



Planning

***MAJOR PROJECT ASSESSMENT:
Knauf Insulation Project***



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

September 2009

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EXECUTIVE SUMMARY

Knauf Insulation Holding GmbH (Knauf) proposes to establish a glass wool insulation manufacturing facility at the Steel River Industrial Estate (the Estate), Mayfield West.

The Estate forms part of the old BHP Steelworks site which has been progressively remediated and redeveloped, for industrial purposes, since 1999. The site is bound by the Hunter River, the Pacific Highway, the Kooragang Goods Rail Line, some small industrial and commercial facilities and the remainder of the Estate. The nearest residential receivers are on the opposite side of the Pacific Highway at Warabrook.

The facility would produce up to 72,000 tonnes of glass wool insulation per year from sand and recycled glass. It has a capital investment value of \$167.5 million and would employ 135 people.

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

During the exhibition period, the Department received 13 submissions on the project, 8 from public authorities and 5 from the general public. None of the public authorities object to the project, however the RTA raised concerns about the potential impacts on traffic and access. Submissions from the general public raised concerns about the potential air (especially fibre glass dust and particulates), contamination, noise, traffic and health impacts of the project.

The Department has assessed the merits of the project. This assessment has found that the potential impacts of the project can be adequately mitigated and managed to ensure an acceptable level of performance and has recommended conditions to ensure this occurs.

The Department engaged an independent air quality expert to assist in assessing the potential air emissions of the project. The assessment found these emissions can be managed to ensure the facility would not exceed the ground level concentrations or the *Protection of the Environment (Clean Air) Regulation 2002* limits during regular operations.

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

- optimise the use of vacant industrial land in the Steel River Estate;
- attract \$167.5 million worth of investment to the region; and
- create at least 135 new jobs.

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

1.1 Background

The Steel River Industrial Estate (the Estate) forms part of the old BHP Steelworks site in the Newcastle local government area (see Figure 1).

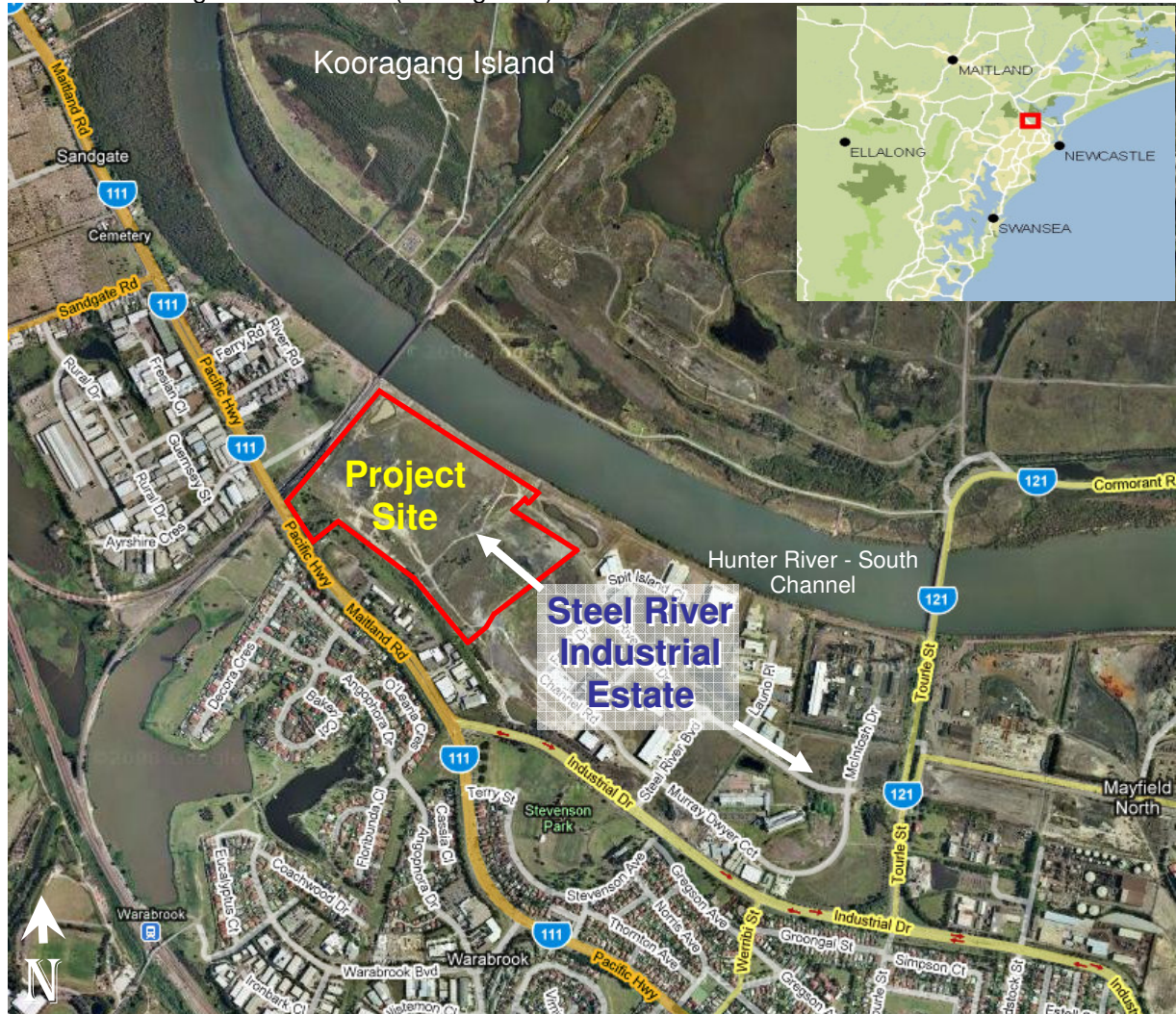


Figure 1: Regional Context

Part of the site was reclaimed in the 1950s. This was achieved by placing waste (such as slag from the steelworks) into the former Platts Channel and surrounding swampy area.

Some of this waste has subsequently become a source of soil and groundwater contamination.

Since the closure of the Steelworks in 1999, the Estate has been progressively remediated and redeveloped as an industrial estate.

There are currently a number of small industrial and commercial facilities operating on the eastern half of the estate (see Figure 2).

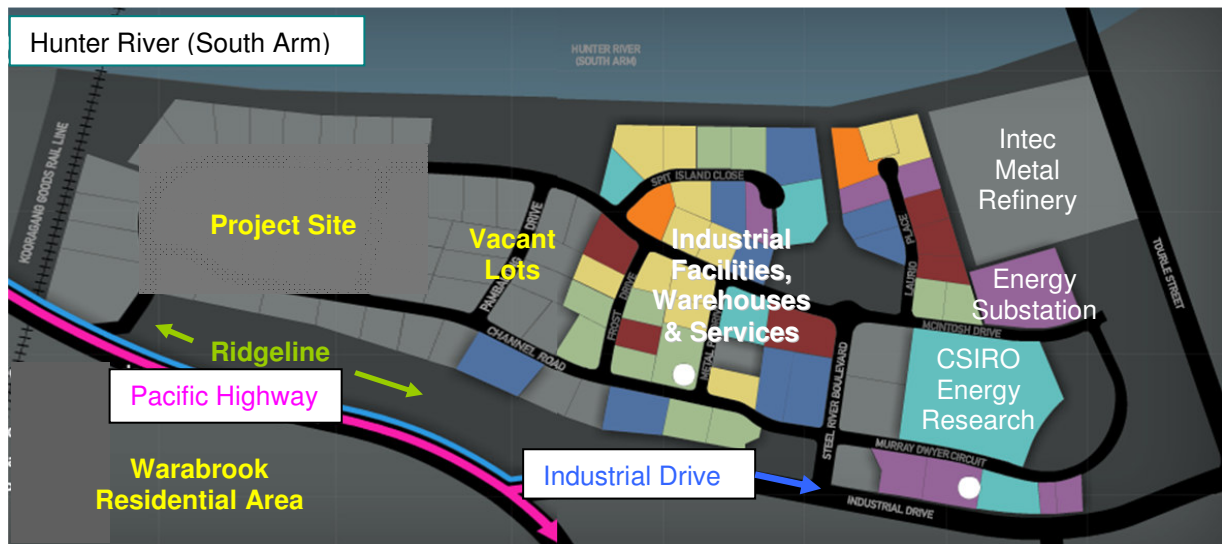


Figure 2: Steel River Industrial Estate

The site is bound by the Hunter River to the North; the Kooragang Goods Rail Line to the West; the Pacific Highway, some small industrial and commercial users, and the Pacific Highway to the South West; and the remainder of the Estate, most of which is now developed, and Tourle St to the East.

The nearest residential areas (Warabrook and Mayfield West) back onto the Pacific Highway and Industrial Drive and some residents also occupy sites to the west of the Kooragang Goods Line in Sandgate. The closest residents are in Warabrook, approximately 50m from the boundary of the site, but approximately 150m from the nearest building onsite.

A small ridgeline runs between the south-western boundary of the site and the Warabrook Residential area, providing some shielding.

The Estate has been remediated and developed in stages. One containment cell has already been constructed on the site and further contaminated material is also stockpiled on the site. This contaminated material, and any other contaminated soil found during the earthworks for the project would be contained within a second containment cell (the T-Cell). While construction of the T-Cell has already been approved, Knauf proposes to construct the cell in a different location on site in order to minimise conflicts with the construction works (see Figure 3).

1.2 Project Description

Knauf proposes to establish a glass wool insulation manufacturing facility on the western part of the Estate.

This facility would partially cover the primary containment cell as well as the approved T-Cell (see Figure 3).

The major components of the project are summarised in Table 1, and depicted in Figure 4 and Figure 5. The project is described in full in Knauf's Environmental Assessment (EA) and Preferred Project Report (prepared by JBA Urban Planning Consultants), which are attached as Appendix H and F respectively. The preferred project report includes some minor changes to address some of the issues raised during the exhibition of the project, such as an increase in the height of the blowing wool stack (to manage odour). The details in Table 1 reflect the changes proposed in the preferred project report.

Table 1: Major components of the project

Aspect	Description
Project Summary	Construct and operate a glass wool insulation manufacturing facility and associated infrastructure
Furnace	An oxy-gas fired furnace capable of producing up to 200 tonnes of molten glass a day from sand and/or recycled glass
Oxygen Plant	Produces oxygen through an absorption system, with 2 liquid oxygen storage tanks
Glass Wool manufacturing plant	Including fiberisers, forming hood, binders system, curing oven and cooler systems, to turn the molten glass into glass wool fibres
Packaging plant	For cutting and packaging the insulation
Dry EP Stack	Height 45 m - Dry electrostatic precipitator stack, for management of air emissions from the Furnace
Emergency Stack	To vent emissions from the furnace during maintenance on the Dry EP Stack.
Wet EP Stack	Height 60 m - Downstream Wet electrostatic precipitator stack – for management of air emissions from the forming hood, curing oven and cooling section
Blowing Wool Stack	Height 55 m - For management of air emissions from the white wool process
Facing Pit Stack	Height 23 m - For management of dust generated from the crushing of fibres in the white wool lines.
Associated Structures	• Batch house – storage for at least 70 tonnes of sand • Cullet Storage Area – storage for recycled glass to be used in the process • Cooling towers • water recycling plant • 20,000m³ hardstand for storage of finished product • Utilities building • Workshop and office buildings • Gatehouse, fire hydrant and sprinkler tanks
Parking	90 staff parking spaces, 32 visitor parking spaces and 17 truck parking spaces
Site Remediation Works	Construction of a 10,000m ³ tertiary containment cell to accommodate 4,500m ³ of contaminated material stockpiled onsite and any additional contaminated material uncovered during excavation works for the project
Transport	226 light vehicle and 108 heavy vehicle movements a day
Hours of operation	24 hours, 7 days a week
Production Capacity	The facility would produce up to 72,000 tonnes of glass wool insulation a year, including both bound (batts or rolls) and unbound blowing wool (white wool).
Capital Investment Value	\$167.5 million
Jobs	Operation – 135
Construction period	Approximately 18 months

1.3 Production Process

Glass production

The project would receive sand and cullet (recycled glass) which would be mixed and then fed into the glass furnace at 1200°C.

Fiberisers

Molten glass is then spun in a centrifuge to produce wool fibres. When fibre production is stopped any remaining molten glass is cooled to become cullet which is then reused in the furnace.

The spun fibres are then produced into either White Wool (unbound blowing wool, used when there is no access to the roof or wall cavity) or Glass Wool (bound insulation).

White Wool Production

The spun fibres are formed and then packaged in bags (as white wool).

Glass Wool Production

The spun fibres are bound, formed, cured and cut into rolls or batts and then packaged.

All packaged insulation would then be transferred to the outdoor storage area and loaded onto trucks as required.

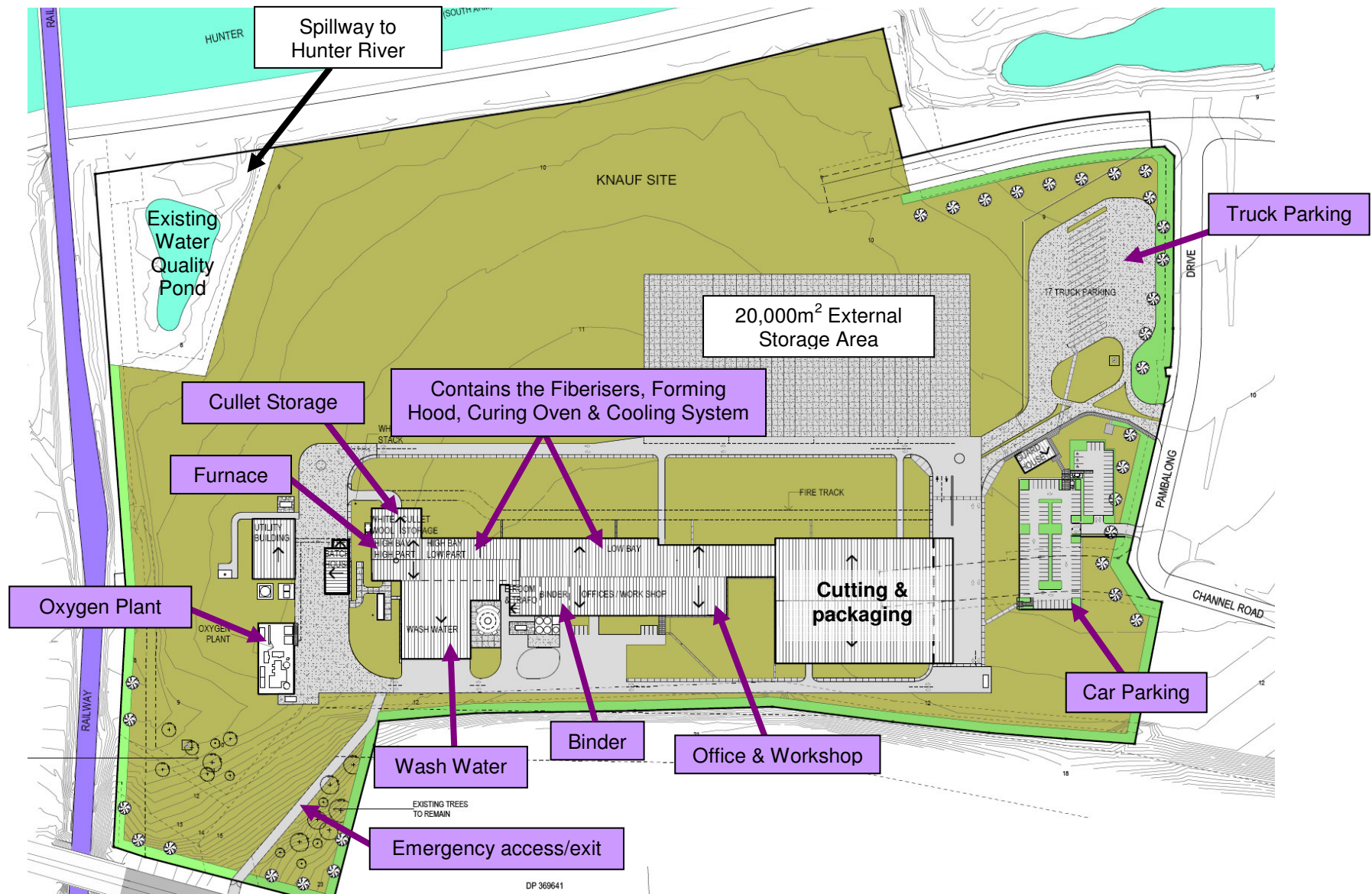


Figure 4: Site Plan

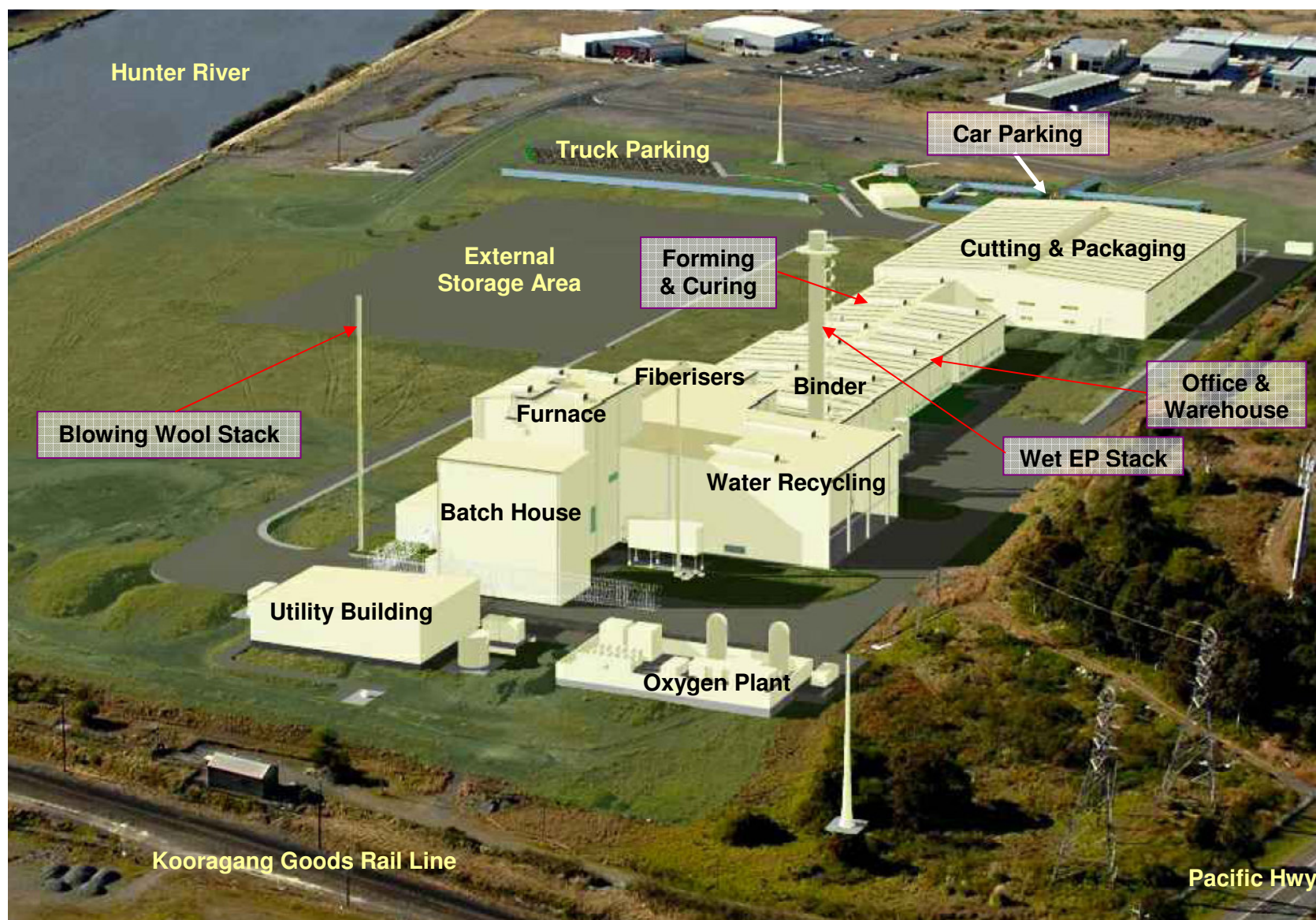


Figure 5: Proposed Project

1.4 Project Need

Once operational the project would have the capacity to produce up to 72,000 tonnes of insulation a year. Insulation is fundamental to reducing the heating and cooling requirements of buildings, and consequently reduces energy consumption and Greenhouse Gas Emissions. A number of government policies encourage the use of insulation, such as the NSW Government's BASIX Program and the Australian Government's Energy Efficient Home Package, which aims to install ceiling insulation in up to 2.9 million homes. Knauf aims to have the project operating in time to take advantage of the Australian Government's Energy Efficient Home Package, which is currently scheduled to end in June 2011.

With the closure to the Newcastle Steel Works, the Steel River Industrial Estate was formed to encourage large industrial facilities and the associated jobs back to the area. The project would be consistent with this goal, and in keeping with the sites industrial history.

1.5 State Plan and Lower Hunter Regional Strategy

The project is consistent with a number of priorities of the State Plan and the Lower Hunter Regional Strategy. The project would provide increased business investment in regional NSW (priorities P1 and P6), would assist in cutting greenhouse gas emissions (priority E3), through the use of the insulation product, and would increase local job opportunities, providing jobs closer to home (priority E5).

2. STATUTORY CONTEXT

2.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of glassworks and the manufacture or reprocessing of polymers with a capital investment value in excess of \$30 million, and therefore triggers the non-discretionary criteria in Clauses 9(b) and 10(g) of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

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

On 18 November 2008, the Minister delegated her powers and functions as an approval authority for certain project applications (including those projects in relation to which a statement has been made disclosing a reportable political donation) to the Planning Assessment Commission (the Commission). This project meets the terms of the delegation as a statement has been made disclosing a reportable political donation. Consequently, the Commission may determine the project under delegated authority.

2.2 Permissibility

The site is zoned 4(c) Steel River Zone under the Newcastle Local Environmental Plan 2003, and is permissible with development consent in this zone.

2.3 Exhibition and Notification

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

After accepting the EA for the project, the Department:

- made it publicly available from Friday 17 July 2009 until Monday 17 August 2009:
 - on the Department's website;
 - at the Department's Information Centre, and Newcastle Office;
 - at the Newcastle City Council Offices; and
 - at the Nature Conservation Council Offices,
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Newcastle City Council by letter; and
- advertised the exhibition in the Newcastle Herald.

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

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

- project application;
- Director-General's environmental assessment requirements;
- EA; and
- Knauf's responses to issues raised in submissions and preferred project report.

2.4 Environmental Planning Instruments

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

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

The Department has considered the project against the relevant provisions of several environmental planning instruments and is satisfied that, subject to the implementation of the recommended conditions of approval, the proposal is generally consistent with the aims and objectives of these instruments (see Appendix D).

2.5 Objects of the Environmental Planning and Assessment Act 1979

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

The objects of this Act are:

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

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

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

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

2.6 Statement of Compliance

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

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

3. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received a total of 13 submissions on the project:

- 8 from public authorities: the Department of Environment, Climate Change and Water (DECCW), Newcastle City Council (Council), the former Department of Water and Energy (now a part of DECCW); the Roads and Traffic Authority (RTA, now a part of the NSW Department of Transport and Infrastructure), Hunter Water and the Hunter Catchment Authority, NSW Transport and Infrastructure and the NSW Fire Brigade; and
- 5 private submissions: 4 from local residents, 1 from a consultant on behalf of an unknown client.

In addition, a submission from Fletcher Insulation was submitted after the exhibition period. This submission has also been considered by the Department in its assessment of the project.

A summary of the issues raised in the submissions and representation is provided below. A full copy of these submissions is attached in Appendix G.

3.1 Public Authorities

DECCW identified a number of potential environmental issues with the project, particularly potential impacts from air emissions, greenhouse gases, noise and contamination. DECCW also noted the facility was capable of using recycled glass and that use of recycled glass should be maximised. While DECCW acknowledged the facility would exceed the regulatory limits under the *Protection of the Environment Operations (Clean Air) Regulations 2002*, during scheduled Dry EP maintenance during the first 2 years of operation, the EPA board has agreed to an exemption for this 2 year period, subject to stringent conditions. DECCW also recommended conditions relating to the management of noise, soil contamination, water and waste.

The Department of Water and Energy, now a part of DECCW, noted the need to establish the extent of groundwater table fluctuations to ensure the containment cell is not within this area.

The RTA raised concerns about Knauf's proposal to use the existing site access road rather than construct a new site access road as was envisaged during the strategic planning for the Estate. It felt this proposal could compromise the redevelopment of the remainder of the Estate.

Council requested additional details of the potential air and noise impacts of the project and recommended measures to manage contamination on site. Council also raised concerns about the project's parking, access and cumulative traffic levels.

The Ministry of Transport recommended that raw materials and finished products be transported by rail, and that a rail siding be constructed onsite.

Hunter Water confirmed it has sufficient capacity to supply water and receive wastewater from the project. The NSW Fire Brigade and Hunter Catchment Management Authority did not raise any concerns.

3.2 Community and Interest Groups

Private submissions raised concerns about:

- potential air emissions (particularly dust, particulates and glass fines, and the increased impacts as a result of the prevailing winds);
- management of contaminated material on site, particularly in relation to the location of the proposed containment cell and potential interactions with groundwater in the area;
- noise;
- traffic;
- hazards and health;
- site selection, given the nearby sensitive receivers; and
- the economic implications of the project, including the likely oversupply of insulation and the potential to force existing insulation manufacturing facilities to close.

3.3 Response to Submissions and Preferred Project Report

Knauf has provided responses to the issues raised in submissions in a preferred project report (see Appendix F), as well as a revised Statement of Commitments for the project. These have been made publicly available on the Department's website.

The Department has considered the issues raised in submissions, and Knauf's responses to these issues, in its assessment of the project.

4. ASSESSMENT

4.1 Air Quality

The project would produce a range of air emissions including, oxides of nitrogen (NO_x), particulates (PM₁₀), carbon monoxide (CO), sulphur dioxide (SO₂), lead (Pb), hydrogen fluoride (HF), and small amounts of other hazardous air pollutants (including arsenic, chromium, mercury, formaldehyde (a VOC), hydrogen chloride and phenol).

The submissions from the general public were concerned about the potential health impacts of these emissions.

The EA included a detailed air quality assessment of the project by URS Australia. Due to the sensitivities to the potential air quality impacts, the Department commissioned an independent expert (PAEHolmes Air Sciences) to review the impacts of the project. A copy of PAEHolmes Air Science's report is attached in Appendix B.

4.1.1 Construction

Construction works could generate dust. The Department considers this could be managed through standard control measures and has recommended conditions to ensure dust would be minimised, through measures such as scheduling of works during windy conditions.

4.1.2 Emissions during regular operations

During normal operations, the air emissions from the project would comply with *Protection of the Environment Operations (Clean Air) Regulation 2002* limits. Dispersion modelling also indicates that DECCW's ground level criteria would not be exceeded (see Table 2).

Table 2: Predicted Air Quality Impacts

Pollutant	Averaging period	Predicted Project only level µg/m ³		Background µg/m ³	Predicted cumulative level µg/m ³		DECCW Criteria µg/m ³
		Normal	By-pass		Normal	By-pass	
NO ₂	1 hour	85	69	90.2	175.28		246
	Annual	1.2	1.2	18.5	19.69		62
PM ₁₀	24 hour	5.6	25.1	11.6 – 48.5	49.7	49.7	50
	Annual	20.5			20.5		30
SO ₂	10 minute	172	171	274	446	446	712
	1 hour	120	120	192	312	312	570
	24 hour	26	26	40	66	66	228
	Annual	1	1	6	7	7	60
CO	15 minute	8.1	7	4800	4808	4807	100,000
	1 hour	6	5	3600	3606	3605	30,000
	8 hour	4	3	3000	3004	3003	10,000
HF	24 hour	0.183	0.183	0.32	0.50	0.50	1.5
	7 days	0.062	0.075	0.17	0.23	0.24	0.8
	30 days	0.062	0.075	0.17	0.23	0.24	0.4
	90 days	0.012	0.020	0.17	0.18	0.19	0.25
VOC (as formaldehyde)	1 hour	1.19	1.32	?			20
HCl	1 hour	1.19	1.38	?			140

Pb	Annual	0.00039		0.09	0.09039		0.5
Co	1 hour	0.0040	0.0032	?			NA
Cd	1 hour	0.0178	0.0028	?			0.018
Cr	1 hour	0.0555	0.0382	?			0.09
Ni	1 hour	0.0376	0.0258	?			0.18
As	1 hour	0.0297	0.0028	?			0.09
Se	1 hour	0.0178	0.0129	?			NA
Sb	1 hour	0.0297	0.0028	?			9
V	1 hour	0.0119	0.0078	?			NA
Ammonia	1 hour	16.8	16.8	?			330
Phenol	1 hour	5.02	5.02	?			20

The independent air assessment report identified a number of areas where the modelling of cumulative particulate levels could be improved but found that as the predicted levels are quite low, this additional modelling was unnecessary and particulate levels would not be significant.

The report also noted that the emission of metals is largely dependent on the quality and type of cullet (recycled glass) used to produce the glass. While the predicted levels of metals are below the relevant criteria, the report noted mercury levels had not been provided (although Knauf advised mercury emissions would be negligible). As the proportions and quality of feedstock (cullet and sand) have not been finalised, the emissions of metals cannot be accurately predicted. The air quality expert recommended including conditions requiring monitoring both the cullet and the corresponding air emissions, when the cullet is processed, for Mercury and other metals. This would allow for the feedstock to be managed, ensuring emissions would remain within the relevant criteria.

The assessment concluded that the emissions from normal operations of the facility could be managed to acceptable levels, within the relevant criteria, preventing health impacts at sensitive receivers. The Department has incorporated the recommended conditions from DECCW and the independent air assessment, into the recommended conditions of approval.

These recommended conditions set emission limits, in accordance with DECCW's requirements, to prevent health and amenity impacts. The air quality expert recommended setting limits consistent with the POEO (Clean Air) Regulation, however DECCW has recommended more stringent limits based on the predicted emissions from the plant. In order to ensure air emissions are minimised, the Department has adopted DECCW's recommended air emissions limits in the recommended conditions of approval. These limits are also generally consistent with the limits imposed on Knauf's plant in Lannemezan, France, which was approved in 2008, and is currently under construction.

The Department has also recommended conditions requiring an air emissions management plan, to:

- ensure that management practices, treatments and controls are implemented to minimise emissions;
- provide for the ongoing monitoring and reporting of emissions;
- manage cullet quality, in order to reduce potential air pollutant emissions; and
- ensure contingency measures could be implemented should exceedances occur.

The Department is satisfied that these conditions would ensure air emissions from the facility would be suitably managed, to prevent potential health impacts during regular operations.

4.1.3 Emissions during scheduled maintenance

Knauf has also requested permission to undertake scheduled maintenance works on the dry electrostatic precipitator (Dry EP) on the furnace stack, for up to 6 days a year. Knauf is unable to shutdown the furnace for this work, due to the time, cost and energy requirements associated with doing this. Consequently, particulate emissions during this Dry EP maintenance work would be diverted to the emergency stack and would exceed the 50mg/m³ limit prescribed in the *Protection of the Environment Operations (Clean Air) Regulation 2002*: with particulate emissions of up to 300 mg/m³ predicted.

Permission to exceed the levels prescribed in the POEO (Clean Air) Regulation can only be granted by the Director-General of DECCW, with permission from the EPA Board (a part of DECCW). The

Board met on 16 September 2009 and agreed to an exemption, for up to 6 days a year during the first 2 years of operations, subject to conditions. DECCW has advised this exemption order can be granted once a project approval has been granted under the EP&A Act.

In deciding whether to allow an exemption the EPA Board must be satisfied that it is not practicable to comply with the regulatory limits and that the non-compliance would not have any significant adverse effect on public health, property or the environment.

While the particulate levels at the stack may reach up to 300 mg/m³, dispersion modelling indicates that ground level criteria (of 50µg/m³) would not be exceeded at any time. Also these levels would only occur for 6 days a year, over 2 years, ie for no more than a total of 12 days. Compliance with the ground level criteria would prevent health impacts at sensitive receivers.

Depending on meteorological conditions and background concentrations of particulates, cumulative levels could become very close to exceeding DECCW's ground level criteria (see Table 2).

The air quality expert advised that to ensure risks are minimised; meteorological data, verification results and weather forecasts could be used to determine the most suitable periods of the year to schedule the Dry EP maintenance.

This is generally reflected in the conditions that would be imposed on the Exemption Order, however the Department has also incorporated this recommendation, along with those from DECCW and the EPA Board, into the recommended conditions of approval.

The air quality management plan, required in the recommended conditions would include a protocol for managing air emissions during the Dry EP maintenance works, to minimise emissions and schedule works during conditions when the cumulative impacts of the emissions would be minimised. This management plan would be updated to reflect the revised management practices that would be implemented, to ensure compliance with the air emission limits, once the exemption order has expired.

Recommended conditions also require validation of the emissions from the stacks, to confirm the predictions in the Environmental Assessment and Preferred Project Report, for Dry EP maintenance works during the first 2 years of operations and in the third year of operations (once the exemption order has expired).

4.1.4 Conclusion

The Department is satisfied the air emissions are acceptable and would be managed and minimised, to ensure compliance with DECCW's regulatory limits (where applicable) and ground level criteria; preventing any risk of health impacts on the community.

In the case of the Dry EP maintenance works the Department considers options to ensure compliance with the regulations can be found during the next 2 years. Management and control of the furnace capacity and feedstock may be sufficient to reduce particulate emission below 50µg/m³, however other options, such as additional emission controls or as a worst case, furnace shutdown, would ensure compliance with the regulatory limits beyond the first 2 years of operations.

4.2 Odour

Potential odour sources relate to the disturbance of contaminated material during construction and operational process relating to the furnace, binding of insulation, and emissions from stacks.

4.2.1 Construction

During construction the project is likely to disturb contaminated soils. This disturbance could cause unavoidable odour impacts. Contaminated groundwater on site also has the potential to generate odorous vapours, should it be intercepted during construction activities.

Disturbance of contaminated soils is likely to occur during earthworks, however some building works also have the potential to cause odour impacts. Building works including the proposed piling through the existing containment cell, the excavation of deep service trenches over the existing containment cell and the location of basements below ground surface also increase the risk of exposure to odorous vapours.

Knauf proposes a number of options to minimise exposure to vapours during building works (that have the potential to allow vapours to escape from the existing containment cell). These include installing a vapour seal collar under the pile cap, sealing of the concrete hardstand, and wall and roof ventilation.

While Knauf has not undertaken a quantitative assessment of the potential odour impacts from construction, it is predicted they will be much the same as odour impacts associated with the previous remediation works on site, which were not significant. There do not appear to have been any substantial odour issues during the remediation and redevelopment works that have already occurred on the Estate. The Department also notes that the completion of the remediation works should remove the existing odour impacts (from the material currently stockpiled onsite).

Knauf proposes to complete the earthworks within 6-12 months, and to implement a range of standard odour controls on site during this period (these would include the enclosure of soils, the use of a soil vapour extraction system, in-situ oxidation, foams, wind breaks and odour suppressants; as required) to minimise the potential odour impacts of the project.

The Department considers that the measures proposed by Knauf are appropriate and that potential odour impacts would be short-term and could be managed. Nonetheless, the Department considers these measures should be further refined during the detailed design phase through a management plan to be provided with the environmental management strategy for the site. This requirement has been incorporated into the recommended conditions of approval.

4.2.2 Operation

Initially, Knauf predicted that the facility would emit 3.3 odour units per m^3 (OU/m^3) during normal operation and $3.6\text{OU}/\text{m}^3$ during Dry EP maintenance periods, at the site boundary. As predicted odour emission would exceed DECCW criteria of $2\text{OU}/\text{m}^3$, the DECCW and the Department considered the exceedance unacceptable.

Knauf subsequently modified its proposal by increasing the stack height of the Blowing Wool Stack from 40 to 55m and reducing production during Dry EP maintenance periods. The modelling for the revised project indicates that the facility would emit $1.8\text{OU}/\text{m}^3$ during normal operation. Odour levels during the Dry EP maintenance period are less certain as Knauf do not have data on odour levels at 5% production. A conservative estimate, based on odour levels at full capacity, predicted levels of up to $2.4\text{OU}/\text{m}^3$ on site: this is predicted to drop below $2\text{OU}/\text{m}^3$ at the site boundary.

While odour emissions are not predicted to exceed the DECCW criteria of $2\text{OU}/\text{m}^3$ off site, the air quality expert advised that there may be fugitive odour emissions from the facility that have not been modelled. It is possible that cumulative odour emissions from the stacks, and any fugitive emissions from the facility, could cause an exceedance of DECCW's odour criteria beyond the boundary of the site.

Nonetheless, fugitive emissions are likely to be minimal (as it is a new facility with modern technologies and controls), however should an exceedance of the odour criteria occur, simple management measures (such as closing doors) are likely to be sufficient to control fugitive emissions.

Knauf has advised odour has not been a problem at its existing facilities overseas. The Department also notes that during Dry EP maintenance works, when odour levels are predicted to be highest, the facility would be operating at no more than 5% production, so odour from any other sources at the facility are also likely to be significantly reduced.

Recommended conditions would require an odour audit to be undertaken, to validate the predictions of the odour modelling. Odour levels would also be monitored and reported on an ongoing basis through the annual reporting requirements.

4.2.3 Conclusion

The DECCW and the Department are satisfied the project is unlikely to emit offensive odour beyond the boundary of the site at any stage. Nonetheless, the Department has recommended a number of conditions of approval to ensure any potential impacts would be identified and managed, including:

- no offensive odour beyond the site boundary;

- validation of the predications made within the EA once operational;
- the preparation of an annual report detailing monitoring results and any exceedances; and
- commissioning of an independent audit to evaluate the environmental performance of the facility.

With these measures in place, the Department is satisfied that potential odour impacts would be identified and managed.

4.3 Soil and Water

4.3.1 Contamination

Due to the historical uses of the site (disposal of waste and reclamation activities) the soils on site are contaminated with a range of contaminants including PAH's, manganese, chromium, BTEX, and TPH's.

In 1997, a combined Remedial Action Plan and Environmental Impact Statement (RAP/EIS) was prepared detailing the preferred remediation strategy for the Estate. The main objective for the remediation of the Estate was to minimise the potential for human exposure to contaminants and to minimise infiltration of stormwater to groundwater to reduce the volume of contaminated groundwater being discharged to the Hunter River. The approved remediation strategy for the Estate included the:

- excavation of shallow impacted soils, with contaminated material to be contained within three containment cells;
- capping of areas where contaminated material was identified within 2m of the surface. These areas were capped with coal washery reject (CWR) to limit exposure to contaminated material;
- re-contouring of areas where contaminated material was at a depth of greater than 2m to minimise stormwater infiltration; and
- limiting infiltration of contaminants to groundwater by improving drainage and establishing impervious areas as part of the re-development of the Estate.

As previously discussed, remediation of the Estate has included construction of a containment cell on the project site and stockpiling of contaminated material for containment on site. In addition, sections of the Estate have been capped with CWR. The primary containment cell has been closed and it is now considered that only one of the remaining approved containment cells would be required for the residual contaminated material, as depicted in Figure 3.

In addition to contaminated soils, the groundwater is contaminated with petroleum hydrocarbons (including benzene and toluene), PAHs, metals, phenols, cyanide, and ammonia. The DECCW consider that the contaminated groundwater poses a risk to the environment and in 2005, declared a portion of site as a remediation site under the *Contaminated Lands Management Act, 1997* (CLM Act). The declaration relates to a 20m buffer/easement parallel to the Hunter River for access and maintenance (see Figure 6). BHP has entered into a Voluntary Management Proposal and is currently investigating options for the remediation of the groundwater. It is unlikely that remediation of contaminated groundwater would occur until 2011.

It is noted that while groundwater contamination for the Estate is regulated under the CLM Act (i.e., portion of the site is a declared remediation site), soil contamination is not. However, a certification scheme was introduced for the Estate to ensure that soil remediation is undertaken in accordance with the approved RAP/EIS.

completed, with contaminated material identified and quantified, prior to contaminated material being placed in the new T-Cell. This in turn would ensure that the T-Cell is appropriately sized to accommodate all material requiring containment.

To support its application, Knauf has prepared management plans detailing:

- management procedures for the construction of the proposal including the management of contaminated stockpiles and contaminated groundwater, as well as validation requirements for material to be re-used on site;
- the proposed design of the T-Cell and procedures for the filling of the T-Cell; and
- the long term management and monitoring of the T-Cell.

The Department considers that:

- the slight deviations to the Estate remediation strategy are unavoidable and the Department is satisfied that any potential impacts can be managed through the measures proposed by Knauf;
- there is benefit in moving the T-Cell from its approved location, as it would negate the need for piling through this cell; and
- any excavated areas would ultimately be capped with either concrete or bitumen and therefore the objectives of the remediation strategy for the Estate would be met. Concrete and bitumen are considered a suitable substitute to CWR as a capping material.

The Department, DECCW and Council are therefore generally satisfied that the proposed remediation strategy is appropriate and generally consistent with the remediation strategy for the Estate. Nonetheless, the Department has recommended conditions of approval requiring an accredited site auditor to review:

- the project's management plans prior to any works commencing; and
- detailed design of the T-Cell to ensure it meets best practice standards prior to the construction of the T-Cell.

It is noted that DECCW has recommended that the Proponent should be required to provide the required certificates in accordance with the Steel River Certification Scheme, in addition to requiring an accredited site auditor to review relevant management plans. However, given the various contamination issues that need to be appropriately designed and managed, the Department and Council considers that the site auditor scheme under the CLM Act would be more appropriate certification scheme in this instance, as the obligations of an accredited site auditor are clearly defined in legislation and DECCW guidelines. This requirement for an accredited site auditor to oversee the remediation of the site has been incorporated into the recommended conditions of approval.

Integrity of Containment Cells

Due to the size of the building required by Knauf, the load bearing capacity of the site needs to be improved to ensure the proposed structures are suitably supported. Dynamic compaction (method to compact soil by dropping a heavy weight repeatedly) is a contemporary method of compaction, however it has the potential to impact on the integrity of the existing primary containment cell and as such is not considered suitable at this location. Knauf therefore proposes to use piles to improve the load bearing capacity in the vicinity of the primary containment cell. Up to 30 piles would be driven into and through the primary containment cell to bedrock (see Figure 6).

It is noted that the primary containment cell does not include an engineered or natural leaching barrier at its base, with the Estate remediation strategy relying on capping material to prevent leaching of contaminants to the groundwater.

To ensure the integrity of the capping layer and containment cell is maintained, Knauf proposes to install a bentonite (impure clay mineral that improves impermeability) cement collar around the pile, with a bentonite pellet layer over each pile (forming a seal) followed by 1.5m concrete cap. The Department is satisfied that the measures proposed by Knauf would ensure that the piles are suitably capped and that the piles would not become a preferential path for contaminants to leach to groundwater.

However, the Department has recommended conditions of approval requiring an accredited site auditor to certify that the integrity of the cells has not been compromised as a result of the construction of the project.

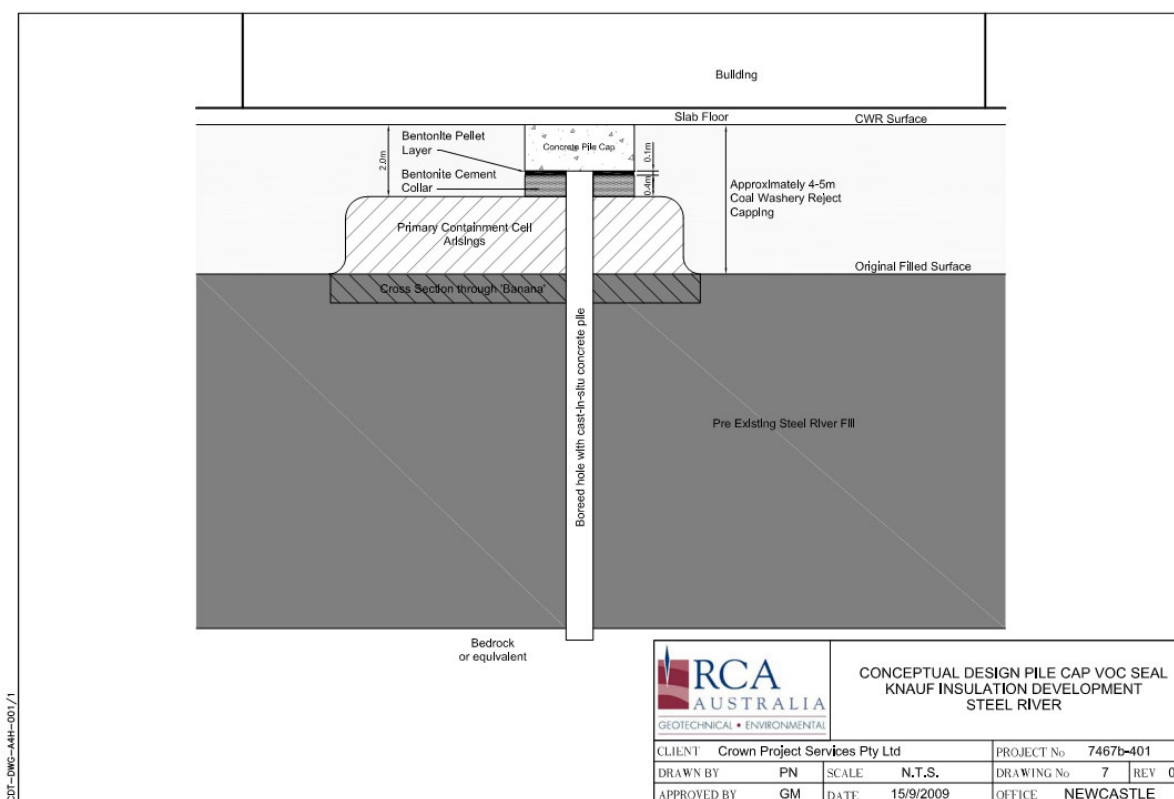


Figure 7: Proposed Piling and Capping Design

It is noted that parts of the primary containment cell and the T-Cell would be covered with either buildings or hardstands, which has the potential to impact on future access to these cells. As shown in Figure 5, only a small portion the containment cells would be covered as such the Department is satisfied that project would maintain access to the primary containment cell and T-Cell should maintenance of the cells be required.

Groundwater

Groundwater is expected to be between 6 to 7m below surface level and Knauf do not expect to intercept this aquifer during construction. However, there is potential for perched aquifer(s) to be intercepted during excavations which may be contaminated. Should contaminated groundwater be intercepted Knauf proposes to contain the contaminated groundwater on-site, with the groundwater to be either evaporated or treated on-site, or disposed of off-site.

The Department is satisfied that the measures proposed by Knauf to manage any contaminated groundwater encountered during construction are appropriate, however, considers that these measures should be further refined prior to construction commencing. As such, the Department's recommended conditions would require Knauf to prepare and implement a groundwater management plan detailing the measures that would be employed to manage any contaminated groundwater intercepted during construction.

Concerns have been raised in submissions that as the depth of groundwater has not been verified at the location of the T-Cell, there is uncertainty that the T-Cell has been appropriately located to minimise groundwater intrusion into the cell.

To minimise groundwater intrusion Knauf proposes to place a gravel drainage overlain by a geotextile layer under the T-Cell to promote lateral movement of the groundwater and to minimise intrusion. Additionally, Knauf proposes to place the T-Cell above the highest recorded groundwater level, with groundwater to be monitored during construction to ensure the T-Cell is appropriately located.

The Department considers that the measures proposed to minimise groundwater intrusion are appropriate and is satisfied that there is more than sufficient area on the site should the depth or location of the T-Cell need to be modified, to ensure intrusion of groundwater is minimised.

Nonetheless, the Department considers that it would be prudent to verify groundwater levels prior to the commencement of the construction of the T-Cell. In addition, the Department and DECCW consider that ongoing monitoring of the groundwater in vicinity of the containment cells is required to ensure that groundwater contamination is not being exacerbated as a result of the project. The recommended conditions of approval would require Knauf to prepare and implement a groundwater monitoring program for the project including details of contingency measures should monitoring indicate that groundwater contamination is being exacerbated. The recommended condition would require this monitoring program to be endorsed by an accredited site auditor prior to the commencement of monitoring.

It is noted that a large percentage of the site (~40%) would be covered. The proposal would therefore minimise infiltration to groundwater and minimise the amount of contaminated groundwater being discharged to the Hunter River. This is consistent with the objectives of the remediation strategy for the Estate.

In addition, the proposal does not extend into the 20m buffer area that is regulated under the CLM Act and DECCW has confirmed that the proposal would not interfere with the regulation of the buffer area under the CLM Act.

Summary

The Department is satisfied that the proposed remediation strategy and the measures proposed by Knauf to manage contamination and remediate the site are appropriate. However, the Department has recommended a number of conditions of approval to ensure potential impacts are minimised and managed.

4.3.2 Erosion and Sedimentation

During construction erosion and sedimentation must be managed to prevent the movement of contaminated material around the site and impacts on the capping layer on site. An erosion and sediment control plan has been prepared to ensure containment of contaminated soil and prevent erosion and sedimentation on site. The Department has also recommended conditions to ensure erosion and sediment controls are appropriately established and maintained.

4.3.3 Stormwater

The project would increase the stormwater runoff from the site as the buildings and hardstand would reduce water infiltration. Runoff from the ridge along the south western boundary of the site would also need to be managed as the facility could block the overland flow of this water.

Knauf proposes to direct stormwater to the 2 existing water quality and sedimentation ponds, 1 of which forms part of the project site and the other is part of the Estate infrastructure. Both these ponds were approved and constructed as part of the estate works. Stormwater infrastructure has been designed to handle the 1 in 20 ARI (Average Recurrence Interval) event.

Council advised that, due to the contamination and capping undertaken in the Estate, it prefers not to have any underground retention or infiltration trenches in the Estate. Given the site is adjacent to the Hunter River, where stormwater is directed, Council suggested there was no need for on site detention, but noted stormwater quality would need to be managed.

Stormwater would be treated through gross pollutant traps and oil separators before entering the 2 ponds. The ponds contain macrophytes, which would reduce nutrient levels (suspended solids, phosphorus and nitrogen) in the water. Both ponds have outflow controls and spillways directing water to the Hunter River approved as part of the overall subdivision of the site.

The stormwater infrastructure on the site has been designed to handle the 1 in 20 ARI event, and modelling indicates the ponds have the capacity to receive this water. Should a larger rainfall event occur, up to the 1 in 100 ARI, water would be directed to the 2 ponds via overland flow. The water would then overtop the spillway of the ponds and flow into the River untreated. This strategy is

generally consistent with Newcastle City Council's Development Control Plan, which aims to balance the cost of drainage infrastructure with the occurrence of inundation.

Consequently, the Department has recommended conditions requiring stormwater infrastructure to be designed to accommodate the 1 in 20 ARI event, in accordance with Council's Development Control Plan and the existing estate infrastructure.

Consequently, flooding of the site and potential interactions with contaminated soil or groundwater would be minimised.

4.3.4 Water use

The project would include some rainwater harvesting for use in toilets, however Knauf has advised that further rainwater harvesting and reuse is not feasible for 2 reasons:

- Water to be used in the process would need to be treated prior to use; and
- Rainwater is predicted to be able to supply only 28% of Knauf's water needs.

The facility would use approximately 180 ML of water a year. Hunter Water has confirmed it has capacity to supply this and also advised Knauf may be able to use recycled water from Hunter Water's water recycling plant, which is being constructed in the estate. Knauf has expressed an interest in this option and is exploring this further with Hunter Water. Should Knauf be unsuccessful in securing recycled water, the Department considers the project's water supply system should be reviewed to determine the feasibility of rainwater reuse.

Recommended conditions include a requirement to investigate water supply options for the plant, once Hunter Water's water recycling scheme is in place. This would ensure reasonable and feasible options to reduce demand on potable water sources would be implemented.

The Department is satisfied soil and water can be managed onsite through the recommended conditions of approval.

4.4 Traffic

The Estate has been progressively subdivided and redeveloped in stages, commencing at the eastern end of the Estate. Access to the Estate is via the intersection of Industrial Drive and Steel River Boulevard, however with the subdivision of the final stage of the Estate (the Knauf site), an additional access road was to be provided, running through the project site and connecting directly to the Pacific Highway.

Knauf's proposed site would incorporate all of the final stage of the Estate and a small portion of the penultimate stage.

The project would generate up to 226 light vehicle and 108 heavy vehicle movements a day, with up to 68 light vehicle and 14 heavy vehicle movements an hour. Traffic modelling indicates Knauf's traffic could be accommodated on the existing access road, with all traffic using the intersection of Industrial Drive and Steel River Boulevard.

Knauf has advised that they do not want an access road running through their site, for security reasons and because they intend to construct their building in the path of the approved road. Consequently Knauf intend to use the existing access road and would not construct the approved access to the Pacific Highway.

The decision not to proceed with the second access to the Estate means all the traffic from the project and the Estate would be directed through the existing intersection (see Figure 8).



Figure 8: Estate access road and intersection

The RTA, Council and 1 public submission raised concerns about the potential impacts on the surrounding road network, given the loss of the approved second access to the site.

The impact on surrounding intersections has been modelled and shows the project would not alter the level of service at these intersections. However, there are a number of vacant lots remaining in the estate and the RTA and Council raised concerns that with all traffic now directed through the existing intersection, traffic impacts may become unacceptable once these vacant lots are developed.

The modelling and assessment of possible future development scenarios, and resulting traffic levels has not been provided to date. Consequently, the Department agrees, that with the development of the remaining vacant lots in the Estate the capacity of the intersection (of Industrial Drive and Steel River Boulevard) may be exceeded.

Nonetheless, the RTA has advised they believe the intersection could be upgraded to cater for the worst case traffic volumes for the estate.

As the project would prevent the second access road being built, and this access road was only considered necessary to manage traffic from the final stage of the Estate (Knauf's site), the Department considers Knauf should be required to pay for any upgrade works required.

To ensure the intersection is managed to handle any future increase in traffic volumes, the Department has recommended conditions requiring Knauf to commission an independent traffic assessment. This assessment would determine the future traffic levels (from the entire Estate) at surrounding intersections and recommend measures to manage this traffic, exploring options to upgrade the intersection or implement other feasible options such as the use of rail for the transport of goods. Knauf would be required to implement the recommendations of the independent assessment, to the satisfaction of the Director-General. This would ensure traffic impacts would be appropriately managed.

In accordance with the recommendations of the Department of Transport and Infrastructure, the Department has also recommended conditions requiring the preparation and implementation of a Sustainable Transport Plan. This would maximise the use of public transport and ensure that other

options to minimise traffic, such as using rail for the transport of goods to and from the site, would be explored.

The Department is satisfied traffic from the project would be acceptably minimised and managed through the recommended conditions of approval.

4.5 Economic

The Department received a submission from Fletcher Insulation which raised concerns about the potential economic impacts of the project on the insulation manufacturing industry.

Fletcher Insulation argued that Australia's current glass wool production capacity is 83,000 tonnes a year and that although the Australian Government's Energy Efficiency Home Package has increased demand for insulation, this increase in demand would only be temporary and could end as soon as late 2010 (when funding for the scheme is predicted to run out).

The Department has carefully considered Fletcher Insulation's concerns, however it is the Department's view that this particular issue is a market and competition issue, between Knauf and the 2 companies already manufacturing glasswool insulation in Australia. Economic competition is not itself considered to be a planning consideration. What is considered under the EP&A Act is a wider and more general consideration of economic impacts in the locality. Consequently, the Department considers this issue is outside the scope of its environmental assessment of the proposal under the EP&A Act.

The Department has considered the potential economic impacts on the locality, such as on amenity and environment; and potential impacts on services provided to the community. In this regard, the Department is satisfied that economic impacts from the Project, on the locality, would be adequately managed and would provide for economic growth through local investment and employment opportunities.

Notwithstanding this, Knauf has also advised they currently import insulation to Australia and would manufacture much of this insulation at the proposed facility, instead of importing it. Consequently the impact on the insulation market is unlikely to be as severe as predicted by Fletcher Insulation. Knauf also indicated they may export some insulation overseas, and the location of the project, near the Newcastle port, supports this.

The Department also considers the growing awareness of climate change, along with increasing energy costs, are likely to increase future demand for insulation. Further policies in relation to home insulation and reducing energy use are likely to be developed into the future.

4.6 Other Issues

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

Table 3: Other Issues

Issue	Assessment	Recommended Conditions
Noise	- The project would generate noise during construction and operation. - The nearest residents are approximately 50m from the site in Warabrook, however the Department notes these residents are currently experiencing high noise levels from the Pacific Highway so noise from the project would be unlikely to be audible. - The use of rock breakers and piling equipment during construction has the potential to exceed construction noise goals at neighbouring facilities in the Estate and these works could also generate vibration impacts. - None of the works are expected to exceed the noise and vibration goals individually, so these potential construction noise and vibration impacts can be managed through scheduling of works. - A number of new facilities such as a coal export terminal and	Recommended conditions specify construction and operation hours, include operational noise limits, and require the Proponent to prepare and implement an operational noise verification plan to ensure the predicted noise levels are not exceeded.

Issue	Assessment	Recommended Conditions
	multipurpose facility have been approved in the area and the cumulative noise from the project and these facilities has the potential to impact on the noise amenity of the area. • In order to reduce the noise emissions of the project, some areas of the facility would be constructed with thickened colourbond cladding or incorporate internal insulation. • With these measures in place noise modelling indicates the project would comply with the relevant operational noise criteria at relevant receptors. • DECCW recommended operational noise limits based on the predicted noise levels, confirming that this would allow for development of the remaining lots on the estate, without risking the noise amenity of the area. • DECCW's recommended operational noise limits have been incorporated into the recommended conditions which are based on the predictions of the noise modelling. • The Department is satisfied the recommended conditions would ensure noise from the project would be managed to protect the noise amenity of nearby sensitive receivers.	
Greenhouse Gas Emissions	• The project would be a high energy user, using both gas and electricity to fuel the furnace and run the other plant and machinery on site. • The facility would produce up to 110,000 tonnes CO₂-e a year, or 1.4 tonnes of CO₂-e per tonne of insulation produced. • The facility would have the capacity to use recycled glass, instead of sand, in the production process and this would substantially reduce the energy use of the site. • A number of existing glasswool insulation manufacture facilities in Australia use between 65 and 80% recycled glass in their products. • Using recycled glass means the furnace temperature and consequent energy requirements can be reduced. • The Department considers that by incorporating the energy efficiency measures proposed in the EA and maximising the use of recycled glass in the production process the greenhouse gas emissions from the project would be minimised. • The Department also notes that the end use of the insulation product would reduce the heating and cooling requirements and associated greenhouse gas emissions of those facilities where it is installed. Consequently the Department is satisfied the project would assist in reducing greenhouse gas emissions.	• Recommended conditions require the Proponent to: ○ maximise the use of recycled glass, instead of sand, ensuring at least 80% recycled glass is used, unless they can demonstrate it is unavailable; and ○ prepare and implement an Energy Efficiency Program to minimise the energy consumption and greenhouse gas emissions of the project.
Visual	• The project would include a 22,000 m² building, with a height of up to 34 m in some sections and 5 stacks, one of which would be 60 m high. Consequently the project has the potential to impact on the visual amenity of the area. • The main views of the site would be from the Pacific Highway travelling South East towards Newcastle City Centre. • The facility would also be highly visible from industrial properties around the site. • A ridge along the south western boundary of the site would screen the majority of the plant from residential areas of Mayfield West and Warabrook. • While the 60 m stack would be visible from much of the surrounding area the Department notes the skyline already features a number of overhead powerlines and telephone towers and the facility is not expected to block views. • Given the existing industrial landscape and industrial history of the site, the Department considers the stack could be incorporated into the character of the landscape. • Knauf has committed to minimise the perceived bulk and scale of the facility by incorporating finishes and materials into the detailed design to provide visual relief. • Knauf has also committed to provide landscaping within the setbacks around the site.	• Recommended conditions of approval require Knauf to prepare and implement: ○ a detailed landscape management plan for the site; and ○ architectural design plans, illustrating the finishes and materials that would be used to minimise the visual impacts of the project, to ensure the project is not inconsistent with the character of the area.

Issue	Assessment	Recommended Conditions
	The Department is satisfied that the visual impacts of the project can be minimised through the recommended conditions of approval and that the project is consistent with the area's existing and historical industrial landscape.	
Waste	- The project would generate waste during construction and operation (including from the end use/disposal of the product). <u>Construction</u> - Material leftover from earthworks on previous stages of the estate, that is suitable for reuse, is stockpiled onsite. - This material would either be reused onsite, during construction of the project, or disposed of to a licensed facility. <u>Operation</u> - The end product would contain some hazardous material, including formaldehyde and arsenic, and consequently the disposal of the product would also need to be managed. - The project could use 80% plate cullet (glass from windows and windscreens) instead of raw sand to produce the glass. - Plate cullet cannot be recycled to produce standard glass bottles, and consequently the project could prevent it being sent to landfill. - Knauf has advised that the entire plate cullet market is currently consumed by Australia's existing glass wool manufacturers. - The facility could also use other types of cullet such as clear or coloured bottle glass, however due to the chemical composition of these different types of glass the proportions of cullet that could be used would be reduced (to as low as 15% for coloured/mixed glass). - Knauf have indicated they are exploring options to increase glass sorting with a Newcastle glass recycler. - The Department is satisfied that the use of recycled glass in the product would be maximised as it is cheaper than using sand, and by implementing a Waste and Product Management Plan, quantities and types of waste generated would be minimised and managed in accordance with the NSW Waste Avoidance and Resource Recovery Strategy.	- Recommended conditions require: - a construction waste management plan; and - a product management plan to be revised every 5 years, ensuring: - waste from the project would be minimised; and - plate cullet would be used in the product wherever possible.
Hazards	- The project would include the storage of some dangerous goods onsite, including ammonia, natural gas, LPG and oxygen. - A preliminary risk screen was undertaken to determine whether there would be any potential hazard risks offsite. - This screening found the dangerous goods to be stored and handled onsite would be below the threshold limit, and consequently the project would not present any offsite hazard risk. - The Department is satisfied any hazards from the operation of the project would be managed onsite.	No conditions are considered necessary.
Local Infrastructure Contributions	- Council advised suitable development contributions for the project would be \$500,000. - Given the services required by the project are already in place, the Department is satisfied this contribution is suitable for the provision of infrastructure and services for the employees of the project.	The Department has recommended conditions which require the payment of a local infrastructure contribution of \$500,000 to Council.
Flora & Fauna	- The site has been heavily modified by the previous BHP Steelworks operations on site and subsequent containment of contaminated material. - Some mature trees remain along some sections of the boundary of the site, the majority of the site consists of disturbed grasslands. - The project would not remove any trees on site and the proposal would include some landscaping. - The Department is satisfied the project would increase the flora and fauna value of the site.	The Department has recommended conditions of approval to ensure the landscaping undertaken on site is maximised and is undertaken using endemic species.

5. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix C), and summarised these conditions in Appendix B. These conditions are required to:

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

The Department has provided the draft conditions of approval for the project to relevant government authorities for comment, and has incorporated these comments into the conditions of approval where appropriate.

Knauf has reviewed and accepts the recommended conditions.

6. CONCLUSION

The Department has assessed the merits of the project and this assessment found that the environmental impacts of the project can be managed to ensure an acceptable level of performance.

Although air emissions would have the potential to exceed regulatory limits for particulates, this would only occur during scheduled Dry EP maintenance, on no more than 6 days a year. Even though the regulatory limits would be exceeded at the emission point, dispersion modelling indicates ground level criteria would not be exceeded at any time. DECCW has reviewed the proposal in detail and agreed to provide Knauf with an exemption for the first 2 years of operation. Knauf has committed to implementing a solution, to manage emissions during Dry EP maintenance works, within the first 2 years of operations. All other air emissions would be within the regulatory and ground level concentration limits. The Department is satisfied this outcome would prevent any health impacts from the project.

The presence of existing contamination on site would be managed through the containment of this material and capping of the site. Works would be undertaken in accordance with the requirements of a DECCW approved site auditor to ensure the integrity of the containment cells. Erosion and sediment controls and stormwater infrastructure would be installed to minimise any interaction between the stormwater and contaminated soil and groundwater, and to contain the contamination on site. The Department notes the project would improve the management of soil and water onsite and is satisfied these measures are suitable.

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

- optimise the use of vacant industrial land at the Steel River Industrial Estate;
- attract \$167.5 million worth of investment to the region; and
- create at least 135 new jobs in Newcastle.

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

7. RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission:

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



8.10.09

Chris Wilson
Executive Director
Major Projects Assessment



9/10/09

Richard Pearson
Deputy Director-General



Sam Haddad
Director-General

APPENDIX A: AIR QUALITY ASSESSMENT



REPORT

REVIEW OF AIR QUALITY ISSUES - KNAUF STEEL RIVER INSULATION PROJECT

NSW Government - Department of Planning

Job No: 3498

25 August 2009

PROJECT TITLE:**REVIEW OF AIR QUALITY ISSUES -
KNAUF STEEL RIVER INSULATION
PROJECT****JOB NUMBER:****3498****PREPARED FOR:**

Mr Chris Ritchie

**NSW GOVERNMENT - DEPARTMENT OF
PLANNING****PREPARED BY:**

A. Todoroski

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VERSION	DATE	PREPARED BY	REVIEWED BY
01	24.09.2009	A. Todoroski	A Todoroski
02	25.09.2009	A. Todoroski	R Kellaghan

Queensland Environment Pty Ltd trading as
PAEHolmes ABN 86 127 101 642

BRISBANE:

Level 1, La Melba, 59 Melbourne Street South Brisbane Qld 4101
PO Box 3306 South Brisbane Qld 4101
Ph: +61 7 3004 6400
Fax: +61 7 3844 5858

SYDNEY:

Suite 2B, 14 Glen Street
Eastwood NSW 2122
Ph: +61 2 9874 8644
Fax: +61 2 9874 8904

Email: info@paeholmes.com

Website: www.paeholmes.com

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1 INTRODUCTION

PAEHolmes has been engaged by the Department of Planning (DoP) to provide independent advice in relation to air quality for the proposed Knauf Insulation Glass Wool Manufacturing Facility (the Proposal), located at Steel River, Newcastle.

In summary, PAEHolmes have conducted the following:

- An adequacy review of an Air Quality Assessment and Greenhouse Gas Assessment prepared by URS Australia Pty Ltd (URS) for Crown Project Services Pty Ltd (**URS, 2009** and **URS, 2009a**);
- Review of the response to comments following the adequacy review, prepared by URS (**URS, 2009b**) (the preferred project report (PPR) for air quality);
- Review of draft specific environmental conditions for the project approval;
- Review of Department of Environment Climate Change and Water (DECCW) comments on the proposed project;
- An overall assessment summary of the potential air quality issues associated with the Proposal; and
- Suggestions for specific approval conditions for the management of air quality for DoP consideration.

This report provides an overall assessment of the air quality issues and suggestions for ongoing management of air quality.

1.1 Background

PAEHolmes have completed an adequacy review of two reports prepared by URS for Crown Project Services Pty Ltd. These reports are;

- *"Proposed Knauf Insulation Glass Wool Manufacturing Facility, Steel River Newcastle – Air Quality Impact Assessment"* dated 2nd July 2009; and
- *"Greenhouse Gas Assessment for Knauf Insulation Glass Wool Manufacturing Facility"* dated 25th June 2009.

The issues identified in the adequacy review are detailed in our letter dated 13 July 2009 (**PAEHolmes, 2009**), and are summarised in **Appendix A**.

The two main issues identified were:

- Use of an incorrect odour impact assessment criteria applied to assess impact; and,
- The legitimacy of in-stack particle emissions at a concentration of 750 µg/m³ (15 times the regulatory limit) for the Emergency Bypass Stack during annual maintenance.

Less significant issues included:

- Clarification on the assumptions used to calculate emission rates;
- Further clarification of the release of Type 1 and Type 2 substances;
- Further clarification on the modelling and assessment approach, including treatment of background PM₁₀;
- Inclusion of fugitive emission sources for odour; and

- Proposed management and mitigation measures.

The Department of Environment, Climate Change and Water (DECCW) undertook a preliminary review of the Proposal (**DECCW, 2009**) and identified issues similar to those identified in the PAEHolmes adequacy review. Issues where DECCW sought further details or clarification include the following:

- Not addressing the potential odour impact from excavation of contaminated soils during construction phase;
- Further clarification on the modelling approach, including assumptions relating to the conversion of NO to NO₂;

Following adequacy review, supplementary information was provided by the proponent (**JBA, 2009**), including a supplementary report (**URS, 2009b**), responding to and clarifying issues raised by PAEHolmes and DECCW.

This information forms the proponents Preferred Project Report (PPR). The following sections respond to the PPR and the original EA and provide an overall assessment of the proposal.

2 REVIEW OF PREFERRED PROJECT REPORT

The two key air quality issues are detailed in **Sections 2.1** and **2.2**, and an overall assessment, considering the broader issues is provided at **Section 3**.

2.1 Odour Impact Assessment Criteria

Modelling has been revised to assess potential odour impacts with an odour criteria of 2 OU. A number of changes have been proposed to achieve compliance with the 2 OU goal, including:

- Increasing the Blowing Wool Stack height from 40m to 55m; and
- Reducing the odour emission rate from the Wet Electrostatic Precipitator (EP) by 90% to account for cessation of downstream operations during emergency scenarios.

The assumption of 90% reduction in odour was based on the cessation of downstream operations during emergency scenarios. It is understood that during maintenance, production will now be scaled back to 5% capacity, to reduce the particulate (and metal) emissions from the Dry EP (discussed further in **Section 2.2**). It is not clear if the 90% reduction in odour emission rate is a result of complete cessation of glass wool production (in which case it is unclear why a 100% reduction is not assumed), or if it is related to the 95% reduction in production level, proposed under maintenance scenarios, with a conservative allowance of 5% for potential variability.

The revised modelling predicts that peak odour concentrations would be less than 2 OU beyond the site boundary during the emergency scenario, which is less than the odour goal of 2 OU. The revised modelling therefore indicates that the Proposal would not result in odour impacts at the closest sensitive receptors.

Fugitive odour emissions (from buildings) have not been included in the revised assessment on the basis that boundary odour monitoring conducted at four locations surrounding a similar plant in Krupka showed that concentrations were below the detection limit when measured using olfactometry. However this does not necessarily show that odour impacts will not result from the combination of fugitive and stack odour sources at this location, but indicates no impact may be likely.

An odour audit, undertaken following commissioning of the Proposal, would confirm that emissions from the operation using the new binder would result in acceptable levels of odour emissions. The odour audit could include monitoring of the Wet EP stack during maintenance to confirm the assumed 90% reduction in odour emission rate. This is discussed further in **Section 4**.

2.2 In-Stack Particle Limits during Maintenance

Supplementary information provided by the Proponent indicates that the revised in-stack concentrations of PM₁₀, during maintenance (~6 days per annum), will be 286 mg/m³, which is 6 times the regulatory limit of 50 mg/m³. The reduction in in-stack concentrations has been achieved by reducing the production rate to 5% (the lowest level of production that can be maintained).

The POEO Act allows the DECCW, with approval from the EPA board, to grant an exemption to a regulatory limit. The DECCW has granted a limited 2 year exemption from the regulatory limit (allowing an in-stack concentration up to 300 mg/m³) following approval by the EPA board on 14 September 2009.

The Proponent proposes that during the first two years of operation, measures will be investigated and/or implemented to reduce particulate concentrations to a level compliant with in-stack limits.

Modelling in the PPR of maintenance activity with a stack emission concentration of 286 µg/m³ shows that the air quality goals for PM₁₀ are likely to be met at receptor locations.

In light of this, it is suggested that:

- verification of the modelling is performed post commissioning; and,
- an Operational Air Quality Management Plan is developed. The plan would outline and document the proposed measures investigated and/ or implemented during year 1 and 2. The Operational Air Quality Management Plan would also be reviewed after Year 2, documenting any modifications needed to the process, plant and pollution control equipment and operational practices. The Plan would also be upgraded to include any protocol or procedure needed for air quality management during maintenance activity.

This is discussed in **Section 3.3** and **Section 4**.

3 OVERALL ASSESSMENT OF THE PROPOSAL

3.1 Existing Air Quality

The background levels presented in the EA are as follows:

Table 1: Background Air Quality

Pollutant	Averaging period	Monitoring site	Background level ($\mu\text{g}/\text{m}^3$)	Criteria ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour	Newcastle	90.2	246
	Annual	Newcastle	18.5	62
PM ₁₀	24 -hour	Average of Beresfield, Newcastle and Wallsend	50.5	50
	Annual	Wallsend	21.9	30
Pb	Annual	Wallsend	0.09	0.5
SO ₂	10 - minute	Wallsend	274	712
	1-hour	Wallsend	192	570
	24 - hour	Wallsend	40	228
	annual	Wallsend	6	60
CO	15 - minute	Newcastle	4,800	100,000
	1 - hour	Newcastle	3,600	30,000
	8 - hour	Newcastle	3,000	10,000
HF	24 - hour	Dora Creek	0.32	1.5
	7 days	Dora Creek	0.17	0.8
	30 days	Dora Creek	0.17	0.4
	90 days	Dora Creek	0.17	0.25

Background air quality data was obtained for criteria pollutants from relevant NSW DECCW monitoring sites, including Wallsend, Newcastle and Beresfield. Annual background Lead concentrations were taken from Annual NEPM Compliance reports. Background concentrations for Hydrogen fluoride were taken from monitoring site at Dora Creek, referenced in an environmental assessment report for Eraring Energy at Eraring, NSW. This report has not been reviewed but the approach adopted appears reasonable. Background concentrations for other pollutants assessed are assumed negligible.

Overall, the treatment of background air quality within the report is considered adequate though not ideal for PM₁₀, as an average level is chosen to represent maximum 24-hour PM₁₀ levels.

Apart from 24-hour average PM₁₀, the presented air quality levels are within criteria.

3.2 Climate and Meteorology

The treatment of meteorological data in the AQIA is sparse and appears illogical, as outlined in PAEHolmes adequacy review. Whilst this is a relatively small issue, it has not been addressed in the supplementary report other than to comment that DECCW did not raise concerns.

PAEHolmes examined 5 years of local site specific data from Steel River. The data are broadly similar to the synthetic TAPM data applied by the proponent, but show differences, for example in autumn and spring wind directions and speeds.

Regardless, as sensitive receptors are quite close this issue is unlikely to significantly alter the modelling results and the conclusions in the EA (as acknowledged in the PAEHolmes adequacy review). To confirm there is no issue a validation exercise can be conducted post commissioning.

3.3 Potential Air Quality Impacts of the Proposal

Overall, dispersion modelling of air quality emissions indicates that there is a relatively low risk of significant impact on the community arising from the proposal. As shown in **Table 2**, predicted impacts comply with the relevant criteria.

Table 2: Predicted Air Quality Impacts

Pollutant	Averaging period	Predicted project only level ($\mu\text{g}/\text{m}^3$)		Predicted cumulative level ($\mu\text{g}/\text{m}^3$)		DECCW Criteria ($\mu\text{g}/\text{m}^3$)
		Normal	By-pass	Normal	By-pass	
NO ₂	1-hour	85	69	90.2		246
	Annual	1.2	1.2	18.5		62
PM ₁₀	24 - hour	5.6	25.1	49.7	49.7	50
	Annual	-	-	20.5	-	30
Odour	1 second	1.8	<2	-	-	2 (OU)
Pb	Annual	0.00039		0.09		0.5
SO ₂	10 - minute	172	171	445	445	712
	1-hour	120	120	312	312	570
	24 - hour	26	26	66	66	228
	annual	1	1	7	7	60
CO	15 - minute	8	7	4,808	4,807	100,000
	1 - hour	6	5	3,606	3,605	30,000
	8 - hour	4	3	3,003	3,003	10,000
HF	24 - hour	0.183	0.184	0.50	0.50	1.5
	7 days	0.062	0.075	0.23	0.24	0.8
	30 days	0.062	0.075	0.23	0.24	0.4
	90 days	0.012	0.020	0.18	0.19	0.25
VOC (as formaldehyde)	1 - hour	14.2	14.2	-	-	20
HCl	1 - hour	1.19	1.38	-	-	140
Co	1 - hour	0.0040	0.0032	-	-	-
Cd	1 - hour	0.0178	0.0028	-	-	0.018
Cr	1 - hour	0.0555	0.0382	-	-	0.09
Ni	1 - hour	0.0376	0.0258	-	-	0.18
As	1 - hour	0.0297	0.0028	-	-	0.09
Se	1 - hour	0.0178	0.0129	-	-	-
Sb	1 - hour	0.0297	0.0028	-	-	9
V	1 - hour	0.0119	0.0078	-	-	-
Ammonia	1 - hour	16.8	16.8	-	-	330
Phenol	1 - hour	5.02	5.02	-	-	20

Revised odour modelling has demonstrated that odour impacts beyond the site boundary can be reduced to levels below the relevant criteria by increasing the blowing wool stack height and reducing the odour emission rate from the emergency stack by 90%.

Revised PM₁₀ modelling has been conducted with an increased Blowing Wool Stack height of 55 m. Under normal operations, the revised predicted incremental PM₁₀ concentrations from the project are low (of the order of 5 $\mu\text{g}/\text{m}^3$).

Under maintenance/ bypass conditions, the highest predicted 24-hour average PM₁₀ levels due to the project is 25 µg/m³, or 50% of the DECCW air quality goal (**DEC, 2005**), however this is excluding ambient background PM₁₀.

The proponent has compared the maximum 24-hour average background level with the predicted level on the same date, and also the maximum predicted level due to the project is added with the background levels on that same date, but no further analysis is presented to better assess the potential for impacts to arise. For example, showing the ten highest predicted incremental concentrations, or a statistical evaluation of the likelihood of levels exceeding the DECCW criteria should background levels be higher during maintenance periods has not been conducted.

The DECCW criteria is met using the proponent's approach, however this on-the-day only comparison is not entirely robust, as for example, a low background level on a given day could have arisen, say, due to suppressed dust levels after a period of prolonged rainfall.

Nevertheless, the levels predicted for normal operation are quite low, less than 6 µg/m³, and there is no significant risk of serious impact. The higher predicted levels, up to 25 µg/m³ under bypass operation, would only arise for up to 6 days in any year, suggesting a relatively low risk of serious impact, especially if the bypass/ maintenance activity coincides with good dispersion conditions or winds away from receptors.

To ensure risks are minimised during maintenance, it is suggested that as part of a verification program the predicted concentrations and associated impacts are validated more rigorously. It is recommended that site meteorological data, the results of the verification and potentially weather forecast information is considered, and if it is found to be practical the information is applied to determine the most suitable periods of the year in which to schedule and commence maintenance activities. This is discussed further in **Section 4**.

Metals emissions are conservatively modelled, with some at relatively high in-stack levels, presumably as little information is available. The predicted levels at receptors are below the relevant criteria, however mercury is not modelled or assessed. As emissions of metals are largely dependent on the quality and type of cullet used in the process, which is unknown, it would be prudent to conduct a campaign of cullet testing for Mercury and other metals (if this can be practically done) and corresponding testing of the emissions when that batch of cullet is processed. Alternatively, where it is not practical to reliably test the cullet, a campaign of monitoring of in-stack metal emission concentrations should be done to verify the levels in practice are as assumed in the EA. A basic procedure to minimise the risk of contaminated cullet entering the process should also be put in place. This is discussed further in **Section 4**.

3.4 Greenhouse Emissions

There are numerous discrepancies noted in the calculation of greenhouse gas emissions, however, in the context that the required calculation procedure is based around broad, generic emission factors in any case, little practical benefit would appear to be gained by addressing the discrepancies further.

A relevant issue is whether the project utilises energy efficiently. The proponent has compared its performance of 10 GJ/tonne to the performance of similar plant based on studies conducted by the European Insulation manufacturer's Association which suggests glass wool manufacture requires between 11 and 22 GJ/tonne to manufacture. On this basis it would appear the plant is efficient, however the European studies are not referenced, nor is any relevant extract quoted.

The indication is that the plant is efficient, and that the greenhouse assessment broadly meets the minimum standard of assessment required.

3.5 Proposed Mitigation & Management Measures

3.5.1 Construction

The supplementary report provides some further detail on the proposed mitigation measures for construction and operations. Detailed mitigation measures for construction phase impacts will be outlined in a Construction Environmental Management Plan (CEMP) which will be developed prior to issuing of a construction certificate.

Construction impacts have not been quantified although potential impacts during construction are identified and include:

- Dust and particulate from general construction / excavation; and
- PAH and odour emissions during excavation of a contaminated area of the site.

Suggested control measures are outlined for dust and odour, including suggestions for monitoring of dust and odour, and full details of control measures would be outlined in the proponent's CEMP. This is considered a standard approach in air quality assessment and management for construction impacts.

3.5.2 Operation

Details of proposed mitigation, management and monitoring measures for operation of the site are not detailed in the Air Quality Assessment or supplementary report, with the exception of references to the electrostatic precipitators for particulate control and to the use of a new binder to reduce odour emissions.

Suggested conditions for the operation of the Proposal are therefore provided in **Section 4** for DoP consideration.

3.6 Summary - potential impacts from proposal

Overall, on the basis of the presented modelling and data evaluated per DECCW Criteria, there is low risk of significant impact arising from the proposal. Where there is some uncertainty, post commissioning validation can be conducted, and conditions can be imposed to mitigate potential impact should it arise in practice.

This is discussed below.

4 CONSIDERATIONS FOR CONDITIONS OF APPROVAL

Specific conditions that could be considered by DoP for their project approval are provided at **Attachment B**.

The following outlines considerations related to potential conditions of approval (**Attachment B**) that would aim to verify the assumptions used in the modelling and provide additional confidence that the Proposal would not pose a health risk to the community, particularly during periods of maintenance when emissions to air are expected to be higher.

Consideration No. 1 – Use of Site Specific Meteorological Data

During maintenance periods, the highest predicted 24-hour average PM₁₀ concentration from the Proposal alone is 25 µg/m³. If maintenance is performed during unfavourable dispersion conditions or when existing ambient PM₁₀ concentrations are high, potential exists to exceed the DECCW air quality criteria (**DEC, 2005**).

Fugitive odour emissions from buildings and external activities have not been addressed by the proponent. The degree of off-site odour impact (if any) from these low lying sources can be significantly affected by local weather conditions.

Actual weather data has not been used in the modelling, and it is not clear why. PAEHolmes has many years of weather data for Steel River that appears suitable for using in air dispersion modelling. This raises some small doubt about the accuracy of the modelling.

The use of synthetic meteorological data, as used in the air quality assessment, is not a suitable basis for ongoing facility management.

In light of the above, consideration should be given to obtaining site specific meteorological monitoring to facilitate operational air quality management of the project. Arrangements should be made to obtain local meteorological data from the Steel River monitoring site on a regular basis. If this is not possible, consideration should be given to the installation of a meteorological station on site.

Local meteorological data can then be used to validate the results of the modelling and provide ongoing input into operational air quality management. For example that data can be used in conjunction with dust or odour monitoring or modelling data, to identify the weather conditions and seasons that are least likely to produce elevated impacts at receptors. This can help to better schedule the start of maintenance operations during favourable dispersion conditions when impacts on adjacent sensitive receptors can be minimised.

Consideration can also be given to obtaining long term meteorological forecast data to assist with maintenance planning; for example to identify conditions when planned maintenance might be best scheduled. Possible flexibility in production is a potential consideration if the need to reschedule maintenance due to poor prevailing weather should arise.

Consideration No. 2 – Post Commissioning Verification

A verification program would aim to:

- Validate the results of the modelling by demonstrating that measured ambient concentrations of key pollutants are within regulatory limits; and,
- Demonstrate that the higher particle emissions during bypass/ maintenance do not pose a health risk to the community;

A monitoring program, if designed correctly, could be a one-off event, provided sufficient representative locations are chosen and concurrent meteorological monitoring is used to describe dispersion conditions. The following monitoring is suggested, as a minimum:

- A round of post commissioning monitoring of all discharge points (furnace stack, blowing wool stack, downstream stack and maintenance bypass stack), in accordance with DECCW approved methods (**DEC, 2005a**) and for the impurities identified in Schedule 2 of the POEO (Clean Air) Regulations 2002 for glass production;

- Collection of ambient particulate (PM10) using two high volume air samplers, run continuously during the 6 days of maintenance (filters changed every 24-hours) and at least one sampler run on a one-day-in-six cycle during regular operations, for one year;
- Analysis of metal concentrations in the collected particulate, in addition to gravimetric determination;
- Consideration of microscopic analysis for particle type / shape differentiation;

Consideration No. 3 – Odour Audit

The assessment indicates that odour concentrations beyond the site boundary are likely to be less than the odour goal of 2 OU. However, fugitive odour emissions (from buildings) have not been modelled.

It is therefore suggested that an odour audit of the facility is conducted following commissioning. The odour audit could also include monitoring of the Wet EP stack during maintenance to confirm the assumed 90% reduction in odour emission rate. Provided the odour audit indicates that assumptions used in the modelling are valid, annual audits are probably not required.

Consideration No. 4 –Cullet

Emissions of metals are largely dependent on the quality and type of cullet used in the process. It is therefore suggested that to reduce the risk of contaminated cullet entering the process, the proponent develop quality control procedures to screen out potentially contaminated materials (e.g. mercury thermometers) entering the cullet stream. In developing a suitable procedure/ protocol, it is recommended that the proponent consider conducting a campaign of metal testing of the cullet, and/ or testing of the metal emissions generated in processing that batch of cullet. It is noted that it may not be practical to reliably test cullet directly for traces of metals such as Mercury.

Consideration No.5 – Ongoing air quality management

The assessment provides a reasonably good indication that air quality impacts are unlikely to occur in practice, however the assessment does not identify how potential impacts would be managed, or what actions are proposed to ensure low impact operation is maintained over time.

In light of this and the previous considerations it is considered that an Operational Air Emissions Management Plan, which would include a Maintenance Air Emissions Management Plan, should be developed by the proponent. A framework for the proponent to develop such a plan is provided at **Appendix B** for DoP consideration.

5 CONCLUSIONS

Dispersion modelling of air quality emissions from the proposal indicates that overall there is a relatively low risk of significant impact on the community arising from the Proposal, despite modelled emissions for the first two years of operation of the emergency stack being greater than the regulatory limits outlined in the POEO (Clean Air) Regulations, 2002.

To provide an additional level of confidence in the modelling results, the predicted impacts from the Proposal (and associated potential for adverse health impacts), could be validated through a post commissioning verification program.

6 REFERENCES

DECCW, 2009. Knauf Insulation – Glass Wool Manufacturing Plant Environment Assessment – Adequacy Review.

DEC, 2005. NSW Department of Environment and Conservation (DEC) Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, August 2005.

DEC, 2005a. NSW Department of Environment and Conservation (DEC) Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales, August 2005.

JBA, 2009. Knauf Insulation Glass Wool Manufacturing Project – Steel River Estate, JBA Urban Planning Consultants, 14 August 2009.

NEPC, 2003. National Environmental Protection Council - National Environmental Protection Measures (NEPM) for Ambient Air Quality, August 2003.

NSW Government, 2002. Protection of the Environmental Operations (Clean Air) Regulation, 2002.

PAEHolmes, 2009. *KNAUF INSULATION LTR RPT_JUL09*, 13 July 2009.

URS, 2009. Greenhouse Gas Assessment for Knauf Insulation Glass Wool Manufacturing Facility, 25th June 2009.

URS, 2009a. Proposed Knauf Insulation Glass Wool Manufacturing Facility, Steel River Newcastle – Air Quality Impact Assessment, 2nd July 2009.

URS, 2009b. Response to Department of Planning Comments on Proposed Knauf Insulation Glass Wool Manufacturing Facility – Air Quality and Greenhouse Gas Assessment, 13 August 2009.

Appendix A - Summary of PAEHolmes Adequacy Review

Issue	Adequacy	Comments
Description of project and process	Adequate	The report provides an adequate description of the process and material flows through the process.
Description of emissions and emissions inventory	Not ideal	Odour emissions are not clearly described. It is unclear how the odour levels that have been used in the modelling have been derived or sourced.
Air quality assessment criteria	Not ideal	DECC impact assessment criteria for criteria pollutants have been correctly applied in the project however it would appear too much emphasis has been placed on the Strategic Impact Assessment Study Air Quality Guidelines for the area.
Odour impact assessment criteria	Not adequate	Incorrect odour impact assessment criteria have been applied.
Meteorological data and approach to modelling	Not ideal	It is unclear why the measured site specific data that have been used to significantly influence TAPM modelling have not been presented, and data from Nobby's station presented instead. Also it is not clear exactly why the TAPM modelling was needed, possibly cloud cover or sigma theta data that would have allowed stability classes to be determined based on site specific data was not available however this is not made clear in the report.
Predicted air quality impacts	Not ideal	Tabulated levels do not always align with the figures.
Compliance with regulatory stack concentration limits	Not adequate	Under Emergency Bypass Stack operation during what appears to be regular scheduled maintenance PM ₁₀ and total metal emissions significantly exceed Clean Air Regulation limits. Confirmation from DECC as to the appropriate approach is warranted.
Assessment of PM ₁₀ impacts	Not ideal	More than the top two results should be presented. The tabulated results should reflect the values shown in the text and ideally a more robust statistical analysis should be conducted.
Management of potential operational impact	Not ideal	It would be appropriate to provide a basic outline of an operational Environmental Management Plan or key actions that would be undertaken to mitigate impacts under various operating scenarios.

Appendix B – Suggested Conditions for DoP Consideration

AIR QUALITY

Odour

1. The Proponent shall not cause or permit the emission of offensive odours from the site as defined under Section 129 of the POEO Act.

Dust

2. The Proponent shall implement all reasonable and feasible measures to minimise dust generated by the project.
3. During construction, the Proponent shall ensure that:
 - (a) all trucks entering or leaving the site have their loads covered;
 - (b) trucks associated with the project do not track dirt onto the public road network; and
 - (c) public roads used by these trucks, in the vicinity of the site, are kept clean.

Emission Limits

4. The Proponent shall ensure that the project meets the air emission limits outlined in the Environment Protection Licence (EPL).

[This may be a redundant condition, as it is covered by condition 5 below, and also by proposed EPL conditions operating via POEO. Consider using either condition 4 or condition 5, not both. It is recommended to only use condition 4 and delete condition 5 and the table. This would allow the DECCW to specify the details of any limits in the EPL, rather than both DoP and DECCW.]

5. The Proponent shall ensure the emissions from the stacks do not exceed the emissions limits in Table 3, unless otherwise specified in the EPL.

Table 3: Air Emissions Limits

Emission Point	Pollutant	Unit of measure	100 percentile concentration limit
Furnace – Dry Electrostatic Precipitator	Solid Particles	mg/m ³	50
	Nitrogen Dioxide (NO ₂) or Nitric Oxide (NO), or both (as NO ₂)	mg/m ³	500
	Sulfur dioxide (SO ₂)	mg/m ³	100
	Total of Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn and V	mg/m ³	1
	Cd	mg/m ³	0.2
	Volatile Organic Compounds (VOC) as n-propane equivalent	mg/m ³	40
	Hydrogen chloride	mg/m ³	10
	Fluorine (F ₂) and any compound containing fluorine, as total fluoride (HF) equivalent	mg/m ³	5
	Opacity	%	20
Furnace – Emergency Stack	Solid Particles	mg/m ³	50*
Forming Hood, Curing Oven and Cooling Section – Wet Electrostatic Precipitator	Solid Particles	mg/m ³	50
	Sulfur dioxide (SO ₂)	mg/m ³	300
	Nitrogen Dioxide (NO ₂) or Nitric Oxide (NO), or both (as NO ₂)	mg/m ³	50
	Volatile Organic Compounds (VOC) as n-propane equivalent	mg/m ³	40
	Ammonia	mg/m ³	50
	Formaldehyde	mg/m ³	5
Facing Pit - Stack	Volatile Organic Compounds (VOC) as n-propane equivalent	mg/m ³	40
	Solid Particles	mg/m ³	50
Blowing Wool Stack	Solid Particles	mg/m ³	20

Notes:

**this concentration limit applies from 2 years after the commencement of operations onwards.*

Averaging periods, reference conditions, and sampling methods are specified in the EPL

[Note, particle limits proposed by DECCW for the facing pit stack and the forming hood EP are more stringent than set out in the EA and modelling. We are not clear why, perhaps DECCW has interpreted these activities as "material handling", and not a process. We have suggested a limit of 50 mg/m³, rather than 20 mg/m³ (which would apply to material handling activities).

Also we suggest applying the Reg limit of 40 mg/m³ to VOC limits for the facing pit stack, the forming hood EP and the furnace stack as there is significant risk and subsequent complication arising from not meeting criteria despite little (if any) risk of impact arising from the proposed limits.]

Operational Air Emissions Management Plan

6. The Proponent shall prepare and implement an Air Emissions Management Plan to the satisfaction of the Director-General. This program must:
- (a) be prepared in consultation with DECCW, and be approved by the Director-General prior to the commencement of operations on site;
 - (b) be updated to incorporate the Maintenance Air Emissions Maintenance Plan (below), and approved by the Director-General within 2 years of the commencement of operations;
 - (c) identify the air emissions limits for the project, including during maintenance works;
 - (d) describe the treatments, controls and operational practices to be implemented to manage air emissions; and
 - (e) include:
 - i. a program for the ongoing monitoring and reporting of air emissions from the project, describing the location, frequency, method and pollutants to be monitored;
 - ii. a maintenance protocol to manage air emissions during plant maintenance and/or shutdown and a program to reduce emissions during maintenance periods; and,
 - iii. a basic protocol to manage cullet quality in order to reduce potential air pollutant emissions.

Maintenance Air Emissions Management Plan

This is a detailed plan and protocol that would be used to manage maintenance activities for year 3 and onwards. It is intended to be integrated with and to update the Operational Air Emissions Management Plan upon approval.

7. The Proponent shall prepare and implement a Maintenance Air Emissions Management Plan to the satisfaction of the Director-General. This program must be:
- (a) prepared in consultation with DECCW, and be approved by the Director-General within 2 years of the commencement of operations;
 - (b) integrated with the Operational Air Emissions Management plan (above) upon approval;
 - (c) identify the air emissions limits for the project during maintenance works;
 - (d) describe the treatments, controls and operational practices to be implemented to manage air emissions during maintenance works; and
 - (e) include:
 - i. a program for the ongoing monitoring and reporting of air emissions from the project, during maintenance works, describing the location, frequency, method and pollutants to be monitored; and,
 - ii. a detailed maintenance protocol to manage air emissions during plant maintenance and/or shutdown and a program to reduce emissions during these maintenance periods;
8. In developing the Maintenance Air Emissions Management Plan and maintenance protocol to manage air emissions the following must be investigated and if practical, applied:
- (a) identify the least risk time of year for maintenance activity in regard to air emissions impact at sensitive receptors (e.g. January);
 - (b) develop a practical protocol to schedule maintenance to best coincide with least risk weather conditions (e.g. using local weather and ambient monitoring data, (measured or modelled), to identify the least risk weather conditions for potential impact, and with this information refer to long term weather forecast information to inform potential maintenance start dates).
 - (c) means for early identification of any factors that preclude compliance during scheduled maintenance.

Air Emissions Validation Report

The purpose of the air emissions validation report is to confirm that the project performance is commensurate with that assumed in the EA and preferred project report, that compliance with the applicable criteria is achieved, that no impact on the environment and community arises, that all controls operate effectively, and where not, that the means to rectify the problem is presented.

9. The Proponent shall prepare Air Emissions Validation Reports to the satisfaction of the Director-General. A report must be prepared for each of the following periods:
 - (a) 90 elapsed days from the commencement of operations and while operating under normal conditions;
 - (b) maintenance (bypass) operation in the 1st and 2nd year of operation; and,
 - (c) 60 days prior and 30 days after the commencement of the first maintenance period in the 3rd year of operations, including maintenance days; or,
 - (d) as otherwise agreed and endorsed in writing by DECCW in consultation with the Director General;
10. The Air Emissions Validation Reports must:
 - (a) be prepared in consultation with DECCW by a suitably qualified expert whose appointment has been endorsed by the Director-General;
 - (b) include a program for a campaign of detailed monitoring of:
 - i. metals in the incoming cullet (if it is practical to reliably measure metals in the cullet);
 - ii. in-stack air emissions from the project, describing the location, frequency, method and pollutants to be monitored, including metals testing when processing any corresponding batch of cullet that has been tested for metals;
 - iii. PM₁₀ levels in the surrounding area;
 - iv. odour from the project (or on the project site) and odour in the surrounding area;
 - v. the program must consider the following:
 - A round of post commissioning monitoring of all discharge points (furnace stack, blowing wool stack, downstream stack and maintenance bypass stack), in accordance with the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales, (DECC 2005)* and for the pollutants identified in Schedule 2 of the POEO (Clean Air) Regulation 2005 for glass production;
 - Collection of ambient particulate (PM₁₀) using two high volume air samplers, run continuously during the 6 days of maintenance (filters changed every 24-hours) and one sampler run on a one-day-in-six cycle during regular operations, for one year;
 - Analysis of metal concentrations in the collected particulate, in addition to gravimetric determination;
 - Consideration of microscopic analysis for particle type / shape differentiation;
 - (c) be undertaken to validate;
 - i. in-stack air emissions from the project, and also ambient PM₁₀ levels in the surrounding area in the following periods:
 - 90 elapsed days from the commencement of operations and while operating under normal conditions;
 - maintenance (bypass) operation in the 1st and 2nd year of operation and,
 - 60 days prior and 30 days after the commencement of the first maintenance period in the 3rd year of operations, including maintenance days; and,
 - ii. odour from the premises and in the surrounding area in the following period:

- 90 elapsed days from the commencement of operations and while operating under normal conditions; or,
- iii. Periods for air emissions and odour monitoring as otherwise agreed and endorsed in writing by DECCW in consultation with the Director General;
- (d) be submitted to the Director-General and DECCW within 3 months of the end of the periods referred to in 9.;
- (e) validate the predictions made in the EA and Preferred Project Report by conducting the following:
 - i. comparing in-stack emission rates applied in the EA and preferred project report modelling with actual measured in-stack emission rates;
 - ii. comparing TAPM meteorological data applied in the EA and preferred project report modelling with actual local meteorological data;
 - iii. Compare the predicted cumulative ambient pollutant levels in the EA and preferred project report with measured ambient pollutant levels (where possible to reasonably do so);
 - iv. Compare predicted pollutant levels attributable project alone (incremental glc) in the EA and preferred project report with derived/calculated incremental pollutant levels based measured ambient pollutant levels (where possible to reasonably do so);
 - v. Where any environmentally adverse discrepancy at 10.(e)i to 10.(e)iv. is found, conducting revised modelling using actual emissions data and local weather data and assessing compliance to the applicable ambient criteria (current at the time of the comparison, and also current at the time of the EA). To allow appropriate assessment of pollutants with annual average criteria, any such revised modelling must be extended to cover a minimum 1 year period that includes the periods of activity referred to in 9.;
- (f) demonstrate that:
 - i. the air emissions comply with the relevant emission limits in the proponents Environmental Protection Licence;
 - ii. no adverse ambient air quality impact is attributable to the operation; and
 - iii. the pollution controls are working effectively;
- (g) include an odour audit, undertaken by an appropriately qualified and experienced person, that demonstrates that the project does not cause offensive odour impact at sensitive nearby receptors;
- (h) If any non-compliance is found at 10.(f)i. or 10.(f)ii., or if pollution controls are not working effectively, or if offensive odour impact is found at 10.(g), the report must describe in detail the measures that would be implemented to ensure compliance.

Meteorological Monitoring

11. The Proponent shall maintain access to local meteorological data that is suitable for use in air dispersion modelling, per section 4 of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW DEC (2005)*, or otherwise operate a meteorological station per section 4.2 of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW DEC (2005)*.

APPENDIX B: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement
Schedule 2: Administrative Conditions		
	6	Limits the quantity of insulation to be produced and the raw materials that can be used
	7	Ensures no previous development consents are extinguished
	13	Requires a Section 94 contribution of \$500,000 to be paid
Schedule 3: Specific Environmental Conditions		
Air Quality	1	Prevents the emission of offensive odour
	2-3	Relates to management of dust
	4	Sets air emission limits
	5	Relates to the exemption order granted by DECCW
	6 - 7	Requires Air Emissions Management Plans to be prepared and implemented for all stages of the operations of the facility
	8	Requires air emissions from the facility to be validated during normal operations, Dry EP maintenance during the first 2 years and in the third year of operations.
	9	Requires appropriate meteorological data to be maintained for monitoring and validation purposes
Noise	10	Sets construction and operation hours
	11	Sets noise limits for the facility
	12	Requires noise emissions to be validated once operational
Soil and Water	13	Prevents the pollution of waters
	14	Requires wastewater to be discharged to sewer
	15 - 16	Specifies bunding requirements and management
	17	Prevents groundwater extraction, except for monitoring purposes
	18	Specifies requirements for fill
	19 - 23	Require remediation and construction works to be undertaken in accordance with the requirements of a DECCW accredited site auditor, ensuring the contamination on site is suitably managed.
	24-29	Requires a Soil and Water Management plan to be prepared and implemented to manage: erosion and sedimentation; stormwater; any acid sulphate soils encountered; groundwater and potable water consumption
Travel, Transport and Traffic	30-31	Require internal roads and access ways to be appropriately designed and
	32-34	Requires traffic levels to be minimised and managed to prevent congestion of local roads
Visual	35-38	Requires buildings, landscaping, any signage or fencing to be appropriately designed and managed to minimise impacts on the visual amenity of the area
Energy and Water Efficiency	39-40	Requires the facility to be energy and water efficient in accordance with industry best practice
Waste	41-42	Requires waste to be minimised and managed
	43	Requires a product designed and manufacture management plan to identify and implement options to reduce the environmental impacts and liabilities at each stage of the product's life cycle
Schedule 4: Environmental Management, Monitoring Auditing and Reporting		
	1	Requires an Environmental Management Strategy to be prepared and implemented
	2-3	Requires a pre operation compliance audit
	4	Sets out requirements for incident reporting
	5	Requires the operations of the facility to be reviewed and reported annually
	6-8	Requires an independent environmental audit to be undertaken every 3 years to ensure any non-compliances are identified

APPENDIX C: CONDITIONS OF APPROVAL

APPENDIX D: CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

Section 75(2) of the *Environmental Planning and Assessment Act 1979* requires that reference be made to the provisions of any environmental planning instrument that would (but for Part 3A of the Act) substantially govern the carrying out of the project. Consideration of the proposed development in the context of the objectives and provisions of the relevant environmental planning instruments is provided below.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 applies to the project. SEPP 55 aims to ensure that potential contamination issues are considered in the determination of a development application. A contaminated site assessment was undertaken and containment of contaminated material will be undertaken. The Department is satisfied with the consideration of SEPP 55 in the EA.

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

SEPP 33 aims to identify proposed developments with the potential for significant off-site impacts, in terms of risk and/ or offence (odour, noise etc). A development is defined as potentially hazardous and/ or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/ or offence impact, on off-site receptors. The dangerous goods to be stored and handled onsite will be below the threshold limit, and consequently the project is not potentially hazardous for the purposes of SEPP 33.

State Environmental Planning Policy No. 71 – Coastal Protection

SEPP 71 applies to the site. SEPP 71 aims to protect and manage the NSW coast through improving public access, protecting Aboriginal cultural heritage, protecting visual amenity and coastal habitats and managing the scale, bulk and height of development along the coast. The Department is satisfied that the development is generally consistent with the objectives of SEPP 71.

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) commenced in January 2008, consolidating and updating a number of State planning instruments. The Infrastructure SEPP details planning provision and development controls for infrastructure works and development located adjacent to particular types of infrastructure development. One of the aims of the SEPP is to ensure the RTA is made aware of and allowed to comment on projects for developments listed in Schedule 3 of the SEPP. Schedule 3 identifies development including industry with a site area of more than 20,000m², or any purpose with a capacity of 200 or more motor vehicles. The project therefore triggers the Infrastructure SEPP. The project was referred to the RTA for comment in accordance with the Infrastructure SEPP.

Newcastle Local Environmental Plan 2003

The site is zoned 4(C) Steel River Zone under the *Newcastle Local Environmental Plan 2003*, and proposed development is permissible with consent in this zone. The objectives of the zone are to facilitate the development of employment-generating industrial, research, service or storage purposes. Clause 36 of the *Newcastle Local Environmental Plan 2003* requires development in this zone to comply with the environmental envelope developed for the area, or where the requirements of the environmental envelope are not met, a development specific environmental assessment must be undertaken.

The Department has considered the project against the requirements of the environmental envelope and is satisfied the proposal would generally comply with these standards. The project is predicted to exceed the air and noise levels for the envelope and these issues have been assessed in detail in consultation with the DECC (see Section 4 of this report). The Department is satisfied the project generally complies with the environmental envelope for the area and the aims and objectives of the *Newcastle Local Environmental Plan 2003*.

APPENDIX E: KNAUF'S RESPONSES TO SUBMISSIONS & PROFERRED PROJECT REPORT

APPENDIX F: SUBMISSIONS

APPENDIX G: ENVIRONMENTAL ASSESSMENT
