing North/South, and car park located on Southern side of the building.

Table 2 – Summary of proposed changes

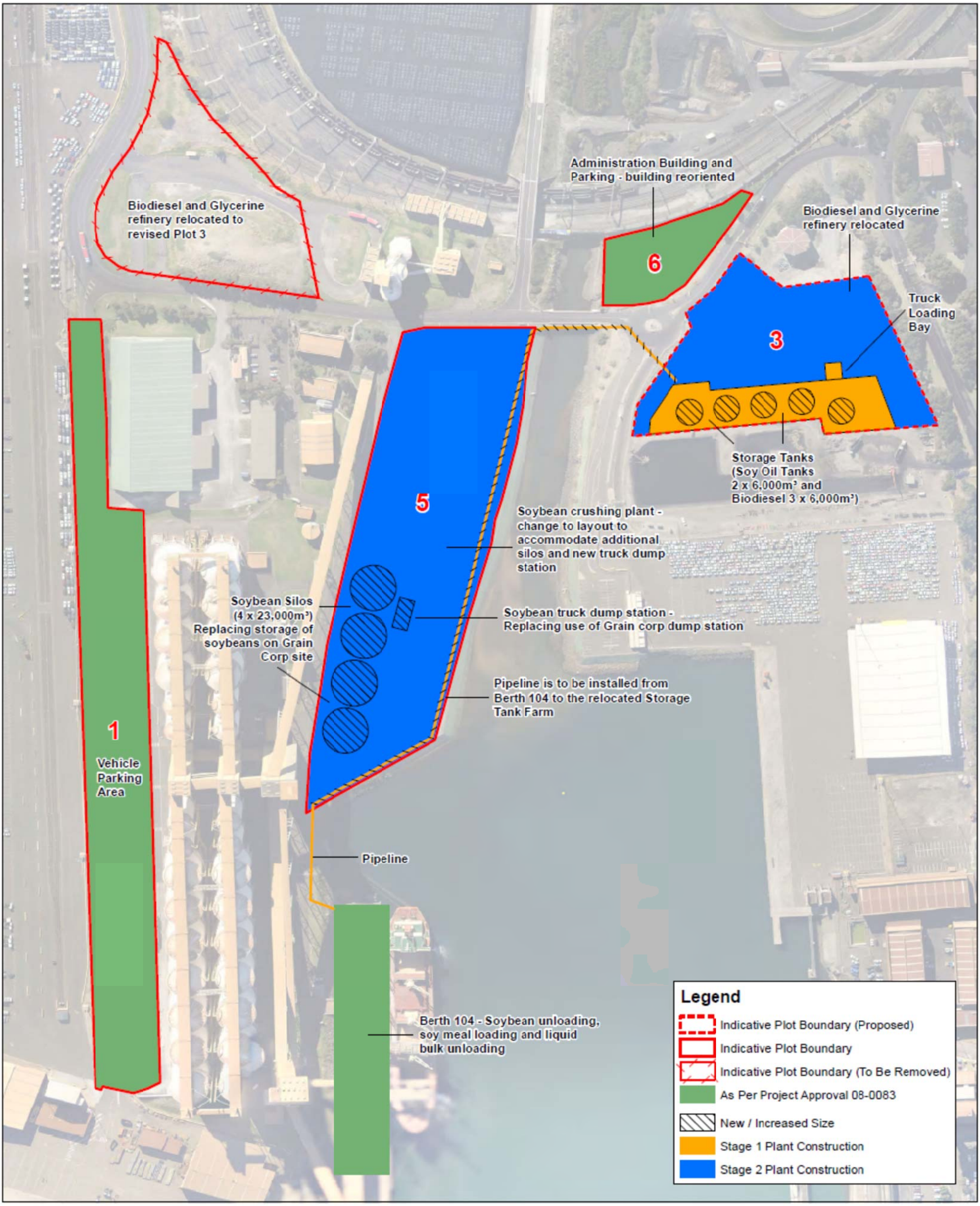

Figure 2 – Summary of proposed changes

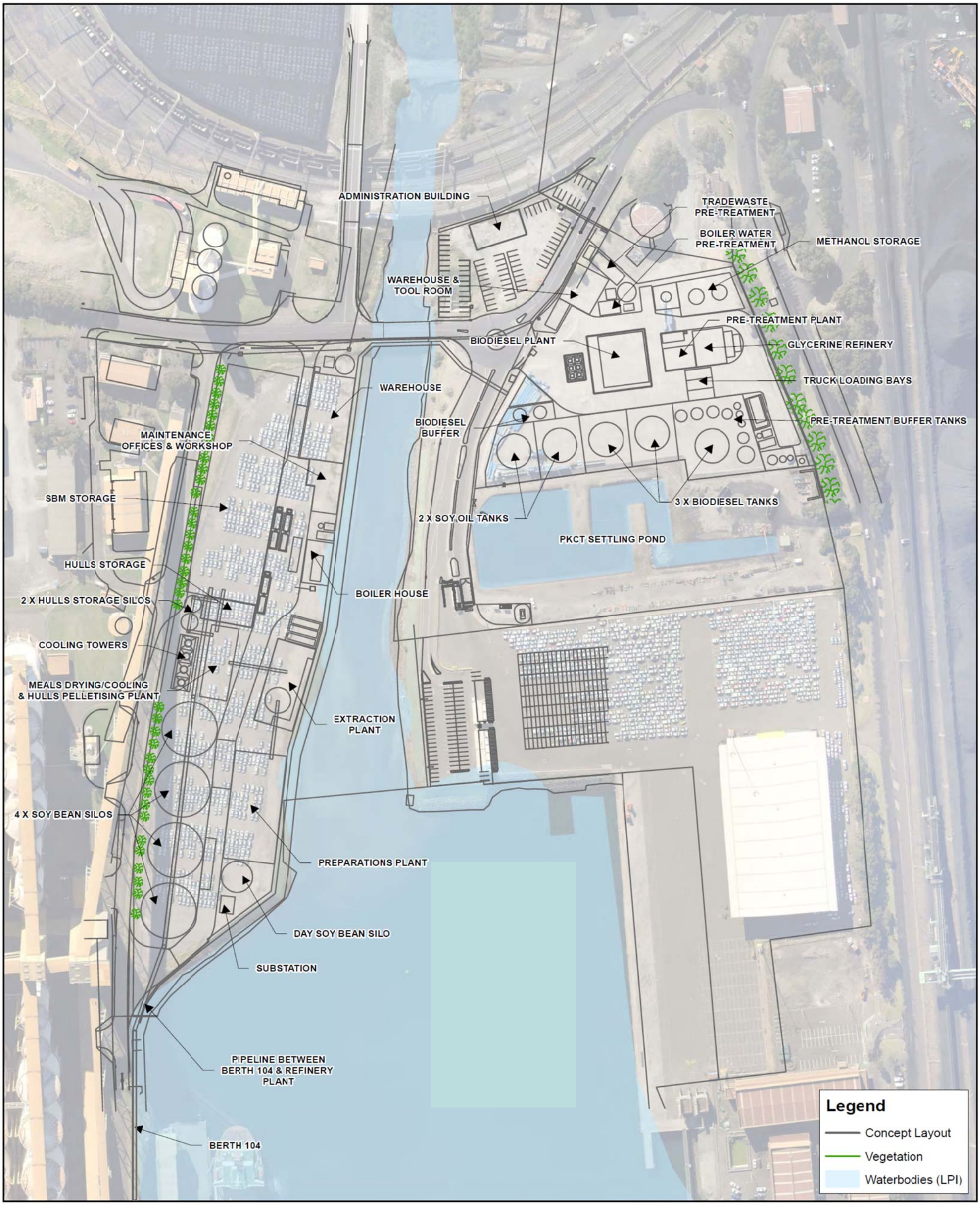

Figure 3 – Revised plant layout with proposed changes

1.4 Summary of Environmental Assessment for the Proposed Changes

For each of the proposed changes, an initial gap analysis was conducted in conjunction with Cardno (a local company specialising in Environmental Engineering in the Port Kembla area) to identify the environmental impact of each of the changes and to determine whether further detailed assessment was required.

The following table summarises the results from this initial gap analysis.

Proposed Change		Gap Analysis Results – Detailed Assessment Required (Y/N)						
		Air Quality	**Hazards and Risk**	**Traffic**	**Biodiversity**	**Noise**	**Soils and Water**	**Visual Amenity**
1	Location and size of Plot 3, Biodiesel plant site	Yes	Yes	No	Yes	No	Yes	Yes
2	Staged Construction of Plant	No	No	No	No	No	No	No
3	Additional Bulk Storage Capacity for Biodiesel and Soybean Oil on Plot 3	No	No	No	No	No	No	Yes
4	Liquid Bulk Unloading Facility at Berth 104	No	Yes	No	No	No	No	Yes
5	Soybean Storage Silos and Truck Dump Station	Yes	Yes	No	No	No	No	Yes
6	Change in orientation of Administration Building and car parking	No	No	No	No	No	No	No

Table 3 – Detailed environmental impact assessment requirements for proposed changes as identified by initial gap analysis

Using the results from this initial gap analysis, detailed assessments were then undertaken for the relevant environmental impacts identified in Table 2, with the assistance of the following relevant experts:

- Air quality: Cardno
- Hazards and Risks: Cardno

- Biodiversity: Dr. A. White, Biosphere Environmental Consultants
- Soils and Water: URS
- Visual Amenity: Cardno

Table 4, below, summarises the findings from each of these detailed assessments.

Environmental Impact	Summary of Detailed Assessment Results
Air Quality	Air quality impacts resulting from the proposed changes are considered to be consistent with those detailed in the Maunsell-AECOM (2008) EA. The process and capacity of the plant remains the same, hence the type and amount of emission generating activities is not is not considered to increase. Therefore, the emissions generated by the changes are expected to be below the adopted criteria as modelled in the Maunsell-AECOM (2008) EA and not significant to the nearest sensitive receptors. Due to the addition of the soybean storage silos and truck dump station, there is the potential for a minor increase in the generation of dust and vehicle emissions. However, the mitigation measures detailed in the materials handling system are expected to control dust generation and the risk of combustion to an acceptable level. Noting also that the location of potential dust generating activities will be further away from sensitive receptors.
Hazards and Risks	The proposed changes are not considered to alter the Preliminary Hazard Analysis (PHA) or the permissibility of the project under the current land use zoning. The relocation of Plot 3 including the Biodiesel and Glycerine Refinery, shifts the plant further away from sensitive receivers. Re-modelling of radiant heat impacts based on the new location of the refinery, has shown the risk of radiant heat impacts to meet the risk criteria. Other risks such as the risk of explosion from soybean dust, flammable liquid storage and tank failures are considered to be mitigated as per the Project Approval.
Biodiversity	The proposed changes do not impact upon the Green and Golden Bell Frog (GGBF). The new Plot 3 is cleared and capped for development and does not contain any habitat suitable for the GGBF to forage amongst or shelter. Both temporary and permanent frog exclusion fences are to be installed around identified areas of potential stray frog movement, in order to protect the GGBF from straying on to National Biodiesel's sites from neighbouring areas.
Soils and Water	The nature of the soils and groundwater for the new Plot 3 are consistent with the findings of previous investigations; the site is not considered to be contaminated and considered suitable for the proposed development with respect to potential ground contamination risks. The relevant control measures for the management of potential acid sulphate soils and saline soils are in accordance with those for the original Project Approval.

Environmental Impact	Summary of Detailed Assessment Results
Visual Amenity	The visual amenity impacts of the proposed modification are considered to be consistent with the Project Approval, as the changes are considered to integrate into the existing industrial setting. Although some of the changes will be visible from surrounding locations, the proposed structures are similar in bulk and character to the existing industrial development. Accordingly the proposed changes are considered to be consistent with the character of the port and its heavy industrial operations. Landscaping, vegetative screening, non-reflective materials, recessive colours and the minimisation of light spill have been incorporated into the project design to minimise the visual amenity impacts.

Table 4 – Summary of detailed environmental impact assessments for proposed changes

Overall, it was found that for all of the proposed changes the environmental impacts and associated mitigation measures are consistent with the original Maunsell-AECOM (2008) Environmental Assessment, and the original Project Approval.

1.5 Consultation

Each of the following key stakeholders, which have plant or operations surrounding the proposed development, were consulted with regards to the proposed changes outlined in this report.

- Port Kembla Port Corporation
- Port Kembla Coal Terminal
- AAT
- GrainCorp

Details of the presentation given to these key stakeholders regarding the proposed changes and the corresponding meeting minutes detailing the associated discussions are provided in Appendix 3.5.

Overall, these key stakeholders considered the proposed changes as being acceptable, and were satisfied with the corresponding assessments that have been undertaken.

1.6 Conclusion

A detailed review of the environmental impacts and associated mitigation measures for the proposed changes, as outlined in the remainder of this report, has found that they are consistent with the findings of the original Maunsell-AECOM (2008) Environmental Assessment and the original Project Approval, as approved by the NSW Minister of Planning on 5th May, 2009.

National Biodiesel seeks approval from the Department of Planning for a Section 75W modification for the proposed changes as detailed in this report.

2 Detailed Review of Proposed Changes

2.1 Change 1: Location and size of Plot 3

2.1.1 Description of Change

The land allotment for the Biodiesel Refinery, Plot 3, has changed in both location and size due to reallocation of lands by the Port Kembla Port Corporation (PKPC). The new Plot 3 is located approximately 250 east of the previously approved site, and is slightly larger in size (1.8 Ha for new Plot 3 vs. 1.55 Ha for old Plot 3).

The relative locations of the new and old locations of Plot 3 are shown in Figure 4 below, and Appendix 3.1 outlines this change in land plots in detail.

NO.	PT LOT	D.P.	PKPC APPROXIMATE AREAS (Ha)
1	2001	1030233	2.27
3(NEW)	2	1125445	1.8
5	123	1128379	3.11
6	101	1120801	0.43

Figure 4 – Change in location of Plot 3

2.1.2 Justification of Change

Despite National Biodiesel Limited executing and servicing a Deed over the approved Land plots as a protection against any other use of the Land plots prior to commencement of construction, the Port Kembla Port Corporation (PKPC) allowed one of the smaller Land plots (old Plot 3, 1.55 Ha) to be developed without National Biodiesel Limited's proper knowledge or consent. In order to remedy the situation, PKPC has substituted some nearby adjacent land (new Plot 3, 1.8 Ha) as part of the reparations. Due to similar size and layout of the new Plot 3, it is proposed that this new parcel of land is used for the Biodiesel & Glycerine Refinery, previously to be located on the old Plot 3.

2.1.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	The process and capacity of the plant remains unchanged. Ambient site conditions and surrounding landscape and structures are similar to the previous Plot 3, and the new site is located slightly further away from residential areas.	Qualitative only, referring to original dispersion modelling results.
Hazards and Risk	The new land plot is located 250m east of the previous site and as such is located further away from residential areas. The volume of flammable liquids (methanol and sodium methylate) to be stored on site remains unchanged. The Biodiesel Refinery is now located on the opposite side of the Garungaty waterway from the Crushing Facility, meaning that process piping will need to cross the waterway between the two facilities. The design of this piping will be such as to ensure that any leakage is contained and does not enter the waterway. Neighbouring sites are industrial users, with similar operations as per the original site (i.e. car parking and material storage & handling).	Revised heat flux diagrams and assessment of risk of flammable liquid fire on new site. Qualitative assessment of risks to neighbouring industrial sites, and risks of piping crossing waterway.
Traffic	The process and capacity of the plant remains unchanged, and traffic volumes for the site remains unchanged. The entrance for the new plot of land is located approximately 400m further along the internal access road at the Port, relative to the old plot of land. The new entrance is also positioned on a roundabout which will have a positive effect on controlling traffic flow to and from the new site, relative to the old site.	No detailed assessment required.
Biodiversity	The process and capacity of the plant remains unchanged, and the amount of developed land remains unchanged. The entire land space of the new Plot 3 is cleared and capped for development.	Qualitative assessment on the impact on the GGBF.
Noise	The process and capacity of the plant remains unchanged and the new site is located slightly further away from key noise receptors. As such, the level of noise from the plant remains unchanged, and there is no change on the impact on the key noise receptors.	No detailed assessment required.

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Soils and Water	Studies will be required to assess new site soil conditions. As outlined in section 7.13.5 of the original EA, the original land plots were found to be suitably higher than potential flood levels or sea level rise. The new plot 3 sits adjacent to, and higher than, the administration block (Plot 6) and all other surrounding land. As such, the new Plot 3 also sits above any potential flood or sea rise levels. A detailed assessment of stormwater requirements for the new site will be undertaken during detailed design and development of associated stormwater management plans as per current DA requirements.	Quantitative assessment of new site soil condition.. No detailed assessment required for flood or sea level rise. Storm water management to be addressed during detailed design as per current DA requirements.
Visual Amenity	The site layout and orientation will change as a result of the new site, and the size of the bulk storage tanks has increased slightly.	Quantitative assessment by means of revised site layouts, and 3D representation & photomontages of new site layout.

2.1.4 Detailed Environmental Assessments

2.1.4.1 Air Quality

Background

The new location of Plot 3 is located 250m east of the Approved location for the Biodiesel Refinery, at the inner harbour of Port Kembla, NSW.

Local air quality is influenced by many factors, including meteorological conditions and topography. The Illawarra region is bounded by a steep escarpment to the west and the ocean to the east, both of which influence air quality in the region. Details of the existing meteorological conditions are provided in Section 7.2.3 of the Maunsell-AECOM (2008) EA. In summary, the predominant wind direction is westerly with relatively low general wind speeds(less than 3m/s).

The existing potential sources of air pollutants within the Illawarra include motor vehicles, industry (in particular ferrous metal manufacturing) and domestic activities, which result in ozone, photochemical smog and brown haze.

The proposed Soybean Processing and Biodiesel Production (SPBP) facility is surrounded by industrial premises including:

- BlueScope Steel Port Kembla Steel Works
- Port Kembla Coal Terminal
- Orica's sulphuric acid recovery and chemical manufacturing plant
- Sydney Water Corporation's Wollongong Sewerage Treatment Plant
- Cement manufacturing facilities
- Metal fabrication, coating and finishing facilities

As outlined in Section 7.2.3 of the original Maunsell -AECOM (2008) EA, historical data from the NSW Department of Environment and Climate Change (DECC) for the Illawarra region shows that carbon monoxide, nitrogen dioxide and sulphur oxide levels are below the Ambient Air Quality National Environment Protection Measures (AAQ NEPM) standards. However, levels for ozone and fine particles (PM_{10}) do not comply with the AAQ NEPM.

Review of the potential emissions from the proposed SPBP facility, including detailed air quality modelling, in the original Maunsell -AECOM (2008) EA found that the emissions generated by the proposed development by point sources are expected to be below the NSW DECC assessment criteria and that there would be no significant impact on air quality from the proposed facilities at the nearest sensitive receptors.

Methodology

The change in the location of Plot 3 does not affect the process or production capacity of the plant and the associated emissions, only the physical location of the Biodiesel and Glycerine Refinery plant and equipment. As such, a qualitative assessment of the potential air quality impacts associated with the proposed change in location of Plot 3 was undertaken by Cardno using the existing data included in the Section 7.2 of the Maunsell AECOM (2008) EA. Specifically, the impact on air quality for this proposed change was assessed in terms of the potential air quality impacts associated with the Biodiesel & Glycerine Refinery plant and equipment; that is, point source emissions, fugitive emissions, odour, and volatile organic compounds (VOCs).

Detailed Assessment Results

<u>Point Source Emissions:</u>

The nature of the proposed change is not considered to alter the point source emissions from the facility in either pollutant type or volume from the following point sources identified in the Maunsell AECOM (2008) EA:

- Hexane emissions from the soybean-oil extraction plant.
- Methane emissions from the biodiesel plant.
- Oxides of nitrogen emissions from gas-fired boilers.

Accordingly, the estimated air pollutant concentrations (annual average, maximum hourly and 95th percentile) for hexane, methanol and nitrogen oxides at the 10 receivers as specified in Tables 27, 28 and 29 of the Maunsell-AECOM (2008) EA are considered to remain unchanged from those modelled in the Maunsell-AECOM (2008) EA, due to the relatively small change in the location of Plot 3.

As a result, the concentrations of hexane and methanol are expected to remain an order of magnitude below the adopted criteria at each of the receptor locations. The NOx predictions are also considered to remain consistent with those modelled in the Maunsell-AECOM (2008) EA, including the previously determined potential for a minor exceedance of the background readings at Receptor 8.

With regards to this potential minor exceedance of NOx background readings at Receptor 8 as identified in the original Maunsell-AECOM EA (2008), it was noted in the original EA that this is unlikely to occur in reality due to the worst case scenario inputs used for the modelling work. It should be further noted that this result was also influenced by the biodiesel plant boiler being located in close proximity to Receptor 8. With the change in Plot 3, the location of this boiler will be

approximately 250m to the east of its original location, further reducing the likelihood of any possible minor NOx background reading exceedance at Receptor 8.

Fugitive Emissions:

With regards to fugitive emissions from the site, minor additional emissions during filling from the importation of biodiesel may occur whilst the main production facility is being constructed. The quantity of biodiesel to be imported will not exceed the final plant capacity, so there will be no change in emissions associated with distribution. Emissions from tank filling will be managed by tank and piping and design, and through the use of desiccant breathers.

Odour:

The heating and processing of oilseeds can produce offensive odours in some industrial applications, while methanol is described as an "odorous air pollutant" by the NSW EPA. As the production process and capacity is not changing, the proposed changes are not considered to increase or alter the production of offensive odours as assessed in the Maunsell-AECOM (2008) EA. Hence, the proposed changes are not considered to alter the impacts to sensitive receivers from odour.

Volatile Organic Compounds:

The proposed changes do not include a modification to the production methodology or volumes assessed in the Maunsell-AECOM (2008) EA. Hence, the potential VOC air quality impacts associated with the proposed changes are considered to be consistent with the Project Approval.

Mitigation Measures

The mitigation measures as defined in section 7.2.6 of the Maunsell-AECOM (2008) EA and those listed in the original Project Approval, are considered to be relevant to the proposed change, and are as detailed below:

- The proposed plant will be designed with emission controls integrated into each stage
- An Air Quality Management Plan will be implemented including monitoring and inspections to confirm that emissions comply with manufacturer's guarantees and legislative requirements, and to confirm that all controls are working appropriately and to ensure impacts to the community are minimised.
- All practicable measures will be undertaken to ensure that air emissions during the construction and operation of the project are within relevant air quality and odour criteria guidelines
- National Biodiesel will ensure that no plant-generated offensive odours will exist as detectable levels at the closest sensitive receivers. If any offensive odours are detected at the closest sensitive recievers and proven to originate from the proposed development once in operation, feasible odour-treatment technology will be evaluated and installed.
- Industry best practices will be followed to prevent fugitive emissions and a Leak Detection and Repair Program will be implemented and followed during normal operation to control the potential for fugitive emissions.
- National Biodiesel will ensure that all emission sources that form part of the proposed facility comply with emission limits as specified in the Protection of the Environment Operations (Clean Air) Regulation.

In addition to these existing mitigation measures, the following additional mitigation measure has been identified to further reduce the potential minor fugitive emissions associated with tank filling during the interim importation of biodiesel while the main production facilities are being built:

- Design of tank and piping and the use of desiccant breathers to control emissions during tank filling.

Conclusion

This detailed assessment found that the impacts on air quality from the proposed change in the location of Plot 3 are in line with those previously determined in the original Maunsell-AECOM (2008) EA, and as such are expected to be below the adopted assessment criteria .

The mitigation measures as listed in Section 7.2.6 of the original Maunsell-AECOM (2008) EA and the original Project Approval are considered to be appropriate to mitigate the potential air quality impacts to meet the adopted assessment criteria.

2.1.4.2 Hazards and Risks

Background

In the original Maunsell-AECOM (2008) EA, the hazards and risks associated with the proposed SPBP were assessed via a Preliminary Hazard Analysis (PHA) which was conducted in accordance with the Department of Planning Hazardous Industry Planning Advisory Paper (HIPAP) Numbers 4 and 6.

The primary hazards identified from this PHA were those due to flammable liquids and combustible dusts that are present on site in sufficient quantities to cause a major fire or explosion risk. Accordingly, the hazard identification in the Maunsell-AECOM (2008) EA was directed at bulk quantities of material and not minor quantities as may be found as small additives, cleaners, waste storage and like situations.

For the Biodiesel Refinery, the primary hazard identified was that due to the storage of flammable liquids (methanol and sodium methylate) on site.

In Section 7.4 of the original Maunsell-AECOM (2008) EA, the hazard of flammable liquids stored on the Biodiesel Refinery site was assessed by means of detailed heat flux diagrams from a flammable liquid fire, consideration of the products of combustion, explosion pressures and associated on site and off site risks.

From this original assessment, the following was determined with regards to the major risks of fires and explosions associated with flammable liquid storage on the Biodiesel Refinery site:

Fires:

- No risk of injury or fatality at residential areas or other sensitive land uses as the separation distance is large, i.e. 1 km or larger
- Fire events have the potential to cause fatality in neighbouring industrial areas, however, their likelihood is acceptably low and there exists a high probability of escape
- Fire events have the potential to cause propagation on-site and at neighbouring industrial facilities; however, the combined likelihood is less than the acceptable criterion of 50 pmpy.

Explosions:

- No risk of injury or fatality at residential areas or other sensitive land uses as the separation distance is large, i.e. 1 km or larger
- Internal tank explosion events have the potential to cause fatality or propagation damage on-site and in neighbouring industrial areas; however, the combined likelihood (approximately 20 pmpy) is less than the acceptable criterion of 50 pmpy

The corresponding societal risk was concluded to be acceptable given that:

- Few events analysed in the PHA have the potential for offsite impact and for the ones that do, their likelihood is acceptably low
- The risk of off-site individual fatality is low and acceptable
- The population density in the area is low

It was therefore determined that the results from the PHA showed that the risks associated with the proposed Biodiesel Refinery comply with the Department of Planning guidelines for tolerable fatality, injury, irritation and societal risk.

Methodology

The hazard and risk assessment for the proposed change in location of Plot 3 was undertaken by Cardno, following the key steps in the PHA methodology used in the original Maunsell-AECOM (2008) EA as outlined below:

- Establishing the nature of the proposed changes in particular the quantity, storage and handling of dangerous goods and combustible dusts that may give rise to major fires and explosions.
- Review of the proposed general arrangement of the proposed changes and development of possible major hazard events, their causes and consequences.
- Review of the consequences of the identified hazardous events by considering onsite and possible offsite impacts, including the risk of propagation of a hazardous event to nearby processing facilities.
- Review of the likelihood and hence the risks of the potential hazardous events with the possibility for offsite harm using qualitative techniques.
- Comparison to the existing local land uses including consideration of cumulative risk factors.
- General consideration proposed safeguards.

Detailed Assessment Results

<u>Hazard Identification:</u>

The primary hazards identified as part of the Maunsell-AECOM (2008) EA were due to flammable liquids and combustible dusts that are present on site in sufficient quantities to cause a major fire or explosion risk. As a result, the hazard identification in the Maunsell-AECOM (2008) EA was directed at bulk quantities of material and not minor quantities as may be found as small additives, cleaners, waste storage and like situations. Accordingly, the hazard identification undertaken by Cardno focussed on these aspects.

The proposed change in the location of Plot 3 does not alter the type of hazard that may be presented or the type of hazardous material to be used. Flammable liquids, methanol and sodium methylate, will still be stored on the Biodiesel Refinery site. The quantity of these flammable liquids

to be stored on the site has not changed, however there is a shift in the location of the storage tanks, albeit further away from sensitive receivers. As a result, the risk associated with this hazard is not considered to change.

The proposed change in the location of Plot 3 also facilitates the need for process piping to now cross over the Garungaty waterway, between the Crushing Plant and Biodiesel Refinery sites. The waterway crossing increases the risk of potential leaks entering the waterway, hence the pipeline design, manufacture and construction will be required to meet relevant standards with regular monitoring implemented during operation to mitigate the risk of significant impacts during operation. Construction hazards and risks associated with the pipeline are expected to minimal as the pipeline will be attached to a new pipe bridge adjacent to the existing road bridge that spans the waterway.

The location of soy oil storage has also being moved to the new Plot 3 and the bunding arrangement for combustible liquids (soy oil, biodiesel and glycerine) has been revised in accordance with the new site layout and relevant requirements of AS 1940. Although the potential for a pool fire from these combustible liquids is suitably low (was not considered a major risk in the original Maunsell-AECOM (2008) EA), this risk was assessed in order to determine the impact from the increased bund size and new location on the adjacent PKCT coal stockpiles.

Risk Assessment:

The same risk analysis methodology as adopted in the Maunsell-AECOM (2008) EA was utilised for assessing the risks associated with the proposed change. This methodology was a scenario based risk assessment approach, as opposed to an incident based approach, for the following reasons:

1. Distance to sensitive land users including residences.
2. Distance between onsite tanks and other equipment to the neighbouring facilities.

The same risk criteria obtained from HIPAP 4 as listed in Table 43 of the Maunsell-AECOM (2008) EA were also adopted, as were the criteria for radiant heat impacts such as heat flux, tolerant radiant heat levels and effects of explosion overpressure as detailed in Tables 43, 44, 45 and 46 of the Maunsell-AECOM (2008) EA.

Radiant Heat Fluxes
Revised modelling of the radiant heat fluxes associated with potential fires from bulk liquids on site was conducted as shown in Figure 5 on the following page. Contours R101, R102 and R103 detail radiant heat fluxes resulting from flammable liquid fires, the major risk identified with the proposed facility.

This revised heat flux diagram shows that the radiant heat impacts from a flammable liquid fire on the Biodiesel Refinery site (contour R103) for the new location of Plot 3 meets the following relevant risk criteria adopted in the original PHA in the Maunsell-AECOM (2008) EA:

- Heat flux less than 23kW/m^2 in open areas on adjoining sites
- Heat flux less than 12.6kW/m^2 at nearby buildings on adjoining sites
- Heat flux less than 1.2kW/m^2 at residential areas

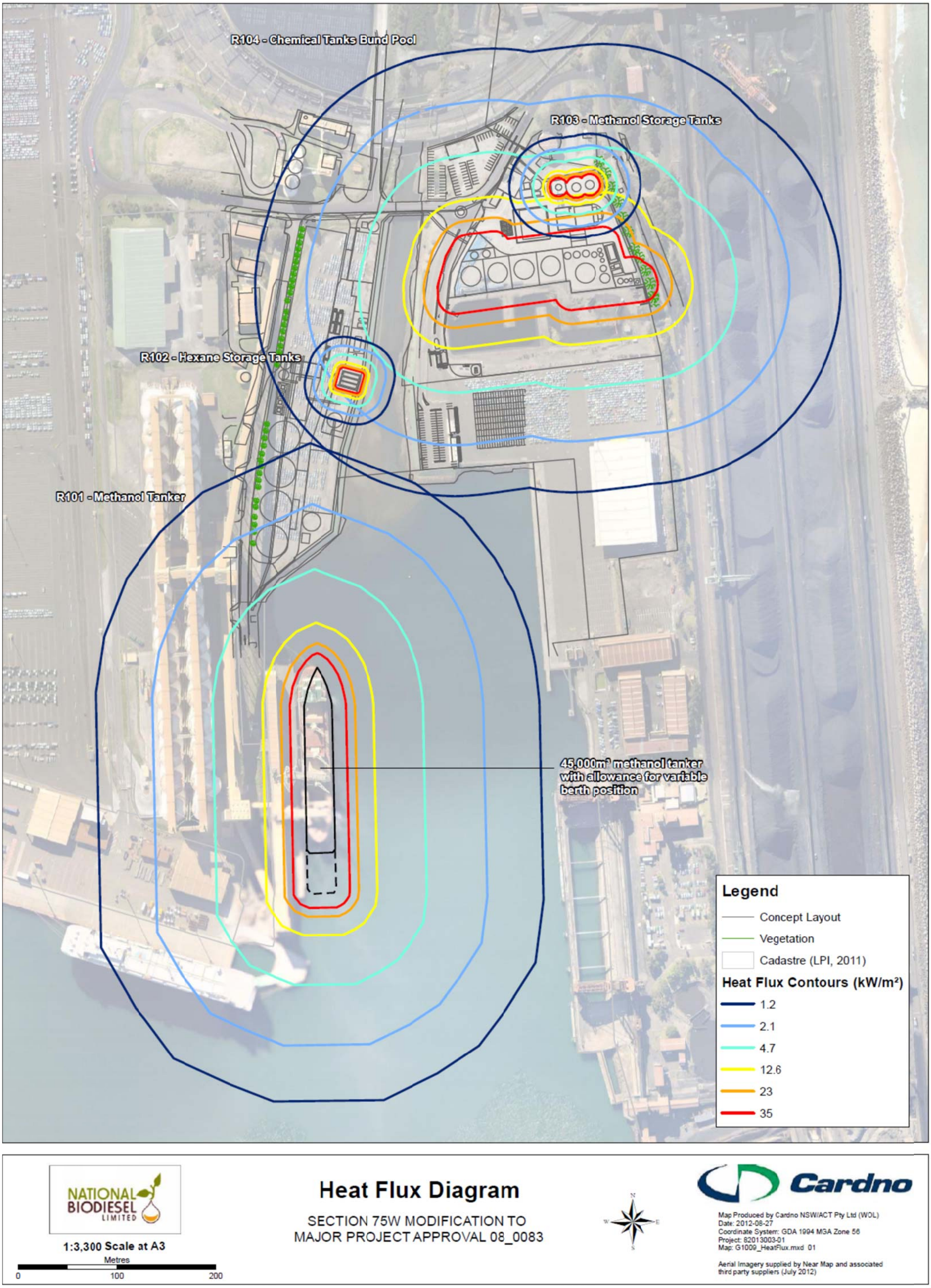

Figure 5 – Revised heat flux contours for proposed changes

Furthermore, the revised radiant heat flux contour R103 (flammable liquid fire on the Biodiesel Refinery site for the new location of Plot 3) showed that the associated radiant heat impacts on the neighbouring PKCT facilities are negligible; the modelled heat flux is a maximum of 4.7kW/m2 at the edge of the water piping compound and near the edge of the western side of the PKCT access road. The heat flux at the PKCT water tank, pump house and the eastern side of the PKCT access road is 1.2kW/m2 which is equivalent to being out in the hot sun in the middle of summer.

An additional heat flux contour, R104, was drawn in on this revised radiant heat flux diagram to understand the potential radiant heat flux effects on the adjacent PKCT coal stockpiles in the very unlikely scenario of a pool fire from the bulk combustible liquid (soy oil & biodiesel) storage tanks bund. This risk was not previously considered in the original Maunsell-AECOM (2008) EA because it is very unlikely to occur, for the following reasons:

- The risk of a tank leaking is suitably low, and it is unlikely that a pool of liquid would accumulate in the bund to create a fuel source for a pool fire. The relevant risk of a tank failure is $6.6x10^{-6}$/yr, and the corresponding estimate of the risk of a tank failure and fire is $3x10^{-6}$/yr and is below the $50x10^{-6}$ criteria from HIPAP No. 4.
- If, in the unlikely occurrence that a leak was to occur, the bund design incorporates 600mm high compound subdivisions in accordance with AS1940 requirements which greatly reduce the potential pool size while the leak is rectified, and thus greatly reduces the potential heat flux radii.
- Both soy oil and biodiesel are non-flammable, and have very high flashpoints (biodiesel typically over 130^{o}C, and soy oil over 250^{o}C). This means that it is very difficult to ignite and sustain a fire from a potential spill (these substances will not burn if you place a lit match on a spilled pool of liquid). It is for this reason that these products are allowed to be safely transported through road tunnels etc., where flammable liquids cannot.

The results from this additional heat flux contour showed that the modelled heat flux at the closest PKCT stockpile is below 12.6kW/m^2, the threshold at which plastic will melt or vegetation will burn. This demonstrates that even in the very unlikely scenario of a pool fire from the bulk combustible liquid storage bund, there is negligible risk of propagation of fire on the adjacent PKCT coal stockpiles.

Products of Combustion
The proposed changes are not considered to alter the products of combustion as detailed in the Section 7.4.8 of the Maunsell-AECOM (2008) EA.

Explosion Pressures
The explosion pressures are not considered to change based on the data included in the Section 7.4.8 of Maunsell-AECOM (2008) EA.

On-site Risks
The onsite risks are considered to be consistent with those stated in Section 7.4.8 of theMaunsell-AECOM(2008) EA.

Products Stored In Bunded Areas
The proposed bunding approach as detailed in the Maunsell-AECOM (2008) EA will be adopted for the proposed changes, with the extent of bunding to be consistent with the increase in storage volumes.

Tank Failure Rates
The tank failure rates are considered to be as per Table 48 of the Maunsell-AECOM (2008) EA.

Drainage Systems & Site Grades
The modified designs have been developed so that in the event of fire, fire water run off containing any materials is held onsite.

Gaseous Emissions
The gaseous emissions are as per those detailed in the Maunsell-AECOM (2008) EA.

Offsite Risks
As per the Maunsell-AECOM (2008) EA, a quantitative risk assessment has not been carried out as the event consequences do not exceed minimum threshold values to cause damage or injury. The proposed changes result in the source of heat flux, explosion pressures and potential toxic concentrations being located further away from potential sensitive receivers.

Mitigation Measures

As the hazards and risks of the proposed changes are in accordance with the findings of the PHA in the original Maunsell-AECOM (2008) EA, the corresponding mitigation measure detailed in Section 7.4.5 of the original EA and the original Project Approval are considered to be relevant to the proposed change, and are as detailed below:

- Design of the plant will be in accordance with the following applicable Australian Standards to cover the relevant safety management requirements:
    - Handling and storage of flammable and combustible liquids (AS/NZS 1940)
    - Tank design (API 650, AS 1692, AS 1170)
    - Classification of Hazardous Areas (AS/NZS 60079-10)
    - Application of HAZOPS (AS IEC 61882)
- A Site Emergency Response Plan will be prepared and all staff appropriately briefed
- Spill response procedures will be prepared and placed in a readily accessible location and all staff trained in such procedures
- Relevant staff will be informed of the requisite Emergency Shutdown Systems
- Fire protection systems (e.g. hydrants, foam, monitors, tank spray systems and fire extinguishers) will be installed in accordance with requirements of the relevant standards
- Prior to construction, the following studies shall be undertaken to the satisfaction of the Director-General and the NSW Fire Brigades:
    - A Fire Safety Study that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.2 – Fire Safety Study Guidelines* and the NSW Government's *Best Practice for Contaminated Water Retention and Treatment Systems*.
    - A Hazard and Operability Study (HAZOP) that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.8 – HAZOP Guidelines*, chaired by an independent qualified person approved by the Director-General (except to the extent that it realise to minor services systems such as compressed air and water), and includes a program for the implementation of all recommendations made during the study (note: if National Biodiesel intends to defer the implementation of certain recommendations, the justification shall be provided for the proposed deferral)
    - A Final Hazard Analysis (FHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis*

- Prior to commissioning the following shall be prepared to the satisfaction of the Director-General
    - An Emergency Plan prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.1 – Industry Emergency Planning Guidelines*
    - A Safety Management System prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.9 – Safety Management*

In addition to these existing mitigation measures, the following measures are proposed to address the introduced risks of product leakage associated with the process piping crossing the Garungaty waterway resulting from the new location of Plot 3:

- Pipeline design, manufacture and installation in accordance with relevant standards.
- Regular inspections and maintenance during operation.

Conclusion

This detailed hazard and risk assessment found that the impacts from the proposed change in the location of Plot 3 are consistent with those identified in the original Maunsell-AECOM (2008) EA and are accordingly manageable. It was found that there is a minor introduced risk due to the need for process piping to now cross the Garungaty waterway. Consideration was also given to the impact on the PKCT coal stockpiles adjoining the new Plot 3 in the unlikely event from a pool fire in the combustible liquids bund, and it was found that the potential impacts are negligible and that the likelihood of this event occurring is remote.

The mitigation measures as listed in Section 7.4.5 of the original Maunsell-AECOM (2008) EA and the original Project Approval are considered to be appropriate to mitigate the hazard and risk impacts of the proposed change, and further measures have been identified to manage the minor risk introduced by the need for process piping to now cross over the Garungaty waterway.

2.1.4.3 Biodiversity

Background

The proposed SPBP facilities are located within an area that has a long history of industrial land use which continues today. As a result, the terrestrial ecology of the subject sites have been highly modified and no natural vegetation or naturally-occurring fauna habitat remains and the subject site is thus not considered to contain any habitat for threatened flora.

As identified in the detailed biodiversity study conducted in Section 7.6 of the original Maunsell-AECOM (2008) EA, the only fauna species observed or considered likely to occur on the subject site are those species that are capable of using such highly modified environments. Of these, the only threatened species identified is the Green and Golden Bell Frog (GGBF), *Litorea aurea*, which has been recorded nearby and is known to occupy highly modified environments under some circumstances.

Accordingly, the detailed biodiversity study in the original Maunsell-AECOM (2008) EA focussed solely on the impact of the proposed development on the GGBF.

In the original Maunsell-AECOM (2008) EA it was determined that the impact on biodiversity, and in particular the GGBF, from the proposed development was suitably low for the following reasons:

- Only commonly found species (both exotic and native) capable of using highly modified habitats were observed on the proposed sites.
- The only threatened species considered to have any potential to occur on site is the GGBF
- Despite an extensive search on the sites, no evidence was found of GGBF being present
- There were no permanent or temporary water bodies located on or adjacent to the original land allotments that could form potential breeding sites for the GGBF
- There was minimal vegetation or rockpiles on the proposed site that could be a potential foraging or sheltering habitat for the GGBF. Of the limited vegetation on site, it was all exotic vegetation and weeds.
- All of the sites, except for Plot 6, the Administration building site, were considered to have little value as a GGBF movement corridor due to their isolation from areas containing potential breeding habitat and drainage channels
- For Plot 6, it was considered to have moderate potential form part of a movement corridor for the GGBF, however the undeveloped component of that land could be suitably vegetated and remain an effective movement corridor for the GGBF.
- As the proposed production sites were not considered a potential movement corridor for the GGBF, the impact of increased vehicular traffic from these sites would not have a significant impact on the GGBF

The new Plot 3 is a highly modified parcel of land that has been cleared and capped ready for development as can be seen from Figures 6 and 7 below. No vegetation or areas for potential shelter or habitat for any species (either exotic or native) exist on site.

Figure 6: Photo of new Plot 3

Figure 7: Aerial view of new Plot 3

As can be seen from Figure 7, the new Plot 3 is located to the north of the PKCT settling pond, which was identified in the Maunsell-AECOM (2008) EA as known habitat for the GGBF.

In addition to the site being cleared and capped, the new Plot 3 is substantially built up and sits approximately 2m higher than the adjoining PKCT site, as shown in Figure 8 below.

Figure 8: View showing difference in elevation between new Plot 3 and adjoining PKCT settling pond

Methodology

As the new Plot 3 is consistent with the existing approved development sites in terms of terrestrial ecology, it was considered appropriate to adopt the same assessment methodology as was used in the original Maunsell-AECOM (2008) EA.

As such, the impact on biodiversity for the new land allotment focussed on the potential impact on the GGBF and a corresponding study was undertaken by a qualified herpetologist and specialist on the GGBF, Dr A. White from Biosphere Environmental Consultants.

The assessment consisted of a thorough site inspection of the new Plot 3 and consideration of known GGBF populations, habitats, breeding grounds and potential movement corridors.

Detailed Assessment Results

Review of known populations and sightings of the GGBF in the Port Kembla area identified the following:

- After the discovery of Green and Golden Bell Frogs in the Port Kembla Coal Loader in 2008,surveys for these frogs commenced in the Coal Terminal and on land nearby land, in particular, Wollongong STP, Wollongong Golf Course, Green house Park, JJ Kelly Park and land along the Tom Thumb lagoon (Biosphere 2010). These surveys demonstrated that habitat for Green and Golden Bell frogs was widely available at north Port Kembla and that there were several apparent frog movement corridors across the area; in particular the edges of Garrangatty Waterway, the edges of Tom Thumb lagoon and open drains along the Wollongong Golf Course and between Greenhouse Park and JJ Kelly Park.

- From 2008 to the 2010, Green and Golden Bell frogs were detected in a few sites in the Port Kembla Coal Terminal and a Plan of Management (Biosphere 2010) was developed whereby sites deep inside the terminal were not available to the frog but a large detention basin at the northern end of the terminal was modified and managed to become habitat for these frogs. The frogs are now permanently resident in this area.

- In 2010, two breeding ponds for Green and Golden Bell frogs were established in Greenhouse Park. Bell frogs are sighted from time to time in these ponds but they are not permanently resident there (A. White pers. obs.).

- No GGBFs have ever been sighted on the new Plot 3.

Figure 9 on the following page shows the new Plot 3 relative to the areas mentioned above that have known habitat and/or sightings of the GGBF.

Close inspection of the new Plot 3 identified that the site consists entirely of hardstand and there is no potential habitat for the GGBF on this site; however there is a known permanent habitat site for the GGBF on the adjoining PKCT settling pond to the south of the site, and there are areas of known habitat and sightings of the GGBF to the far north of the site (e.g. Greenhouse Park).

Figure 9 – Location of Plot 3 relative to areas of known GGBF habitat and sightings

The corresponding proposed management of the GGBF on the National Biodiesel Site is predicated on the following four main points:

1. Green and Golden Bell frog habitat on the site is minimal (and may not be used at all).
2. The National Biodiesel Site lies on either side of the Garrangatty Waterway which is a potential movement corridor for Bell frogs.
3. The National Biodiesel Site (Plot 3) lies immediately north of the Northern Sediment Pond in the Port Kembla Coal terminal. This pond is a permanent habitat site for the frogs and is presumed to be the main dispersal point for Bell frogs moving around the north Port Kembla area.

4. Considerable construction activity will occur on the National Biodiesel site as the site is developed and operated. These activities are likely to be highly hazardous for frogs in the area.

As there is no permanent habitat for Green and Golden Bell frogs on the new Plot 3, and due to the impending extent of industrial activity on the site, it was identified by Dr A. White that it would not be in the interests of the conservation of this frog to try to develop habitat for this species on site. Instead, it is proposed that the site be isolated from GGBFs before construction works commence in order to protect any frogs that should stray near the site.

Mitigation Measures

It is considered that the mitigation measures listed in section 7.6.1.5 of the original Maunsell-AECOM (2008) EA and the original Project Approval, relevant to the development of the new Plot 3, are appropriate and are as outlined below:

- In areas where there is excess land available for landscaping and planting, native grass and understory vegetation should be planted. Only endemic species of seed and propagule from local botanical provenance shall be used.
- An integrated pest management approach will be implemented to control feral animals and ensure that there is no additional impact of these species on the ecological values of the site and surrounds. The pest management approach employed should minimise the use of chemicals in order to prevent off-target impacts on native species
- National Biodiesel will prepare and implement a Green and Golden Bell Frog Management Plan for the project to the satisfaction of the Director-General (Note: this management plan has already been developed in conjunction with this biodiversity impact assessment and is outlined in detail in Appendix 3.3)

In addition to these measures, it is proposed that both temporary and permanent frog exclusion fences be erected around parts of Plots 3 and 6, in accordance with the GGBF Management Plan developed by Dr. A. White. This is in order to protect the frogs from heavy machinery and construction vehicles.

These frog exclusion fences will keep the frogs out of hazardous areas but still allows dispersal to other Bell frog habitat areas nearby. It is proposed that the frog-exclusion fence located along the southern and western boundary of Plot 3 become a permanent exclusion fence, as should the exclusion fence along the northern boundary of Plot 6.

Figure 10 on the following page details the proposed layout and arrangement of these frog exclusion fences.

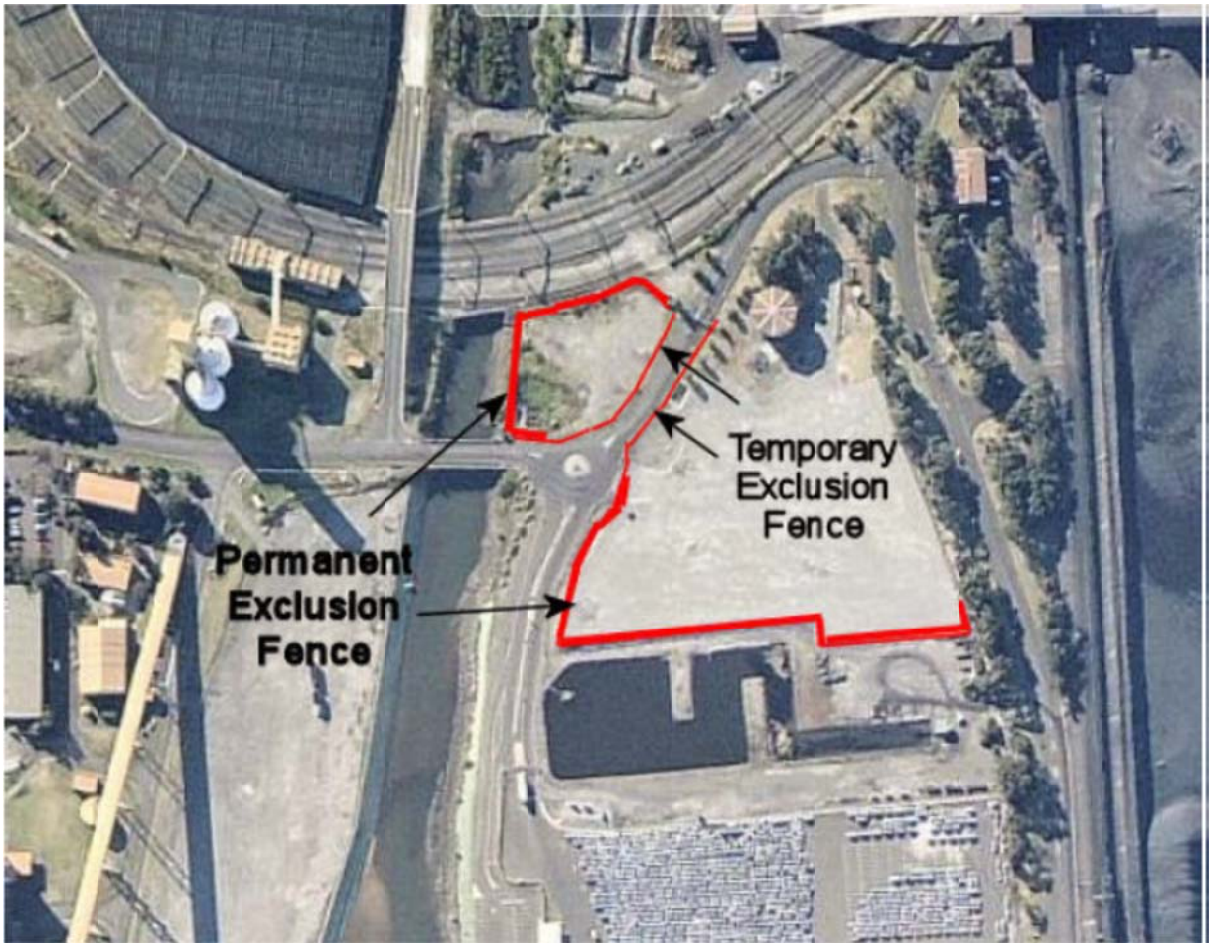

Figure 10 – Layout and arrangement of recommended frog exclusion fences

Conclusion

The detailed biodiversity assessment identified that the terrestrial ecology of new Plot 3 is consistent with that of the existing approved development sites assessed in the original Maunsell-AECOM (2008) EA. Accordingly, this assessment focussed on the impact on the Green and Golden Bell Frog (GGBF), Litorea aurea, which is the only threatened species identified within the local area, and was conducted by a suitably qualified herpetologist, Dr A. White.

This assessment identified that while the new Plot 3 lies immediately north of the Northern Sediment Pond in the Port Kembla Coal terminal (a known habitat for the GGBF), there is no permanent habitat for the GGBF on the new Plot 3. Furthermore, due to the impending extent of industrial activity on the site it would not be in the interests of the conservation of this frog to try to develop habitat for this species on site.

Accordingly, in addition to the existing relevant mitigation measures listed in the original Maunsell-AECOM (2008) EA and the original Project Approval, it is proposed that both permanent and temporary frog exclusion fences be established around the new Plot 3 (and existing Plot 6) to keep the frogs out of hazardous areas and still allow dispersal to other Bell frog habitat areas nearby.

2.1.4.4 Soils and Water

Background

The Port Kembla area has been characterised by industrial activity for a substantial period of time, and was originally part of Tom Thumb Lagoon. It was filled/reclaimed using blast furnace slag, gravel, concrete and sand. A casting basin was established in the filled area in the late 1980s for the purpose of constructing immersed tube segments for the Sydney Harbour Tunnel. This area was subsequently filled in, using approximately 2 million tonnes of blast furnace slag derived from local steelmaking operations.

In the original Maunsell-AECOM (2008) EA, URS Australia Pty Ltd (URS) was engaged to conduct a detailed soils and groundwater contamination study for the subject sites. This study identified that the original sites have a substrata of quaternary alluvium including estuarine muds, sand and silts as well as fill material. The fill material is comprised of slag and gravel, with some concrete and sand. The groundwater flows in an easterly direction and is encountered at varying levels over the site, ranging from 0.480 to 8.740 m above Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranges between 0.001 and 0.005.

Analysis of site soils and groundwater by URS determined the following:

- There was no soil contamination detected for metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs, and no PAH compounds were detected in soil in close proximity to the subject sites.
- No data was available to provide an assessment of the risk of acid sulphate soils or saline soils, however given the proximity of the sites to marine waters it is considered the potential for use soils to be found on the site.
- Groundwater investigations indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the subject sites.
- Total PHAs exceeded nominated ILs in groundwater sample from five of the monitoring wells. However, investigation of the sample quality and corresponding results found that these concentrations were the result of contamination of the samples and are not representative of actual groundwater concentrations.

Based on these findings it was concluded that the original subject sites were not considered to be contaminated and are suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the original subject sites have led to contamination of the surrounding water bodies.

Methodology

As the new Plot 3 is located in close proximity to the original site (250m to the east), and is adjacent to Plot 6, the Administration building site, URS were engaged to conduct an updated soils and groundwater assessment for the subject sites, taking into account the proposed new location of Plot 3. Assessment was made using results from extensive historical reports and data, and additional samples obtained from the new Plot 3.

Detailed Assessment Results

The detailed review of soils and groundwater by URS incorporating the new Plot 3 identified that site conditions are consistent with those for the previously examined subject sites, as outlined below:

- There was no soil contamination detected for metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs, and no PAH compounds were detected in soil in close proximity to the subject sites.
- No data was available to provide an assessment of the risk of acid sulphate soils or saline soils, however given the proximity of the sites to marine waters it is considered the potential for use soils to be found on the site.
- Groundwater investigations indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the subject sites.
- Total PHAs exceeded nominated ILs in groundwater sample from five of the monitoring wells. However, investigation of the sample quality and corresponding results found that these concentrations were the result of contamination of the samples and are not representative of actual groundwater concentrations.

Accordingly, the new Plot 3 is not considered to be contaminated and is suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that this site has led to contamination of the surrounding water bodies.

Note: The reader is directed to Appendix 3.4 for the extensive soil and groundwater test result data reviewed by URS, as these results are too numerous to list in this report.

Mitigation Measures

As the soils and ground water results for the new Plot 3 are consistent with the findings of the original project assessment, the corresponding mitigation measures listed in Section 7.12.5 of the original Maunsell-AECOM (2008) EA and original Project Approval are considered to be appropriate for the proposed change, and are as outlined below:

- Prior to the commencement of construction and in areas where soil disturbance is likely, testing shall be undertaken to establish the presence of acid sulphate soils and saline soil. Should testing reveal that either acid sulphate soil or saline soil is present, than an Acid Sulphate Management Plant and/or a Salinity Management Plan shall be prepared prior to the commencement of work and that the management measures detailed in those plans shall be implemented.
- National Biodiesel will ensure that all waste generated on site during construction will be classified in accordance with the DECC's *Waste Classification Guidelines: Part 1 Classifying Waste* and disposed of to a facility that may lawfully accept the waste.
- Any fill material brought to site must be Virgin Excavated Natural Material
- As part of the Construction Environmental Management Plan (CEMP) for the project, an Erosion and Sediment Control Plan (ESCP) will be prepared in accordance with the Landcom *Managing Urban Stormwater; Soils and Construction Manual 2004*, and will be maintained for the duration of the construction process to prevent, within reason, and sediment and polluted water entering any waterway. The ESCP will also contain emergency procedures for high rainfall events that could increase soil erosion during construction.

Conclusion

The detailed assessment of soils and groundwater for the new Plot 3 found that the site conditions are consistent with those previously determined in the original Maunsell-AECOM (2008) EA. The site is not considered to be contaminated and is suitable for the proposed development with respect to

potential ground contamination risks. Furthermore, no evidence was sighted to indicate that the new Plot 3 has led to contamination of the surrounding water bodies

Accordingly, the mitigation measures listed in Section 7.12.5 of the original Maunsell-AECOM (2008) EA, and those in the original Project Approval, are considered to be appropriate to mitigate the risks to soils and water for the proposed change.

2.1.4.5 Visual Amenity

Background

The existing environment is generally described as a regionally significant industrial precinct on the coastal plain which is characterised by foreshore port facilities and operations. The visual landscape within the vicinity is dominated by the BlueScope Steel Works and Port Kembla Coal Terminal, with existing items of high public exposure including the GrainCorp silos, BlueScope Steel cranes, coal stockpiles, ship loading facilities and the 198m chimney located in the Outer Harbour precinct.

On a local scale, the site of the proposed SPBP facility is generally flat, cleared of vegetation and contains no significant built form. While the subject site has a neutral existing visual amenity, it is dominated by the silos and other existing infrastructure on the adjacent Grain Terminal site to the west, and the large coal stockpiles at the adjacent Coal Terminal site to the east. The Grain Terminal silos and associated infrastructure have an approximate maximum height of 60 m and dominate the local visual landscape.

In the original Maunsell-AECOM (2008) EA the impact on visual amenity was considered by assessing the view of the proposed facilities from the following five potentially sensitive visual receptors that were identified:

1. Swan Street
2. Robwald Avenue
3. Outer Harbour
4. Port Kembla Coal Terminal
5. Mount Keira

A sixth viewpoint, Tom Thumb Rd, was also selected to assess the visual impact immediately adjacent to the proposed facilities. The location of these six viewpoints is detailed in Figure 11 on the following page.

Assessment was conducted by comparing the existing view against a series of photomontages that included a scaled layout of the plant and associated facilities, and considering the following issues:

- colour
- lighting
- bulk and height
- suitability of development in the locality
- associated structures
- existing site features

From this original assessment it was concluded that the proposed SPBP facility would integrate relatively well into the existing landscape without being visually intrusive. Given the height and

density of existing screening, and the presence of other industrial operations, the SPBP facility would be entirely consistent in character with the port and its current heavy industrial operations.

Figure 11 – Location of sensitive visual receptors studied in the original Maunsell-AECOM (2008) EA

Methodology

As the new Plot 3 is located within the same local area, and adjacent to the existing approved land site, the same methodology as employed in the original Maunsell-AECOM (2008) EA was used to assess the visual impact of the new Plot 3.

The revised layout of the proposed SPBP facility incorporating all of the proposed changes outlined in this report was modelled in 3D by Cardno. Utilising this 3D model, a series of photomontages were then generated showing the revised view of the proposed facilities from the six different viewpoints.

The resulting views of the plant were then assessed, taking into account the same issues identified in the original Maunsell-AECOM (2008) EA, as outlined below:

- colour
- lighting
- bulk and height
- suitability of development in the locality
- associated structures
- existing site features

Detailed Assessment Results

The following Figures 12 to 17 show the relative view of the revised plant layout from each of the six key viewpoints identified in the original Maunsell-AECOM (2008) EA.

For Viewpoints 1 to 3 (i.e. Figures 12 to 14), a 3D view of the revised site layout using Google Earth was employed rather than a photo montage due to the large amount of existing infrastructure that would otherwise shelter the view of the revised site. As such, Figures 12 to 14 represent a worst case view of the revised layout, and show the plant from these locations relative to the existing GrainCorp facilities which dominate the local visual landscape.

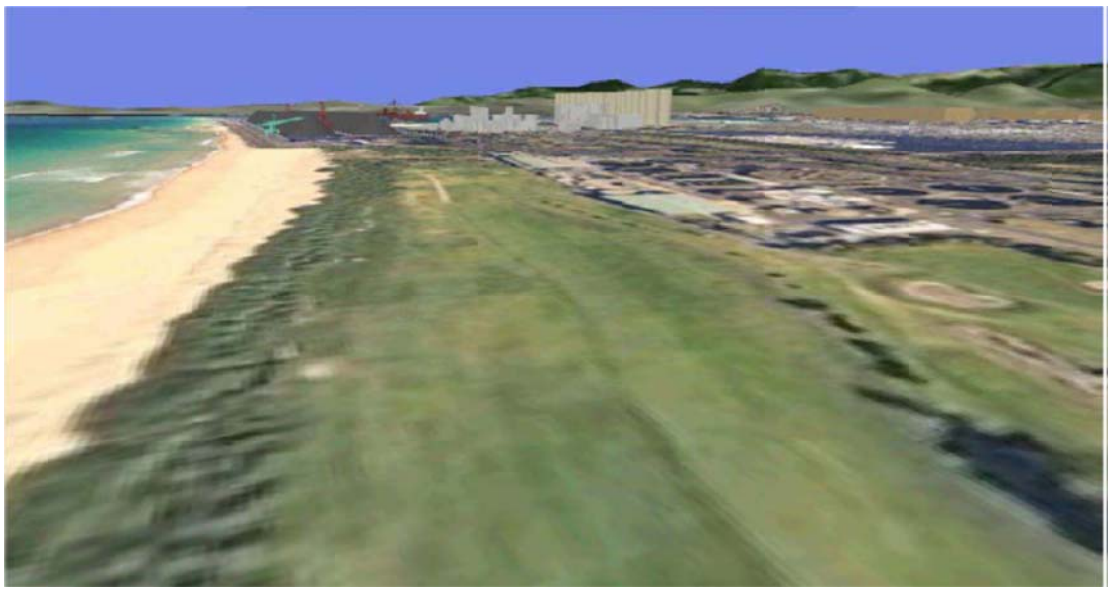

Figure 12 – Revised site layout as seen from Vewpoint 1, Swan St

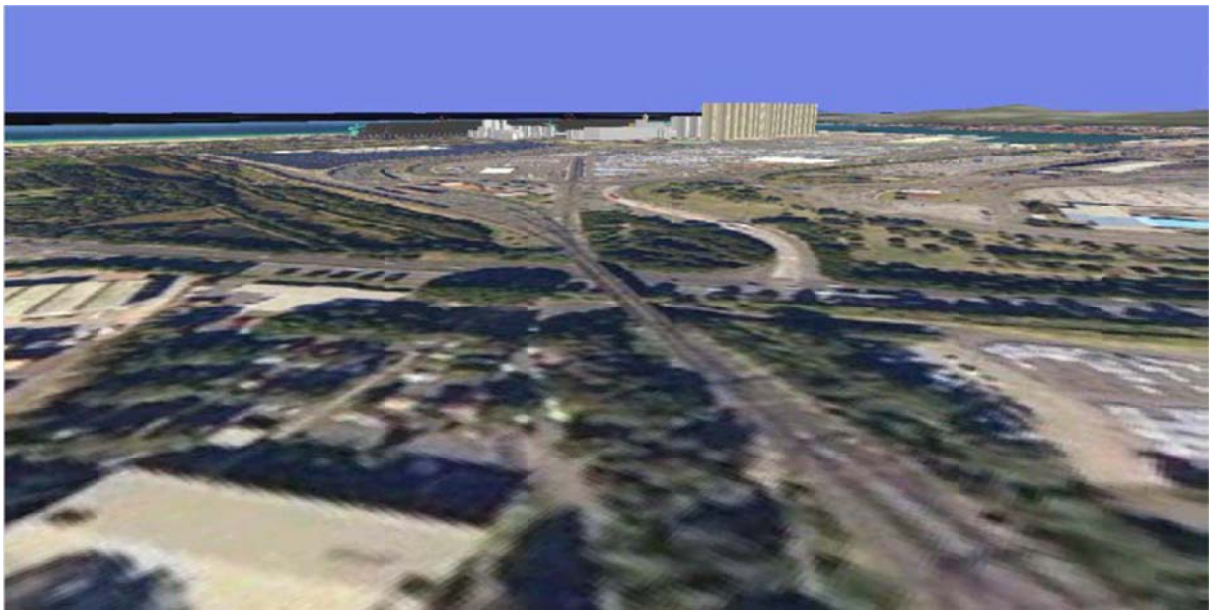

Figure 13 – Revised site layout as seen from Vewpoint 2, Robwald Ave

Figure 14 – Revised site layout as seen from Vewpoint 3, Outer Harbour

Figure 15 – Revised site layout as seen from Vewpoint 4, Port Kembla Coal Terminal

Figure 16 – Revised site layout as seen from Vewpoint 5, Mount Keira

Figure 17 – Revised site layout as seen from Vewpoint 6, Tom Thumb Rd

The shift in location of Plot 3 has slightly increased the distance from residential receivers, and the proposed changes include a maximum building height of approximately 36m, which is consistent with the existing industrial presence. As can be seen from figures 12 to 17, the corresponding visual impact is considered to be low.

Using these revised images, a detailed visual assessment was conducted and the key findings are as outlined below:

Viewpoint	Visual Modification	Visual Sensitivity	Visual Impact	Comments
1. Swan St	No perceived reduction in amenity	Regional	Negligible	Given the relative height of the existing grain silos, the propose modifications are no considered to noticeably protrude beyond the extent of the existing structures.
2. Robwald Ave	No perceived reduction in amenity	Local	Negligible	The subject site is within close proximity to the existing Grain Terminal and accordingly is no considered to alter this viewpoint
3. Outer Harbour	No perceived reduction in amenity	Regional	Negligible	In general the proposed modification works are screened from the Outer Harbour by the Grain Terminal and PKCT

4.	**PKCT**	No perceived reduction in amenity	Regional	Negligible	The photomontage indicates that the character and height of the proposed modification works is consistent with the surrounding environment and therefore does not have a significant impact from this viewpoint
5.	**Mount Keira**	No perceived reduction in amenity	Regional	Negligible	The proposed modification is not visually obtrusive from this viewpoint.
6.	**Tom Thumb Rd**	No perceived reduction in amenity	Regional	Negligible	In the context of the surrounding environment, the proposed modifications are considered to be less obtrusive than the existing Grain Terminal

It is also noted that the visual impacts during construction and resulting from lighting and building material/design are considered to be consistent with those assessed in the Maunsell-AECOM (2008) EA, however, the construction activities will take place over two stages.

Mitigation Measures

As the impacts on visual amenity of the proposed changes were found to be in accordance with those determined in the original Maunsell-AECOM (2008) EA, the corresponding mitigation measures are consistent with those listed in the Maunsell-AECOM (2008) EA and the original Project Approval, as outlined below:

- National Biodiesel will ensure that any lighting associated with the project complies with the latest version of the Australian Standard, *AS 4282 – Control of Obtrusive Effects of Outdoor Lighting* and is mounted, screened and directed in such manner that it does not create a nuisance to surrounding properties, or the public road network
- Any proposed landscaping, fencing or signage is not to impede the desired sight lines of all road users including pedestrians and cyclists.
- National Biodiesel will prepare a Landscape Management Plan, which will include local native species and will ensure lines of sight are not compromised, and will ensure that landscaping is undertaken in accordance with this Plan.
- National Biodiesel will employ the use of recessive colours for external materials and finishes wherever practicable
- Construction areas will be managed to minimise any potential visual impacts

Conclusion

It was found that the visual amenity impacts of the proposed modification are considered to be consistent with the Project Approval, as the changes are considered to integrate into the existing industrial setting. Although parts of the modification will be somewhat visible from surrounding locations, the proposed structures are similar in bulk and character to the existing industrial development, and are considered to be consistent with the character of the port and its heavy industrial operations.

Accordingly, the mitigation measures listed in the original Maunsell-AECOM (2008) EA and those in the original Project Approval are considered to be appropriate to mitigate the visual amenity impacts of the proposed changes.

2.2 Change 2: Staged Construction of Plant

2.2.1 Description of Change

In the original approval for the Project it was planned for the whole facility to be built in one construction phase. It is now proposed that the facility be built in two stages as outlined below:

Stage 1: Construction of liquid bulk storage tanks, liquid bulk unloading facility, truck loading facility, and associated amenities to allow commencement of operation of these facilities whilst the main production facilities are being built.

Stage 2: Construction of the main Soybean Processing and Biodiesel Production facilities.

Figure 2 at the start of this report summarises this visually, highlighting the plant that will be constructed in Stages 1 and 2 respectively.

2.2.2 Justification

A staged construction approach will enable National Biodiesel Limited to commence distribution operations from the site whilst the lengthy construction phase (Stage 2) of the main plant is undertaken. This will allow National Biodiesel Limited to develop a robust distribution network from the Port Kembla facility prior to start up of the main plant.

It will also effectively fast track commencement of operations at the Port Kembla site, bringing about the associated benefits of employment and economic activity in the local area.

2.2.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	The process and capacity of the overall plant remains unchanged. This change simply impacts the timing that operation will commence on site.	No detailed assessment required.
Hazards and Risk	This change has no effect on the overall hazards and risks of the final plant, as the process and capacity of the plant remains unchanged. During construction of Stage 2 there will be interactions between operating plant and construction activities which will be managed as part of the construction safety management plan as per current DA requirements.	No detailed assessment required – hazards associated with interaction of construction & plant operation activities to be addressed in the Construction Safety Management Plan.

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Traffic	The overall amount of traffic associated with operation and construction of the plant will remain the same. For the Stage 1 distribution operations, the associated vessel and truck movements will be less than that for the final plant operations.	No detailed assessment required.
Biodiversity	The process and capacity of the overall plant remains unchanged. This change simply impacts the timing that operation will commence on site.	No detailed assessment required.
Noise	The process and capacity of the overall plant remains unchanged. This change simply impacts the timing that operation will commence on site.	No detailed assessment required.
Soils and Water	The process and capacity of the overall plant remains unchanged. This change simply impacts the timing that operation will commence on site.	No detailed assessment required.
Visual Amenity	The process and capacity of the overall plant remains unchanged. This change simply impacts the timing that operation will commence on site.	No detailed assessment required.

2.2.4 Detailed Environmental Assessments

No detailed assessments were identified as being required for this change.

2.3 Change 3: Additional Bulk Storage Capacity for Biodiesel and Soy Bean Oil on Plot 3

2.3.1 Description of Change

It is proposed to slightly increase the bulk storage capacity of biodiesel on Plot 3 from 3 x 5,600m^3 to 3 x 6,000m^3 tanks. It is also proposed to move the soy oil storage from Plot 5 to Plot 3 and increase storage capacity from 1 x 10,800m^3 to 2 x 6,000m^3 tanks. The process and capacity of the plant remains unchanged.

Figure 3 at the start of this report shows the revised concept layout for the Biodiesel Refinery site incorporating these slightly larger storage tanks on the new land plot, and it is also indicated in the visual summary of proposed changes provided in Figure 2.

2.3.2 Justification

The new Plot 3 is larger than the original Plot 3 (1.8 Ha vs. 1.55 Ha) so National Biodiesel Limited would like to take advantage of this additional land space for increased product storage. Although the process and capacity of the plant remains unchanged, the additional storage capacity provides greater flexibility for operation of the plant (i.e. for maintenance and unscheduled delays).

Moving the storage of soy oil from Plot 5 to Plot 3 consolidates the bulk storage of products into one area, reducing the overall risk of the plant and allowing for sharing of common facilities (namely bunding and fire services). By changing the storage configuration of soy oil from 1 x 10,800m^3 to 2 x

6,000m^3 tanks, the risk is further reduced as the potential volume of material released in the event of a single tank failure is significantly reduced.

2.3.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	The process and capacity of the overall plant remains unchanged. This change simply impacts the quantity of biodiesel and soy oil stored on site. Biodiesel and soy oil will still be stored in sealed tanks with desiccant breathers as outlined in the original Maunsell-AECOM (2008) EA.	No detailed assessment required.
Hazards and Risk	This change only affects the quantity of product stored on site, not the overall process and capacity of the plant. The amount of additional biodiesel and soy oil to be stored on site is approximately 10% of the original amounts proposed, and the risk of storage of biodiesel and soy oil is low, as both products are non-flammable, non-toxic and biodegradable. By consolidating the storage of bulk liquids onto one site, the overall risk of the plant is reduced as any leaks would be confined to a single area. Furthermore, the change in storage of soy oil from one large tank, to two smaller tanks reduces the potential volume of material released in the event of a single tank failure. The bund sizing for the bulk storage tanks will be increased in accordance with relevant standards to account for the additional storage volume of biodiesel and soy oil.	No detailed assessment required.
Traffic	The process and capacity of the overall plant remains unchanged. There will be no increased traffic movements resulting from the increased storage capacity.	No detailed assessment required.
Biodiversity	The process and capacity of the overall plant remains unchanged, and the amount of developed land remains unchanged with the slightly increased storage capacity because the entire land space of the new Plot 3 is already cleared and capped for development.	No detailed assessment required.
Noise	The process and capacity of the overall plant remains unchanged. There will be no increased noise associated with the additional storage capacity.	No detailed assessment required.
Soils and Water	The process and capacity of the overall plant remains unchanged, and the amount of developed land remains unchanged. The bund sizing of bulk storage tanks will be increased in accordance with relevant standards to account for the additional storage volume of biodiesel and soy oil.	No detailed assessment required.

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Visual Amenity	This change will result in slight increase in the size of the storage tanks. In the case of soy oil tanks, it also means relocation of the tank and two smaller tanks instead of one larger tank.	Quantitative assessment by means of revised site layouts, and 3D representation & photomontages of new site layout.

2.3.4 Detailed Environmental Assessments

2.3.4.1 Visual Amenity

A detailed assessment of the impact on visual amenity from the proposed change in the size of the liquid bulk storage tanks and location of the soy oil tanks was undertaken by Cardno, in conjunction with the visual impact assessment for Change 1, as detailed in Section 2.1.4.5 of this report.

The assessment was conducted by generating a 3D model of the revised site layout incorporating all of the proposed changes listed in this report, and considering the corresponding views and visual impacts at the 6 key visual receptors identified in the original Maunsell-AECOM (2008) EA.

From this assessment, it was found that the visual amenity impacts of the proposed modification are considered to be consistent with the Project Approval, as the changes are considered to integrate into the existing industrial setting. Although parts of the modification will be somewhat visible from surrounding locations, the proposed structures are similar in bulk and character to the existing industrial development, and are considered to be consistent with the character of the port and its heavy industrial operations.

Accordingly, the mitigation measures listed in the original Maunsell-AECOM (2008) EA and those in the original Project Approval are considered to be appropriate to mitigate the visual amenity impacts of the proposed changes.

Further details regarding the background, methodology, results and mitigation measures associated with this assessment are provided in Section 2.1.4.5 of this report.

2.4 Change 4: Liquid Bulk Unloading Facility at Berth 104

2.4.1 Description of Change

It is proposed to install a liquid bulk unloading facility at Berth 104 that will allow for the importation of biodiesel to the bulk storage tanks located on Plot 3 so that distribution operations can commence on site whilst the main production facilities are being built during Stage 2 of construction. This will involve the installation of steel piping between Plot 3 and Berth 104, associated valves and instruments, and flexible hoses for bunkering of vessels at the Berth.

2.4.2 Justification

The ability to import biodiesel will allow National Biodiesel Limited to fast track commencement of distribution operations from the site while the main production facilities are being built during the lengthy Stage 2 of construction.

This will bring forward the associated employment and regional economic benefits from operation of the biodiesel distribution facilities, and allow National Biodiesel Limited to establish a robust distribution network prior to commencement of the main production facilities.

2.4.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	The process and capacity of the overall plant remains unchanged. Emissions from tanks and distribution operations will be managed by vapour recovery and desiccant breathers in the same way that final plant operations will be managed. The quantity of biodiesel to be imported will not exceed the final plant capacity, so there will be no change in emissions associated with distribution operations of the plant.	No detailed assessment required.
Hazards and Risk	The process and capacity of the overall plant remains unchanged. However, the importation of biodiesel will introduce risks associated with bunkering operations at Berth 104. These activities will be managed by ensuring that all relevant standards for design and operation are followed. In addition biodiesel is non-flammable, non-toxic and biodegradable, so any associated risks are very low.	Qualitative assessment of risks associated with biodiesel bunkering operations at Berth 104.
Traffic	The process and capacity of the overall plant remains unchanged. During importation and distribution of biodiesel during Stage 2 of construction, the associated vessel and truck movements will be less than that for the final plant operations.	No detailed assessment required.
Biodiversity	The process and capacity of the overall plant remains unchanged, and the amount of developed land remains unchanged. The liquid bulk unload pipeline will only run across land that is to be developed as part of the main processing facilities.	No detailed assessment required.
Noise	The process and capacity of the overall plant remains unchanged. Noise associated with bunkering operations will be minimal, and less than that associated with the final operations of the plant.	No detailed assessment required.
Soils and Water	The process and capacity of the overall plant remains unchanged, and the amount of developed land remains unchanged. As with the rest of the process piping for the site, design of all piping and connections will be in accordance with relevant standards to ensure that any leaks are identified and suitably contained.	No detailed assessment required.
Visual Amenity	Overall this change will have minimal effect on the overall visual amenity of the site, as the additional piping and equipment associated with this change are minor relative to the overall plant facilities.	Quantitative assessment by means of revised site layouts, and 3D representation & photomontages of new site layout.

2.4.4 Detailed Environmental Assessments

2.4.4.1 Hazards and Risks

Background

In the original Maunsell-AECOM (2008) EA, the hazards and risks associated with the proposed SPBP were assessed via a Preliminary Hazard Analysis (PHA) which was conducted in accordance with the Department of Planning Hazardous Industry Planning Advisory Paper (HIPAP) Numbers 4 and 6.

The primary hazards identified from this PHA were those due to flammable liquids and combustible dusts that are present on site in sufficient quantities to cause a major fire or explosion risk. Accordingly, the hazard identification in the Maunsell-AECOM (2008) EA was directed at bulk quantities of material and not minor quantities as may be found as small additives, cleaners, waste storage and like situations.

The general risk of chemical or liquid spills and shipping accidents were considered in section 7.4.6.3 of the original Maunsell-AECOM (2008) EA, however it was identified that these events were relatively minor due to their limited and local impact, and that they would be developed further during detailed design reviews when further details on the plant layout, equipment and operating procedures are available.

Methodology

As the proposed addition of a liquid bulk unloading facility at Berth 104 does not alter the amount or type of flammable liquids and combustible dusts stored on site, the associated hazard and risk scenarios are not considered major as defined in the original Maunsell-AECOM (2008) EA.

Accordingly, a general assessment of the risks associated with the addition of a liquid bulk unloading facility at Berth 104 was conducted by Cardno, in line with the methodology adopted for general risks in section 7.4.6.3 of the original Maunsell-AECOM (2008) EA.

Detailed Assessment Results

Assessment of the general risks associated with the addition of the liquid bulk unloading facility at Berth 104 identified the following:

Event No.	Event Type	Description / Causes	Consequences / Notes	Control Measures
1	Chemical or liquid spill	Plant failure or human error	Environmental, operator injury	• Plant design for transfer hoses, piping and containment bunding • Operating & process controls • Spill response measures • PPE & safety showers etc
2	Shipping Accident	Impact to wharf, spills and other events	Injury, damage to wharf, environmental	• Existing shipping procedures • Spill response measures

These risks are consistent with those previously identified in Table 42 of the original Maunsell-AECOM (2008) EA associated with the original Project Approval.

Consideration of the revised layout of the plant with the change in the location of Plot 3 identified that the liquid bulk unload pipeline will need to cross over the Garungaty waterway, between the Crushing Plant and Biodiesel Refinery sites. The waterway crossing increases the risk of potential leaks entering the waterway, hence the pipeline design, manufacture and construction will be required to meet relevant standards with regular monitoring implemented during operation to mitigate the risk of significant impacts during operation. Construction hazards and risks associated with the pipeline are expected to minimal as the pipeline will be attached to a new pipe bridge adjacent to the existing road bridge that spans the waterway.

Mitigation Measures

Assessment of the general risks associated with the addition of the liquid bulk unloading facility at Berth 104 identified that they are consistent with those identified in Table 42 of the original Maunsell-AECOM (2008) EA.

As such, the mitigation measures are considered to be consistent with the relevant mitigation measures listed in the original Maunsell-AECOM (2008) EA and the original Project Approval, as outlined below:

- Design of the plant will be in accordance with the following applicable Australian Standards to cover the relevant safety management requirements:
    - Handling and storage of flammable and combustible liquids (AS/NZS 1940)
    - Tank design (API 650, AS 1692, AS 1170)
    - Classification of Hazardous Areas (AS/NZS 60079-10)
    - Application of HAZOPS (AS IEC 61882)
- A Site Emergency Response Plan will be prepared and all staff appropriately briefed
- Spill response procedures will be prepared and placed in a readily accessible location and all staff trained in such procedures
- Relevant staff will be informed of the requisite Emergency Shutdown Systems
- Fire protection systems (e.g. hydrants, foam, monitors, tank spray systems and fire extinguishers) will be installed in accordance with requirements of the relevant standards
- Prior to construction, the following studies shall be undertaken to the satisfaction of the Director-General and the NSW Fire Brigades:
    - A Fire Safety Study that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.2 – Fire Safety Study Guidelines* and the NSW Government's *Best Practice for Contaminated Water Retention and Treatment Systems*.
    - A Hazard and Operability Study (HAZOP) that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.8 – HAZOP Guidelines*, chaired by an independent qualified person approved by the Director-General (except to the extent that it realise to minor services systems such as compressed air and water), and includes a program for the implementation of all recommendations made during the study (note: if National Biodiesel intends to defer the implementation of certain recommendations, the justification shall be provided for the proposed deferral)
    - A Final Hazard Analysis (FHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis*

- Prior to commissioning the following shall be prepared to the satisfaction of the Director-General
    - An Emergency Plan prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.1 – Industry Emergency Planning Guidelines*
    - A Safety Management System prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.9 – Safety Management*

In addition to these existing mitigation measures, the following measures are proposed to address the introduced risks of product leakage associated with the process piping crossing the Garungaty waterway resulting from the new location of Plot 3:

- Pipeline design, manufacture and installation in accordance with relevant standards.
- Regular inspections and maintenance during operation.

Conclusion

This detailed hazard and risk assessment found that the impacts from the proposed addition of the liquid bulk unloading facility at Berth 104 are consistent with those identified in the original Maunsell-AECOM (2008) EA and are accordingly manageable. It was found that there is a minor additional risk due to the need for the liquid bulk unload pipe to cross the Garungaty waterway as a result of the new location of Plot 3.

The mitigation measures as listed in Section 7.4.5 of the original Maunsell-AECOM (2008) EA and the original Project Approval are considered to be appropriate to mitigate the hazard and risk impacts of the proposed change, and further measures have been identified to manage the minor risk introduced by the need for liquid bulk unload pipe to cross over the Garungaty waterway.

2.4.4.2 Visual Amenity

A detailed assessment of the impact on visual amenity from the proposed addition of the liquid bulk unloading facility at Berth 104 was undertaken by Cardno, in conjunction with the visual impact assessment for Change 1, as detailed in Section 2.1.4.5 of this report.

The assessment was conducted by generating a 3D model of the revised site layout incorporating all of the proposed changes listed in this report, and considering the corresponding views and visual impacts at the 6 key visual receptors identified in the original Maunsell-AECOM (2008) EA.

From this assessment, it was found that the visual amenity impacts of the proposed modification are considered to be consistent with the Project Approval, as the changes are considered to integrate into the existing industrial setting. Although parts of the modification will be somewhat visible from surrounding locations, the proposed structures are similar in bulk and character to the existing industrial development, and are considered to be consistent with the character of the port and its heavy industrial operations.

Accordingly, the mitigation measures listed in the original Maunsell-AECOM (2008) EA and those in the original Project Approval are considered to be appropriate to mitigate the visual amenity impacts of the proposed changes.

Further details regarding the background, methodology, results and mitigation measures associated with this assessment are provided in Section 2.1.4.5 of this report.

2.5 Change 5: Soybean Storage Silos and Truck Dump Station

2.5.1 Description of Change

The last major change that is proposed for the site is the addition of 4 x 20,000t silos, a soybean truck dump station and associated conveyors for the storage and handling of soybeans at the Crushing Facility site (Approved Plot 5) rather than using the existing GrainCorp silos and truck dump station facilities as previously proposed. This change will also involve modification of the conveyor design to unload soybeans and load soymeal between the Crushing Facility site and Berth 104.

Figure 3 at the start of this report shows the revised concept layout for the Crushing Facility site incorporating these new storage silos and new dump station, and they are also indicated in the visual summary of proposed changes provided in Figure 2.

2.5.2 Justification

The addition of the soybean storage silos and soybean truck dump station will provide security of operations for National Biodiesel Limited, as the plant will not be restricted by the availability of GrainCorp's existing assets (e.g. during bumper seasons, or due to changes in financial conditions). The quantity and size of silos proposed is based on the amount of soybeans in a single shipload plus sufficient buffer capacity to account for any normal shipping delays. The total storage quantity (80,000t) is consistent with the amount previously proposed to be stored in the GrainCorp silos.

2.5.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	Any potential impact on air quality from fugitive dust emissions from the handling and storage of soybeans associated with the truck dump station and storage silos will be managed by similar control measures as previously proposed for the use of existing GrainCorps facilities.	Qualitative assessment of control measures to be put in place to manage fugitive dust emissions.
Hazards and Risk	This change does not affect the overall process and capacity of the plant. It does introduce the risk of dust explosion on to the Crushing Facility site; however control measures similar to those used for GrainCorp silos will be implemented. As a result, the risk of a potential explosion is considered to be low, and is commensurate with the risks of existing facilities in the immediate area.	Qualitative assessment of control measures to be put in place to manage risk of dust explosion.
Traffic	This change does not affect the process and capacity of the plant and will not increase the overall volume of traffic associated with plant operations (Note: truck deliveries for soybeans will report to Crushing Facility site, rather than GrainCorp facility as previously proposed, which is located approximately 300m away on internal access road at the Port)	No detailed assessment required.

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Biodiversity	The process and capacity of the main plant remains unchanged, and the amount of developed land on the Crushing Facility site remains unchanged. The site layout and size of the soymeal storage shed has been revised to accommodate the new dump station and storage silos.	No detailed assessment required.
Noise	The process and capacity of the main plant remains unchanged, and noise associated with dumping and storage of soybeans will be in line with operations previously proposed using GrainCorps facilities.	No detailed assessment required.
Soils and Water	The process and capacity of the main plant remains unchanged, and the amount of developed land on the Crushing Facility site remains unchanged. The site layout and size of the soymeal storage shed has been revised to accommodate the new dump station and storage silos.	No detailed assessment required.
Visual Amenity	The dump station will be approximately 11m x 28m and 15m tall. The storage silos will be approximately 32m in diameter and 36m tall. They will be located behind the existing GrainCorp silos, in the same general area. Due to the size & location of these new silos relative to the existing GrainCorp silos there will be minimal effect on the overall visual amenity of the site.	Quantitative assessment by means of revised site layouts, and 3D representation & photomontages of new site layout.

2.5.4 Detailed Environmental Assessments

2.5.4.1 Air Quality

Background

The new location of Plot 3 is located 250m east of the Approved location for the Biodiesel Refinery, at the inner harbour of Port Kembla, NSW.

Local air quality is influenced by many factors, including meteorological conditions and topography. The Illawarra region is bounded by a steep escarpment to the west and the ocean to the east, both of which influence air quality in the region. Details of the existing meteorological conditions are provided in Section 7.2.3 of the Maunsell-AECOM (2008) EA. In summary, the predominant wind direction is westerly with relatively low general wind speeds(less than 3m/s).

The existing potential sources of air pollutants within the Illawarra include motor vehicles, industry (in particular ferrous metal manufacturing) and domestic activities, which result in ozone, photochemical smog and brown haze.

The proposed Soybean Processing and Biodiesel Production (SPBP) facility is surrounded by industrial premises including:

- BlueScope Steel Port Kembla Steel Works
- Port Kembla Coal Terminal
- Orica's sulphuric acid recovery and chemical manufacturing plant
- Sydney Water Corporation's Wollongong Sewerage Treatment Plant

- Cement manufacturing facilities
- Metal fabrication, coating and finishing facilities

As outlined in Section 7.2.3 of the original Maunsell -AECOM (2008) EA, historical data from the NSW Department of Environment and Climate Change (DECC) for the Illawarra region shows that carbon monoxide, nitrogen dioxide and sulphur oxide levels are below the Ambient Air Quality National Environment Protection Measures (AAQ NEPM) standards. However, levels for ozone and fine particles (PM_{10}) do not comply with the AAQ NEPM.

Review of the potential emissions from the proposed SPBP facility, including detailed air quality modelling, in the original Maunsell -AECOM (2008) EA found that the emissions generated by the proposed development by point sources are expected to be below the NSW DECC assessment criteria and that there would be no significant impact on air quality from the proposed facilities at the nearest sensitive receptors.

Methodology

The proposed addition of the soybean storage silos and truck dump station does not affect the process or production capacity of the plant and the associated emissions, only the physical location of where the soybeans are stored and emptied from trucks. As such, a qualitative assessment of the potential air quality impacts associated with the proposed addition of the soybean storage silos and truck dump station was undertaken by Cardno using the existing data included in the Section 7.2 of the Maunsell AECOM (2008) EA. Specifically, the impact on air quality for this proposed change was assessed in terms of those impacts associated with the storage and handling of soybeans; that is, fugitive emissions, and dust.

Detailed Assessment Results

Fugitive Emissions:

The handling and storage of soybeans has the potential to result in dust emissions. However, consistent with the Project Approval, integrated dust suppression technology which is required from a hazard reduction and quarantine perspective will be implemented and maintained. As a result, the addition of the soybean storage silos and truck dump station is unlikely to result in a measurable increase in fugitive emissions.

The location of the proposed storage and truck dump station facilities are adjacent to the existing GrainCorp facilities that were previously planned to be utilised, and accordingly the potential impact of any fugitive emissions are consistent with the findings of the original Maunsell-AECOM (2008) EA.

Dust:

Soybean cargos can contain dust of varying nature such as coarse and/or fine sand, grain dust and other coarse materials including sticks, leaves and branches. Handling of the soybeans can lead to the generation of dust. The proposed changes include a truck dump station which is likely to increase dust generation on site. The potential for dust to cause a significant impact to local air quality and sensitive receivers is considered to be low, given the location of the truck dump facility, the orientation of the plant, the distance to sensitive receivers, the predominant wind direction and the mitigation measures outlined below.

Mitigation Measures

As the impact on air quality from the proposed addition of the soybean storage silos and truck dump station was found to be consistent with the findings of the original Maunsell-AECOM (2008) EA, the corresponding mitigation measures are in accordance with those defined in Table 30 and section 7.2.6 of the Maunsell-AECOM (2008) EA, and the original Project Approval, as outlined below:

- The proposed plant will be designed with emission controls integrated into each stage
- National Biodiesel will ensure that all conveyors associated with the project are designed, installed and operated to prevent visible dust emissions, and incorporate fully enclosed dust suppression units at all conveyor transfer points and directional change points so that the material transferred on the conveyor belt is enclosed. Any collected dust will be returned to the process.
- An Air Quality Management Plan will be implemented including monitoring and inspections to confirm that emissions comply with manufacturer's guarantees and legislative requirements, and to confirm that all controls are working appropriately and to ensure impacts to the community are minimised.
- All practicable measures will be undertaken to ensure that air emissions during the construction and operation of the project are within relevant air quality and odour criteria guidelines
- National Biodiesel will ensure that all emission sources that form part of the proposed facility comply with emission limits as specified in the Protection of the Environment Operations (Clean Air) Regulation.
- Industry best practices will be followed to prevent fugitive emissions and a Leak Detection and Repair Program will be implemented and followed during normal operation to control the potential for fugitive emissions.

For the Air Quality Management Plan, the following additional aspects are to be incorporated to address the dust management issues associated with the storage of soybeans on National Biodiesel's site (previously this was to be addressed by GrainCorp with the use of their facilities):

- An extensive cleaning program to minimise the build-up of combustible dusts
- Dust collection systems at all transfer points including small self-containing dust extraction units
- Regular plant inspections

Conclusion

This detailed assessment found that the impacts on air quality from the proposed change in the location of Plot 3 are in line with those previously determined in the original Maunsell-AECOM (2008) EA, and as such are expected to be below the adopted assessment criteria .

The mitigation measures as listed in Section 7.2.6 of the original Maunsell-AECOM (2008) EA and the original Project Approval are considered to be appropriate to mitigate the potential air quality impacts to meet the adopted assessment criteria.

2.5.4.2 Hazards and Risks

Background

In the original Maunsell-AECOM (2008) EA, the hazards and risks associated with the proposed SPBP were assessed via a Preliminary Hazard Analysis (PHA) which was conducted in accordance with the Department of Planning Hazardous Industry Planning Advisory Paper (HIPAP) Numbers 4 and 6.

The primary hazards identified from this PHA were those due to flammable liquids and combustible dusts that are present on site in sufficient quantities to cause a major fire or explosion risk. Accordingly, the hazard identification in the Maunsell-AECOM (2008) EA was directed at bulk quantities of material and not minor quantities as may be found as small additives, cleaners, waste storage and like situations.

For the storage and handling of soybeans, the primary hazard identified was the risk of explosion from combustible dusts.

In Section 7.4.6.2 of the original Maunsell-AECOM (2008) EA, the hazard of combustible dusts was assessed by considering the relevant event types, causes, consequences and control measures, as outlined in Table 41 of the original Maunsell-AECOM (2008) EA.

From this original assessment, it was determined that the consequences of a dust explosion due to the storage and handling of soybeans does not materially change from the existing land use, and although dust explosions are possible the worst case events will be restricted to the plant equipment and the corresponding explosion pressures will not impact on residential areas.

The corresponding societal risk was concluded to be acceptable given that:

- Few events analysed in the PHA have the potential for offsite impact and for the ones that do, their likelihood is acceptably low
- The risk of off-site individual fatality is low and acceptable
- The population density in the area is low

It was therefore determined that the results from the PHA showed that the risks associated with the storage and handling of soybeans comply with the Department of Planning guidelines for tolerable fatality, injury, irritation and societal risk.

Methodology

The hazard and risk assessment for the proposed addition of the soybean storage silos and truck dump station was undertaken by Cardno, following the key steps in the PHA methodology used in the original Maunsell-AECOM (2008) EA as outlined below:

- Establishing the nature of the proposed changes in particular the quantity, storage and handling of dangerous goods and combustible dusts that may give rise to major fires and explosions.
- Review of the proposed general arrangement of the proposed changes and development of possible major hazard events, their causes and consequences.
- Review of the consequences of the identified hazardous events by considering onsite and possible offsite impacts, including the risk of propagation of a hazardous event to nearby processing facilities.

- Review of the likelihood and hence the risks of the potential hazardous events with the possibility for offsite harm using qualitative techniques.
- Comparison to the existing local land uses including consideration of cumulative risk factors.
- General consideration proposed safeguards.

Detailed Assessment Results

The primary hazards identified as part of the Maunsell-AECOM (2008) EA were those due to flammable liquids and combustible dusts that are present on site in sufficient quantities to cause a major fire or explosion risk. As a result, the hazard identification in the Maunsell-AECOM (2008) EA was directed at bulk quantities of material and not minor quantities. Accordingly, the hazard identification undertaken by Cardno focussed on these aspects.

The proposed addition of the soybean storage silos and truck dump station does not alter the type of hazard that may be present with the storage and handling of soybeans; that is, the potential generation and accumulation of combustible dusts. The total amount of soybeans to be stored and the rate at which they are handled has not changed, however there is a shift in the location of the storage and handling facilities to Plot 5, albeit slightly further away from sensitive receivers.

As a result, the consequences of a combustible dust explosion (i.e. destruction of materials and beings) do not materially change from the existing land use as detailed in Table 41 of the Maunsell-AECOM (2008) EA, as outlined below:

Event No.	Event Type	Description / Causes	Consequences / Notes	Control Measures
1	Main silo explosion due to soybean dust	Worst case event due to ignition source in silo	• Destruction to the top of silos. • Shockwave across site • Explosions at GrainCorp silos are more likely and will have higher consequences due to material properties of grain currently stored there	• Plant design to minimise dust generation • Dust extraction systems • Heat detection and plant controls (e.g. belt drift monitoring) • Classification of hazardous areas and control of ignition sources
2	Dust explosion within process equipment	Primary explosion inside plant due to heat, sparks etc.	Damage to plant and initiation of secondary explosions	• Plant design to minimise dust generation • Dust extraction systems • Water sprays • Heat detection and plant controls (e.g. belt drift monitoring) • Explosion venting to avoid overpressure • Classification of hazardous areas and control of ignition sources

3	Dust explosion within builidings	Secondary explosions could be initiated by an explosion with other plant if dust is in the general plant area	Building overpressure leading to dislodgement of wall sheets and plant damage	• Dust collectors and dust suppression at all transfer points and other areas of dust creation • Housekeeping to keep dust to minimum in buildings • Grated flooring and other measures to avoid dust accumulation • Fire protection and alarms

As identified in section 7.4.6.2 of the original Maunsell-AECOM (2008) EA, providing that general buildings are kept clean of dust, any potential explosions will be limited to internal process equipment and the resultant pressure wave external to the plant will be minimal and not result in damage to buildings beyond the immediate vicinity of the explosion. As a result, significant explosions due to combustible dusts resulting from the storage handling of soybeans are not expected.

Mitigation Measures

As the hazards and risks of the proposed changes are in accordance with the findings of the PHA in the original Maunsell-AECOM (2008) EA, the corresponding mitigation measure detailed in Section 7.4.5 of the original EA and the original Project Approval are considered to be relevant to the proposed change, and are as detailed below:

- Design of the plant will be in accordance with the following applicable Australian Standards to cover the relevant safety management requirements:
    - Classification of Hazardous Areas (AS/NZS 60079-10)
    - Application of HAZOPS (AS IEC 61882)
- A Site Emergency Response Plan will be prepared and all staff appropriately briefed
- Relevant staff will be informed of the requisite Emergency Shutdown Systems
- Fire protection systems (e.g. hydrants, foam, monitors, tank spray systems and fire extinguishers) will be installed in accordance with requirements of the relevant standards
- Prior to construction, the following studies shall be undertaken to the satisfaction of the Director-General and the NSW Fire Brigades:
    - A Fire Safety Study that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.2 – Fire Safety Study Guidelines* and the NSW Government's *Best Practice for Contaminated Water Retention and Treatment Systems*.
    - A Hazard and Operability Study (HAZOP) that has been prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.8 – HAZOP Guidelines*, chaired by an independent qualified person approved by the Director-General (except to the extent that it realise to minor services systems such as compressed air and water), and includes a program for the implementation of all recommendations made during the study (note: if National Biodiesel intends to defer the implementation of certain recommendations, the justification shall be provided for the proposed deferral)
    - A Final Hazard Analysis (FHA) prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis*

- Prior to commissioning the following shall be prepared to the satisfaction of the Director-General
    - An Emergency Plan prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.1 – Industry Emergency Planning Guidelines*
    - A Safety Management System prepared in accordance with the Department's *Hazardous Industry Planning Advisory Paper No.9 – Safety Management*

In addition to these existing mitigation measures, the following measures listed below are proposed to further manage the risk of dust explosions. These measures are in accordance with those identified in section 7.4.5 of the original Maunsell-AECOM (2008) EA that are utilised at the existing GrainCorp silos to manage the risk of dust explosions at their facilities:

- Extensive cleaning program to minimise the build-up of combustible dusts
- Dust collection systems at all transfer point for conveyors and silos
- Use of equipment that is certified for safe use in dust hazard conditions
- Staff that are trained in dust hazards and compliance requirements
- Weekly plant inspections to identify potential problem areas
- Comprehensive plant monitoring and alarm systems

Conclusion

This detailed hazard and risk assessment found that the impacts from the addition of the soybean storage silos and truck dump station are consistent with those identified in the original Maunsell-AECOM (2008) EA for the use of the existing GrainCorp facilities, and are accordingly manageable. Significant explosions due to combustible dusts resulting from the storage handling of soybeans are not expected, and any potential explosions will be limited to internal process equipment.

The mitigation measures as listed in Section 7.4.5 of the original Maunsell-AECOM (2008) EA and the original Project Approval are considered to be appropriate to mitigate the hazard and risk impacts of the proposed change, and additional measures in accordance with those currently utilised at the existing GrainCorp facilities are to be employed to manage the risk of dust explosions.

2.5.4.3 Visual Amenity

A detailed assessment of the impact on visual amenity from the proposed addition of the soybean storage silos and truck dump station was undertaken by Cardno, in conjunction with the visual impact assessment for Change 1, as detailed in Section 2.1.4.5 of this report.

The assessment was conducted by generating a 3D model of the revised site layout incorporating all of the proposed changes listed in this report, and considering the corresponding views and visual impacts at the 6 key visual receptors identified in the original Maunsell-AECOM (2008) EA.

From this assessment, it was found that the visual amenity impacts of the proposed modification are considered to be consistent with the Project Approval, as the changes are considered to integrate into the existing industrial setting. Although parts of the modification will be somewhat visible from surrounding locations, the proposed structures are similar in bulk and character to the existing industrial development, and are considered to be consistent with the character of the port and its heavy industrial operations.

Accordingly, the mitigation measures listed in the original Maunsell-AECOM (2008) EA and those in the original Project Approval are considered to be appropriate to mitigate the visual amenity impacts of the proposed changes.

Further details regarding the background, methodology, results and mitigation measures associated with this assessment are provided in Section 2.1.4.5 of this report.

2.6 Change 6: Change in orientation of Administration Building and car parking

2.6.1 Description of Change

In the original approval for the Project it was planned for the Administration building to face East/West, and the corresponding car park to be located on Western side of the building. It is now proposed that Administration building will face North/South, and car park located on Southern side of the building. In addition to this, it is proposed to maximise the number of car park spaces on this site to ensure sufficient parking for the building staff as required by relevant standards.

Figure 3 at the start of this report shows the revised layout of the Administration building and car park.

2.6.2 Justification

Detailed surveying and utility plotting of the site has identified that a series of High Voltage (HV) cables run through Plot 6 underneath the originally proposed location of the Administration Building. In addition to this, preliminary geotechnical studies of the site have identified that it is likely that the Administration Building will need to be piled to a depth of up to 25-30m. As a result, it is not feasible to have the building located above HV cable, and the building has had to be reorientated so that it is located away from the HV cables.

Preliminary design work for the Administration building and associated car park has also identified that the number of car parks proposed in the original concept design was insufficient to meet the requirements in relevant standards for the number of people to be located in the building. As a result, it is now proposed to maximise the number of car parks on Plot 6 to ensure there is a suitable number of parks for the Administration Building and associated overflow parking capacity for site personnel.

2.6.3 Initial Gap Analysis

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Air Quality	The process and capacity of the overall plant remains unchanged. This change simply impacts the orientation of the Admin Building and car park	No detailed assessment required.
Hazards and Risk	This change has no effect on the overall hazards and risks of the final plant.	No detailed assessment .

Environmental Aspect	Preliminary Assessment/Comments	Detailed Assessment Requirements
Traffic	This change has no effect on the overall amount of traffic associated with operation and construction of the plant.	No detailed assessment required.
Biodiversity	This change does not affect the impact on biodiversity for Plot 6, as the planned development activities on the site have not changed (i.e. construction of an Admin building and car park).	No detailed assessment required.
Noise	This change has no impact on the noise generated from the site.	No detailed assessment required.
Soils and Water	This change does not affect the impact on soils and water, as it merely involves the reorientation of the Admin Building and car park on the site	No detailed assessment required.
Visual Amenity	This change does not affect he impact on visual amenity of the site as the proposed size of the Admin building is unchanged and is much smaller than the major processing facilities. Only the orientation of the building on site has changed.	No detailed assessment required.

2.6.4 Detailed Environmental Assessments

No detailed assessments were identified as being required for this change.

3 Appendices

3.1 Plot Diagram of Revised Biodiesel Plant (Plot 3) Land Allotment

3.2 Detailed Environmental Impact Assessment – Air Quality, Hazards & Risks, Visual Amenity

(Cardno)

3.3 Detailed Environmental Impact Assessment – Biodiversity

(Biosphere Environmental Consultants)

3.4 Detailed Environmental Impact Assessment – Soils & Water

(URS)

3.5 Consultation With Key Stakeholders