Manildra Park Pty Ltd

Preliminary Environmental Assessment of Manildra Park's Marine Fuel Storage and Distribution and BioDiesel Production Facility, Kooragang Island

May 2007

Umwelt
Environmental Consultants

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Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Manildra Park Pty Ltd

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Report No. 2305/R01/FINAL		Date: May 2007

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1.0 Introduction

Manildra Park Pty Ltd (Manildra Park) proposes to construct and operate a marine fuel oil and diesel bunker (the refuelling of ships) terminal and biodiesel production facility off Greenleaf Road, Kooragang Island. The facility is located within the Kooragang Island Industrial Area, located at the southern end of Kooragang Island (refer **Figure 1.1**). Associated with the Greenleaf Road Terminal's operation are, berth receival and distribution facilities, a pipeline connecting the terminal with the berth facilities, truck loading facilities, a biodiesel plant and administration and amenities buildings. A detailed description of the proposal can be found in **Section 2.0**.

In overview, the operations can be described as the following activities:

- **Receival**: the receival of marine fuel oils, diesel and the primary raw materials (vegetable oil for biodiesel production) by ship (NB some of the raw materials for the biodiesel facility may also be received by road e.g. canola oil, methanol, etc);

- **Transfer**: the transfer of marine fuel oils, diesel and the primary raw materials from the berth to the Greenleaf Road Terminal via a pipeline , i.e. incoming fuels and oils;

- **Storage**: the storage of marine fuel oils, diesel, biodiesel and the primary raw materials for biodiesel facility within the terminal;

- **Biodiesel Production**: the production of biodiesel from vegetable oils; and

- **Distribution**: the distribution of marine fuel oils, diesel and biodiesel via pipeline to a refuelling barge and then to ships within the Port of Newcastle and by road tanker to bulk diesel users within the region.

1.1 The Applicant

Manildra Park forms a company within the Manildra Group. The Manildra Group is an Australian owned private company based in Auburn, NSW. The company was established in 1952 with the purchase of a single flour mill in Manildra, western NSW. Over the past 50 years, the Manildra Group has diversified. Its product range includes flour, pre mixes and products derived from flour such as modified starches, glucose syrups, maltodextrine, gluten, specialty protein products and ethanol.

Manildra Park (operating as Port Kembla Marine Fuels (PKMF)) is the owner/operator of the Marine Fuel Terminal at Port Kembla. The company imports marine fuels into the Port Kembla Terminal and resells these fuels to the Australian bunker fuels market. A pipeline network is used to distribute fuel to ships within Port Kembla, while road tankers distribute fuel to land based bulk fuel users in the Illawarra, Sydney and Newcastle regions. The proposal at Kooragang Island would be similar to the operation at Port Kembla.

Manildra Park employs 80 staff through its direct operations. The Manildra Group employs over 600 people in New South Wales and approximately 900 people nationally and internationally.

Manildra Park has secured a long term lease over a site on Greenleaf Road, Kooragang Island, Newcastle, from the Regional Land Management Corporation (RLMC). Manildra Park proposes to construct and operate a marine fuel oil and diesel bunker terminal and biodiesel production facility on Greenleaf Road, Kooragang Island.

Source: Aerial Photo: Port Waratah Coal Services

0 0.25 0.5 1.0km
1:25 000

Legend

Greenleaf Terminal

FIGURE 1.1

Locality Plan

1.2 Purpose of the Document

This Preliminary Environmental Assessment has been prepared by Umwelt (Australia) Pty Limited (Umwelt), on behalf of Manildra Park, to brief the relevant government agencies about the proposal, introduce the consultation and environmental assessments conducted to date and outline further assessments to be completed as part of preparation of the Environmental Assessment (EA).

This document will be provided to all relevant agencies by Department of Planning (DoP) prior to seeking their comments and requirements for DoP's consideration during the preparation of the Director-General requirements for the EA.

2.0 Description of Proposal

Manildra Park proposes to undertake the proposal in three discrete phases, as outlined below:

Phase 1: involves refurbishing the two existing storage tanks, constructing the pipeline and operating fuel receival and distribution facilities at the berth, constructing a road tanker loading bay and constructing amenities and service buildings and the purchase of a barge to distribute products around the port. Under this phase the storage capacity is approximately 51 ML.

Phase 2: involves constructing three additional fuel storage tanks. Associated with the increased storage capacity, is an increase in distribution volumes to service local land based bulk diesel users. Under this phase, the storage capacity is increased by approximately 9 ML, taking the total storage capacity to approximately 60 ML.

Phase 3: involves constructing a biodiesel production facility with a production capacity of approximately 60 ML per year. The distribution of biodiesel will utilise the marine and road distribution infrastructure constructed as part of **Phase 1**. Under this phase, the construction of a 5 ML tank increases the total storage capacity to approximately 65 ML.

The annual marine fuel oil, diesel and biodiesel distribution volumes are shown in **Table 2.1**. Product will predominantly be transported to the facility via ship. The subsequent distribution of marine fuel oil will be predominantly undertaken via barge, while diesel and biodiesel will be predominantly distributed by road tankers.

Table 2.1 - Indicative Annual Marine Fuel Oil, Diesel and Biodiesel Distribution Volumes

		Year		
Product		**2009 - 2011**	**2012 - 2014**	**2015 - 2018**
Marine Fuel Oil	**Million ltr/Yr**	190	280	280
Diesel	**Million ltr/Yr**	110	245	245
Biodiesel	**Million ltr/Yr**	19	44	52

A detailed description of the individual components associated with each phase can be found in **Sections 2.1**, **2.2** and **2.3**.

2.1 Phase 1

The general arrangement of the Greenleaf Terminal can be seen in **Figure 2.1** and the main components are described in **Section 2.1.1**.

Under Phase 1 marine fuel oil and diesel will be received and distributed from the terminal. The marine fuel oil will be predominantly distributed via barge to ships within the Port of Newcastle, while road tankers will distribute diesel to other users within the port and local bulk fuel users.

2.1.1 Greenleaf Road Terminal

Marine Fuel Oil and Diesel Storage

During the 1970's and early 1980's the site was used to store naphtha. The two existing steel tanks (T1 and T2), each with a capacity of approximately 25.5 ML and an earthen bund which surrounds these tanks, are evidence of this previous operation.

These tanks will be refurbished to allow for the storage of fuel oil and diesel.

The refurbishment works will involve replacing the existing floating roof in each tank with a fixed roof, as a floating roof is unsuitable for fuel oils and unnecessary for diesel storage. Repairs to the tank floor and walls will be done where required. The southern bund wall will be relocated to the north. The site (including the bund walls) will be lined with an impervious membrane. A leak detection system will also be installed beneath the existing tanks.

Road Tanker Loading Bay

The loading bay will be roofed, bunded and drain to an oil separator. Truck loading operations will be semi automated to prevent overfilling. Spills during the coupling and uncoupling of hoses are minimised via the use of a 'dry break' coupling, which cannot be opened unless fitted to the vehicle. The trucks are also fitted with brake interlocks, which prevent the truck from driving off while connected to the loading bay hoses.

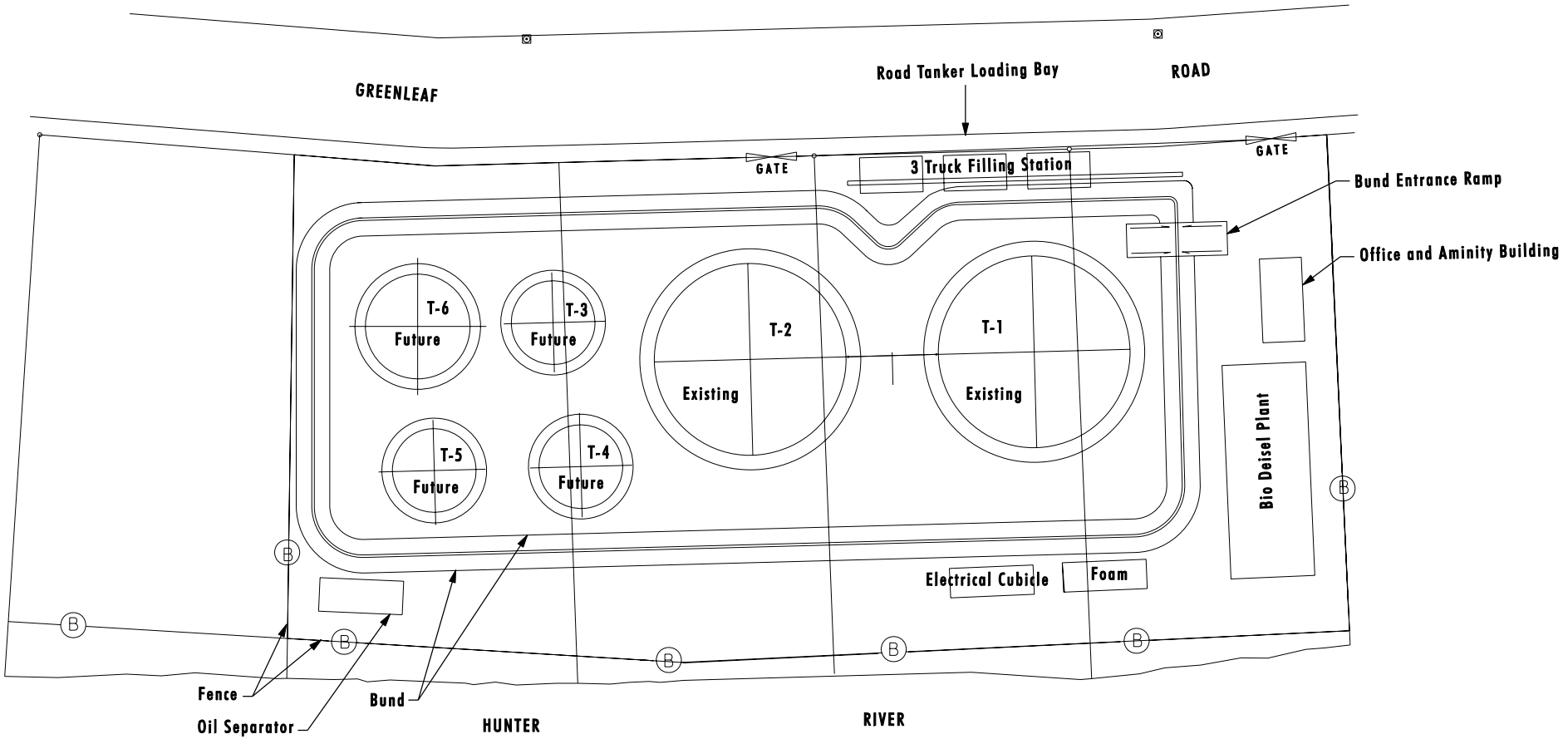
Discharge from the separator will be licenced under an Environment Protection Licence for the site.

Amenities and Services

Office and amenity buildings, together with car and truck parking areas, will be provided to accommodate staff at the Greenleaf Road Terminal. A storage compound will also be constructed to store plant, equipment and emergency response equipment.

The site is unsewered and therefore an onsite sewage treatment facility will be designed and installed to treat wastewater from the office and amenity buildings.

The current fire ring main located on-site will be refurbished and reconnected to mains water and additional fire fighting equipment including foam, foam applicators and hoses will be installed around the Greenleaf Road Terminal as required by legislation. A comprehensive Fire Safety Study will be carried out during the detailed design phase to identify the specific requirements of the site.



Source: Manildra Park

0 25 50 75m
1:1500

Legend
B Boundary
2.94 RL

FIGURE 2.1

General Arrangement
Greenleaf Road Terminal

File Name (A4): R01_V1/2305_005.dgn

2.1.2 Berth Facilities –Receival

Marine fuel oils, diesel and vegetable oil will be shipped to Kooragang Island. The unloading of bulk fuels and oils will occur at either Kooragang Island Berth No 3 (K3) or Kooragang Island Berth No 2 (K2). The location of these berths is shown in **Figure 2.2**. The mechanics of unloading remains the same regardless of the unloading berth location, i.e. fuel will be transferred from the ship to the terminal via a 400 mm steel pipeline. Flexible hoses will run between the ship and the point of connection with the steel pipeline.

The general alignment of the pipeline will follow the eastern side of Greenleaf Road and the western side of Heron Road and terminate at the K2 and K3 berths (refer to **Figure 2.2**). The pipeline will be located below ground within the road reserve.

From Heron Road the pipe to turn to the west and continue underground through the backup land which adjoins the berth and terminate in a bunded area at the eastern edge of the berths. An underground position avoids operational conflicts associated with the existing plant and equipment which use the berths. A manifold will be constructed within the bunded area, which provides a connection point for flexible hoses, which can be connected to a ship for the importation of fuels. Pig launching and receiving chambers will also be constructed within the bunded area. A steel spill tray will also be used in the bunded area.

2.1.3 Berth Facilities – Distribution

The distribution of fuel to ships within the port will be undertaken using a refuelling barge. The refuelling barge will moor at the refuelling berth and will receive fuel from the terminal via a pipeline, as described below. Two options are currently being considered for the barge refuelling operation; the PWCS Wallarah tie-up berth and the Boskalis berth in the North Arm of the Hunter River. The barge will be self propelled and have a crew of three. When not in use the refuelling barge will be moored at the refuelling berth.

The need for any infrastructure, services upgrades and/or structural improvements such as berthing dolphins, fenders, walkways, anchoring points, power and water will be determined following a survey of the berths. These works may be undertaken from land and/or water.

The need for any fire fighting or safety equipment at the berth will be assessed in a comprehensive Fire Safety Study, to be completed in the detailed design phase of the proposal.

Wallarah Berth

The Wallarah berth is located to the north of K3 and east of Kooragang Island Berth No 4 (K4). If this option is used fuel would be delivered to the Wallarah berth by an extension to the steel receival pipeline located on the K3 berth. A diverter would be placed at the point where the steel receival pipeline comes onto the K3 wharf. The pipeline would run from this point north underground, where the pipeline would then turn west 90 degrees once it entered Port Waratah Coal Service (PWCS) land. Once on PWCS property, the pipeline would be located on the surface and would run parallel to the Wallarah berth before extending onto the berth. The pipeline will terminate within a bunded area on the berth (refer to **Figure 2.2**). The loading of the refuelling barge will be accomplished by connecting flexible hoses between the manifold at the end of the pipeline and the refuelling barge.

Source: Aerial Photo: Port Waratah Coal Services

0 100 200 500m
1:10 000

Legend

- Greenleaf Terminal
- Receival and Distribution Pipeline
- Distribution only Pipeline

FIGURE 2.2

Location of Receival / Distribution Berths and Pipeline Alignments

Boskalis Berth

If this option is used a pipeline will transfer fuel from the Greenleaf Road Terminal to the Boskalis Berth (old Westham berth) for barge re-filling. The pipeline would start at the north western corner of the terminal and travel underground within the road reserve on the eastern side of Greenleaf Road. On reaching the southern boundary of Lot 19 the pipeline will turn east and travel underground along the lot boundary to the berth. The pipeline will terminate within a bunded area on the berth (refer to **Figure 2.2**). The loading of the refuelling barge will be accomplished by connecting flexible hoses between the manifold at the end of the pipeline and the refuelling barge.

Irrespective of the alignment, the design, construction, operation and maintenance of the pipeline will be undertaken in accordance with AS 2885 Pipelines – Gas and liquid petroleum. The pipeline will be cathodically protected for enhanced anti-corrosion properties. Any underground or inaccessible sections will be sheathed in polymer coating or wrapped in anti-corrosion impregnated tape. The pipeline will be hydrostatically tested every 12 months to ensure its integrity and visually inspected half hourly during pipeline transfers.

An emergency stop system will run the length of the pipeline, which will activate a visual and audible alarm at the terminal, K2, K3 berths and barge refuelling point. In barge refuelling situations, the emergency stop system will also cut pumps and shut valves at the terminal pipeline manifold. Pressure switches will be installed on discharge pumps at the terminal to ensure maximum operating pressures are not exceeded and check valves will be installed on the pipeline at the ship discharge point, to ensure there is no backflow to the ship in the event of failure or power loss.

The pipeline will be cleared of product following the transfer of product by running a rubber plug, known as a 'pig' through the line propelled by compressed air. Flexible hoses used in the transfer of product between the berth receival/discharge points and marine ships or refuelling barge, will also be cleared of remaining product by using compressed air. To avoid accidental opening receival/discharge points will be fenced and secured by turning off, locking and isolating valves using bolted blind flanges.

2.2 Phase 2

Phase 2 involves the construction of three 3 ML diesel storage tanks within the Greenleaf Road Terminal as illustrated within **Figure 2.1**. Associated with the additional tanks will be the installation of additional pipe network infrastructure within the Terminal.

2.3 Phase 3

Phase 3 involves the establishment and operation of a biodiesel production and distribution facility with an annual production capacity of approximately 60 ML. Construction of the biodiesel facility consists of assembling prefabricated components. The location of the biodiesel facility is shown in **Figure 2.1**.

One 5 ML tank will also be constructed under this phase.

The biodiesel facility will convert vegetable oil into biodiesel. The chemistry of the biodiesel process is based on transesterification, where fats or oils are mixed with methanol and a catalyst (potassium hydroxide (KOH) or sodium hydroxide (NaOH) and

heated. The chemical reaction that occurs through this process breaks down the oil molecules and replaces the glycerin portion of the molecule with an alcohol molecule. The glycerin falls to the bottom and is drained off resulting in Biodiesel.

2.4 Construction Schedule

The construction of the proposal (Phase 1, 2 and 3) is predicted to be completed within three to five years. The construction of each phase will overlap during this three to five year period.

Construction activities which are audible at any residential or other sensitive receiver will be limited to between 7.00 am and 6.00 pm Monday to Friday and 8.00 am and 1.00 pm Saturdays.

Works proposed to be undertaken outside of these hours includes:

- any works that do not cause construction noise emissions to be audible at any nearby sensitive noise receiver;
- the delivery of materials as requested by the Police or other authorities for safety reasons e.g. oversized loads;
- emergency work to avoid the loss of life, property and/or prevent environmental harm; and
- any other work agreed to through negotiations between the Manildra Park and the potentially affected noise receivers.

2.5 Hours of Operation

The facility will operate 24 hours a day, seven days a week in order to meet the demands of Port and local users.

2.6 Workforce

It is anticipated that the proposal will generate approximately 37 full-time equivalent positions, plus additional indirect jobs involved in the transportation of diesel and biodiesel products. Construction workforce is estimated to be approximately 23 full-time equivalent positions at peak.

3.0 Planning Considerations and Consultation

3.1 Planning Considerations

The following sections identify the State and Commonwealth legislation and policy applicable to the proposal, including the planning approval process.

3.1.1 Environment Protection and Biodiversity Conservation Act (1999)

The primary objective of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to 'provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance.'

Under the EPBC Act, approval of the Commonwealth Minister for the Environment and Water Resources is required for any action that may have a significant impact on matters of national environmental significance. The provisions of this legislation relevant to the proposal relate to potential impacts on migratory and threatened species, listed in the EPBC Act, and RAMSAR listed wetlands.

Actions that are considered to have a significant impact on a matter of national environmental significance are defined under the EPBC Act as a 'controlled action'. The determination of whether an action is a 'controlled action' and if the action requires further assessment is made by Department of Environment and Water Resources through a preliminary referral process.

The proposal is located 1.2 kilometres to the south of the Kooragang Nature Reserve a RAMSAR wetland and a number of migratory and threatened species listed in the EPBC Act are known to occur in the area. The proposal is located entirely within an area previously disturbed by industrial activities and does not directly impact on the nearby RAMSAR wetland. Off-site impacts (noise and dust) are also not expected to significantly contribute to existing ambient levels. On this basis, it is anticipated that the proposal will not have a significant impact on the wetland or listed species, and therefore will not need to be assessed as 'controlled action' under the EPBC Act. **Section 4.4.2** details the ecological assessment undertaken to date and the proposal's potential ecological impacts.

A Preliminary Referral will be made to the Department of Environment and Water Resources, to confirm that approval of the Commonwealth Minister for Environment is not required.

3.1.2 Environmental Planning and Assessment Act 1979

Manildra Park has consulted the DoP in regards to this proposal and confirmed that the proposal is characterised as a Major Project, as it is of a class of development listed in Schedule 1 of State Environmental Planning Policy (SEPP) (Major Projects) 2005. An approval under Part 3A of the Environmental Planning and Assessment (EP&A) Act is required. Consequently, the Minister for Planning is the consent authority for this proposal.

3.1.3 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act* 1997 (PoEO Act) is administered by the Department of Environment and Climate Change (DECC) and requires a licence for environmental protection including waste, air, water and noise pollution control. Manildra Park will need to apply for an Environment Protection Licence following receipt of project approval.

3.1.4 Environmentally Hazardous Chemicals Act 1985

The DECC is granted power under the *Environmentally Hazardous Chemicals Act* 1985 to assess and control chemicals and declare substances to be chemical wastes.

Part 3 Division 1 Clause 10(1) defines chemical wastes as:

> "… any chemical substance (including any mixture) is or is likely to be stored in accumulating deposits or dumped or abandoned or otherwise dealt with as chemical waste, the Authority, by order published in the Gazette, may declare that substance to be a chemical waste for the purposes of this Act."

As the input streams to the facility are not waste products and the by-products from the facility are proposed to be reused either within the facility or transported off site for reuse, the *Environmentally Hazardous Chemicals Act* 1985 is not applicable.

3.1.5 Roads Act 1993

The *Roads Act* 1993 is administered by the Roads and Traffic Authority (RTA), local council or the Department of Lands. The RTA has jurisdiction over major roads, the local council over minor roads, and the Department of Lands over road reserves. The Act requires that applications for the closure of Crown roads be made to the Minister.

3.1.6 Other Relevant Environmental Planning Instruments

The Proposal is located wholly within the Newcastle Local Government Area and thus the Newcastle Local Environmental Plan 2003 (Newcastle LEP) applies.

However, Section 75R of the EP&A Act provides that environmental planning instruments, other than State Environmental Planning Policies (SEPPs), do not apply to Major Projects defined under Part 3A of the Act, other than as detailed below.

Permissibility

Newcastle LEP is relevant to the permissibility of the proposal. Section 75J(3)(b) of the EP&A Act provides the Minister cannot approve the carrying out of a project that would be wholly prohibited under an environmental planning instrument.

The areas to be affected by the proposal are zoned 4(b) Port and Industry under the Newcastle Local Environment Plan (LEP) 2003 (see **Figure 3.1**). The objectives of this zone are:

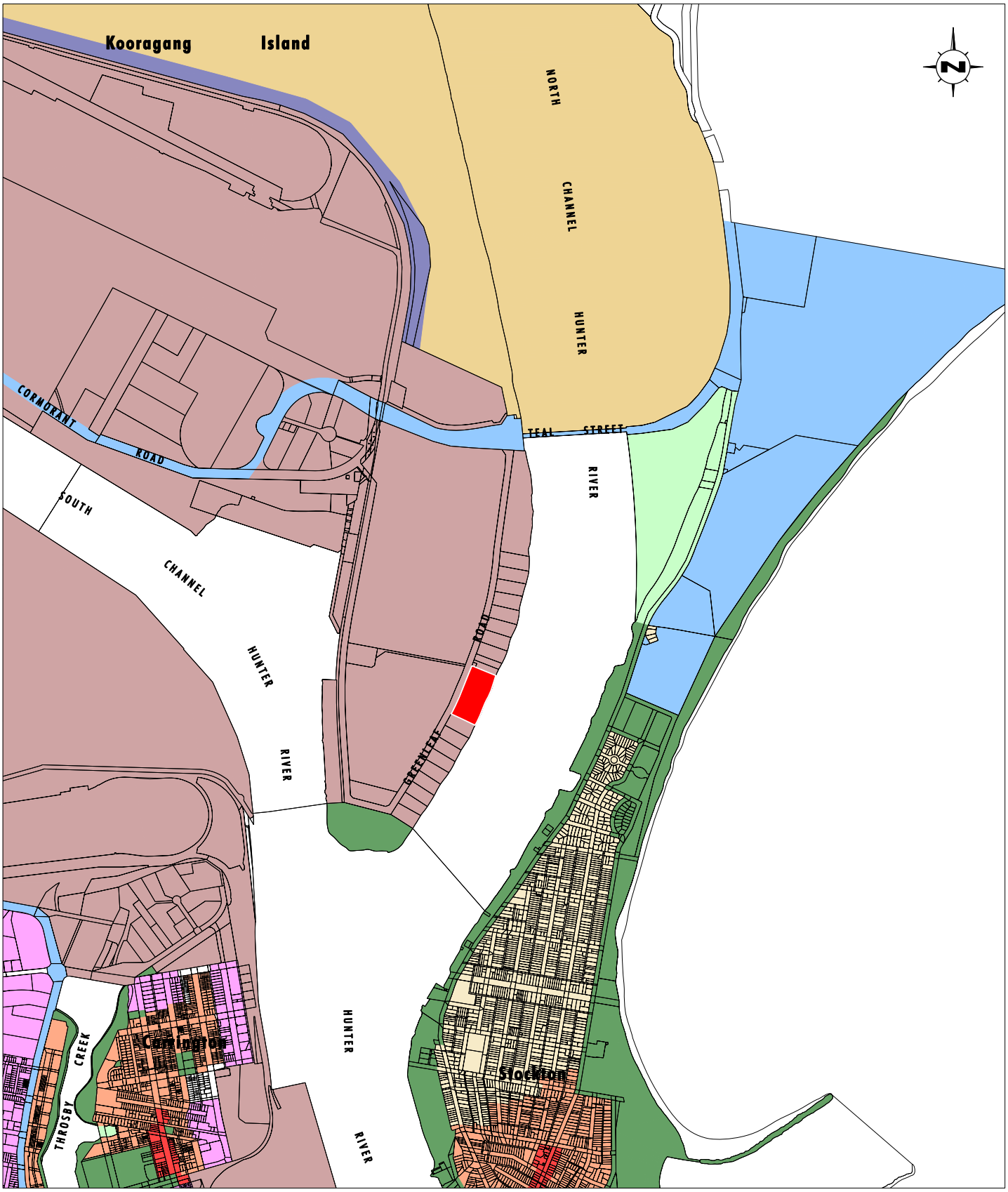
a) To accommodate port, industrial, maritime industrial, and bulk storage activities, which by their nature or the scale of their operations require separation from residential areas and other sensitive land uses.

b) To require that development of land within 750 metres from the high-water mark of the shores of the Port of Newcastle, capable of docking ocean-going vessels, is used for purposes that:

- *i) require a water front location that provides direct access to deep water, or*
- *ii) depend upon water-borne transport of raw materials or finished products, or*
- *iii) have a functional relationship that necessitates proximity to the activities described above.*

c) To facilitate sustainable development through the application of industrial ecology.

d) To provide for other development which will not significantly detract from the operation of large scale industries or port-related activities, that is primarily intended to provide services to persons employed in such industries and activities.



Source: Newcastle City Council

0 0.25 0.5 1.0km
1:25 000

Legend

- Greenleaf Terminal
- 2(a) Residential Zone
- 2(b) Urban Core Zone
- 3(a) Local Centre Zone
- 4(a) Urban Services Zone
- 4(b) Port and Industry Zone
- 5(a) Special Uses Zone
- 5(b) Special Uses Reservation Zone
- 6(a) Open Space and Recreation Zone
- 7(a) Conservation Zone
- 8(a) National Parks Zone

FIGURE 3.1

Zoning

The proposal is consistent with the objectives of the LEP and so the proposal is permissible with development consent.

3.1.7 State Environmental Planning Policy 11 (Traffic Generating Developments) 1985

SEPP No 11 requires that the RTA is made aware of and given the opportunity to make representations in respect of developments listed in Schedule 1 of the SEPP.

Schedule 1(j) includes:

> Transport terminals, bulk stores, container depots or liquid fuel depots or the enlargement or extension of any existing transport terminal, bulk store, container depot or liquid fuel depot by increasing by more than 8000 square metres the area of land or the gross floor area of buildings used for that purpose.

As discussed in **Section 4.3.2** the RTA was consulted regarding the proposal.

3.1.8 State Environmental Planning Policy 33 (Hazardous and Offensive Development) 1992

SEPP No. 33 requires the consent authority to consider whether an industrial proposal is a potentially hazardous industry or a potentially offensive industry. A hazard assessment is completed for potentially hazardous developments to assist the consent authority to determine acceptability. A Preliminary Hazard Analysis will be undertaken during the preparation of the EA.

3.1.9 State Environmental Planning Policy (Major Projects) 2005

The State Environmental Planning Policy (Major Projects) (the Major Projects SEPP) clarifies what constitutes a major project for the purpose of planning approval under Part 3A of the EP&A Act.

Clause 6 of the SEPP defines Part 3A projects:

> (1) Development that, in the opinion of the Minister, is development of a kind:
>
> (a) that is described in Schedule 1 or 2, or
>
> (b) that is described in Schedule 3 as a project to which Part 3A of the Act applies, or
>
> (c) to the extent that it is not otherwise described in Schedules 1–3, that is described in Schedule 5,
>
> is declared to be a project to which Part 3A of the Act applies.

The following Part 3A project definition is included in Schedule 1:

Clause 10 (2) of Major Projects SEPP:

> Development with a capital investment value of more than $20 million for the purpose of:
>
> (a) bulk liquid storage facilities, or

(b) gas storage facilities, or

(c) chemical storage facilities.

Part 3A applies to the proposal as it is consistent with the bulk liquid storage facilities and has a capital investment of $32 million ie greater than the $20 million required under the SEPP.

3.2 Authority Consultation

Initial briefings have been provided to DoP to confirm the application of the Part 3A approval process to this proposal. In addition, other key organisations have been briefed to date are:

- NSW Maritime Authority;
- Newcastle City Council;
- Newcastle Port Corporation; and
- Australian Rail Track Corporation (note Australian Rail Track Corporation own and manage the rail corridor that runs parallel to Heron Rd through which the pipeline will pass.)

DoP has advised that this Preliminary Environmental Assessment will be provided to all relevant agencies prior to seeking their comments and requirements for DoP's consideration during the preparation of the Director-General requirements for the EA.

As noted in **Section 3.1.1**, the Commonwealth Department of Environment and Heritage will be consulted regarding this proposal, and a Preliminary Referral made under the EPBC Act, to confirm that this proposal is not a 'controlled action'.

3.3 Community Consultation

Manildra Park has held preliminary discussions with the various landholders and businesses within the area, being:

- Regional Land Management Council – own the land on which the proposal will be constructed and nearby land;
- Port Waratah Coal Services (PWCS) – own the refuelling/tie-up berth;
- P & O Ports – lease the K2 berth;
- Kooragang Bulk Facilities (KBF) – own the conveyors on the K3 berth;
- Cargill – lease a site at the rear of K3 berth and own pipelines on the K2 berth;
- NSW Department of State and Regional Development and Premiers Department;
- Orica – own manufacturing plant opposite proposed terminal site on Greenleaf Road; and

- Incitec Pivot – own manufacturing plant opposite the Greenleaf Road Terminal.

A preliminary briefing has been provided to the Community and Kooragang Alliance (CAKA).

It is planned to undertake consultation with all relevant community stakeholders during the preparation of the EA.

Consultation with the above orgainisations and groups, as well as others, will be ongoing throughout the EA process, ensuring clear identification of issues, feedback on the findings of the environmental assessment and identification of appropriate community and environment management measures to be incorporated in the project.

4.0 Preliminary Environmental Assessment

4.1 Land Description and Surrounds

The proposal is located on Kooragang Island on the lower reaches of the Hunter River approximately two kilometres north of Newcastle (refer to **Figure 1.1**). Kooragang Island was created in the early 1900s by the reclamation of Dempsey, Moscheto and Walsh Islands. The Island was originally developed as the industrial centre for Newcastle. It was officially named in 1968, and has a total area of approximately 2600 hectares, and is bounded by the North and South Arms of the Hunter River. The proposal is to be located on the eastern tip of the Island, on the North Arm of the Hunter River, providing ready access to sea going vessels via the Hunter River and Newcastle Harbour.

As shown on **Figure 1.1**, the nearest urban areas are Stockton located approximately 600 metres to the east; and Carrington located approximately 1.6 kilometres to the south-west. The former BHP Steelworks and the current OneSteel operations are located to the west, across the South Arm of the Hunter River. Immediately adjacent to the proposed Greenleaf Road Terminal are the Orica and Incitec Pivot facilities. The Hifert Distribution Centre is located approximately 500 metres to the north-west of the Greenleaf Road Terminal.

4.1.1 Land Ownership and Land Use

The land associated with the proposal is owned by the Regional Land Management Council (RLMC). The major landowners in the area are NSW Maritime, Newcastle Port Corporation and RLMC.

Industry and port facilities are located on the southern part of Kooragang Island. Some of the businesses which occupy this area include: Port Waratah Coal Services, Cargill Australia, Air Liquide, Orica, Incitec Pivot, Sawmillers Exports, Newcastle Woodchipping, Cleanaway, Mountain Industries, Blue Circle Cement, Boral, Port Hunter Commodities, Sims Metals, Kooragang Bulk Facilities and Transfield. Industrial land uses therefore dominate the immediate surrounding land uses. These businesses provide a range of industrial services, such as: cement production, concrete batching and recycling, concrete building products, oilseed processing, fertiliser manufacturing and distribution, and ammonium manufacturing. In addition, surrounding industrial land use includes a hazardous waste management facility, LPG gas distribution facilities, a scrap metal reclamation facility, a licensed landfill and a number of engineering and fabrication operations.

The port facilities within the area are primarily used for the handling of raw materials, including coal , alumina, coke, wood chips, phosphate rock, and a number of agricultural products, most of which are utilised in the range of manufacturing operations associated with the heavy industry land uses within the area. There are also a number of transport and logistic companies located within the Kooragang Island industrial area, which are generally associated with fertiliser manufacturing operations, and aluminium production.

Within the Kooragang Island industrial area, there are considerable areas of vacant industrial land. The RLMC controls much of this land, with commercial leases being established between RLMC and entities to utilise land within this area.

Kooragang Nature Reserve is located approximately one kilometre north of the Greenleaf Road Terminal. Following an investigation into the natural areas and environmental importance of the site, parts of Kooragang Island were internationally recognised as a RAMSAR site in 1984. The Kooragang Wetland Rehabilitation Project was created in 1993, with ongoing support from government, local industries and the community. The project includes work on Ash Island, to the north-west of the proposal, Stockton Sandspit to the north-east and Tomago wetlands to the north.

4.2 Preliminary Environmental Risk Assessment

To assist in identifying the key environmental and community issues that require further assessment, a preliminary environmental risk assessment has been completed for the proposal. Each risk was assessed using a five level qualitative ranking of consequence and likelihood. This yields a five by five risk analysis matrix and results in four levels of risk: “extreme”, “high”, “moderate” and “low”. The consequence and likelihood categories, together with the preliminary environmental risk assessment, are included in **Appendix 1**.

The controls proposed to mitigate the potential environmental impacts documented in the preliminary environmental risk assessment are based on controls effectively used at Manildra Park’s existing operations at Port Kembla. The operations proposed are similar to those at Manildra Park’s Port Kembla Terminal.

The preliminary environmental risk analysis identifies those issues requiring detailed investigation in the EA, as being: noise, traffic, leaks/spills of fuel, storm water management, visual impacts, hazard and operability and air quality. Further assessment is not considered necessary for other potential environmental issues as indicated in **Appendix 1**.

The proposed approach to further consideration of the key environment and community issues is discussed in **Section 4.3**, whilst an overview of other issues is provided in **Section 4.4**.

4.3 Key Environmental and Community Issues

4.3.1 Noise

Previous studies (ERM Mitchell McCotter 1996 – Kooragang Coal Terminal Stage 3 Expansion; Resource Strategies 2006 – Newcastle Coal Export Terminal; GHD 2003 – Port of Newcastle Extension) have found that daytime background noise levels in the suburbs surrounding Kooragang Island are relatively unaffected by industrial noise, however, some are affected by the industrial noise arising from Kooragang Island in the

evening and night time. Discernible noise occurs during lulls in transport, domestic and natural noise sources (e.g. ocean noise).

A detailed noise impact assessment will be undertaken for the construction and operational aspects of the proposal by Heggies Australia Pty Ltd. Heggies Australia Pty Ltd has extensive experience in noise management, monitoring and assessment of industry on Kooragang Island.

The noise impact assessment will involve the following:

- identification of the nearest potentially affected residential receivers and the noise-sensitive localities to the proposal;
- designing and conducting a noise monitoring program to quantify the existing background noise levels for a period of at least seven days at up to four selected locations. The monitoring program will also include operator-attended noise surveys;
- discussion of the existing noise environment;
- determining the construction and operational noise criteria;
- a calculation of the noise levels at the nearest potentially affected residential receivers and the noise-sensitive localities from the proposal, using a computer generated noise model;
- an assessment of the impact of the proposal on the nearest potentially affected residential receivers and the noise-sensitive localities in accordance with the Environmental Noise Control Manual for the construction activities and the NSW Industrial Noise Policy for the operational activities; and
- an outline of recommendations relating to noise monitoring and management.

Additionally, a cumulative noise impact assessment of the proposal and other relevant nearby industrial operations will be undertaken.

4.3.2 Traffic

Product will be distributed from the facility via road trucks (single tankers and B-doubles). When fully operational, the facility will generate approximately 30 truck trips per day and employ approximately 37 staff. The majority of trucks will travel via Greenleaf Road, Teal Street, Cormorant Road, Tourle Street and Industrial Drive to delivery locations throughout the region.

Christopher Stapleton Consulting Pty Ltd has completed a preliminary assessment of the access, traffic and parking issues associated with the proposal. The potential traffic impacts associated with a combined construction and operational program has been considered for each phase.

The following construction and operational impacts of each phase were assessed:

Phase 1 – Establishment of a Marine Fuel Storage and Distribution Facility

- construction impacts associated with the laying of the pipeline between the berth and the Greenleaf Road Terminal, i.e. traffic impacts on Heron Road and Greenleaf Road;

- construction impacts associated with the refurbishment of on-site tanks, and the construction of office and amenity facilities, i.e. traffic movements associated with vehicle movements to and from the site via Greenleaf Road;

- operational impacts associated with the distribution of product by truck; and

- vehicle movements associated with construction and operational staff.

Phase 2 – Expansion of the Marine Fuel Storage and Distribution Facility

- construction impacts associated with the development of new on-site diesel storage tanks;

- operational impacts associated with the distribution of product by truck; and

- vehicle movements associated with construction and operational staff.

Phase 3 – Establishment of a Biodiesel Plant

- construction impacts associated with the development of a biodiesel production and storage facilities;

- operational impacts associated with the importation of feed stock and the distribution of product by truck via the local road network; and

- vehicle movements associated with construction and operational staff.

Christopher Stapleton Consulting Pty Ltd have consulted the RTA and Newcastle City Council regarding the local area and the proposal, to determine whether there are any local issues relevant to the proposal. Both the RTA and Council indicated that the local network operates well and that additional downstream capacity will be improved in the future with the reconstruction of the Tourle Street Bridge.

SIDRA, an RTA (and preferred) intersection modelling suite, was used to provide key indicators or delay, queuing and capacity and ultimately the level of service of key intersections, assuming all of the vehicle movement occurred during the morning and afternoon peaks.

Table 4.1 and **Table 4.2** show the existing, Phase 1, Phase 2 and Phase 3 SIDRA results for the Cormorant Road and Teal Street Intersection during the morning and afternoon peaks respectively.

Table 4.1 - SIDRA Results for the Cormorant Road and Teal Street Intersection (Morning Peak)

	Level of Service	Average Delay (sec)	Worst Delay (Sec)	Capacity
Existing	B	11	17	0.35
Phase 1	B	11	17	0.37
Phase 2	B	11	17	0.39
Phase 3	B	11	19	0.45

Source: Christopher Stapleton Consulting Pty Ltd 2007

Table 4.2 - SIDRA Results for the Cormorant Road and Teal Street Intersection (Afternoon Peak)

	Level of Service	Average Delay	Worst Delay	Capacity
Existing	A	10	14	0.44
Phase 1	A	10	14	0.46
Phase 2	A	10	14	0.49
Phase 3	B	11	15	0.56

Source: Christopher Stapleton Consulting Pty Ltd 2007

As shown in **Table 4.1** and **Table 4.2**, the additional traffic flows (even if generated during a single peak hour) would not significantly affect the existing classification of local roads, or in any way impact upon the existing performance of local intersections. Even under worst case conditions, the key local intersection of Cormorant Road and Teal Street would accommodate the additional traffic generation of the site with only a minor change in level of service occurring during the afternoon peak associated with Phase 3 operations. Similarly the average delay, with the exception of the afternoon peak associated with Phase 3 operations, remains unchanged as a result of the proposal. This is due in part to the volumes of traffic generated by the proposal representing only a small percentage of daily and peak period flows through the local network.

Traffic management measures in Heron Road and Greenleaf Road may be required during the construction of the pipeline between the berth and the Greenleaf Road Terminal. This will involve a temporary or full closure of both roads. This can be undertaken without adversely affecting existing traffic flows.

Site access will be provided where possible in accordance with Newcastle Development Control Plan (DCP) 2005, and to *AS 2890.2 – 2002 Off Street Commercial Vehicle Facilities*. This will include the provision of appropriate access driveways and circulation roadways, as well as loading areas, which will ensure that all manoeuvring occurs on-site.

Parking for staff will be provided using an onsite and offsite configuration in accordance with Newcastle DCP 2005.

4.3.3 Hydrocarbon Management (Spills and Leak Detection)

Six aspects of the proposal which may result in spills and/or leaks of product were identified during the preliminary environmental risk assessment and are listed below:

- connecting/disconnecting flexible hoses from barge or the ship to end of the steel pipeline;
- pipe integrity compromised via damage to pipeline from mobile equipment and/or external interference (human or nature) with pipeline and valves while not operational;
- vandalism and/or external party (human or nature) interference during operations;
- spill during truck loading activities;
- general leaks of product; and
- overfilling of tanks.

The preliminary environmental risk assessment also documents proposed control measures to mitigate the potential environmental impacts, based on controls effectively used at Manildra Park's existing operations at Port Kembla. These control measures include physical, operational and behavioural controls, such as:

- maintenance programs;
- visual inspections;
- operating procedures;
- automatic shut off valves and triggers;
- bunding;
- spill response equipment; and
- staff training, etc.

These control measures will be documented within the EA.

4.3.4 Stormwater Management

The Hunter River is the nearest water body to the proposal. Stormwater management for the site will need to consider the risk of contamination due to the nature of the proposal i.e. biodiesel production and diesel/biodiesel distribution terminal.

Interestingly, the behavioral characteristics of biodiesel and mineral petroleum based diesel are not identical. Biodiesel degrades about four times faster than mineral diesel and within approximately 28 days, pure biodiesel degrades 85% to 88% in water (internet reference: http://www.biodiesel.org/: July 2006). Hence, the use of biodiesel is better suited to water based applications.

The EA will detail the stormwater management approach for the site and the stormwater management system, i.e. control measures proposed for the site, such as:

- delineation of clean and dirty water areas using bunding;
- provision of water detention basins within the dirty water management system; and
- the use of oil and water separators to treat dirty water prior to its release off site, etc.

4.3.5 Visual Impacts

The visual assessment will consider the significance of the views of the proposal in the context of the existing industrial nature of the surrounding area. It is considered that visual impact is likely to be relatively low given the industrial context of the site, however, landscaping and visual controls, such as infrastructure colours, will be investigated and documented in the EA.

4.3.6 Preliminary Hazard and Risk Assessment

It is anticipated that SEPP 33 Hazardous and Offensive Developments will require the preparation of a Preliminary Hazard Analysis (PHA) for the proposal.

The PHA will be undertaken in accordance with the following DoP documents: *Applying SEPP 33 for Hazardous and Offensive Development Application Guidelines*; *Multi Level Risk Assessment*; *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis*; *Australian Standard AS/NZS 4360:1999 – Risk Management*; and *Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning*.

The following documents will also be considered:

- Section 16.5 of the Kooragang Island Cumulative Risk Assessment Report, Department of Urban Affairs and Planning (1992); and

- The Newcastle Development Control Plan (DCP) 2005 – Element 7.4 Kooragang Port and Industrial Area.

The assessment will follow the 1992 report's recommendations that all potentially hazardous developments on Kooragang Island be considered in the context of the existing risk profiles. The risk assessment objectives detailed in the DCP will also be taken into consideration.

The assessment will include:

- identification of possible risks and causes of potentially hazardous incidents associated with proposed storage, handling and processing facilities;

- an assessment of the consequences of events identified;

- a qualitative estimation of the likely frequency of occurrence of identified scenarios;

- consequence/likelihood quantification of the most relevant hazardous incidents;

- estimation of the overall risk (depending on statutory authority requirements and estimated risk);

- assessment of cumulative risk levels and safety implications for surrounding land uses;

- identification of appropriate safeguards and procedures, which may be employed in the storage, handling and use of hazardous materials in order to minimise risk to the workforce and adjacent community;

- an outline of all operational and organisational safety controls; and

- evaluation of the adequacy of safeguards against identified risk levels.

It is noted that the products handled at the terminal (marine fuels and biodiesel) are classified as combustible liquids. The storage and handling of these products will be undertaken in accordance with Australian Standard AS1940 2004 The Storage and Handling of Flammable and Combustible Liquids.

4.3.7 Air Quality Assessment

The facility is not expected to significantly contribute to the existing background dust concentrations during construction, as dust generating activities are expected to be minor (i.e. earthworks) and potential dust emissions can be readily managed via routine dust

suppression techniques. Dust emissions are also not expected to be an issue during operation, as there are no potential dust emission sources.

Potential odour emissions may result from the production of biodiesel i.e. Phase 3. The production of biodiesel uses methanol. Methanol has a high vapour pressure characteristic, which may result in odour emissions. A methanol recovery system has been incorporated into the biodiesel facility, i.e. scrubbers to minimise any odour emissions. Diesel, biodiesel and marine fuel oils are not expected to generate any odourous emissions due to their low vapour pressure characteristics.

The use of biodiesel has a number of environmental benefits. The combustion of biodiesel is more complete/efficient than traditional mineral petroleum based diesel, as fewer unburnt fuel emission result. The improved combustion is a result of the increased oxygen content of biodiesel. B100 biodiesel (i.e. 100% biodiesel) contains approximately 10% oxygen by weight (GHD 2007).

Vehicle exhaust pollutants, such as particulate matter, hydrocarbons and carbon monoxide, decrease when biodiesel is used in most modern four-stroke engines (US Department of Energy: pp 5: 2006).

Some vehicle emissions are toxic to human health. Using B100 biodiesel can eliminate up to 90% of these toxic emissions and by 20% - 40% if using B20. The positive effects of biodiesel on air toxics are heavily supported by numerous studies (US Department of Energy: pp 5: 2006).

Biodiesel can also compliment fuels that have low sulfur contents. Emissions of sulfur oxides and sulfates are a major component of acid rain. Low sulfur mineral petroleum based diesel experiences significant reductions in their lubricant properties. Biodiesel, in contrast, has high level of lubricity and a blend of 1-2% in low sulfur fuel brings lubricity back to a specified value (Pramanik and Tripathi: pp 53: 2005).

An odour assessment will be included in the EA.

4.4 Other Environmental and Community Issues

4.4.1 Soil Contamination

A site contamination assessment, commissioned by Manildra Park, has been completed. Contaminated material identified during the assessment will be managed in accordance with the DECC Environmental Guidelines: Assessment, Classification of Liquid and Non-Liquid Wastes, or as per the recommendations detailed in the contamination assessment report.

4.4.2 Ecology

An ecological survey of the site was undertaken in February 2007 by Umwelt. No threatened species, populations, or ecological endangered communities were recorded. In particular, no threatened green and golden bell frogs (*Litoria aurea*), a species that occurs elsewhere on Kooragang Island, were located. The vegetation and habitats of the area were found to be highly modified, containing vegetation largely derived from human disturbances, and very limited fauna habitat values. While there are many important habitat areas for migratory waders located on Kooragang Island and elsewhere in the Hunter Estuary, the study area does not provide foraging or roosting opportunities for these birds. No anticipated direct or indirect impacts on the Kooragang Nature Reserve

are expected. It was concluded that there are no ecological constraints to the proposal. Nevertheless the EA will include an ecological assessment.

4.4.3 Maritime Safety

The proposal will result in an increased number of ships utilising the Newcastle Port. The facility will supply marine fuels to vessels entering the port, as well as vessels which will use the port as a refuelling hub while on coastal and international voyages. Phase 1 of the proposal involves the establishment of a barge operation for refuelling ships throughout the port. Some 15 barge movements per month are expected to occur as a result of ship refuelling operations. Establishment of the proposed biodiesel plant (Phase 3) will involve ships unloading vegetable oil. In total, the proposal will generate approximately 30 additional ships utilising the Newcastle Port per year.

Consultation with the Newcastle Port Corporation has been undertaken with regard to the identification of suitable berths for the discharge of product. Consultation has also confirmed that sufficient navigational capacity is available for the additional shipping and that maritime safety would not be jeopardised as a result of the proposal.

4.4.4 Aboriginal Archaeology

The indigenous inhabitants of the Kooragang Island area are the Worimi tribal group (Umwelt, 2003a). The areas that were traditionally inhabited by the Worimi group include the region north of the south arm of the Hunter River along with Stockton Bight and the Williams and Patterson River valleys. The Awabakal tribe neighboured the Worimi tribe and occupied areas south of the Hunter River extending across Lake Macquarie, Maitland and Newcastle.

Kooragang Island, including the proposed site, has been heavily disturbed and modified by historical land uses including grazing, land reclamation and the long term disposal of dredge spoil and industrial waste.

It is understood that the site is reclaimed land, which has been formed using dredge material and/or material from the former BHP site. The composition of the land material will be confirmed during the site contamination assessment. It is therefore expected that there are no Aboriginal artefacts or sites present on the site and that no further assessment is required.

4.4.5 Greenhouse Gas

The benefits of the proposal in terms of reduced global warming gas emissions of carbon dioxide are two fold:

1. the carbon dioxide emissions associated with the distribution of fuel to end users in the Newcastle area will be less, as this facility will provide a local distribution point, which is closer to the end users than terminals located in Sydney and Port Kembla, i.e. transport emissions will be less; and

2. the carbon dioxide emissions from the combustion of biodiesel do not add to the carbon dioxide concentration in the atmosphere. Biodiesel is sourced from plants and thus the carbon dioxide produced from the combustion of biodiesel is utilised by the growth of the next plant crop (US Department of Energy: pp4:2006). It is noted that this is not 100% efficient as fossil fuels are used to produce biodiesel.

A detailed greenhouse gas assessment will be completed as part of the EA.

4.4.6 Cumulative Impacts

Potential cumulative impacts will be considered as part of relevant specialist studies of the EA, including noise, traffic, visual and air quality. In addition to being specifically addressed in each of the specialist studies, potential cumulative impacts will be explored and detailed in the EA to ensure that the potential impacts on the surrounding area are fully considered. The EA will also identify any special monitoring needs that may be required to identify impacts from the proposal, as distinct from the existing and potential future developments in the area.

5.0 Alternatives

5.1 Other Ports

In terms of using a refuelling barge to service ships in the Port of Newcastle there is no real alternative to locate the terminal and barge within another port besides Newcastle.

It is not practical or feasible to run a refuelling barge operation from another port due to the following reasons:

- the turnaround time for the barge to travel from another port would be prohibitive (eg eight hours for Sydney);
- a refuelling barge is not suitable for open water voyages especially during rough weather; and
- the capacity of the barge is too small requiring many trips between ports.

5.2 Road Transport

Ship refuelling, otherwise known as fuel bunkering, within Newcastle Port is currently undertaken via road tankers. Approximately nine truck loads of fuel per week are dispatched from Manildra Park Port Kembla operations to ships within Newcastle Port. Manildra Park could increase its road transport logistical operation to meet the needs within Newcastle Port. Not only is this seen as an expensive option, it also has negative transport and environmental impacts when compared against the proposal.

5.3 Other Land within Newcastle Port

There are alternative vacant industrial lands within the area surrounding the proposal. Each of these sites is located along Greenleaf Road. The proposed site was selected due to the existing storage tanks which could be reused by this proposal and its proximity to the Kooragang common user berths at K2 and K3.

The alternative of not proceeding has also been considered, however, this option is not considered appropriate as it is expected that the environmental and social impacts of the proposal can be effectively managed and not proceeding would result in the loss of the substantial economic benefits of the proposal.

Minimising environmental and community impacts will be the major consideration in evaluating alternative options as part of the EA. Alternatives to be considered will include terminal location options.

6.0 Justification

The port operates 24 hours a day, 365 days a year and manages more than 3100 ship movements every year. A variety of materials are shipped via the port, with coal being the dominant export commodity. Of the 85.6 million tonnes which passed through the port in 2005-2006, approximately 80 million tonnes was coal. The total value of these exports was valued at more than $7.5 billion. It is expected that shipping numbers will increase with the rise in coal exports. PWCS recently received approval to increase it Kooragang Island Terminal's throughput from 77 million tonnes per year to 120 million tonnes per year. The Newcastle Coal Infrastructure Groups also recently received approval to construct a third coal loader on Kooragang Island with a capacity of 66 million tonnes per year.

Re development of the ex-BHP site is also expected to increase shipping activities within the port and therefore the demand for bunkering services.

There is no fuel bunking service within the Newcastle Port. Currently fuel bunking services for Newcastle Port are provided out of Sydney and Port Kembla. The development of this facility will satisfy an existing need to the vessels which use the port.

The distribution of fuel to end users within the Newcastle region from a local terminal is expected to result in a net reduction in the emission of greenhouse gases. There are also benefits associated with the use of biodiesel in minimising greenhouse gas emissions and reduced air quality and health impacts.

The proposal will also provide a number of significant economic benefits via the employment of approximately 37 people, with many more indirect jobs created through flow-on effects.

The EA will demonstrate that the above economic benefits can be achieved, whilst impacts on the environment and local community managed.

7.0 Schedule

Manildra Park plans to lodge the Development Application for the proposal with the accompanying EA on exhibition in the third quarter of 2007. Development Consent is sought before the end of 2007.

8.0 References

Christopher Stapleton Consulting Pty Ltd (2007), Manildra Park Kooragang Island.

ERM Mitchell McCotter (1996), Kooragang Coal Terminal Stage 3 Expansion Environmental Impact Statement.

GHD 2007, Vopak Terminals Sydney and Natural Fuels Australia Ltd Proposed Sydney Biodiesel Terminals Environmental Assessment.

Pramanik, T & Tripathi S (2005), *Biodiesel: Clean Fuel of the Future*, Hydrocarbon Processing, February 2005, pp49 – 54.

Resource Strategies (2006), Newcastle Coal Infrastructure Group Coal Export Terminal Environmental Assessment.

Umwelt (2003a), *Aboriginal Cultural Heritage Assessment, Proposed Extension of Shipping Channels, Port of Newcastle*. Report prepared for New South Wales Waterways Authority.

US Department of Energy (2006), *Biodiesel Handling and Use Guidelines*, 2nd Edition, US Department of Energy, March 2006.

www.biodiesel.org/: July 2006.

APPENDIX 1

Preliminary Environmental Risk Assessment

Appendix 1 - Preliminary Environmental Risk Assessment

Table 1 - Qualitative Measures of Environmental Consequence

Severity Level	Natural Environment	Legal/Government	Heritage	Community/Reputation/Media
(1) Insignificant	Limited damage to minimal area of low significance.	Low-level legal issue. On the spot fine. Technical non-compliance prosecution unlikely. Ongoing scrutiny/attention from regulator.	Low-level repairable damage to commonplace structures.	Low level social impacts. Public concern restricted to local complaints. Could not cause injury or disease to people.
(2) Minor	Minor effects on biological or physical environment. Minor short-medium term damage to small area of limited significance.	Minor legal issues, non-compliances and breaches of regulation. Minor prosecution or litigation possible. Significant hardship from regulator.	Minor damage to items of low cultural or heritage significance. Mostly repairable. Minor infringement of cultural heritage values.	Minor medium-term social impacts on local population. Could cause first aid injury to people. Minor, adverse local public or media attention and complaints.
(3) Moderate	Moderate effects on biological or physical environment (air, water) but not affecting ecosystem function. Moderate short-medium term widespread impacts (e.g. significant spills).	Serious breach of regulation with investigation or report to authority with prosecution or moderate fine possible. Significant difficulties in gaining approvals.	Substantial damage to items of moderate cultural or heritage significance. Infringement of cultural heritage/ scared locations.	Ongoing social issues. Could cause injury to people, which requires medical treatment. Attention from regional media and/or heightened concern by local community. Criticism by NGOs. Environmental credentials moderately affected.
(4) Major	Serious environmental effects with come impairment of ecosystem function. Relatively widespread medium-long term impacts.	Major breach of regulation with potential major fine and/or investigation and prosecution by authority. Major litigation. Project approval seriously affected.	Major permanent damage to items of high cultural or heritage significance. Significant infringement and disregard of cultural heritage values.	On-going serious social issues. Could cause serious injury or disease to people. Significant adverse national media/public or NGO attention. Environment/management credentials significantly tarnished.

Table 1 - Qualitative Measures of Environmental Consequence (cont)

Severity Level	Natural Environment	Legal/Government	Heritage	Community/Reputation/Media
(5) Catastrophic	Very serious environmental effects with impairment of ecosystem function. Long term, widespread effects on significant environment (e.g. national park).	Investigation by authority with significant prosecution and fines. Very serious litigation, including class actions. License to operate threatened.	Total destruction of items of high cultural or heritage significance. Highly offensive infringements of cultural heritage.	Very serious widespread social impacts with potential to significantly affect the well being of the local community. Could kill or permanently disable people. Serious public or media outcry (international coverage). Damaging NGO campaign. Reputation severely tarnished. Share price may be affected.

Table 2 - Qualitative Measure of Likelihood

Level	Descriptor	Description	Guideline
A	Almost Certain	Consequence is expected to occur in most circumstances.	Occurs more than once per month.
B	Likely	Consequence will probably occur in most circumstances.	Occurs once every 1 month – 1 year.
C	Occasionally	Consequence should occur at some time.	Occurs once every 1 year - 10 years.
D	Unlikely	Consequence could occur at some time.	Occurs once every 10 years – 100 years.
E	Rare	Consequence may only occur in exceptional circumstances.	Occurs less than once every 100 years.

Source: AS/NZS 4360:2004 Risk Management

Table 3 - Qualitative Risk Matrix

	Maximum Reasonable Consequence				
Likelihood of the Consequence	(1) Insignificant	(2) Minor	(3) Moderate	(4) Major	(5) Catastrophic
(A) Almost certain	High	High	Extreme	Extreme	Extreme
(B) Likely	Moderate	High	High	Extreme	Extreme
(C) Occasionally	Low	Moderate	High	Extreme	Extreme
(D) Unlikely	Low	Low	Moderate	High	Extreme
(E) Rare	Low	Low	Moderate	High	High

Source: AS/NZS 4360:2004 Risk Management

Table 4 - Manildra Park Preliminary Environmental Risk Analysis

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
General Construction activities.	Ground Disturbance.	Disturbance to sites of archaeological significance.	• Kooragang Island, including the proposed site, has been heavily disturbed and modified by the industrial development, land reclamation and the long term disposal of dredge spoil and industrial waste. The likelihood of finding archaeological deposits is unlikely.	2	E	L	No further assessment required.
		Loss of native flora and fauna.	• Kooragang Island, including the proposed site, has been heavily disturbed and modified by the industrial development, land reclamation and the long term disposal of dredge spoil and industrial waste. The likelihood of impacting native flora and fauna is low.	1	E	L	The EA will include an ecological assessment of the site.
		Sedimentation of local waterways.	• Relatively minor earth works are associated with the proposal eg excavation required for : ▪ concrete blocks where sections of steel pipeline will be welded together; ▪ underground sections of the steel pipeline; ▪ building foundations/footings; and ▪ terminal roadwork. • Minimise ground disturbance period – disturbed ground to be backfilled ASAP. • Install silt barriers. • Excavated material to be removed from site at the end of each day and/or placed in dedicated stockpile area to be established.	2	D	L	No further assessment required.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
		Contaminated land.	• Complete phase 1 site contamination audit ie background research, for the project area prior to commencing excavation. • Minimise ground disturbance period – disturbed ground to be back filled ASAP. • Testing and disposal of contaminated material in accordance with EPA guidelines.	2	D	L	The EA will document the findings of the contamination assessment.
	Generation of noise.	Noise levels in excess of DEC goals.	• The major noise sources associated with the construction of the proposal are a crane, excavator and a truck.	3	B	H	Detailed noise assessment will be completed.
	Generation of dust.	Dust levels in excess of relevant guidelines.	• The level of dust generated from the earthwork activities is expected to be minimal. • Wet suppression will be used to minimise dust emissions during adverse weather conditions and/or during activities likely to generate excessive dust emissions/plumes. • The project is therefore unlikely to significantly change current dust level in the region, i.e. minimal cumulative air quality impacts.	4	D	L	No further assessment required.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Generation of traffic.	Reduction in traffic flow/reduced intersection performance.	• The local network operates at a high level of service, with most roads and intersections having significant spare capacity. • RTA and Council have indicated that the local network at present operates well, particularly following the introduction of the new roundabout at Cormorant Road & Teal Street. Additionally, downstream capacity will be improved in the future with the reconstruction of the Tourle Street Bridge. • The project will generate a small number of heavy vehicle and 46 passenger vehicle movements per day	4	B	M	A detailed traffic assessment is to be completed.
	Spill of hydraulic oil from mobile plant.	Contamination of land/water.	• Spill kits maintained on site (e.g. wheelie bins). • Visual inspection hydraulic hoses as part of a pre start checklist. • Plant maintained in accordance with maintenance schedule. • Training of personnel re spill control.	1	C	L	Spill management measures to be document in the EA.
	Construction waste.	Littering of the site.	• Construction will consist of some pre fabricated components and some fabrication on site. Work methods will ensure all construction waste is collected and taken away for recycling or disposal. • Waste bins will be provided on site for the disposal of rubbish.	1	D	L	No further assessment required.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Work over water.	Loss of equipment/material in water.	• Develop work method statement. • Appropriately trained and competent operators.	1	C	L	No further assessment required.
Tankers ballast water.	Discharge of tankers ballast water.	Impacts on local marine environment.	• Not applicable. Tankers will arrive at the port laden and will be taking on ballast and not discharging ballast.	5	E	L	No further assessment required.
Steel Pipeline and flexible hoses - Fuel Distribution Network (Import/Export)	Connecting/ disconnecting flexible hoses between the tanker/barge and the steel pipeline.	Spill to water/land.	• Fuel removed from pipeline at the conclusion of each transfer operation i.e. pipeline pigged. The steel pipeline is empty when connecting flexible hose. • Fuel removed from pipeline at the conclusion of each transfer operation i.e. pipeline pigged. The steel pipeline and flexible hose is empty when flexible hose is disconnected. • The connection point between the steel and flexible hoses is located in a bunded area. • Drip trays located underneath point of connection for flexible hose. • Dedicated overflow tank on barge. • Spill kits maintained on site (e.g. wheelie bins) and in Manildra Park emergency response vessel (floating boom etc). • Activity undertaken in accordance with operational procedure – Bunkering by Pipeline procedure (MFO 003). • Bunker hoses pressure and continuity tested every 6 months (refer MFO 017).	2	D	L	Control measures to be documented in the Environmental Assessment.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
			• Appropriately trained and competent operators (refer MFQ 009). • Multiple staff on site during barge refuelling operations. • Recruitment, Performance, Monitoring and Training. • Visual inspection of pipeline prior to and during loading. Half hourly checks during loading. • Multiple shut-off valves along pipeline. • Regular cross checks of volume dispatched from terminal to that received at the berth. • Regular cross checks of the pressure in the pipeline at the terminal and at the berth. • Automatic shut off if the maximum operating pressure of the pipeline is exceeded. • Emergency stop buttons located at staffing points.				
	Pipe integrity compromised (Vandalism, mechanical damage, or external party interference during operations).	Spill to land/water.	• Pipeline located underground for the majority of its length. • Install physical protection methods – bollards, armco guard rail etc. • Utilise high visibility colours and signage on pipeline. • Spill kits maintained on site (e.g. wheelie bins) and in Manildra Park emergency response vessel (floating boom). • Cathode protection.	2	D	L	Control measures to be documented in the Environmental Assessment.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
			• Pipeline empty when not in use. • Visual inspection of pipeline prior to and during loading. Half hourly checks during loading. • Radio contact between barge, terminal and intermediate walking pipeline. • Multiple shut-off valves along pipeline. • Valves located within secure/fenced area. • Regular cross checks of volume dispatched from terminal to that received at the berth. • Regular cross checks of the pressure within the pipeline at the terminal to that at the berth. • Automatic shut off if the maximum operating pressure of the pipeline is exceeded. • Emergency stop buttons located at staffing points. • Multiple staff on site during refuelling operations. • Pressure testing of pipeline: • Yearly hydrostatic leak and strength testing of pipeline (refer MF 002). • Monthly air pressure test of pipeline.				

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Spill during truck loading activities.	Spills to land/water.	• Truck loading occurs within a bunded concrete area. • 20 KL Spill Pit – maximum spill from any one truck is18K assuming all compartments are compromised. • Trucks connect to a PLC system during loading which controls the loading process via: ▪ Correlating volume to be loaded with truck ID Tag; ▪ Scully system ie sensor which detects fuel level in tank and activates automatic shut off if triggered; ▪ Emergency stop button located at filling bays; ▪ Trucks fitted with break interlocks, which prevents the truck from driving off while connected to the hoses from the loading bay; and ▪ Hoses are fitted with dry break couplings which prevents spills/leaks during connection/disconnection operations. • Local spill stations.	4	D	L	Control measures to be documented in the Environmental Assessment.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Generation of noise.	Generation of noise which exceeds DEC goals and/or results in community complaint.	• Facility located within the Kooragang Island industrial Area. • Surrounded by various industrial developments e.g. Port Waratah Coal Services, Cargill Australia, Air Liquide, Orica, Incitec Pivot, Kooragang Bulk Facilities, etc. • The nearest residential suburb (Stockton North), is located approximately 1.5 kilometres to the south-east of the site.	3	C	M	A detailed noise assessment of the construction and operational phases of the facility will be completed for the Environmental Assessment. Potential noise impacts from additional transport movements will also be considered.
	Generation of traffic.	Adverse impact on traffic flow/intersection performance.	• The local network operates at a high level of service, with most roads and intersections having significant spare capacity. • RTA and Council have indicated that the local network at present operates well, particularly following the introduction of the new roundabout at Cormorant Road & Teal Street. Additionally, downstream capacity will be improved in the future with the reconstruction of the Tourle Street Bridge. • The project will generate 64 heavy vehicle and 74 passenger vehicle movements per day.	4	B	M	A detailed traffic assessment is to be completed.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
Tank Farm/Biodiesel Facility.	General leaks of product. Overfilling of tanks.	Contamination of soil/water.	• The terminal will be within a bunded area. • An impervious liner will be installed within the bunded area e.g. HDPE, Bentonite liner etc. • Tanks constructed in accordance with AS 1940 – Category 6. • Leak detection system to be installed under all tanks. • Cross reference of import/export volumes of fuel with volumes in tank (existing and new tanks). • Marine grade fuels are not readily absorbed/disperse though soil and thus potential soil contamination is restricted to the surface of the ground.	3	D	M	Control measures to be documented in the Environmental Assessment.
	Stormwater Management.	Release of contaminated stormwater from the facility.	• Clean water/dirty water areas defined by bunds/gradient. • Stormwater detention basin collects all stormwater from dirty water areas. • All dirty water passes through an oil skimmer/separator pit before being discharged from the site as per Environmental Protection Licence. • Discharge to Hunter River.	3	D	M	Control measures to be documented in the Environmental Assessment.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Air Emissions.	VOC and odourous emissions which reduces local air quality. .	• Primary impact is the emission of odorous volatile organic compounds associated with the proposed biodiesel plant, i.e. methanol. • Methanol recovery system incorporated into biodiesel facility i.e. scrubbers. • Odours from tank storage of biodiesel and feedstock (vegetable oil) are expected to be negligible due to their low vapour pressure characteristics.	3	C	M	Air quality assessment to focus on methanol vapour emissions due to its high vapour pressure and odorous characteristics. There are two potential sources: 1. methanol scrubber exhaust; and 2. methanol storage tanks. Odour assessment to be completed as part of the EA.
	Generation of noise.	Generation of noise which exceeds DEC goals and/or results in community complaint.	• Facility located within the Kooragang Island industrial Area. • Surrounded by various industrial developments e.g. Port Waratah Coal Services, Cargill Australia, Air Liquide, Orica, Incitec Pivot, Kooragang Bulk Facilities, etc. • The nearest residential suburb (Stockton North), is located approximately 1.5 kilometres to the south-east of the site.	3	C	M	A detailed noise assessment of the operational phases of the facility will be completed for the Environmental Assessment. Potential noise impacts from additional transport movements will also be considered.
	Visual Impact.	Construction of additional infrastructure on waterfront land which restricts existing view corridors.	• Facility located within an existing industrial setting i.e. it will blend in with the existing landscape. • Landscaping and visual appearance to be considered in the Environmental Assessment.	4	C	M	The Environmental Assessment will document the landscaping and visual appearance of the facility.

Table 4 - Manildra Park Preliminary Environmental Risk Analysis (cont)

Activity	Aspect	Potential Impact	Status and Proposed Control	Risk Assessment			Further Assessment Requirements
				C[1]	L[1]	R[1]	
	Greenhouse Gas Emissions.	Potential impacts on climate change.	• The facility provides a local distribution point for bulk fuel users in the Port of Newcastle and the surrounding region. A local distribution point will reduce transport related greenhouse gas emission.	5	E	L	This project will have greenhouse benefits which will be documented in the EA.
	Hazard and Operability.	Risks associated with the storage/use of hazardous agents.	• Limited volume of methanol and acid held on site. Local suppliers are available. • Control measures proposed include: ▪ training of staff; ▪ Foam Systems; ▪ storage tank cooling; ▪ hydrant/hose reel system; ▪ fire water supplies; ▪ fire extinguishers; ▪ road tanker loading fire protection; ▪ fire alarms; and ▪ facility to comply with AS1940 for storage and handling of flammable and combustible liquids, AS1670 for fire alarms and AS2941 for pump sets. NB marine fuels and biodiesel are classified as combustible liquids.	2	E	M	A hazard analysis will be completed for the project and documented in the EA.

Notes:
1. C = Consequence, L = Likelihood, R = Risk.

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