# Environmental Assessment Report
# Project Application

## Knauf Insulation - Glass Wool Manufacturing Plant

Steel River Estate, Newcastle

Submitted to
Department of Planning
On Behalf of Knauf Insulation

July 2009 ■ 09187

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JBA Urban Planning Consultants Pty Ltd operates under a Quality Management System. This report has been prepared and reviewed in accordance with that system. If the report is not signed below, it is a preliminary draft.

This report has been prepared by: Stephanie Ballango

Signature  Date 15/07/09

This report has been reviewed by: Gordon Kirkby

Signature  Date 15/07/09

# Statement of Validity

This Environmental Assessment has been prepared and submitted under Part 3A of the *Environmental Planning and Assessment Act* 1979 (as amended) by:

## Environmental Assessment

| | |
|---|---|
| Name | Stephanie Ballango |
| Qualifications | Bachelor of Science (Applied Geography) Hons |
| Company | JBA Urban Planning Consultants Pty Ltd |
| Address | Level 7, 77 Berry Street<br>North Sydney NSW 2060 |

## Project Application

| | |
|---|---|
| Applicant | Knauf Insulation Holding GmBH |
| Address | c/- Level 15, 3 Spring Street<br>Sydney NSW 2000 |
| Land to be developed | Industrial Drive, Mayfield West as identified in Section 2 of this Report |
| Proposed development | Glass wool manufacturing plant, associated infrastructure |
| Environmental Assessment | An Environmental Assessment (EA) is attached |
| Certificate | I certify that I have prepared the content of this Environmental Assessment and to the best of my knowledge:<br>▪ It is in accordance with the Environmental Planning and Assessment Act and Regulation.<br>▪ It is true in all material particulars and does not, by its presentation or omission of information, materially mislead. |
| Signature |  |
| Name | Stephanie Ballango |
| Date | 15 July 2009 |

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# Executive Summary

This Environmental Assessment Report (EAR) in relation to the development of Steel River Estate, Mayfield West for a new glass wool manufacturing plant is submitted to the Minister for Planning pursuant to Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Major Development) 2005.

The proponent is Knauf Insulation (KI).

The proposal involves the construction of a glass wool manufacturing plant at the Steel River Estate, in the Newcastle City local government area. Approximately 22,000square metres in area, the plant will produce 100-200 tonnes of insulation per day, depending on market demand.

Approval is sought for the following:

- site preparation works, including excavation and bulk earthworks;
- construction of a approximately 22,000m$^2$ insulation plant, incorporating:
  - an oxy-gas fired furnace;
  - high bay low part and low bay plant containing the fiberiser, forming hood, curing oven and cooler systems.
  - wash water system;
  - four emission stacks;
  - binder system;
  - a multi pack system (MPS); and
  - workshop and ancillary offices.
- construction of associated service buildings, including an oxygen plant, batch house, cullet storage; utility building and gate house;
- civil works, including:
  - internal road network;
  - onstruction of a 20,000m$^2$ hardstand outdoor (uncovered) storage area to accommodate finished product;
  - 90 staff and 32 visitor at-grade car parking spaces; and
  - 17 at-grade truck parking spaces.
- relocation of an approved but not yet constructed tertiary containment cell; and
- landscaping.

The capital investment value of the project is $167.5 million in total.

The land is legally described as Lots 79-82 and Lot 89-91 in DP 270249, and is owned by Domain Steel River Pty Ltd. The site is zoned 4(c) Steel River under Newcastle Local Environmental Plan 2003 and the proposed development is permissible with consent in the zone.

This EAR provides an assessment of the environmental impacts of the project in accordance with the Director-General's Environmental Assessment Requirements and includes a draft Statement of Commitments (see Chapter 8) which sets out the undertakings made by KI to manage and minimise potential impacts arising from the development. In summary, this EAR concludes:

- The proposed development is permissible with consent in the 4(c) Steel River Zone in Newcastle LEP 2003 and meets the zone objectives. It is
- Supports, and is consistent with, the Hunter Regional Strategy and relevant State Environmental Planning Policies;
- The predicted emission levels and ground level concentrations is within the regulatory criteria.
- Predicted odour concentrations from the stacks are well below the regulatory criteria and accordingly there are no specific management measures required to manage odour impacts;
- The Preliminary Risk Screening undertaken for the proposal in accordance with Department of Planning Guidelines for Hazard Analysis, has concluded the KI proposal is not potentially hazardous and that a Preliminary Hazard Analysis is not required;
- The proposed scope of works are consistent with the remediation regime in place for the site, and are not expected to result in any new or additional contamination impacts;
- The proposed relocation and construction of the tertiary containment cell is proposed to be undertaken generally in accordance with Newcastle City Council's previous approval, however KI has committed to preparing a new environmental management plan to specifically address the site and KI development;
- Construction and operation noise levels have been modelled and the results indicate the KI development can comply with the Industrial Noise Policy thresholds;
- The site is above both the 1 in 100 year ARI and probable maximum flood (PMF) levels, however the required freeboard has been incorporated into the design of the KI plant to account for climate change and projected sea level rise;
- The proposed development will increase stormwater runoff due to an increase in impervious area across the site and accordingly, the stormwater system has been designed with a capacity to accommodate the design flow;
- Stormwater from the site will be directed through gross pollutant traps and oil separators prior to entering water quality ponds established within the Steel River Estate;
- The visual, lighting and signage impacts are negligible and the plant's bulk, scale and typology is in keeping with the site's industrial context. Lighting will be managed in accordance with Australian Standard As 4282: Control of Obtrusive Effects of Outdoor Lighting. Signage is proposed at the site's entry only;
- The Scope 1 and 2 greenhouse gas emissions assessment has determined that KI will be required to register and report greenhouse gas emissions to the Commonwealth Department of Climate Change. By its very nature, the KI plant's greenhouse gas emissions are offset by the 200t/day maximum output of roof insulation which will be used to insulate Australian homes and leading to reduce energy use;
- Intersection and road capacity analysis demonstrates the KI development will have no adverse traffic impacts during the construction or operation phases, and will in fact result in an improved traffic scenario to that previously approved for the site under the SIAS;

- Adequate car parking can be accommodated on site and the proposed rate of car parking encourages greater use of public transport if preferred by employees;
- The vast bulk of waste generated by the proposal will be recycled, reprocessed or re-used. KI will implement and monitor procedures and practices to manage waste in a Construction Management Plan.

Based on the findings, the EAR concludes the site is considered suitable for the proposed development, and can be approved by the Minister as it is:

- zoned for the proposed use;
- represents an efficient and economic use of existing industrial land and is located close to major road transport infrastructure;
- proposed operations are neither offensive nor hazardous and do not pose a risk to nearby residents or other industrial operations;
- justified on economic and environmental grounds, including the creation of 135 operational jobs; and
- provides an environmental off set that is consistent with recent Federal Government announcements relating to insulation and specifically presents the opportunity for the demand for insulation to be met by insulation products made in Australia using Australian materials.

# 1.0 Introduction

This Environmental Assessment Report (EAR) in relation to the development of part of the Steel River Industrial Estate for a glass manufacturing facility is submitted to the Minister for Planning pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and State Environmental Planning Policy (Major Development) 2005 (the Major Development SEPP).

The report has been prepared by JBA Urban Planning Consultants Pty Ltd on behalf of the proponent, Knauf Insulation (KI) and is based on plans and supporting technical information provided by the proponent. It describes the site, its environs and the proposed development, and includes an assessment of the proposal in accordance with the Director-General's Environmental Assessment Requirements under Part 3A of the EP&A Act. It should be read in conjunction with the Architectural Drawings (**Appendix A**), Civil Engineering Drawings (**Appendix B**) and the supporting information appended to this report (refer to Table of Contents).

## 1.1 Overview of Project

KI proposes to establish a glass wool manufacturing plant in Mayfield West, Newcastle. The proposal involves the design and construction of a 24 hour operational facility approximately 22,000 square metres in area. Roads, infrastructure, landscaping and utilities provision are also proposed.

The final decision on insulation products will be determined on market conditions, however, the plant will produce a variety of insulation products including glass wool (roof insulation), white wool (blowing wool where accessibility into roofs and walls is restricted) and yellow wool (used to insulate walls).

In summary, the project involves the following:

- site preparation works, including excavation and bulk earthworks;
- construction of approximately 22,000m$^2$ insulation plant, incorporating:
  - an oxy-gas fired furnace;
  - high bay low part and low bay plant containing the fiberiser, forming hood, curing oven and cooler systems.
  - wash water system;
  - four emission stacks;
  - binder system;
  - a multi pack system (MPS); and
  - workshop and ancillary offices.
- construction of associated service buildings, including an oxygen plant, batch house, cullet (recycled broken glass) storage; utility building and gate house;
- civil works, including:
  - internal road network;
  - construction of a 20,000m$^2$ hardstand outdoor (uncovered) storage area to accommodate finished product;
  - 90 staff and 32 visitor at-grade car parking spaces; and
  - 17 at-grade truck parking spaces.
- relocation of a tertiary containment cell currently approved on the site but not yet constructed; and
- landscaping.

Construction is expected to commence in late 2009 with completion and commissioning by late 2010.

## 1.2 Background to the Project

### Overview of Knauf Group

Founded in Germany in 1932 as a producer of gypsum based building products, the Knauf Group has evolved into a multi-national manufacturer of building products including thermal and acoustical insulation for residential, commercial, industrial, marine and equipment fabrication applications.

KI is part of the Knauf Group of Companies, a family owned global building material business with annual revenue in excess of $7billon. As one of the world's leading insulation manufacturers, they are active in more than 50 countries and have over 30 manufacturing sites producing glasswool, rock mineral wool, extruded polystyrene expanded polystyrene, extruded polyethylene and reflective foil insulation. With over 22,000 employees, they are specialists in insulation manufacturing, research and development; providing advanced energy efficiency solutions for buildings around the world.

The KI business in Australia currently imports a wide range of glass wool and reflective foil insulation products, along with design services for any building project. Recognising that Australia has unique climatic conditions and therefore specific insulation requirements, KI provides a range of products to suit local construction methods and proven solutions to provide comfort and energy efficiency in buildings.

### Need for the project

The need for the project is justified on economic and environmental grounds.

In the most recent stimulus package announced by the Federal Government, 2.2 million owner occupiers will be eligible for the free insulation to a value of up to $1,600 from 1 July 2009. In addition, 500,000 people that own rental properties will see their insulation subsidy increase from $500 to $1,000. Insulation will be able to be retrofitted (installed) into existing homes. As a result of the stimulus package there will be an increased demand for insulation. This project presents the opportunity for the demand for insulation to be met by insulation products made in Australia using Australian materials.

Once operational, the development will provide 135 new jobs on site in addition to those generated by activities related to the glass wool production process, transportation of finished product and during the construction of the development.

The insulation products proposed to be produced by KI provide considerable long term environmental benefits, including:

- sustainability and a better environment by reducing energy use in buildings to counter global warming;
- thermal protection to keep buildings warm in winter and cool in summer;
- lower energy bills by preventing heat loss from buildings in winter and enabling more efficient air conditioning in summer; and
- acoustic protection to block outside noise and segregate internal noise.

In addition to this, a major component of glass wool insulation is recycled glass plate and bottles which will reduce the environmental footprint of the development. KI is already ranked in independent sustainability tables as the best performing insulation in terms of low environmental impact – even better than sheep's wool according to the Green Guide for Specification in England.

## 1.3 Alternatives

In considering its expansion and development strategy, KI considered over 50 alternative sites across New South Wales and Queensland. The Steel River site is considered the most appropriate location due to site layout and logistics, and transport accessibility.

In preparing the design of the plant, KI considered several layout options. The proposed layout has been adopted as it best responds to KI's operational and functional requirements, and satisfactorily resolves the site's environmental constraints.

A further alternative considered was to not proceed with establishing an insulation plant in Australia and satisfy demand for insulation through increasing imports from overseas KI plants which would result in the employment and economic benefits going offshore.

## 1.4 Statutory Context

The Major Development SEPP identifies development to which Part 3A of the EP&A Act applies and which therefore requires approval from the Minister for Planning ('the Minister'). Clause 6 of the SEPP states that development, which in the opinion of the Minister is development of a kind referred to in Schedule 1 of the SEPP, is declared to be a project to which Part 3A of the Act applies. The project falls into the class of development described in Clause 9 of Schedule 1 - Metal, mineral or extractive material processing namely:

> ***Development that employs 100 or more people or with a capital investment value of more than $30 million for the purpose of:***
>
> *(a) metal or mineral refining or smelting; metal founding, rolling, drawing, extruding, coating, fabricating or manufacturing works; metal or mineral recycling or recovery, and*
>
> *(b) brickworks, ceramic works, silicon or **glassworks** or tile manufacture.*

For the purposes of the SEPP, the redevelopment project has a capital investment value of $167.5 million.

In accordance with Section 75B of the EP&A Act and Clause 6 of the SEPP, the applicant sought the opinion of the Minister as to whether the project is of the kind to which Part 3A of the Act applies. On 25 May 2009, the Director-General of the Department of Planning, as delegate of the Minister for Planning, formed the opinion that the development is of a kind described in Schedule 1 and is thus declared to be a project to which Part 3A of the Act applies for purposes of Section 75B of the Act. Relevant correspondence is attached at **Appendix C**.

Subsequently, the Director-General issued the Environmental Assessment Requirements for the project under Part 3A of the Act. A copy of these requirements is included at **Appendix C**. A table cross-referencing the location in this report where the requirements are covered is located in Section 6.1.

## 1.5 Capital Investment Value

The capital investment value of the project is $167.5 million (see **Appendix D**). Capital investment value is defined in the SEPP as the value of development including all costs necessary to establish and operate the development, including design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment (but excluding land costs).

## 1.6 Consultant Team

The following consultants contributed to this environmental assessment report:

| | |
|---|---|
| **Project Managers** | Crown Project Services |
| **Urban planning** | JBA Urban Planning Consultants |
| **Architecture** | Morris Bray Architects |
| **Landscaping** | Morris Bray Architects |
| **Traffic impacts** | URS Australia |
| **Noise** | URS Australia |
| **Air quality** | URS Australia |
| **Odour** | URS Australia |
| **Preliminary Hazard Analysis** | Planager |
| **Water cycle management** | URS Australia |
| **Civil engineering** | URS Australia |
| **Green house and energy** | URS Australia |
| **Waste management** | JBA Urban Planning Consultants |
| **Soils** | URS Australia |
| **Contamination** | URS Australia and RCA Australia |

# 2.0 Site Analysis

## 2.1 Site Location and Context

The site is located on the Pacific Highway in Mayfield West, Newcastle, approximately 9km north-west of the Newcastle CBD.

The 23 ha regularly-shaped site has a north-eastern orientation and is located within the Steel River Industrial Estate. It is bound by the South Arm of the Hunter River to the north, Pambalong Drive and industrial development to the east, Industrial Drive and the Pacific Highway to the south, and the Kooragang Island Railway to the west.

The site's locational context is shown at **Figure 1**.


**Figure 1** – Locality Plan

## 2.2 Site History

### Previous Uses

The site was originally a low lying swampy area. An old river channel ran through the site with Spit Island lying between this old river channel and the present South Arm of the Hunter River.

The Steel River site was used by BHP for approximately 80 years up to 2001 as an area for disposal of slag produced as part of the steel making process. The site is essentially an area of reclaimed land where slag was used for reclamation purposes. Following the decommissioning of the BHP Steelworks, the Steel River site was sold to Domaine Steel River and subject to a planning process to determine the most appropriate use of the site.

### Planning History

Following comprehensive investigations in February 1998, the City of Newcastle Council adopted a Strategic Impact Assessment Study concerning land at Tourle Street and Industrial Drive, Mayfield – The "Steel River" Project (SIAS) – which includes the subject site. The intention of the SIAS was:

- To support the preparation of a new environmental planning instrument applying to the subject land providing a mechanism which would allow a rapid (28 days) development approval period for industries which comply with the requirements of the environmental envelopes set out in the SIAS.
- To define an environmental envelope consisting of environmental standards, requirements and objectives, to which the new LEP would refer, and with which future development on the subject land must comply, or be subject to a further, development specific environmental study.
- To define a mechanism by which the environmental performance of future development on the subject land can be monitored and by which the environmental standards initially established can be subsequently reviewed on a regular basis.
- To provide for on-going community access to and participation in monitoring reporting and review processes for the site's development.

The SIAS has 5 key objectives:

- The socio-economic objective aimed at providing 2000 jobs (within the Estate);
- The eco-industrial objectives of applying principles of industrial ecology to the overall Steel River Estate;
- The socio-cultural objective whereby development of the site responds to its past use, and gives due regard to the visual and landscape attributes of the site;
- The environmental management objective in which the management of the site is on-going and includes monitoring environmental performance as well as the continuing application and management of eco-industrial principles; and
- The community consultation objectives aimed at permitting periodic consultation between the estate management and the community in respect of the environmental envelope and its application.

As a result of this process, the Newcastle Local Environmental Plan 2003 was amended to rezone the site 4(c) Steel River Zone and require development to be consistent with the environmental envelopes set out in the SIAS. The environmental envelopes include (without limitation) requirements relating to the following:

(a) air quality, noise emissions and water quality,

(b) industrial ecology and ecologically sustainable development,

(c) the social and economic welfare of residents and workers in Newcastle,

(d) urban design and landscaping,

(e) the cultural, historic and landscape significance of the land.

The SIAS process also led to the master plan approval of an industrial subdivision by the City of Newcastle Council and ultimately the registration of the Community Management Statement DP 270249 (CMS) on 23 February 2001. The CMS establishes the Steel River Community Association and by-laws which govern future development of the Steel River Estate including the subject site. The key objectives of the CMS are to:

- establish the Estate as a leading eco-industrial park;
- ensure the Association is operated in such a manner to satisfy the Environmental Envelope; and
- establish procedures and controls to ensure lots within the Estate are managed and used to meet the above two objectives.
- The environmental envelopes established in the SIAS and the requirements of the CMS are further considered at Section 7.2.

## Contamination History

The site was created by BHP infilling the western section of Platts Channel and nearby low lying land. Fill material comprised waste materials associated with the production of iron and steel, including slags, coal washery rejects, ashes, metallic dusts, hydrocarbons such as oils and tar, and other materials including general (non-putrescible) refuse.

Following detailed investigations into the site in the mid 1990's, the site was determined to pose an unacceptable risk to human health due to the presence of polycyclic aromatic hydrocarbons (PAH). The investigations concluded that remediation was required to make the site suitable for industrial development, and accordingly the Steel River Project Remediation Action Plan Environmental Impact Statement (herein referred to as 'the RAP') was prepared and adopted by Newcastle City Council (**Appendix E**).

A key aim of the adopted RAP is to prevent, as far as possible, surface waters from the site recharging the underlying groundwater. To ensure this is achieved, the RAP requires a staged remediation process:

- Initial site capping and grading of a minimum 2m impervious layer to provide foundation material, separate the underlying potentially contaminated fill from the surface, and to shed surface water – now completed;
- Site development, including construction of impervious hard surfaces to provide additional barriers to human contact and prevent surface water infiltrating the underlying groundwater – implemented incrementally by individual site developers and the subject of this proposal insofar as the site is concerned; and
- Remediation of the contaminated groundwater – currently being carried out by BHP Billiton under the Contaminated Land Management Act, 1997.

The approved RAP requires contaminated materials to be retained on site. It accordingly approved a 'primary containment area' for the concentration and long-term disposal of arisings encountered in excavations, as well as secondary and tertiary containment areas in the locations indicated in **Figure 2**.


**Figure 2** – Location of primary containment area

The primary containment area has already been created, reached capacity and been closed whilst the secondary and tertiary areas have not been constructed to date. The secondary containment area is not envisaged to be constructed. The *Operational and Long Term Environmental Management Plan, Proposed Tertiary Containment Cell Steel River Site* (July, 2008) was however prepared for Domaine Steel River consistent with the RAP to guide construction of the tertiary containment cell. The tertiary containment cell has not been constructed to date and is addressed in further detail in Sections 4.6 and 7.5 of this EAR.

In addition to the RAP, the Steel River Project Construction Guidelines have been prepared for the site to set out the protocols and considerations which must be taken into account when developing the site in order to maintain the integrity of the primary containment cell. Their key objective is to ensure that surface water from the site does not recharge the underlying contaminated groundwater.

In May 2005, the former Department of Environment and Conservation declared part of the site a remediation site (Declaration 21040 / Area UB 3368) under the Contaminated Lands Management Act, 1997. The declaration related to groundwater contamination and identified a 20m wide buffer zone at the bank of the South Arm of the Hunter River, being Lot 49 DP 270249 (north of the KI site as indicated in **Figure 2**) for an easement for the installation of facilities for the treatment of groundwater.

### Relevant Stakeholders

A summary of the key stakeholders and the nature of their interest is summarised in **Table 1** below:

**Table 1** – Steel River Key Stakeholders

| Stakeholder | Nature of Interest |
|---|---|
| BHP Billiton Ltd | - Original site owner, 'polluter', and initiator of Steel River project<br>- Responsible for groundwater monitoring and remediation<br>- Responsible for remediation of groundwater in 'Environmental Buffer Zone K' (refer Figure X) |
| Domaine Steel River Pty Ltd | Developer of Stages 7 and 8 to the east of the property and vendor of Steel River site the subject of this project |
| Newcastle City Council | Owner of roads within the Steel River Estate following construction |
| Steel River Community Association | The owner of 'common property' (eg: Environmental Buffer Zone K, the escarpment within the Steel River Estate and open space areas) that is not owned by other entities |
| Steel River Lot Owners | Ownership of individual development lots within the Steel River Estate<br>Members of the Steel River Community Association |
| Department of Environment and Climate Change | Environmental regulators of the 'Environmental Buffer Zone K' |

## 2.3 Land Ownership and Legal Description

The land is currently predominantly owned by Domaine Steel River Pty Ltd, with Channel Road owned by Newcastle City Council. Domaine Steel River Pty Ltd and Newcastle City Council have provided owner's consent for this application as provided to the Department of Planning on 15 June 2009 and 6 July 2009 and attached at **Appendix F.**

The land, which consists of seven lots and Channel Road (see **Figure 3**), is legally described as:

- Lot 79 DP 270249;
- Lot 80 DP 270249;
- Lot 81 DP 270249;
- Lot 82 DP 270249;
- Lot 89 DP 270249;
- Lot 90 DP 270249; and
- Lot 91 DP 270249.

The CMS is registered on the title of the above lots. Drainage, electricity, sewer and access and maintenance easements of variable width apply to the lots. 'Environmental easements' are also located within the first 5m of all Lots fronting Channel Road, Riverside Drive and Pambalong Road which enable future occupiers to discharge surplus water and / or energy for reuse by other lots within the Estate.


**Figure 3** – Cadastral Plan

# 2.4 Site Characteristics

## 2.4.1 Existing Development

The site is vacant as shown on **Figure 4**. The majority of the site has been raised to its present levels of approximately 7.5 -11.8 AHD through placement of industrial waste and fill (mainly slag and coal washery rejects).

The site is highly modified and cleared of natural vegetation except for grass cover (see **Figure 5**) and 18 trees located in the far south western corner of the site near the Pacific Highway.

As detailed in Section 2.2, the site is essentially reclaimed land where slag was used for reclamation purposes. Small quantities of other wastes were co-disposed with the slag resulting in some materials being contaminated with PAH and tar. In accordance with the SIAS, areas suspected or known to be contaminated have been capped with a minimum 2 metres of coal washery reject and similar material. The objectives of the capping layer are to:

- provide a physical barrier between the underlying potentially contaminated materials, thereby minimising the potential for human contact with the contaminants; and
- minimise the infiltration of rain water to the underlying groundwater, thereby reducing the volume of groundwater discharging from the Steel River Estate to the South Arm of the Hunter River.

**Figure 4** – The vacant site looking north east to South Arm of Hunter River

**Figure 5** – The site looking south west

## 2.4.2 Water

The site is located within the Hunter River Floodplain, but is above both the 1 in 100 year ARI and probable maximum flood (PMF) levels as described in Section 7.8.

There are currently two existing water quality ponds within the Steel River Site known as WQP1 and WQP2. The current maximum receiving volume of these ponds is around 1,500m$^3$ for WQP1 and 16,000m$^3$ for WQP2. Development within the Steel River Estate is required to be drained to these ponds prior to discharge.

## 2.4.3 Vehicular and Public Transport Access

The Steel River Industrial Estate enjoys frontages with three major arterial roads, the Pacific Highway, Industrial Drive and Tourle Street. Access to the Estate is located off an existing intersection with Industrial Drive which allows road access to the site without the use of residential roads.

Vehicular access to the site is currently located off Channel Road and Riverside Drive see **Figure 6**. Both roads link up to Steel River Boulevard which runs through the Steel River Industrial Estate and connects up to the Pacific Highway via Industrial Drive.

All roads within the Steel River Industrial Estate are capable of accommodating heavy vehicles.

Two bus routes operate along the Pacific Highway, providing services between Jesmond and Newcastle. The nearest train station to the site is Warabrook Railway Station (approximately 1.3km away), which is on the Hunter line, operating between Scone or Dungog and Newcastle.

**Figure 6** – Riverside Drive terminating at the site

## 2.4.4 Utilities and Infrastructure

The site currently has access to the following electricity, gas, sewer, water and telecommunications:

- connection to an under construction Energy Australia 132kV/11 kV substation located 750m to the east;
- 350mm secondary steel gas main, located parallel to the Pacific Highway with connection available at the south west corner of the site;
- water and sewer mains are located in Pambalong Road adjacent to the site; and
- sewer pump house and rising main on the north east boundary of the site adjacent to the water quality control pond.

## 2.5 Surrounding Development

Consistent with the location, the built form of the surrounding development is essentially industrial in nature.

The South Arm of the Hunter River runs to the north east of the site (see **Figure 7**). The river separates the mainland from a vacant area of Koorangang Island, a state owned island, which includes part of the former BHP Waste Emplacement site and a number of leased sites for general and port related industry including Sims Metal, BOC Gases, John Holland, and Specialised Waste Services.

**Figure 7** – The Hunter River and Kooragang Island

The north western boundary of the site follows the Kooragang Goods Rail Line which connects Koorangang Island to the main Hunter Valley Rail Line (see **Figure 8**). Further to the north-west is an area of vacant land, beyond which is another industrial development.

**Figure 8** – Koorangang Goods Rail Line

The developed area of the Steel River Industrial Estate is located to the south east of the site and is characterised by a range of small to medium scale industrial buildings up to 5 storeys in height (see **Figure 9**). The estate comprises the Intec Metal Refinery, Horan Steel, Ulrich Aluminium, CSIRO's Energy Research Division, Hunter Water Corporation facilities, and smaller strata titled industrial lots (see **Figure 10**).

**Figure 9** – Steel River Industrial Estate


**Figure 10** – Neighbouring developments within the Steel River Industrial Estate

A large natural embankment, containing a high voltage overhead transmission line runs along the south western boundary of the site (see **Figure 11**). Located on top of the embankment are light industrial uses which front the Pacific Highway. Situated on the other side of the Pacific Highway (see **Figure 12**) is the residential suburb of Mayfield West which is characterised by detached residential dwellings (see **Figure 13**). These residences are approximately 230m from the site and are visually screened from the site by the natural embankment.

**Figure 11** – Industrial development along the embankment

**Figure 12** – The Pacific Highway looking south east

**Figure 13** – Vegetated screening / buffer at Mayfield West viewed from the Pacific Highway

# 3.0 Glass Wool Manufacturing

By way of background to the proposed development, this chapter provides a description of the glass wool manufacturing process.

## 3.1 What is Glass Wool?

Knauf Batt Insulation is made of glass mineral wool, a thermal and acoustic product made from highly resilient, inorganic glass fibres bonded by a thermosetting resin. Glass wool provides a cost-effective thermal and acoustical barrier for energy-efficient construction. These applications include thermal and acoustic treatments to walls, ceilings and floors.

The glass mineral wool is rot-proof, odourless, non-hygroscopic, does not sustain vermin and will not encourage the growth of fungi, mould or bacteria. It is chemically neutral and does not contain impurities.

Sand and recycled glass plates and bottles are the main raw materials used in the production of glass wool.

## 3.2 Overview of the Process

The proposed KI Plant will produce two types of glass wool products. These include:

- Glass wool (bound glass wool insulation) (see **Figure 14**); and
- White wool (non bound blowing wool used when there is no access in to the roof or wall cavities).

**Figure 14** – KI glass wool

An overview of the process behind each product is shown on **Figures 15** and **16** and explained below.

In the first stage of the glass wool manufacturing process, the raw materials comprising primarily of sand and recycled glass plates and bottles (cullet), are mixed and then fed into a glass furnace at 1200$^0$C to form molten glass. The emissions from the glass furnace are directed to a Dry Electrostatic Precipitator (Dry EP) which primarily acts to reduce particulate matter. This molten glass is then directed downwards though spinning fiberisers which convert the glass into 'wool fibres' through centrifugal force, which are then made into either 'white wool', 'glass wool' or 'yellow wool'.

## Glass wool

To create glass wool a solution of organic binder is sprayed on the fibres which is then distributed on a moving production line to form a 'blanket' of glass wool. This 'blanket' proceeds through a curing oven, is 'cut to size' and then compression-packed as a roll or into a batt. The air emissions that pass through the forming hood, curing oven and cooling section are directed to the Wet Electrostatic Precipitator (Wet EP).

## White wool

To create white wool, the fibres are not sprayed with any binder but are instead crushed, sprayed with silicone, oil and antistatic material and then packaged in bags.

A detailed description of the various process components is located in Section 3.3.

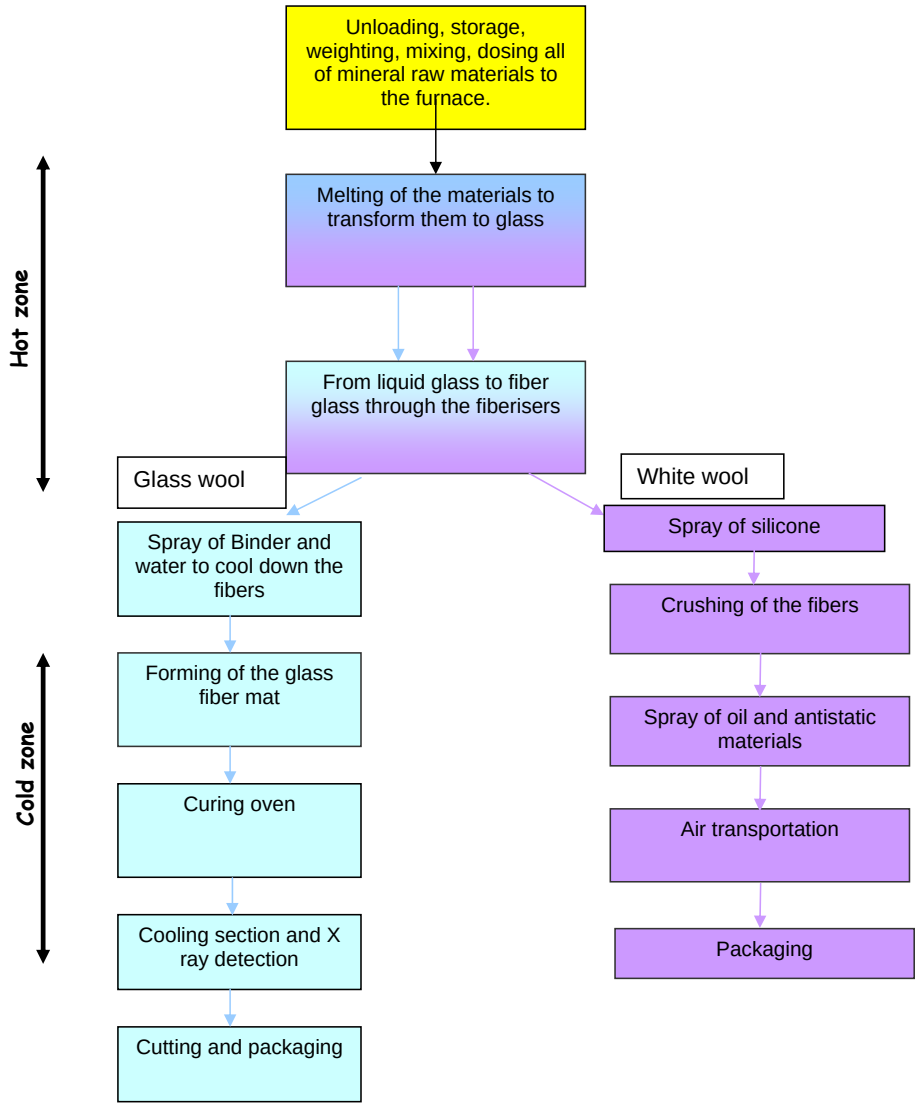


**Figure 15** – Overview of the process

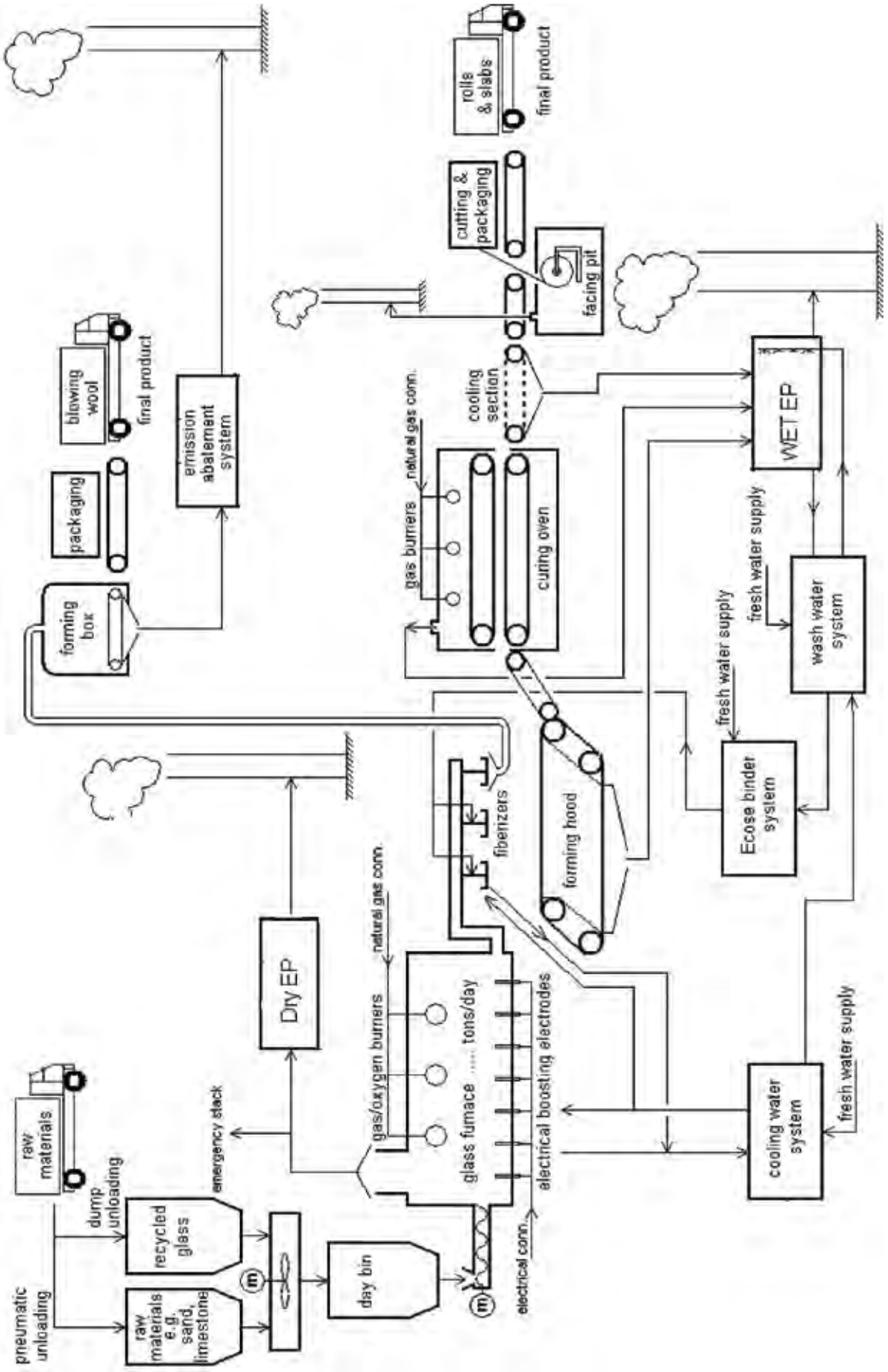


**Figure 16** – The glass wool manufacturing process

# 3.3 Process Components

## 3.3.1 Oxygen plant

To feed the oxy-gas burners of the furnace, oxygen must be produced on site. The process uses an absorption system with two tanks of liquid oxygen.

## 3.3.2 The furnace

The furnace is made by refractory bricks with a steel structure frame. The furnace is heated through the use of the combustion of natural gas and electrically boosted electrodes. The exhaust is cooled by outside air, passed through a Dry EP and is emitted through the stack. There is an emergency stack which is used in case of Dry EP maintenance and cleaning (approximately 2 – 6 days per year).

## 3.3.3 Cooling system

Some of the parts in the process need to be cooled down with water. To do so, a cooling system with open cooling tower is used. The typical cooling power is 6000kw. The open cooling tower evaporates water at a rate of 8$m^3$/hr and purges 4$m^3$/hr. The purged water is then recycled in the wash water system.

There is also a separate cooling water system which cools down the molten glass when the fibre production is stopped. The glass is transformed into cullet and re-used afterwards in the furnace as raw materials.

## 3.3.4 Wash water system

The wash water system recycles all of the process water used in the plant. The water captured during the process is used to clean the air stream in the abatement system. It is also used to dilute the binder for application on the fibres.

# 4.0 Description of Development Proposal

## 4.1 Overview

The project involves the construction of the approximately 22,000m$^2$, 24 hour operational glass wool manufacturing facility and associated roads, infrastructure, landscaping and utilities (see **Figure 17**). This chapter of the report provides a description of the proposed development.

Architectural and landscaping drawings prepared by Morris Bray Architects are attached at **Appendix A**. Civil drawings of the proposed development prepared by URS are located at **Appendix B**.

The project seeks approval for:

- site preparation works, including excavation and bulk earthworks;
- construction of a approximately 22,000m$^2$ insulation plant, incorporating:
  - an oxy-gas fired furnace;
  - high bay low part and low bay plant containing the fiberiser, forming hood, curing oven and cooler systems.
  - wash water system;
  - four emission stacks;
  - binder system;
  - a multi pack system (MPS); and
  - workshop and ancillary offices.


**Figure 17** – The proposed facility

- construction of associated service buildings, including an oxygen plant, batch house, cullet storage; utility building and gate house;
- civil works, including:
  - internal road network;
  - construction of a 20,000m$^2$ hardstand outdoor (uncovered) storage area to accommodate finished product;
  - 90 staff and 32 visitor at-grade car parking spaces; and
  - 17 truck at-grade truck parking spaces.
- relocation of an approved but not yet constructed tertiary containment cell; and
- landscaping.

## 4.2 Site Preparation, Excavation and Bulk Earthworks

Civil engineering plans prepared by URS showing the proposed excavation, bulk earthworks are located at **Appendix B**. The works will be undertaken to prepare the site for the construction of the Insulation Plant and associated works as described below.

Prior to the commencement of bulk earthworks, temporary erosion and sediment controls will be installed and access points for construction traffic and trucks established and stabilised.

## 4.3 Insulation Plant

Construction of a approximately 22,000m$^2$ insulation plant incorporating a variety of elements used in the production of glass wool is proposed near the south western boundary of the site. The plant will be capable of processing 50-200 tonnes of molten glass a day with a production line capacity of between 60,000 and 80,000 tonnes per year.

The linear nature of the glass wool manufacturing process necessitates a long elongated building envelope. The modulated form of the envelope is determined by the needs of the internal components to undertake their specific stage of the glass wool manufacturing process. The components include:

- Cullet storage: an area used to store the recycled glass prior to melting, which is part of the batch house.
- A 33.5m high 'high bay building' including an Oxy-gas fired furnace constructed from refractory bricks with a steel frame which melts the raw materials to form liquid glass.
- A 21.5m 'high bay low part' and 12m 'low bay low part' plant containing the fiberisers, forming hood, curing oven and cooler systems. The low bay will also accommodate office facilities for up to 15 administration staff, staff amenities and canteen, and laboratory.
- Binder system: used to bind the glass fibres in the production of glass wool.
- Wash water system: used to recycle the process water used in the plant.

- Four emission stacks:
  - Dry EP Stack: a 45m stack used to emit the emissions from the furnace melting activities after emission reduction in the electrostatic precipitator.
  - Downstream (Wet EP) Stack: a 60m high stack used to emit the air emissions from the forming hood, curing oven and cooling section.
  - Blowing Wool Stack: a 34m high stack used to emit emissions from white wool process.
  - Facing Pit Extraction: a 23m stack used to emit dust generated from the crushing of fibres in the white wool line.
- MPS: the Multi Pack System used to cut, compress, pack and palletize the finished materials ready for transportation.
- Workshop and ancillary offices: used to undertake activities associated with the daily operation and maintenance of the insulation plant.

The bulk of the building mass is contained within the furnace and high bay low part as shown on **Figures 18** and **19**. The building then progressively steps down to an extended low bay area.

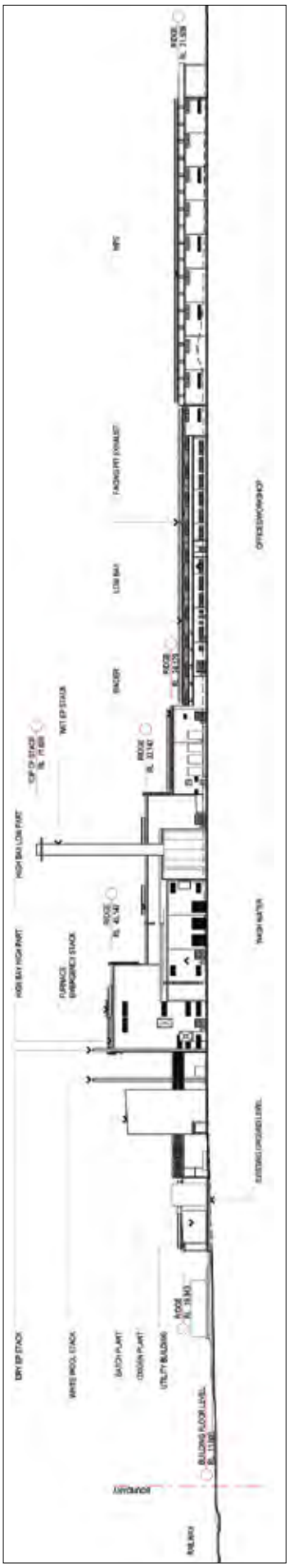

**Figure 18** – Southern elevation

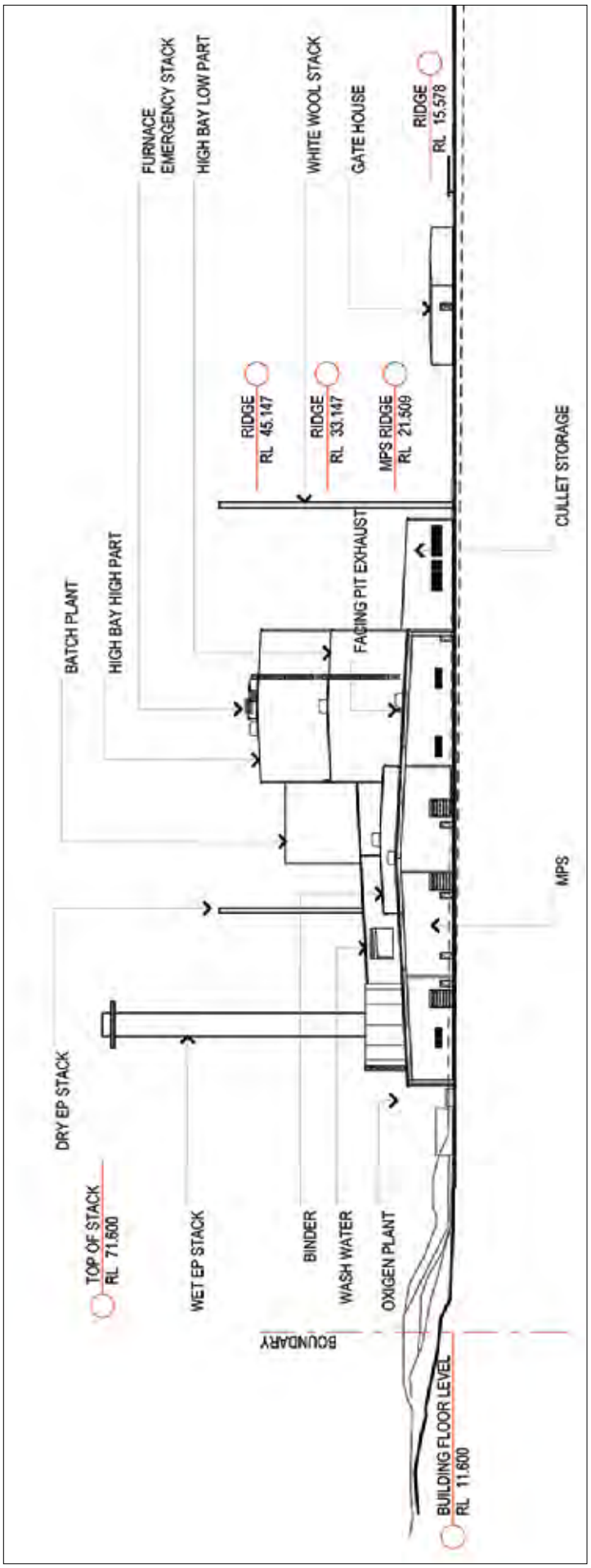


**Figure 19** – Eastern elevation

## 4.4 Service Buildings

A range of associated service buildings are proposed across the site as part of the Project Application to support the Insulation Plant. The buildings include:

- Oxygen plant: 9m high building containing 2 liquid oxygen tanks located to the west of the plant.
- Batch house: 29m high building with the storage capacity for 70+ tonnes of raw materials located 14m from to the west of the furnace.
- Utility building: 9m high building used to house high voltage switch rooms, air compressors and 3 transformers.
- Gate house: 4m high building used to control access to the Insulation Plant.
- Fire hydrant and fire sprinkler water tanks.

## 4.5 Civil Works

The proposed development includes a range of civil works to provide vehicular access to the site. The works include construction of an internal road off Pambalong Drive which will provide heavy vehicle access around the proposed Insulation Plant, external storage area and service buildings. A heavy vehicle parking area containing 17 truck spaces will be located off the proposed road. Security boom gates will be located at the entry next to the gate house and at the exit to Pambalong Drive.

A dedicated at-grade car park for 90 staff vehicles spaces and 32 visitor spaces will be located further south and is accessed via a separate entry off Pambalong Drive.

An emergency exit (gravel driveway) will be provided for KI staff and emergency vehicles to the Pacific Highway on the western boundary of the site in the event the main access is blocked during an emergency event.

The works also include construction of a 20,000m$^2$ hardstand outdoor (uncovered) storage area to accommodate finished product prior to distribution. The storage capacity for the raw materials has been designed to accommodate 3 to 4 days storage.

## 4.6 Relocation of Tertiary Containment Cell

The development proposes to construct a 10,000m$^3$ tertiary containment cell to accommodate:

- Up to 4,500m$^3$ of contaminated material which is currently stockpiled across the site; and
- Arisings generated by excavation works undertaken by KI to construct the plant.

Whilst the construction of the tertiary containment cell has been approved by Newcastle City Council under the RAP and sub sequential *'Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site'* (prepared by RCA Australia and dated July, 2008), KI proposes to construct the tertiary containment cell in a more suitable location for the plant. The cell's location is proposed to be shifted approximately 220m south east of the approved location.

KI proposes to construct the tertiary containment cell consistent with the approved design and generally in accordance with the RCA's Environmental Management Plan, although the Plan will need to be revised in recognition of the proposed new location.

Following completion of construction works, the cell will be closed in accordance with the *Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site* (see **Appendix G**) requirements. Any additional arisings from future development within the Steel River Estate will be disposed of off-site.

## 4.7 Landscaping

A Site Landscaping Plan (see **Appendix B**) illustrates the proposed landscaping works for the KI site. The landscape plan has been designed in accordance with SIAS Landscape Development guidelines and proposes the planting of 21 new trees along the eastern boundary with Riverside Drive, Pambalong Drive and Channel Road and a further 9 trees along the western boundary with the Pacific Highway and Kooragang Railway. Screen planting will be located in parking areas, along all street frontages, and sections of the east, west and southern site boundaries. The screen planting will consist of low to medium height shrubs and shallow root trees. The 18 existing trees and native grasses covering the site will also be retained.

## 4.8 Signage and Outdoor Lighting

### Signage

Business identification signage will be located at the entrance to the KI site. No building signage is proposed.

### Outdoor lighting

Outdoor lighting will is proposed around the proposed development to allow for ongoing operation at night and will be provided in accordance with *Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282).*

## 4.9 Utility Services

Discussions with Jemena, Hunter Water Corporation, and Energy Australia, have established that the site is capable of being serviced to meet the anticipated levels summarised **Table 2** below.

**Table 2** – Average daily utilities consumption

| | Average Consumption | Maximum Consumption |
|---|---|---|
| Gas | 60 GJ / h | 100GJ / h |
| Electricity | 150 MWh per day | 7.5MW |
| Potable Water | 486L / day | 60$m^3$/hr |

## 4.10 Hours of Operation

The site will operate on a 24 hour 7 days a week basis and employ approximately 135 full time equivalent staff over four shifts. Of these, approximately 50 people will be on site at any one time.

## 4.11 Water Cycle Management

### 4.11.1 Stormwater

The proposed stormwater system for the KI development has been conceptually designed for the 1 in 20 year ARI storm event, with all flows contained within concrete pipes. The stormwater system will, in accordance with all developments in the area, flow into the two existing water quality ponds to the north-west and north-east of the proposed development.

The existing embankment to the south of the KI site does not currently have a managed drainage path. As the proposed development is adjacent to this embankment, runoff from this area has been addressed to prevent runoff issues for the KI plant. An open channel has been incorporated into the site drainage plan to direct flows from the embankment to the water quality ponds.

### 4.11.2 Water consumption and reuse

#### Operational

Approximately 179,215 kL of water will be used annually on site for process requirements and for miscellaneous uses such as staff amenities as illustrated on the Water Process Flow Diagram at **Figure 20**.

The water supply will be initially provided from the proposed mains water connection and may eventually be supplemented with recycled water once Hunter Water completes their recycling plant and distribution system (being constructed within the Steel River Estate).

It is anticipated that approximately 220 kL of rainwater will be sourced annually from four rainwater tanks appropriately located around the proposed buildings. These rainwater tanks have been strategically located to allow the use of rainwater for toilet flushing. As with all rainfall dependent systems, a top up arrangement will be put in place to ensure viable levels of supply, with potable water supplementing rainwater when required.

#### Construction

During the construction phase it is estimated that 6 - 8 kL of water will be needed per day.

### 4.11.3 Wastewater

The Cooling Tower(s) will generate approximately 5m$^3$ per day of wastewater that is proposed to be discharged to the existing sewer under a future Trade Waste Agreement with Hunter Water.

## 4.12 Construction Management

A construction management plan will be developed for lodgement with the Preferred Project Report. The following issues will be addressed:

- provision of required amenities for construction workers and temporary fences to construction areas;
- provision of site signage for construction workers to limit access to certain areas;
- site orientation and instructions for subcontractors in relation to overseeing construction traffic, cranage, and services;
- protocols for construction traffic on surrounding roads to reduce noise and manage driver behaviour;
- erosion and sediment control measures;
- management of demolition and construction waste; and
- occupational health and safety matters.

***Development of a Construction Management Plan forms part of the draft Statement of Commitments***.

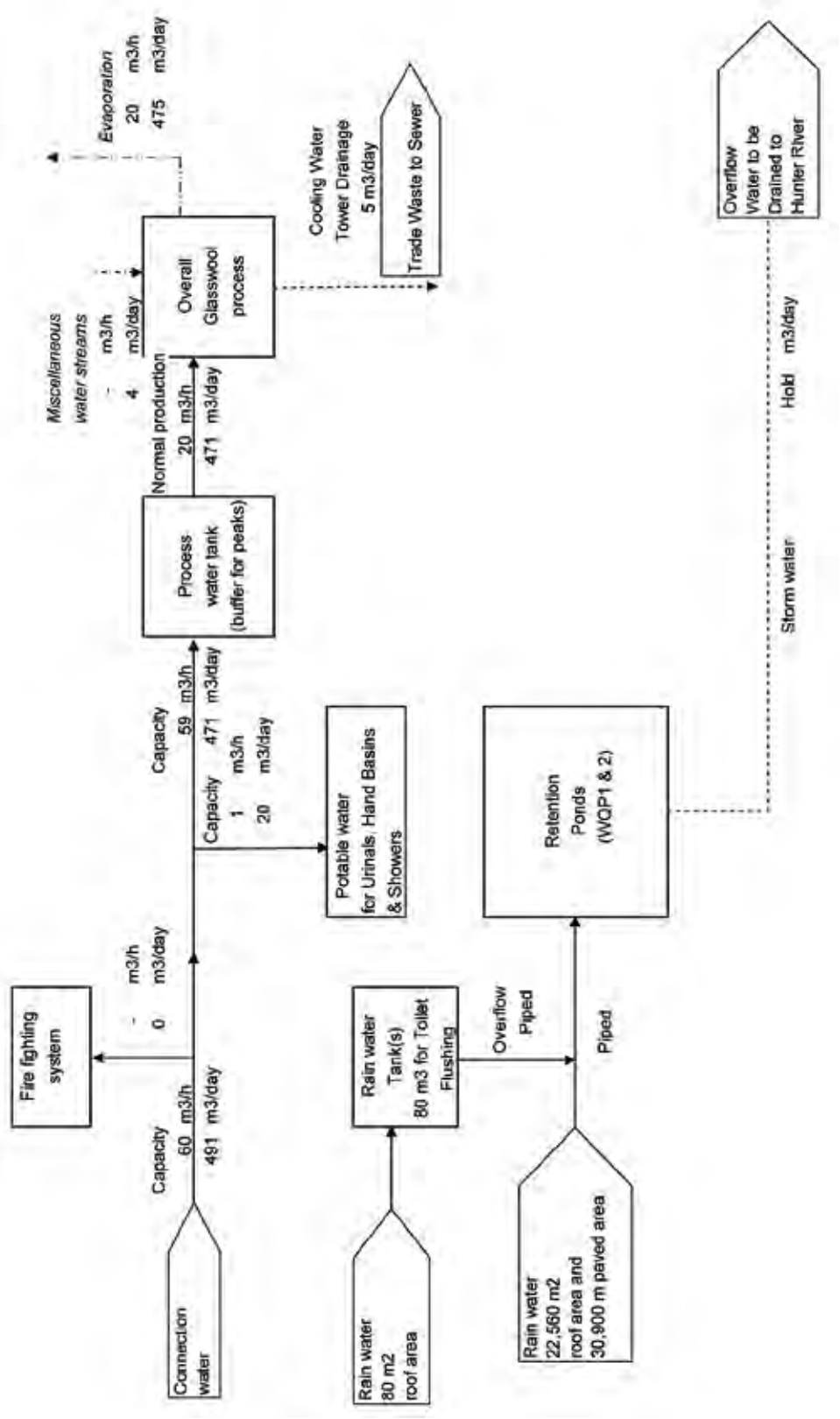


**Figure 20** – Process water flow diagram

## 4.13 Staging

The plant is proposed to be constructed within a single construction programme, commencing immediately after obtaining planning approval and completion

scheduled for the end of 2010.

# 5.0 Planning Framework

This chapter details the relevant environmental planning instruments (EPI) applying to the site and the proposal. An assessment of compliance with relevant planning controls is summarised in **Chapter 8** and a detailed assessment of consistency is provided in **Appendix H**.

## 5.1 Strategic Plans

### Lower Hunter Regional Strategy

The Lower Hunter Regional Strategy was released in October 2006. The Regional Strategy is intended to guide land-use planning over in the Lower Hunter Region over the next 25 years. Consistent with the Strategy, the proposed development will contribute to achieving the employment capacity target of providing 66,000 new jobs by 2031 in the Region.

## 5.2 Environmental Planning Instruments

### State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33)

SEPP 33 aims to ensure that when a consent authority is considering an application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact. A risk assessment has been undertaken and is summarised in Section 7.13.

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

SEPP 55 applies to the site. This SEPP aims to provide a State-wide planning approach to the remediation of contaminated land in order to reduce the risk of harm to human health or the environment. The SEPP defines when consent is or is not required for remediation work, and requires that remediation work meets certain standards and notification requirements. Contamination has been addressed in Section 7.5.

### State Environmental Planning Policy – Major Development 2005

The Major Development SEPP identifies certain categories of development and specified sites that are subject to assessment and determination under Part 3A of the EP&A Act. As detailed in Section 1.4 the Steel River site is declared a major project under Clause 9 of Schedule 1 as a manufacturing industry that employs 100 or more people and has a capital investment value of more than $30 million.

### State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP came into force on 1 January 2008. The aim of this Policy is to facilitate the effective delivery of infrastructure across the State by:

- improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services;
- providing greater flexibility in the location of infrastructure and service facilities;
- allowing for the efficient development, redevelopment or disposal of surplus government owned land;
- identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development);

- identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development; and
- providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

Clause 85 of the SEPP requires the relevant rail authority to be notified for development immediately adjacent to rail corridors, if the development:

- is likely to have an adverse effect on rail safety, or
- involves the placing of a metal finish on a structure and the rail corridor concerned is used by electric trains, or
- involves the use of a crane in air space above any rail corridor.

The aforementioned matters will not be triggered by the development.

Under Clause 104 the Roads and Traffic Authority is made aware of traffic generating development and is given the opportunity to provide comment. The proposed development is considered a traffic generating development by virtue of Schedule 3, which requires referrals for all industrial development over 20,000m$^2$ in area.

## Newcastle Local Environmental Plan 2003

The site is zoned 4(c) Steel River under the Newcastle LEP 2003. The 4(c) zone objectives are to:

*a) facilitate the development of employment-generating industrial, research, service or storage activities.*

*b) allow commercial, retail or other development only where it is:*
- *(i) ancillary to the use of land within this zone for industrial, research, service or storage purposes, or*
- *(ii) primarily intended to provide personal services and community facilities to persons occupied or employed in activities otherwise permitted in this zone or for the benefit of the local community.*

*c) ensure that any such commercial, retail or other development is unlikely to be prejudicial:*
- *(i) to employment-generating activities, or*
- *(ii) to the viability of existing commercial centres.*

The proposal is permissible with consent in the 4(c) Steel River Zone.

## Strategic Impact Assessment Study

The Strategic Impact Assessment Study (SIAS) was prepared following decommissioning of the site by BHP to initially support a rezoning of the site for employment purposes and define an 'environmental envelope' consisting of environmental standards, requirements and objectives. Subsequently, the SIAS has been incorporated into the Newcastle LEP and is used to assess the environmental performance of development proposals.

Delivery of the objectives is measured through qualitative and quantitative standards and objectives, which are also used to guide development on the site.

The environmental envelope has been considered during the assessment of the KI proposal and is addressed in Assessment of Consistency at **Appendix H**.

# 6.0 Consultation

In accordance with the Environmental Assessment Requirements for this project issued by the Director-General consultation must be undertaken with relevant public authorities, community groups and affected landowners. This chapter details the consultation undertaken as part of the preparation of the proposal.

## 6.1 Public Authorities

The following public authorities were consulted as required by the Director-General on 27 May 2009, during an on-site meeting:

- Department of Environment and Climate Change (DECC);
- Department of Water and Energy (DWE);
- Department of State and Regional Development;
- Department of Planning; and
- Newcastle City Council.

During the meeting the public authorities were briefed on the project and given the opportunity to provide comment, raise issues and ask questions about the project. The session was used by the Department of Planning to formalise the key issues included in the DGRs which have been assessed in Section 7.

On 2 June 2009, the project team met with Newcastle City Council to provide Council with the opportunity to raise any key matters they wished to be addressed in the Project Application. The key issues raised by Council were:

- Containment cell
- Traffic management
- Community consultation

In the preparation of the specialist reports, the sub-consultants and particularly URS, have met with and consulted with the Roads and Traffic Authority and relevant service providers for energy, gas, water and telecommunications.

## 6.2 Neighbours, Landowners and Organisations

KI facilitated a community meeting attended by approximately 20 people on 24 June 2009. Attendees represented the following groups and organisations:

- Domaine Steel River (as the original Steel River Estate owner and developer);
- Steel River Community Association Representatives (as established under the Community Management Scheme);
- Property owners from within the Steel River Estate;
- Hunter Chamber of Commerce (CEO attended);
- Newcastle City Council ( meeting attended by Geoff Mansfield) ; and
- Local residents from Mayfield, Warrabrook and Stockton.

The main issues raised during that meeting were air, noise, traffic and visual impacts, and particularly how the development satisfies the environmental envelope established by the SIAS.

Section 7 of this EAR addresses each of the issues raised at the community meeting and also outlines the proposal's compliance with the SIAS.

# 7.0 Environmental Assessment

## 7.1 Director-General's Environmental Assessment Requirements

This chapter of the report provides an assessment of the environmental impacts of the project in accordance with the Director-General's Environmental Assessment Requirements (DGRs) – attached at **Appendix C.**

The key environmental impacts of the proposal relate to air quality and odour emissions, operational and construction traffic noise, visual impact, contamination, traffic generation, and hazards. These and additional matters set out in the DGRs are described and assessed in detail in this chapter. **Table 3** summarises the individual matters listed in the DGRs and identifies where each requirement is addressed in this report and the accompanying technical studies.

The EAR includes a draft Statement of Commitments (see **Chapter 8**) which sets out the undertakings made by KI to manage and minimise potential impacts arising from the development.

**Table 3** – Director General's Environmental Assessment Requirements

| Director-General's Requirements | Report Location |
|---|---|
| Executive Summary | Page 2 |
| Site Analysis | Section 2 |
| Description of the proposed development | Section 5 |
| Assessment of key issues | Section 7 |
| Assessment of potential impacts and Draft Statement of Commitments | Sections 7 & 8 |
| Architectural plans | Appendix A and B |
| Statement of Validity | Page 1 |
| Quantity Surveyor's Certificate | Appendix D |
| Conclusion and justification of suitability of the site for proposal | Section 9 |
| Key Issues | |
| Air | Section 7.3 and Appendix K |
| Site Contamination | Section 7.4 |
| Noise | Section 7.5 and Appendix L |
| Soil and Water | Section 7.6 |
| Visual | Section 7.7 |
| Greenhouse Gas | Section 7.8 and Appendix M |
| Transport and Accessibility | Section 7.9 and Appendix N |
| Hazards | Section 7.10 and Appendix I |
| Waste | Section 7.11 |
| Consultation | Section 6 |

## 7.2 Consistency with Relevant Strategic and Statutory Plans

The proposal is permissible with consent in the 4(c) Steel River Zone and meets the zone objectives of the Newcastle LEP 2003. It is also consistent with all relevant provisions of LEP.

**Table 4** provides a summary of consistency with key strategic plans relevant to the project, and a more detailed assessment of consistency with provisions and controls in relevant environmental planning instruments is provided in **Appendix H**.

**Table 4** – Summary of consistency with key strategic and statutory plans

| Instrument / Strategy | Comments |
|---|---|
| Lower Hunter Regional Strategy | The project is consistent with the relevant key directions in the strategy as it will contribute positively to achieving employment targets and retains the site for employment uses. |
| SEPP 33 | SEPP 33 does not apply to the subject development as established in Section 7.13 and Appendix I. |
| SEPP 55 | Section 7.5 address contamination in accordance with the requirements of SEPP 55. |
| SEPP (Infrastructure) | The proposed development will be referred to the RTA in accordance with the SEPP. |
| Newcastle LEP 2003 Part 2: Permitted or prohibited development | The proposed use is permissible within the 4(c) Steel River Zone. |
| SIAS | The environmental envelope has been considered during the assessment of the KI proposal and is addressed in Assessment of Consistency at Appendix H. |

## 7.3 Air Quality

An air quality assessment has been undertaken of the proposed glass wool manufacturing process by URS (see **Appendix K**). The findings in relation to emission levels and predicted ground level concentrations are summarised in this section of the EAR.

The *Protection of the Environment Operations (Clean Air) Regulation Amendment (Industrial and Commercial Activities and Plan) Regulation 2005* (Clean Air Regulation) sets out the maximum emission concentration limits relevant to the proposal, with Schedule 3 of the Regulation referring to standards for Glass Production.

The assessment comprised a comparison of in stack concentrations with the limits specified in the Clean Air Regulation 2005 and a comparison of ground level concentrations against criteria contained in the *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW* (DEC 2005). Where appropriate, the assessment of the cumulative impacts against regulatory criteria has used the aggregate of the worst case predicted plant impacts and peak background concentrations from DECC and other relevant monitoring stations.

The ground level concentrations were assessed using the Ausplume dispersion model, incorporating meteorological data from the Steel River weather station. The modelled species included oxides of nitrogen ($NO_2$), particulate matter ($PM_{10}$), carbon monoxide (CO), sulphur dioxide ($SO_2$), lead (Pb), and hydrogen fluoride (HF).

## 7.3.1 Assessment

The furnace stack emissions were compared against the regulatory limits specified in the Clean Air Regulation 2005, and found to be below the regulatory limits as shown on **Table 5**.

**Table 5** – Comparison of source emissions from a Furnace Stack to Concentrations for Glass Production (Clean Air Regulation 2005)

| Pollutant | Clean Air Regulation Limit | Estimated emission concentration | Conformance to Clean Air Regulation |
|---|---|---|---|
| Solid Particulates | 50 mg/m$^3$ | 20 mg/m$^3$ | Yes |
| $NO_2$ or NO or both as $NO_2$ equivalent | 700 mg/m$^3$ | 500 mg/m$^3$ | Yes |
| Type 1 and Type 2 substances | 1 mg/m$^3$ | 1 mg/m$^3$ | Yes |
| Cadmium (Cd) or mercury (Hg) individually | 0.2 mg/m$^3$ | 0.02 mg/m$^3$ Cd | Yes |
| Smoke | Ringelmann 1 or 20% opacity | < 20% opacity[A] | Yes |

Source: URS

[A] Opacity of the emissions has not been provided, however, emissions from the Dry EP emissions are expected to meet regulatory criteria.

The air dispersion modelling assessment, which was based on normal operation and emergency stack operation (see **Tables 6** and **7**), demonstrates that the predicted impacts on ground level concentrations of $NO_2$, CO, $SO_2$, Pb, $PM_{10}$ and HF when added to background concentrations, are within the DECC regulatory criteria.

**Table 6** – Proposed emission levels under normal operation compared against DECC criteria

| Pollutant | Averaging Time | Background (µg/m$^3$) | Cumulative (µg/m$^3$) | Criteria (µg/m$^3$) | Exceedance |
|---|---|---|---|---|---|
| NO2 | Annual | 18.5 | 19.69 | 62 | No |
| PM10 | 24 hours | Included | 49.7 | 50 | No |
| | Annual | Included | 20.5 | 30 | No |
| Pb | Annual | 0.09 | 0.0904 | 0.5 | No |
| SO2 | Annual | 6 | 7.10 | 60 | No |
| CO | 8 hours | 3000 | 3003 | 10,000 | No |
| HF | 24 hours | 0.32 | 0.50 | 1.5 | No |

Source: URS

**Table 7** – Proposed emission levels operating under emergency stack compared against DECC criteria

| Pollutant | Averaging Time | Background (µg/m$^3$) | Cumulative (µg/m$^3$) | Criteria (µg/m$^3$) | Exceedance |
|---|---|---|---|---|---|
| $NO_2$ | Annual | 18.5 | 19.69 | 62 | No |
| $PM_{10}$ | 24 hours | Included | 49.8 | 50 | No |
| | Annual | Included | 22.1 | 30 | No |
| Pb | Annual | 0.09 | 0.0901 | 0.5 | No |
| $SO_2$ | Annual | 6 | 7.08 | 60 | No |
| CO | 8 hours | 3000 | 3003 | 10,000 | No |
| HF | 24 hours | 0.32 | 0.50 | 1.5 | No |

Source: URS

Whilst the assessment against the Environmental Envelope Air Emission Allocation (see **Tables 8** and **9**) shows an exceedance of the guideline concentrations for $PM_{10}$ and Pb, the criteria would generally be only considered suitable for assessing medium size development in this area in the absence of a detailed assessment. However, theAir Quality Impact Assessment has undertaken a broader assessment, investigating adverse impacts at local sensitive receptors using regulatory (DECC) criteria and found the emissions to be below the criteria. It is therefore considered that the DECC assessment methods and criteria provide a more robust assessment and should be viewed in preference to the SIAS criteria.

**Table 8** – Predicted ground level concentrations under normal operation compared against SIAS criteria

| Pollutant | Averaging Time | Predicted Ground Level Concentration (µg/m³) | SIAS Guideline Concentration (µg/m³) | Exceedance |
|---|---|---|---|---|
| $NO_2$ | Annual | 2.3 | 19.688 | No |
| $PM_{10}$ | Annual | 8.4 | 3.6915 | Yes |
| Pb | 3 months | 2.2 | 0.2481 | Yes |
| $SO_2$ | Annual | 3.5 | 9.844 | No |

Source: URS

**Table 9** – Predicted ground level concentrations under emergency stack compared against SIAS criteria

| Pollutant | Averaging Time | Predicted Ground Level Concentration (µg/m³) | SIAS Guideline Concentration (µg/m3) | Exceedance |
|---|---|---|---|---|
| $NO_2$ | Annual | 19 | 19.688 | No |
| $PM_{10}$ | Annual | 30 | 3.6915 | Yes |
| Pb | 3 months | 1.6 | 0.2481 | Yes |
| $SO_2$ | Annual | 3.5 | 9.844 | No |

Source: URS

Dust and other particulate matter from construction and earthworks will be managed in accordance with usual industry practice and the proposed Construction and Environmental Management Plan.

Given the generally conservative nature of the air quality assessment, it is considered that the potential for adverse air quality impacts of the proposed KI plant will be low and within DECC regulatory limits.

## 7.3.2 Management

KI will prepare a Construction Environmental Management Plan (CEMP) prior to commencement of works which will incorporate the following environmental safeguards into the during the construction processes to address air monitoring and management:

- Use of water sprays during dry, windy conditions, to dampen soils prior to excavation and handling;
- Spraying, watering and covering of stockpiles as relevant;
- Loading of construction vehicles up to (not over) the side and tailboards. All loads will be covered, and the undercarriages and wheels of all trucks will be removed prior to exiting the site;

- Stabilisation of long-term stockpiles using fast-seeding grass or synthetic cover spray;
- Sealing of major access roads into the site, or alternatively controlled speeds on unsealed roads to minimise dust; and
- Standard dust control mitigation measures ordinarily carried out during construction works.

***All the above matters are incorporated in the draft Statement of Commitments.***

## 7.4 Odour

This section summarises the assessment of the odour impact of the proposed development prepared by URS as part of the Air Quality Assessment and located at **Appendix K.**

Odour is not generally considered an air quality issue at other existing KI plants around the world. Odour is sometimes generated from the ammonia used during the binding process which is emitted from the downstream stack..

Boundary odour monitoring at four locations performed at the Krupka plant (located in the Czech Republic) demonstrated that odour concentrations were below the detection limit. This suggests that fugitive odour emissions (from buildings) will not result in any adverse impacts and does not require assessment, however odour emissions from the stack (using the current binder) has been assessed.

### 7.4.1 Assessment

Odour becomes detectable at 1 odour unit concentration – referred to as the Threshold of Detection. In accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales, the Impact Assessment Criteria for individual odorous air pollutants in relation to the surrounding land uses is 4 milligrams per cubic metre with an averaging period of 1 hour.

The highest concentration at sensitive receptors of odour would be 2.94 $OU/m^3$ which is below the $4OU/m^3$ odour threshold.

### 7.4.2 Management

As the predicted odour output is below the maximum criteria set out in the Approved Methods the odour impact is considered low and within regulatory criteria. Accordingly, there are no specific management measures that need to be implemented to manage odour impacts.

## 7.5 Site Contamination

Under SEPP 55, consideration as to whether land is contaminated is required prior to development proceeding. Accordingly, an investigation into potential on-site contamination has been undertaken by the proponent to establish the suitability of the proposed use of the site.

The sites contamination profile, the adopted RAP and consequential requirements have been outlined in Section 2.2. Subsequently, KI has commissioned RCA Australia to undertake a review of the available reports to document any changes undertaken on the site which could have the potential to influence the findings of the original assessments, and specifically any impacts arising out of the proposal to relocate the tertiary containment area. The findings of that review are summarised below.

## 7.5.1 Assessment

### Primary Containment Area

The proposed location of the plant partly coincides with the existing primary containment area, and accordingly construction of the plant may encounter arisings which are deemed contaminated. The proposed concrete slabs, sealed hardstands and the building apron(s) will seal off the site, thereby providing an impenetrable barrier to the primary containment area. This approach is consistent with the Construction Guidelines which acknowledge that capping of the site with impervious materials such as bitumen, concrete and buildings, can achieve the same or a better result than the current 2m (minimum) capping present on the site. The sealing of the site will also provide an effective barrier between human contact and any potentially contaminated materials located on the site.

Piling is required through the capping layer and primary containment area. RCA Australia has confirmed steel driven piles can be used to construct the plant, provided the recommendations outlined in its report at Section 2.2 are adopted.

The permeability of the contact interface between the pile and ground (alluvium and filling) would be similar to that of the existing material on the site found at depth and accordingly no specific measures are required to manage leachate migration.

### Tertiary Containment Cell

As outlined in Section 2.2, the RAP/EIS has approved the construction of a yet-to-be constructed tertiary containment area. In July 2008, the Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site, was prepared by RCA Australia, which nominated the total volume of tertiary cell to be 10,000m$^3$, and also recognised that additional volume could be generated if needed through further excavation of clean materials below the cell.

Whilst the historic contamination approvals and activities at the site have been comprehensively investigated, the relocation of the tertiary containment cell has not been entertained previously, and as such RCA Australia has recently considered the impacts of the proposed relocation (**Appendix I**). RCA has also considered whether the new location raises any new or previously unknown contamination issues.

In summary, RCA Australia has concluded the KI proposal to construct the cell in the revised location in accordance with the approved design is generally suitable and could be approved. It has been noted that the new location is in close proximity to a residual clay profile which grades steeply away to the north along the site's southern boundary. RCA Australia has advised that the surface infiltration to subsurface soil/fill profile is likely to be preferentially low due to clay's naturally low permeability, potentially capturing any surface water infiltration.

To ensure a physical barrier is maintained between the contaminated materials and occupiers of the site, KI proposes to modify the approved *Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site* to incorporate RCA Australia's recommendations as well as incorporate the alternative control measures outlined in Section 2.3 of RCA Australia's report (**Appendix I**) in recognition of the KI plant.

The proposed construction and design methodology is accordingly consistent with the approved RAP and Construction Guidelines. To this end, a revised Remedial Action Plan is not warranted.

### Declared Remediation Site

The proposal does not encroach on any portion of the declared remediation site. BHP Billiton is working with DECC to develop and implement a remediation plan in response to the declaration.

## 7.5.2 Management

To ensure that the redevelopment of the site is managed in a way to prevent any contamination in the future, KI will prepare a construction management plan that:

- Adopts the measures outlined in the Steel River Project Construction Guidelines; and
- Requires construction activities to be undertaken in accordance with the Managing Stormwater Volume 1 Soils and Construction (Landcom, 2004).

### Primary Containment Area

The following measures will be addressed in the design and construction of the facilities:

- Development will be generally in accordance with the Steel River Construction Guidelines, *Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site,* and alternative control measures recommended by RCA Australia at Section 2.3 of its report (**Appendix I**);
- all relevant site construction management guidelines will be followed to ensure the protection of both site workers and the integrity of the remediation strategy for the site;
- the pile system will be designed to ensure infiltration of surface waters into the primary containment area does not occur;
- contingencies will be made for pile protection or corrosion loss given the ground may be chemically aggressive to buried structures.

### Tertiary Containment Cell

Following approval of the tertiary containment cell KI will incorporate the recommended alternative control measures to suit the specific site constraints of the new location, namely:

- construction of a diversion drain around the foot of the residual clay embankment to divert any surface water that infiltrates the soil profile;
- provision of an additional layer of coarse drainage gravel overlain by 'bidim' (a geotextile) to allow dissipation and lateral groundwater discharge to the surrounding strata rather than into the lower levels of the containment cell;
- fill and residual clay should be situated beneath the proposed tertiary containment cell base to avoid localised groundwater flow;
- incorporation of the alternative control measures outlined in Section 2.3 of RCA Australia's report (**Appendix I**);
- verification of the soil profiles, groundwater levels and the likely extent of contaminated material at the new location during the construction works.

***All the above matters are incorporated in the draft Statement of Commitments.***

## 7.6 Noise and Vibration

In order to ensure that no negative acoustic or vibration impacts arise as a result of the proposed development, URS prepared an Noise Impact Assessment (refer **Appendix L**). The assessment reviewed the following matters in accordance with relevant NSW regulatory requirements including, DECC Industrial Noise Policy, on nearby residential land and other noise sensitive receivers:

- Impacts from the operation of the facility;
- Impacts from off-site traffic; and
- Impacts from construction activities.

For the purposes of the assessment the nearest potentially sensitive noise and background noise monitoring receptors were identified (see **Figure 21** and **Table 10**).


Source: URS

**Figure 21** – Surrounding sensitive noise receivers (Source: URS)

**Table 10** – Noise Receptors

| Receptor | Address | Distance from Centre of Site (m) | Land use |
|---|---|---|---|
| A | Decora Crescent, Warabrook | 170 | 2(a) Residential Zone |
| B | O'Learia Crescent Warabrook | 250 | 2(a) Residential Zone |
| C | Stevenson Avenue, Mayfield West | 520 | 2(a) Residential Zone |
| D | Mabellae Place, Warabrook | 430 | 2(a) Residential Zone |
| E | Mangrove Road, Sandgate | 320 | 4(a) Urban Services Zone |
| F | Pacific Highway | 80 | 4(a) Urban Services Zone |
| G | Pacific Highway | 130 | 4(c) Steel River Zone |
| H | Stevenson Park | 850 | 6(a) Open Space and Recreation Zone |

Source: URS

## 7.6.1 Assessment

### Operational Noise

Calculations of the total noise emissions during typical operations were conducted near the nearest noise sensitive receivers using neutral and prevailing meteorological conditions against DECC Noise Limits and the SIAS Noise Limits. **Table 11** presents the assessment of the worst case predicted night-time noise levels.

**Table 11** – Predicted Night-time Operational Noise Levels against DECC and SIAS Noise Limits

| Receptor | Predicted Noise Level (dB) | DECC Noise Limits | | SIAS Noise Limits | |
|---|---|---|---|---|---|
| | | Criterion (dB) | Exceedance | Criterion (dB) | Exceedance |
| A | 47 | 45 | Yes (2dB) | 30 | Yes (17dB) |
| B | 36 | 45 | No | 30 | Yes (6dB) |
| C | 34 | 40 | No | 30 | Yes (4dB) |
| D | 39 | 40 | No | 30 | Yes (9dB) |
| E | 40 | 45 | No | 30 | Yes (10dB) |
| F | 54 | 65 | No | 40 | Yes (14dB) |
| G | 50 | 70 | No | 65 | No |
| H | 37 | 55 | No | 40 | No |

Source: URS

The results presented in **Table 11** show that the noise levels generated by the proposed operation would generally be within the established DECC noise limits at all receptor locations under all conditions except for at Receptor A.

A marginal exceedance of the noise limit during the night-time period is predicted to occur at Receptor A due to its proximity to the site. However, the predicted exceedance of up to 2dB is not considered significant and would not be noticeable as the existing road traffic noise level during the night-time period at this location is 54dB.

The results shown in **Table 11** predict an exceedance of the SIAS environmental envelope noise limits during the night-time are predicted to occur at all the assessed residential receptors and the commercial receptor by 4dB to 17dB.

It should be noted that the SIAS noise limits were established using LA10 descriptor in accordance with DECC *Environmental Noise Control Manual* (ENCM). It was based on the background noise levels measured at selected nearby residential locations to the Steel River site during the night-time period in 1997. The ENCM was later superceded by the *Industrial Noise Policy* which was published by NSW EPA in 1999 for the purpose of assessment of industrial noise.

The background noise survey conducted in May 2009 provided noise levels of 40 – 51 dB(A) and 35 – 41 dB(A) during the daytime and night-time period, respectively. The survey results show that the background noise in the area has not been significantly increased since 1997, therefore the measured background noise levels used to establish the project-specific noise levels for this project are considered valid and suitable.

With the implementation of the noise mitigation measures provided in Section 7.6.2 operational noise in all scenarios are expected to comply with the Industrial Noise Policy noise criteria and have no adverse acoustic impacts on the surrounding sensitive noise receivers.

### Off-Site Traffic Noise

The predicted increase in road traffic noise levels during construction from the Pacific Highway is negligible (less than 0.2 dB above the existing levels) at the most potentially affected dwellings.

The traffic volumes generated by the proposed site operation would not increase the traffic noise levels greater than 0.3 dB above the existing levels and therefore satisfy the off-site traffic noise criteria.

### Construction Noise

The noise levels generated by the expected construction activities have been predicted at each receptor location. The predicted construction noise levels show that no exceedance of the noise limit is expected at any residential locations. A marginal exceedance of 2dB is predicted at the nearest commercial premises (Receptor F) which is not considered significant and would only occur for a limited duration during the earthworks.

Physical construction noise mitigation measures are not considered necessary. However, adoption of noise management strategies implementing good industry practice is recommended to minimise noise emissions from the proposed construction works.

### Construction Vibration

It is anticipated that the primary source of ground vibration generated during construction will be associated with the steel and concrete piling operations. The minimum recommended buffer distance for piling operations is 80-100m for human disturbance and 20-40m for structural damage.

As the nearest dwelling is located approximately 170 metres from the site the expected ground vibration levels from the proposed construction activities would be significantly lower than the vibration limits for both human disturbance and structural damage.

The nearest commercial premises is located within 100 metres from the site, the ground-borne vibration may occasionally be slightly perceptible. However, cosmetic damage due to the proposed piling operation is not expected to occur. Vibration monitoring would be conducted during the piling operations should any piling be any closer to this receptor.

Based on typical vibration levels and 'buffer distances', no mitigation measures are required to reduce vibration levels.

### 7.6.2 Management

KI will implement the following measures to manage and mitigate any acoustic impacts to meet the requirements of the NSW Government's *Industrial Noise Policy*:

#### Operational Noise

In order to mitigate the minor exceedance of the night-time noise limit at Receptor A and meet the DECC Noise Limits, one of the following wall treatments should be applied to the south western and south eastern façades of the High Bay Low Part building:

- use 0.8mm thick Colorbond steel cladding walls instead of the 0.48mm cladding used in the rest of the plant; or
- apply internal glass wool insulation lining to the 0.48mm Colorbond steel cladding wall with a minimum thickness of 50mm and a density of 14 kg/m$^3$.

#### Construction Noise and Vibration

To manage construction vibration impacts a Construction Noise and Vibration Management Plan will be prepared in accordance with the DECC *Environmental Management – Noise Assessing Vibration: A Technical Guideline.*

***All the above matters are incorporated in the draft Statement of Commitments.***

## 7.7 Soils

### 7.7.1 Assessment

The four main geotechnical units identified in the region are upper fill materials, estuarine sediments, alluvial / residual clays and bedrock. The thickness of each unit varies across the site with the bedrock level gradually getting deeper towards the eastern part of the site.

During the SIAS process, chemical testing of soil samples taken from boreholes located across the site for Acid Sulphate Soils, sulphate and chloride content, pH, electrical conductivity and sodicity was undertaken by Australian Environmental Laboratories. The results of the testing indicate generally non-agressive conditions and as such the soil conditions are unlikely to be detrimental to the performance of structures on the site, and specifically steel and concrete (eg: foundations, slabs and piles).

#### Acid sulphate soils

The site is mapped as a Class 2 probability of Acid Sulphate Soils (ASS) and accordingly requires the preparation of an Acid Sulfate Soils Management Plan to be prepared in accordance with the Acid Sulfate Soils Manual.

Excavation works to be undertaken as part of the development are expected to be undertaken to a depth of 5m, which is above the water table. There is therefore no expectation that the development will lower groundwater levels or generate leachate. Further, as the site is reclaimed land that has been remediated, it is unlikely that ASS are present on the site. The acid sulphate results obtained during the soils testing described above for the SIAS indicate that the generation of acid due to oxidation of the existing capping would be negligible. Nonetheless, KI has committed to the preparation of an ASS Management Plan.

### 7.7.2 Management

#### Acid sulphate soils

KI will prepare an Acid Sulphate Soils Management Plan in accordance with the NSW Government's Acid Sulphate Soil Manual which will include:

- A description of mitigation strategies for the treatment of soil, including the application of lime to disturbed soils.
- A monitoring program – outlining the parameters to be monitored, the number of locations, monitoring frequency, and analyses to be conducted.
- Contingency procedures for remedial and restoration action in the case of unexpected events or the failure of management procedures.

***All the above matters are incorporated in the draft Statement of Commitments.***

## 7.8 Water Cycle Management

### 7.8.1 Assessment

#### Flooding

Newcastle City Council has advised that the site is above both the 1 in 100 year ARI and probable maximum flood (PMF) levels. There is a freeboard above the PMF of some 3.5m at the lowest part of the site and some 5.6m to the floor level of the buildings.

These levels of freeboard will be adequate to account for consideration of climate change and projected sea level rise.

#### Stormwater Quantity

The current maximum receiving volume of the existing water quality ponds on the site is 1,500m$^3$ (WQP1) and 16,000m$^3$ (WQP2). The proposed development will increase stormwater runoff due to an increase in impervious area across the site resulting in relatively quicker and higher peak discharges. Accordingly, the stormwater system has been designed with a capacity to accommodate the design flow for a 1:20 year ARI storm event with exceedances directed via overland flow to the designated water quality ponds.

The hydrological assessment predicts that the total discharge after the KI development for a 1 in 100 year ARI storm event would exceed the maximum capacity of WQP1 and WQP2. However, these ponds are sized and intended to act as water quality ponds rather than flood detention basins and in such an event they will overflow to the river.

Additional on-site detention, other than that achieved by the proposed rainwater tanks, has not been considered for this site due to the existing contamination and capping strategy.

Drainage from the embankment to the south of the KI Site will be managed through un-piped drainage. A suitably sized cut-off drain would be constructed to divert flows up to and including the 1 in 100 year ARI storm flow east and west of the site. These overland flows would be directed to the existing water quality ponds adjoining the river utilising existing open channels and / or the existing road drainage system.

### Stormwater Quality

As the Site is located adjacent to the Hunter River there is potential for sediment laden runoff to reach the river, therefore all runoff will be diverted through the existing ponds to allow sedimentation to occur. The depth of sediment in the pond will be monitored and should a major storm event fill the ponds, they will be cleaned and the excess material appropriately disposed of off-site.

All stormwater from the developed site will be directed through a gross pollutant trap (GPT) and oil separator prior to entering the water quality ponds. Any rainfall outside the area developed for the KI plant but within the broader KI site will retain the existing run off paths, with any silts captured by grasses and other low vegetation of the site. It will then discharge to the road drainage system where it will pass through existing GPTs. As required by Newcastle City Council, all property drainage pits will incorporate water quality measures, as appropriate to their location.

Areas where there may be a potential for spill of fuels or other chemicals will be bunded and drained separately from the remaining structures. Runoff from these sites will be stored in a suitably sized sump and residue runoff removed from the site and treated as hazardous waste.

Construction Erosion and Sedimentation

The proposed construction works have the potential to result in erosion and sedimentation occurring as rainfall on disturbed sites may cause soil erosion and runoff may contain elevated levels of sediments which could then enter the natural drainage system. However, with appropriate mitigation measures recommended in Section 7.8.2 below there will be no adverse quality impacts on the stormwater system.

## 7.8.2 Management

The proponent should implement the following measures to manage any impacts associated with the water cycle on site:

### Operational

- Water quality devices should be incorporated into the drainage system once the development becomes operational.
- Rainwater harvesting should be used for use in toilets.
- Spill control measures should be adopted around all potential spill sites including specific sump and clean out measures.

### Construction

- A Construction Environmental Management Plan should be prepared to ensure all construction works are undertaken in a manner to minimise the potential for soil erosion and sedimentation. As a minimum, the measures outlined in the *Managing Urban Stormwater – Vol 1 Soils and Construction* should be implemented.
- Construction should be planned to minimise the time that disturbed land is exposed and appropriate erosion prevention and sedimentation devices will be installed and maintained where areas are disturbed.
- Sediment basins should not be used as their construction may expose the underlying material to additional infiltration of water, possibly mobilising the contaminated material capped on the site.

- Construction should be undertaken in accordance with the conceptual erosion and sedimentation plan (see Drawing number H59657 of **Appendix B**). It includes measures such as sediment fence (straw bale filter), temporary earth bank and earth bank stabilisation. These devices should remain in place until the surface is restored.
- Staff facilities should be installed and maintained so that pollutants, including wash water, are not conveyed from the Site in stormwater. All wastewater during the construction period would be disposed of either via a connection to the existing Hunter Water sewerage system and / or offsite to a licensed facility.
- Spills should be minimised through the application of protocols for the handling of hazardous materials. If any spill occurs, it is likely to be of a small volume and contaminate only a small area. All possible pollutant materials should be stored clear of site boundaries and stormwater drainage lines and in a designated covered area. Containment bunds would be constructed with provision for collection of any spilt material.

***The above matters are incorporated into the draft Statement of Commitments.***

## 7.9 Visual Impact

Current views of the site can be viewed from:

- from Channel Road and Riverside Drive looking west into the site (**Figure 6**);
- looking south from Kooragang Island: and
- looking north from the Pacific Highway and elevated industrial properties along the Pacific Highway towards the site (**Figure 22**).

**Figure 22** – Looking down onto the site from elevated industrial properties on Industrial Drive

The site sits below a ridgeline (Pacific Highway) and residential properties to the south. There are therefore no direct views to the site from residential properties at Mayfield West. As discussed below, the new building is not expected be visible from the residences at Mayfied West, however the main stack is likely to be visible intermittently above the ridge line.

The visual impact analysis undertaken for the site and its surrounds included an on-site inspection and photographic desk top analysis. The opportunities and constraints of the site and its surrounds are as follows:

- Adjoining Steel River Estate development and surrounding development including the industrial properties to the south and north (on the other side of the South Arm of the Hunter River) ;
- The embankment that forms the site's southern boundary and the depressed nature of the site;
- Local access roads such as Channel Road and Riverside Drive; and
- Hunter River foreshore.

## 7.9.1 Assessment

### Distant and Local Views

There is not currently any formal public space from which the proposed development can be seen. Views of the site from the only elevated overview location being the southern ridgeline (Pacific Highway) are virtually non-existent as shown in **Figures 23** and **24**. The ridgeline and surrounding topography screen the visual catchment for residential properties to the south at Mayfied West.

**Figure 23** – View from Industrial Drive looking east – the site is behind and below the tree line

**Figure 24** – Both sides of the Pacific Highway are well vegetated screening views to the site (left of photo) and views from residential properties (right of photo)

The industrial properties to the south on the ridgeline have direct views of the site, however the change in levels from these properties to the KI plant means the KI plant, with the exception of the main stack, is expected to be below eye

level. The plant building will not be blocking any distant views these industrial properties may currently enjoy. The main stack is likely to be visible from certain properties, however it is not expected to be a dominant visual feature given its context and surrounding features such as the ridgeline, overhead powerlines, and the industrial landscape of the Steel River Estates surrounds.

Local views of the site are limited to Channel and Riverside Roads when approaching from the west (**Figure 6**), as well as views south from Koorangang Island. It should be noted however that the latter view is only accessible from within the general and port related industries that occupy the Island including Sims Metal, BOC Gases, John Holland, and Specialised Waste Services and is generally not publicly accessible.

Land east of the site (ie: between Frost Drive and the site) whilst currently undeveloped, is also earmarked for future industrial uses as part of the Steel River Estate. This area will also be developed for industrial warehouse purposes with buildings of similar bulk and scale to those already constructed within the Estate. Future views will therefore present as an industrial visual catchment, with warehouse and similar industrial development blocking views of the proposed plant.

The localised Channel and Riverside Roads views are likely to have the most significant visual impact, particularly upon approach to the site. These impacts will only be short term until the Steel River Estate is fully developed, with warehouse buildings constructed on surrounding properties assisting to screen the visual impacts of this development from the east.

## Design

The project involves the construction of a large warehouse building which by its very nature if not designed adequately could impact on the visual amenity of the area. To that end, the proposed building will be no higher than 33 metres (with the exception of the Wet EP stack). The Pacific Highway ridgeline, will screen the majority of the plant. Any extrusions above the ridge line would read as part of the industrial properties already fronting Industrial Drive, rather than a dominant isolated built form.

The proposed height is not inconsistent with the SIAS height controls which encourage buildings fronting main roads to be greater than 6.5 m. We note the SIAS also encourages a maximum height of up to 2 storeys or 12m above finished ground level, and further note that the gatehouse, being the closest building to the street is consistent with the SIAS at approximately 4m in height. The MPS being the closest extremity of the plant is a maximum of 10m, which is also entirely consistent with the SIAS. The site's western extremity is advantageous in that the plant provides an appropriate juncture to the Steel River Estate.

The building's design exhibits a functional response to the production process and will utilise quality materials and finishes to establish a aesthetically pleasing frontage to Channel Road. Pre-cast concrete wall panels, colorbond metal roof and wall cladding, pre-finished metal wall cladding, will be off-set to provide visual relief. Whilst the proposed external material colours will be determined following detailed design, finishes and materials will be chosen to minimise the perceived scale and mass of the warehouse and prevent a monotonous building form. Reflectivity will be managed through the use of external materials that do not exceed 20%.

While large, the site is zoned for industrial uses, is located within the Steel River Estate and is surrounded by existing and proposed industrial developments to the north, east, west and immediate south of the site. It is therefore considered that the proposed development is consistent with the desired future character of the industrial area as promoted by the applicable planning controls.

### Setbacks

Building setbacks from Channel Road and Pambalong Drive (60 metre) seek to reduce the impact of the built form on public domain. The building has been located in the southern portion of the site, providing a generous setback from the Hunter River. Furthermore, the tallest elements of the plant are concentrated towards the centre of the site and are setback approximately 220m from the road.

### Landscaping

Visual relief will be further provided through landscaping within the proposed setbacks.

The visual impact of the development is softened by a landscape zone of up to 10 metres wide. Notably, the existing trees are proposed to be retained and will screen views to the site from Industrial Drive.

### Lighting Impacts

The Director General's Environmental Assessment Requirements (DGRs) issued by the DG on 26 November 2007 require the Environmental Assessment to address the visual impacts of the proposal, including the design features, landscaping, and measures to minimise the lighting and signage impacts of the project . The DGRs further require consideration of the "*plans, guidelines, statutory*" and identifies the *Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282)* as a specific matter relevant to the proposal's visual impacts.

Provision will be made for external lighting during the detailed design phase and will comply with the relevant requirements of *Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282).* No adverse impacts are anticipated upon the use and enjoyment of adjoining premises and surrounding areas, particularly residential areas south of the Pacific Highway.

The lighting shall be designed to ensure that light is wholly contained within the property boundaries.

### Signage

The single signage structure is proposed at the gatehouse to provide a quality entrance statement to the site. KI is committed to ensuring the proposed signage is:

- restricted generally to one sign identifying KI and/or products manufactured or produced on the site; and
- contained wholly within the site;
- constructed of high quality, durable materials; and
- considered in conjunction with the design and construction of the site's entrance.

## 7.9.2 Management

Overall, it is considered that the proposal will not have a negative visual impact. The plant's bulk, scale and typology is in keeping with its industrial context. Proposed landscaping and external façade treatments will have an overall positive impact on the locality.

It is not considered necessary to mitigate any visual impacts. However, the proponent will mitigate any potential lighting impacts by complying with *Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282*.

# 7.10 Greenhouse Gases and Energy Efficiency

In accordance with the DGRs a greenhouse gas and energy assessment was undertaken by URS (see **Appendix M**).

## 7.10.1 Greenhouse

The *National Greenhouse and Energy Reporting Act 2007* (NGER Act), administrated by the Commonwealth Department of Climate Change (DCC), establishes a structure for corporations to report greenhouse gas emissions and energy consumption and production from 1 July 2008.

Under the NGER Act, corporations are required to apply for registration with the Greenhouse and Energy Data Officer if their associated greenhouse gas emissions or energy consumption levels are above defined thresholds for a financial reporting year. There are two threshold levels at which corporations are required to report - facility thresholds and corporate group thresholds. The facility thresholds apply to an individual operation while corporate thresholds are applicable to controlling corporations. The facility threshold of 25 kilo tonnes of $CO_2$-e per year applies to this KI proposal.

The DGRs require an assessment of the proposal's Scope 1 and Scope 2 greenhouse gas (GHG) emissions, defined as follows:

- Scope 1 emissions result from activities under a company's control or from sources which they own (eg on-site generation of electricity, on-site transportation emissions); and
- Scope 2 emissions relate to the generation of purchased electricity consumed in its owned or controlled equipment or operations.

## 7.10.2 Assessment

Scope 1 emissions associated with the project are attributable to:

- combustion of natural gas within the furnace and curing oven; and
- combustion of carbon-containing feedstock for glass manufacturing, specifically soda ash, limestone and dolomite.

Based on an average load, the proposal's consumption of natural gas was estimated at 61GJ/hour; whilst the consumption of feedstock was estimated at 27.1 tonnes/day of soda ash, 5.5 tonnes/day of limestone, and 18 tonnes/day of dolomite. The annual GHG emissions from Scope 1 emissions were estimated at 34,487 tonnes of $CO_2$-e.

The Scope 2 emissions from annual electricity consumption were estimated at 48,728 tonnes of $CO_2$-e per annum.

The combined Scope 1 and Scope 2 emissions total 83 kilo tonnes of $CO_2$-e which exceeds the above facility threshold for GHG emissions of 25 kilo tonnes. Accordingly, KI will be required to register and report GHG emissions and energy data from the project to the Greenhouse and Energy Data Officer in accordance with the NGER Act.

Notwithstanding the predicted emissions, KI's end product – glass wool insulation – is a key factor in reducing energy use in buildings and accordingly is an offset for the developments expected Scope 1 and 2 greenhouse gas emissions. This is supported by URS's report which states that average glass wool insulation saves 12 times as much energy annually, as is consumed to produce the insulation (refer to Section 5.1 of URS's Greenhouse Gas Assessment at **Appendix M**). Recent modelling undertaken by the Insulation Council of Australia and New Zealand, predicts up to a 70% energy saving in dwellings that have insulation (compared to those that don't) (refer to ICANZ Information Brochure at **Appendix M**).

Whilst the actual reduction in energy consumption is dependant on several factors, including house construction components, climatic zones, and use of heating and cooling, emerging studies indicate the typical energy reductions are much greater than the use of energy to produce insulation, resulting in a net reduction in energy use over the life of the project. The recovery period for energy use and greenhouse gas emissions is extremely fast, typically being recouping within 4 – 6 weeks (refer URS report at **Appendix M**).

KI has advised that the Steel River Plant is expected at maximum capacity, to produce up to 60,000 tonnes of insulation per annum. The annual output equates to 28,000,000m$^2$ of insulation/year. Assuming an average dwelling size of 230m$^2$ (based on 100m$^2$ average unit size and maximum dwelling sizes cited in the NSW Housing Code), KI's annual output can insulate over 120,000 homes per year. Given the savings outlined above, the KI product will result in a considerable net cumulative energy saving which counteracts the predicted $CO_2$-e emissions.

### 7.10.3 Management

To decrease energy consumption, KI has implemented the following techniques:

- use of Natural gas in place of more emission-intensive fossil fuels;
- furnace use oxy/gas burner with electrodes boosting;
- low NOx burner for all of burners on site; and
- the use of cullet which decreases the required melting temperature from 1500°c to 1200°c.

***All of the above matters are included in the draft Statement of Commitments.***

## 7.11 Transport and Accessibility

In accordance with the DGRs, KI commissioned URS to assess the traffic and parking impacts of the development (see **Appendix N**). The results are summarised below.

### 7.11.1 Assessment

#### Traffic Generation

The construction phase of the Project is likely to generate up to 209 light vehicle movements between 0630 and 0700 hours, which is outside the normal AM peak hour, and nine heavy vehicle movements within the AM peak hour. This equates to a daily volume of 418 light vehicle movements and 70 heavy vehicle movements.

Once operational the proposed development is expected to generate up to 226 light vehicle movements and 108 heavy vehicle movements a day. This translates to up to 68 light vehicles per hour and 14 heavy vehicles per hours within peak periods.

Based on the expected movements the development's impact on the level of service (LOS) on the key roads and intersections is summarised in **Table 12** below. The results of the intersection and road capacity analysis demonstrate that the post development LOS, are acceptable, and that the proposed development will have no adverse traffic impacts during construction or once operational.

**Table 12** – Pre, construction and operational LOS (AM Peak)

| Road / Intersection | Pre-development LOS | Construction Phase LOS | Operational Phase LOS |
|---|---|---|---|
| Channel Road | A (60 vehicles) | A (69 vehicles) | A (142 vehicles) |
| Steel River Boulevard | A (240 vehicles) | A (249 vehicles) | A (322 vehicles) |
| Steel River Boulevard / Channel Road | A (3.7 second average delay) | A (4.1 second average delay) | A (5.3 second average delay) |
| Steel River Boulevard / Industrial Drive | B (21.8 second average delay) | B (21.8 second average delay) | B (25.0 second average delay) |
| Industrial Drive / Maitland Road | B (26.6 second average delay) | B (24.5 second average delay) | B (25.4 second average delay) |

As detailed in Chapter 2 of the Transport and Accessibility Assessment, a number of traffic scenarios have been modelled for the varying development schemes proposed for the site since the SIAS was introduced. A comparison between the traffic impacts of the proposed development with the intersection LOS of the previous scenarios modelled (see **Table 13**) further demonstrates that the proposed development will result in an approved traffic scenario to that previously approved for the site.

**Table 13** – Comparison of Intersection LOS (AM Peak Operational Phase)

| Scenario | Steel River Boulevard / Industrial Drive (LOS) | Industrial Drive / Maitland Road (LOS) | DA Approved Access Road / Pacific Highway (LOS) |
|---|---|---|---|
| Existing | B | B | N/A |
| KI Operational | B | B | N/A |
| Stage 8A, 8B and 8C | B | D | A |
| Stage 8A, 8B and 8C | B | B | A |
| Stage 8, 9 (formerly 8B) and 10 (formerly 8C) | C | C | D |

[1] Colston Budd and Twiney (June 1997)
[2] Varga Traffic Planning (July 2006)
[3] Mark Waugh (September 2007)

## Road Upgrade Works

The SIAS for the Steel River Industrial Estate envisaged an access road to be constructed from the Pacific Highway, adjacent to the Kooragang Goods Rail Line. Under the SIAS the KI site was envisaged to contain 32 lots and generate 690 vehicle trips per hour during AM peak hour. As the proposed development is estimated to only generate 68 light vehicles and 14 heavy vehicles during the AM peak hour and will therefore generate a significantly lower number of vehicle trips and still provide adequate LOS at key intersections (see **Table 11**), the second access road from the Pacific Highway is not considered necessary. An emergency exit (gravel driveway) will be provided for KI staff and emergency vehicles to the Pacific Highway on the western boundary of the site in the event the main access is blocked during an emergency event.

## Parking

Under SIAS, the car parking rate for industrial development is one space for every 100m$^2$ GFA or one space for every two employees, which ever is greater. Based on the parking allocation required with the total building area equating to approximately 22,000m$^2$ the maximum total number of parking spaces required is 223. However, the maximum number of staff on site at a given time would be 84, which is considerably lower than the 223 required by the Steel River Strategic Impact Assessment Study. For this reason, parking provision for the site has been reduced to:

- 90 staff parking spaces;
- 32 visitor parking spaces (including four disabled spaces); and
- 17 truck parking spaces (for B-doubles).

Furthermore, the reduced number of spaces demonstrates the proponents minimalist approach to car parking provision to encourage greater use of public transport together with increased walking and cycling.

In light of the maximum anticipated demand for car parking, the number of parking spaces to be provided on site is considered appropriate.

## Access and Internal Circulation

The detailed design of the access arrangements to the site was carefully considered to ensure pedestrian and vehicular safety to and within the KI site. Access to the site for shift personnel and administration staff is proposed via Channel Road while access for heavy vehicles (required for the transportation of raw materials and product distribution) would be via Pambalong Drive. By providing separate access points the design will reduce potential vehicular conflicts. Additionally, pedestrian movements from the staff and visitor parking area has been segregated from heavy vehicle movements within the site therefore minimising the risk of pedestrian and heavy vehicular conflicts.

Access and circulation arrangements for heavy vehicles within the site have been designed in accordance with B-double turning circles, which would accommodate the largest vehicle expected to access the site. There will be sufficient turning provisions for B-doubles within the internal access roads, which allows for trucks to enter the site in the forward direction, turn fully within the site and exit again in the forward direction.

## Cycleway Access and Upgrades

Existing cycle lanes within the site consist of marked cycleways within the wide shoulders on both sides of the roads, including Channel Road, Riverside Drive and Steel River Boulevard. Any cycling trips to and from the Project site would use the existing on-road cycleways along Channel Road, Riverside Drive and Steel River Boulevard.

Previous Development Applications for the Steel River Estate comprised a cycleway connecting the on-road cycle lanes on Industrial Drive, Tourle Street and sections of the Pacific Highway via the three main accesses to the site, namely Steel River Boulevard, the access onto Tourle Street and the access onto the Pacific Highway.

KI does not propose to construct the access from Pacific Highway and therefore would not comply with the cycleway provisions of previous Development Applications for the Steel River Estate. An alternative cycleway "loop" has been identified to provide access to the Steel River foreshore, which connects the existing on-road cycleway along Riverside Drive with the foreshore via links adjacent to Pond 2 and adjacent to the existing water quality pond at the north-eastern end of Steel River Boulevard as shown on **Figure 25**. The development of this cycleway would be the responsibility of the Steel River Estate developer, Domaine Steel River.


**Figure 25** – Future Cycleway Route

## 7.11.2 Management

To minimise the traffic generated by the project KI will develop the following plans to be lodged with the Preferred Project Report:

- A detailed Transport Plan (including obtaining approvals) for the transportation of facility components and equipment.
- A Traffic Management Plan for the operational phase, detailing traffic management measures for:
  - safety for all modes of transport;
  - potential hazards;
  - maintenance of road network; and
  - cumulative impacts of traffic movements.

In addition to the development of the plans listed above KI will:

- ensure that the construction of access from Channel Road and Pambalong Drive and internal access roads will be in accordance with Australian Standards, RTA and Newcastle City Council requirements, to accommodate the design vehicles required for delivery of raw materials and distribution of final product.
- Provide alternative emergency vehicle access to the Pacific Highway from the western boundary of the site via a gravel driveway.

***All the above matters are incorporated in the draft Statement of Commitments.***

# 7.12 Hazards and Risk

In accordance with the DGRs a Preliminary Risk Screening in accordance with the Guidelines Applying SEPP 33 was undertaken by Karen Nilsson. The screening concluded that the proposed development is not defined as potentially hazardous, see Section 7.13.1 below, and therefore a Preliminary Hazard Analysis (PHA) was not required. Despite this, a risk assessment was conducted as part of KI's internal risk management requirements. This risk assessment was prepared in accordance with the NSW Department of Planning Guidelines for Hazard Analysis, with their Multilevel Risk Assessment, and with the Australian Standards for Risk Management.

This report is located at **Appendix I** with the findings and conclusions summarised in this section of the EAR.

## 7.12.1 Assessment

### Preliminary Risk Screening

SEPP 33 applies to any proposals which fall under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry'. For development proposals classified as 'potentially hazardous industry' the policy establishes a comprehensive test by way of a preliminary hazard analysis (PHA) to determine the risk to people, property and the environment at the proposed location and in the presence of controls. SEPP 33 is based on the quantity of dangerous goods involved in the proposal and, in some cases, the distance of these materials from the site boundary.

As can be seen in **Table 14** below, SEPP 33 is not applicable for the proposed development and therefore the proposed development is not Potentially Hazardous (as per the definition in SEPP 33) and a PHA is not required as part of NSW Department of Planning requirements.

**Table 14** – Dangerous Goods to be stored and handled

| Product Name | Maximum Quantity on Site | Composition | Dangerous Goods Class | SEPP 33 Screening Threshold |
|---|---|---|---|---|
| Ammonia solution | Atmospheric storage tank 30m$^3$ | Aqueous ammonia solution with 25% ammonia. | DG Class 8 PGIII | 50 tonnes |
| Natural Gas | No buffer storage. Used as fuel in the furnace. Supplied via a delivery station with pressure reduction to 4 bars and then delivered via underground piping (DN150 pipe diam). | Methane (CH4): 86 to 98 %; Ethane (C2H5): 2 to 9 %; Carbon dioxide: < 3 %; Trace elements. | DG Class 2.1 | Not applicable as no storage on site |
| LPG | Storage method: <10 tonne in one pressure vessel. | Propane (70%) and butane (30%) mixture | Class 2.1 | 10 tonne |
| Oxygen | Used in the furnace Supplied from oxygen plant to furnace via pressure piping. Stored in two pressure vessels (for use as backup supply) 2x x49m$^3$ | Pure oxygen | DG Class 2.2 | Subsidiary Risk Class 5.1 DG Class 2.2: Excluded from risk screening. Subsidiary risk DG Class 5.1: 5 tonnes. Not applicable as none of the other DG Classes exceed threshold quantities. |

### Risk Assessment

The majority of the materials used and produced at the site are non hazardous and not classified as Dangerous Goods. However, some materials while not in themselves hazardous can produce hazardous decomposition products if involved in a fire or result in hazardous reactions if inadvertently mixed. The main risks identified are as follows:

- Fire
- Emissions of toxic fumes following a fire in a storage area
- Fire / explosion following formation of an explosive mixture
- Leak of oxygen
- Legionella emission
- Boiling liquid vapour explosion
- Unconfined vapor cloud explosion
- Environmental pollution

The report assess the potentially hazardous events and their associated risk levels relative to human injury or fatality potential and to the potential to cause a threat to the natural environment. The risk profile of human injury and environmental pollution associated with the proposed site is essentially Low. This is due to the combination of low severity scores with low likelihood scores for most of the potential incident scenarios identified for the new site.

There are some incident scenarios that have been scored as of Intermediate risk, which in each case relates to the potential for a high severity score, however the likelihood score (i.e. the probability of occurrence of the incident) is low.

## 7.12.2 Management

While the offsite risks as a result of the proposal are considered low, the proponent will undertake the following to manage any potential hazards and risks arising from the proposed glass wool manufacturing operation.

- Storage and unloading areas will be designed in accordance with AS3780 for corrosive substances (incl. bunding).
- Hot work permit system will be established for all hot work such as welding, grinding etc.
- Location of hose reels and fire extinguishers will be determined in accordance with applicable Australian Standards.
- A fire water containment strategy will be prepared for the site.
- HAZOP or other structured hazard identification technique will be used to determine adequacy of process controls, trips and alarms.
- Hazardous Area Classification (zoning) required in accordance with Australian Standards. Electrical equipment will be determined in accordance with Hazardous Zones.
- Location of natural gas isolation valve will be determined to allow for rapid isolation from a safe location in case of an incident.
- The burner controls will adhere to international codes and standards, e.g. NFPA.
- Spill kits will be available on the site for incidental spillage or leakage from the domestic fuel storage and handling.

- AS1940 Storage and Handling of Flammable and Combustible Liquids and AS 1596 The storage and handling of LP Gas to be referred to in the design of LPG and fuel storages.
- KI is to prepare a Fire Risk Management Plan or other fire risk study for a detailed determination of required fire systems.
- Ensure hydrants and hoses comply with standards and code requirements.
- Location of fire hose reels to be determined in accordance with the requirements in AS1940, AS2419.1 and Building Code of Australia. Hose reel needs to be compliant with AS1221 and AS2441.
- At least two emergency access points for the fire brigade are required to access the site.
- All fire protection equipment will be maintained to AS1851.
- Portable fire extinguishers will be strategically located at the plants and within the building as per Australian Standard and BCA requirements (Portable fire extinguishers will need to comply with AS2444 .The testing of the fire extinguishers will comply with AS1850).
- The site fire protection drawings will be prepared to show the exact location of all forms of fire protection once the detail design has finished.

***These matters form part of the draft Statement of Commitments.***

## 7.13 Waste Management

The proposal has the potential to generate waste during construction and at all stages of operations. Where possible waste products will be recycled, reprocessed or reused.

### 7.13.1 Assessment

#### Construction waste

Construction and machinery installation will generate waste in the form of metal; timber; concrete and masonry; machinery packaging; paper and cardboard packaging; other construction material and miscellaneous waste. KI has committed to preparing a construction management plan prior to construction which will detail the proposed type and volumes of construction waste quantum and proposed destination/treatment.

#### Operational waste

The proposed insulation plant will generate a range of waste products which, where possible, will be reused for fuel, recovered or recycled. The products that can not be reused will be disposed offsite through the appropriate process such as landfill, biological treatment, incineration, etc. **Table 15** summarises the annual quantum of solid and liquid waste forecast to be generated by the proposal and proposed disposal methods.

**Table 15** – Treatment of operational waste

| Waste type | Category | Estimated quantity (t/year) | Handling Method |
|---|---|---|---|
| Other filtration cakes and used absorption agents | Hazardous | 250 | Reused and disposed |
| Waste materials based on fibre glasses | Other | 3,120 | Reused and disposed |
| Other unspecified wastes (equipment cleaning) | Other | 100 | Disposed |
| Synthetic hydraulic oils | Hazardous | 10 | Reused and disposed |
| Other engine, transmission and lube oils | Hazardous | 5 | Reused and disposed |
| Paper and cardboard packages | Other | 50 | Reused |
| Plastic packages | Other | 100 | Reused |
| Wooden packages (pallets) | Other | 100 | Reused |
| Packages containing residues of hazardous substances or contaminated by such substances | Hazardous | 25 | Reused and disposed |
| Absorption agents, filtration materials (including unspecified oil filters), cleaning cloths and protective cloths contaminated with hazardous substances | Hazardous | 1 | Disposed |
| Discarded systems containing hazardous components | Hazardous | 0.02 | Reused and disposed |
| Inorganic waste | Other | 200 | Disposed |
| Refractory and fireproof materials from other than metallurgic processes | Other / Hazardous | 15 | Disposed |
| Paper and cardboard | Other | 100 | Reused |
| Edible oil and fat | Other | 0.5 | Reused and disposed |
| Bio-degradable waste from kitchens and catering facilities | Other | 7.5 | Disposed |
| Bio-degradable waste | Other | 90 | Disposed |
| Fluorescent tubes and other waste containing mercury | Hazardous | 1 | Reused |
| Plastic | Other | 50 | Reused |
| Mixed communal waste | Other | 8 | Reused and disposed |
| Street swept waste | Other | 4 | Disposed |

## 7.13.2 Management

The vast bulk of waste generated by the proposal will be recycled, reprocessed or re-used.

The proponent will implement and monitor procedures and practices to manage solid and liquid waste from operations. Procedures for managing waste as a result of demolition and construction will form part of the Construction Management Plan.

***These matters form part of the draft Statement of Commitments.***

# 7.14 Ecologically Sustainable Development

The proposed development is consistent with the five accepted principles of ecologically sustainable development described below. The proponent is committed to ESD principles and has reinforced this through the draft Statement of Commitments and this Environmental Assessment.

## Integration Principle

The integration principle holds that decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

The Environmental Assessment demonstrates the integration of the social, environmental and economic benefits of the proposal. It uses a site intended for industrial uses in an established industrial precinct, incorporates measures to conserve water and energy and eliminate emissions to the atmosphere and provides new jobs. The proponent's investment in plant, equipment and infrastructure demonstrates a long term commitment. The environmental impacts are addressed through the draft Statement of Commitments.

## Precautionary Principle

If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

The application is supported by extensive environmental studies and technical reports which effectively conclude that there are no environmental constraints that preclude the development subject to appropriate management in future design, construction and operational stages.

## Intergenerational Equity

The principle of inter-generational equity holds that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The site will produce insulation batts which will result in significant long term reduction in domestic energy consumption therefore resulting in an enhanced natural environment for future generations.

## Biological diversity

Under the biodiversity principle, the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

As stated above there is little natural vegetation on the site and it does not contain any threatened or vulnerable species, populations, communities or significant habitats. Construction and ongoing operations of the facility will be managed in accordance with the draft Statement of Commitments, ensuring no indirect impacts on the Hunter River.

## Valuation and pricing of environmental resources

Under this principle, improved valuation, pricing and incentive mechanisms should be promoted.

The costs of infrastructure and measures to ensure an appropriate level of environmental performance on the site have been incorporated into the cost of development. Once operational the development will bring new permanent jobs to the locality and short term jobs and economic benefits during construction.

# 8.0 Draft Statement of Commitments

In accordance with the Director-General's Environmental Assessment Requirements, the proponent is required to include a Draft Statement of Commitments in respect of environmental management and mitigation measures on the site. The following are the commitments made by KI to manage and minimise potential impacts arising from the project.

## 8.1 Construction Management

KI commits to prepare a Construction Management Plan for the development. Noise, dust and erosion, and waste arising from construction will be managed in accordance with the Plan.

## 8.2 Air Quality

KI will prepare a Construction Environmental Management Plan (CEMP) prior to commencement of works which will incorporate the following environmental safeguards into the during the construction processes to address air monitoring and management:

- use of water sprays during dry, windy conditions, to dampen soils prior to excavation and handling;
- spraying, watering and covering of stockpiles as relevant;
- loading of construction vehicles up to (not over) the side and tailboards. All loads will be covered, and the undercarriages and wheels of all trucks will be removed prior to exiting the site;
- stabilisation of long-term stockpiles using fast-seeding grass or synthetic cover spray;
- sealing of major access roads into the site, or alternatively controlled speeds on unsealed roads to minimise dust; and
- standard dust control mitigation measures ordinarily carried out during construction works.

## 8.3 Contamination

To ensure that the redevelopment of the site is managed in a way to prevent any contamination in the future, KI will prepare a construction management plan that requires construction activities to be undertaken in accordance with the Managing Stormwater Volume 1 Soils and Construction (Landcom, 2004);

### Primary Containment Area

- Development will be generally in accordance with the Steel River Construction Guidelines, *Operational and Long Term Environmental Management Plan Proposed Tertiary Containment Cell Steel River Site,* and alternative control measures recommended by RCA Australia at Section 2.3 of its report (**Appendix I**);
- all relevant site construction management guidelines will be followed to ensure the protection of both site workers and the integrity of the remediation strategy for the site;
- the pile system will be designed to ensure infiltration of surface waters into the primary containment area does not occur;
- contingencies will be made for pile protection or corrosion loss given the ground may be chemically aggressive to buried structures.

### Tertiary Containment Cell

Following approval of the tertiary containment cell KI will incorporate the recommended alternative control measures to suit the specific site constraints of the new location, namely:

- construction of a diversion drain around the foot of the residual clay embankment to divert any surface water that infiltrates the soil profile;
- provision of an additional layer of coarse drainage gravel overlain by 'bidim' (a geotextile) to allow dissipation and lateral groundwater discharge to the surrounding strata rather than into the lower levels of the containment cell;
- fill and residual clay should be situated beneath the proposed tertiary containment cell base to avoid localised groundwater flow;
- incorporation of the alternative control measures outlined in Section 2.3 of RCA Australia's report (**Appendix I**);
- verification of the soil profiles, groundwater levels and the likely extent of contaminated material at the new location during the construction works.

## 8.4 Soils

KI will prepare an Acid Sulphate Soils Management Plan in accordance with the NSW Government's Acid Sulphate Soil Manual which will include:

- A description of mitigation strategies for the treatment of soil, including the application of lime to disturbed soils.
- A monitoring program – outlining the parameters to be monitored, the number of locations, monitoring frequency, and analyses to be conducted.
- Contingency procedures for remedial and restoration action in the case of unexpected events or the failure of management procedures.

## 8.5 Traffic Management

KI will develop the following plans:

- A detailed Transport Plan (including obtaining approvals) for the transportation of facility components and equipment.
- A Traffic Management Plan for the operational phase, detailing traffic management measures for:
  - safety for all modes of transport;
  - potential hazards;
  - maintenance of road network; and
  - cumulative impacts of traffic movements.

KI will also:

- Construct access from Channel Road and Pambalong Drive and internal access roads in accordance with Australian Standards, RTA and Newcastle City Council requirements and to accommodate the design vehicles required for delivery of raw materials and distribution of final product.
- Provide alternative emergency vehicle access from the Pacific Highway to the western boundary of the site via a gravel driveway.

## 8.6 Noise and Vibration

### Operational Noise

KI will apply one of the following acoustic wall treatments to the south western and south eastern façades of the High Bay Low Part building:

- 0.8mm thick Colorbond steel cladding walls instead of the 0.48mm cladding used in the rest of the plant; or
- apply internal glass wool insulation lining to the 0.48mm Colorbond steel cladding wall with a minimum thickness of 50mm and a density of 14 kg/m$^3$.

### Construction Noise and Vibration

KI will prepare a Construction Noise and Vibration Management Plan in accordance with the DECC *Environmental Management – Noise Assessing Vibration: A Technical Guideline.*

## 8.7 Landscaping

All landscaping works will be provided in accordance with the SIAS Landscape Development guidelines.

## 8.8 Water Cycle Management

KI commits to implement the following measures to manage any impacts associated with the water cycle on site:

### Operational

- Water quality devices will be incorporated into the drainage system once the development becomes operational.
- Where practical rainwater harvesting will be used for use in toilets.
- Spill control measures will be adopted around all potential spill sites including specific sump and clean out measures.

### Construction

- A Construction Environmental Management Plan will be prepared to ensure all construction works are undertaken in a manner to minimise the potential for soil erosion and sedimentation. As a minimum, the measures outlined in the *Managing Urban Stormwater – Vol 1 Soils and Construction* should be implemented.
- Construction will be planned to minimise the time that disturbed land is exposed and appropriate erosion prevention and sedimentation devices will be installed and maintained where areas are disturbed.
- Sediment basins will not be used as their construction may expose the underlying material to additional infiltration of water, possibly mobilising the contaminated material capped on the site.
- Construction will be undertaken in accordance with the conceptual erosion and sedimentation plan (see Drawing number H59657 of **Appendix B**).
- Staff facilities will be installed and maintained so that pollutants, including wash water, are not conveyed from the Site in stormwater. All wastewater during the construction period will be disposed of either via a connection to the existing Hunter Water sewerage system and / or offsite to a licensed facility.

- Spills will be minimised through the application of protocols for the handling of hazardous materials. If any spill occurs, it is likely to be of a small volume and contaminate only a small area. All possible pollutant materials will be stored clear of site boundaries and stormwater drainage lines and in a designated covered area. Containment bunds will be constructed with provision for collection of any spilt material.

## 8.9 Visual Impact

KI commits to mitigate any potential lighting impacts by complying with *Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282)*.

## 8.10 Waste Management

KI will implement and monitor procedures and practices to manage solid and liquid waste from operations.

## 8.11 Hazards

KI commits to undertaking the following mitigation measures to manage potential hazards on site:

- Storage and unloading areas will be designed in accordance with AS3780 for corrosive substances (incl. bunding).
- Hot work permit system will be established for all hot work such as welding, grinding etc.
- HAZOP or other structured hazard identification technique will be used to determine adequacy of process controls, trips and alarms.
- Location of natural gas isolation valve will be determined to allow for rapid isolation from a safe location in case of an incident.
- A fire water containment strategy will be prepared for the site.
- Hazardous Area Classification (zoning) required in accordance with Australian Standards. Electrical equipment will be determined in accordance with Hazardous Zones.
- The burner controls will adhere to international codes and standards.
- Spill kits will be available on the site for incidental spillage or leakage from the domestic fuel storage and handling.
- AS1940 Storage and Handling of Flammable and Combustible Liquids and AS 1596 The storage and handling of LP Gas to be referred to in the design of LPG and fuel storages.
- KI will prepare a Fire Risk Management Plan or other fire risk study for a detailed determination of required fire systems.
- Ensure hydrants and hoses comply with standards and code requirements.
- Location of fire hose reels to be determined in accordance with the requirements in AS1940, AS2419.1 and Building Code of Australia. Hose reel needs to be compliant with AS1221 and AS2441.
- At least two emergency access points for the fire brigade are required to access the site.
- All fire protection equipment will be maintained to AS1851.
- The site fire protection drawings will be prepared to show the exact location of all forms of fire protection once the detail design has finished.

# 9.0 Conclusion

The proposal represents the outcome of exhaustive environmental analysis and consideration of several design solutions to minimise any impacts on the environment. The assessment of the proposal has demonstrated that the proposal will result in positive economic and environmental benefits. It utilises land within an established industrial area earmarked for employment in the Metropolitan Strategy and the Hunter Subregional Strategy, and will bring up to 180 new jobs to the Newcastle region.

The new plant will demonstrate state of the art, best practice technology, and the adopted production process has undergone extensive environmental modelling to remove any impacts on the environment.

In terms of energy efficiency and greenhouse, the manufacturing of insulation for domestic and commercial use will result in significant energy savings in the short to long term which significantly off sets the greenhouse gas output per tonne of product.

There are no environmental impacts as a result of the proposal in relation to traffic, noise, waste, air quality and odour. Operational wastes are to be recycled and reused where possible. There are no hazards that cannot be managed.

The form, height and proportions of the new KI plant are well integrated into the site's context and appropriate for their industrial context. There are negligible visual impacts will be experienced by nearby receivers.

The site is considered suitable for the proposed development for the following reasons:

- it is zoned for the proposed use;
- it represents efficient use of existing industrial land and infrastructure;
- it is located close to major road transport infrastructure; and
- proposed operations are neither offensive nor hazardous and do not pose a risk to nearby residents or other industrial operations.

Approval of the proposed development is sought on the following grounds. The proposal:

- is located in an area identified for employment growth.
- has no negative acoustic, air quality and odour impacts; and
- does not create hazards that cannot be managed.

The proposed development will have no negative impacts on the environment, during both construction and operations, and serves the public interest. We therefore request that Minister approve this project.