DEVELOPMENT ASSESSMENT REPORT

DA/1282/2010

Proposal: **Industry – Asphalt Plant**

Address: **11, 15 and 18 Billbrooke Close, Cameron Park**

Lots 317, 318 and 319 DP1089554

Applicant: **Parsons Brinckerhoff**

Owner: **Bitupave Limited**

Consent Authority: **Joint Regional Planning Panel**

Lodged: **3 August 2010**

Value: **$10 million**

Submissions: **120 submissions, three petitions**

Precise

It is proposed to erect an Asphalt Plant on three recently created but vacant lots of land within an industrial subdivision at Cameron Park.

The assessment of the application has identified significant concerns regarding methodology and level of investigation associated with air quality assessment, acoustic impact and hazardous development analysis.

It is concluded that:

1 The development application including the EIS and additional information does not provide a sufficient level of information to enable a full and proper assessment of air quality impacts, including odour, of the Asphalt Plant. The air quality impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

2 The development application including the EIS and additional information does not provide a sufficient level of information to enable a full and proper assessment of acoustic impacts of the Asphalt Plant. The acoustic impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

3 The risk assessment methodology selected for the Preliminary Risk Assessment is not suitable to be compared against HIPAP No 4 risk criteria, and does not provide a sufficient level of information to enable a full and proper assessment of risk impacts of the Asphalt Plant. The risk impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

It is recommended that the application be refused for the above reasons.

Location

The site is located in an existing, relatively newly developed industrial suburb adjacent to the Sydney – Newcastle F3 Freeway. The land has not been developed previously and may be described as a "green field site". Figure 1 below shows the location of the site.

The land (made up of three allotments) has an area of 13,039m^2.

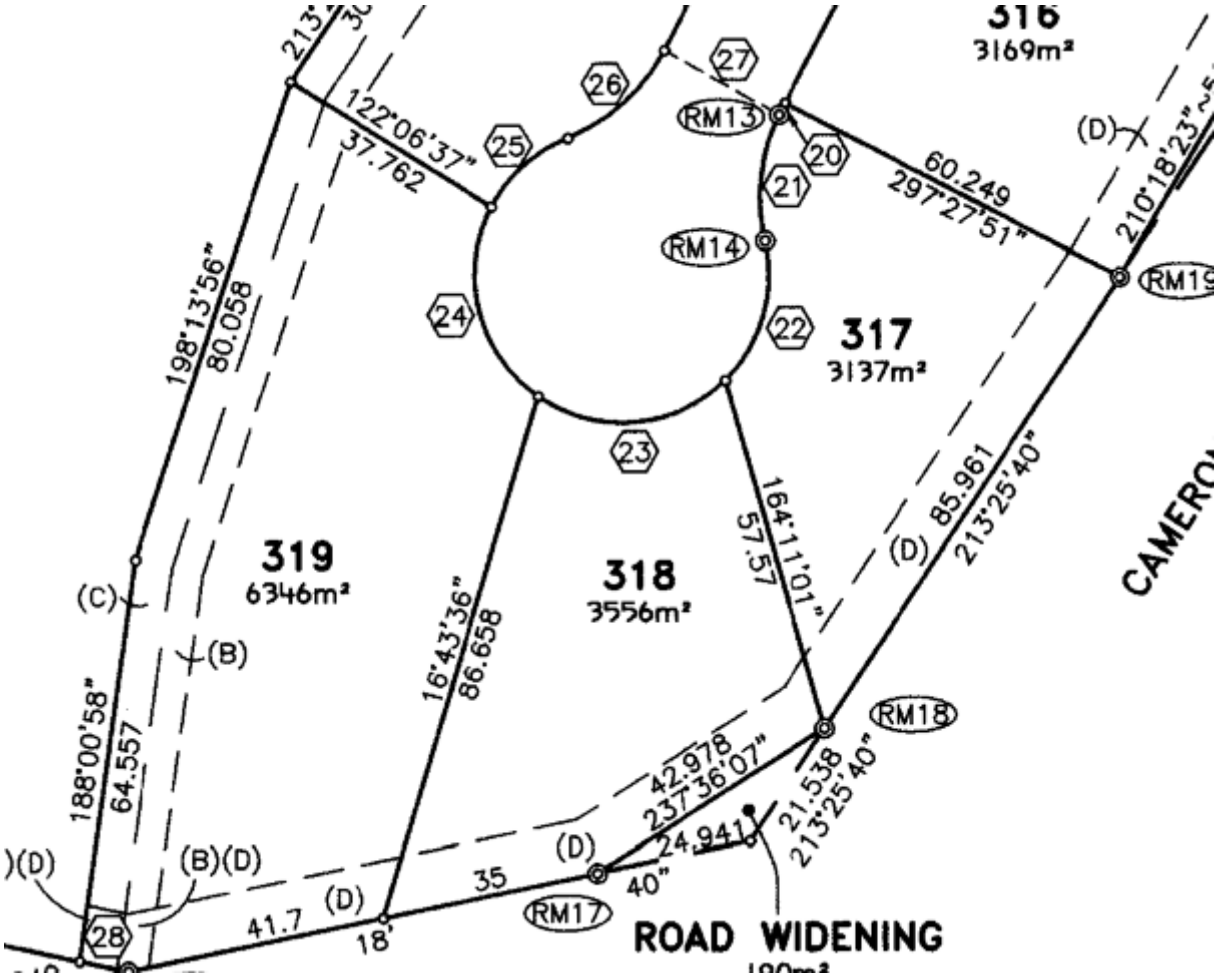

Figure 1 – Deposited Plan Extract

The Deposited Plan in Figure 1 above indicates the three allotments, respective areas and easements burdening the land. Easements (B) and (C) relate to setbacks for bushfire protection and easement (D) to setbacks from Cameron Park Drive. The development complies with the terms of the easements.

Figure 2 – Location of Proposed Asphalt Plant (Source – EIS for DA)

Project Description

The development proposal is for the construction of a large asphalt plant. In simple terms, an asphalt plant mixes crushed or ground rock, crusher dust, sand and aggregate up to 28mm in diameter, recycled asphalt product (RAP), ash, and hot bitumous material through a

series of processes to gain the final product – asphalt. This asphalt is then transported and applied to road surfaces and the like.

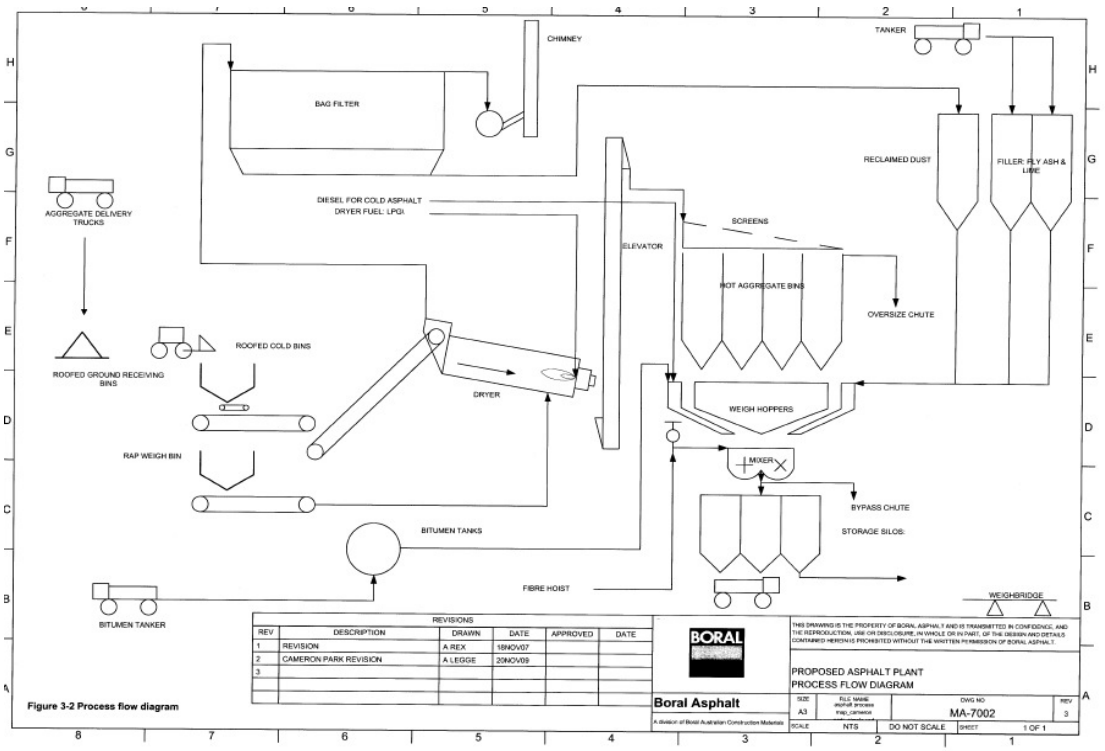

Figure 3 – Asphalt making process

The process includes receiving raw materials and RAP by road transport and storing those materials in either silos or covered 'bins'.

The RAP is crushed on site and transported to smaller bins.

The aggregate and RAP is heated and dried to prepare for bitumen coating.

The heated material is conveyed and sorted according to size and then mixed with bitumen to produce the asphalt.

The asphalt is then stored in hot bins awaiting loading to road transport, which then transports the asphalt to the construction site.

The process requires a large industrial plant approximately 29 metres in height consisting of silos, tanks, storage bins, truck top loader, large hopper feeders, etc. The physical appearance of the proposal is demonstrated in the photos and elevations below:

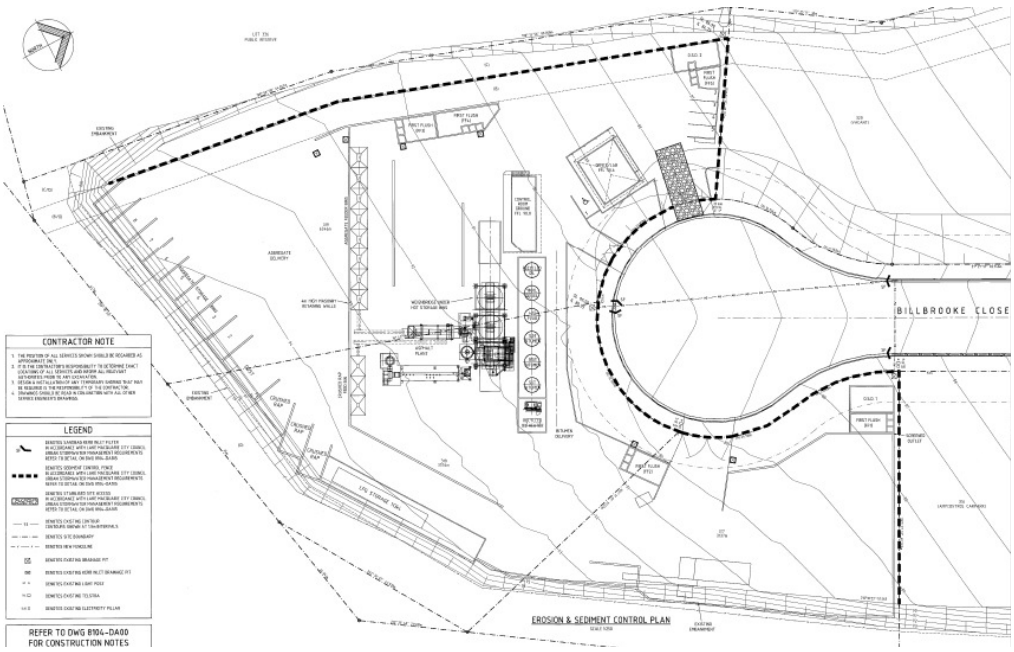

Figure 3 – Site Plan

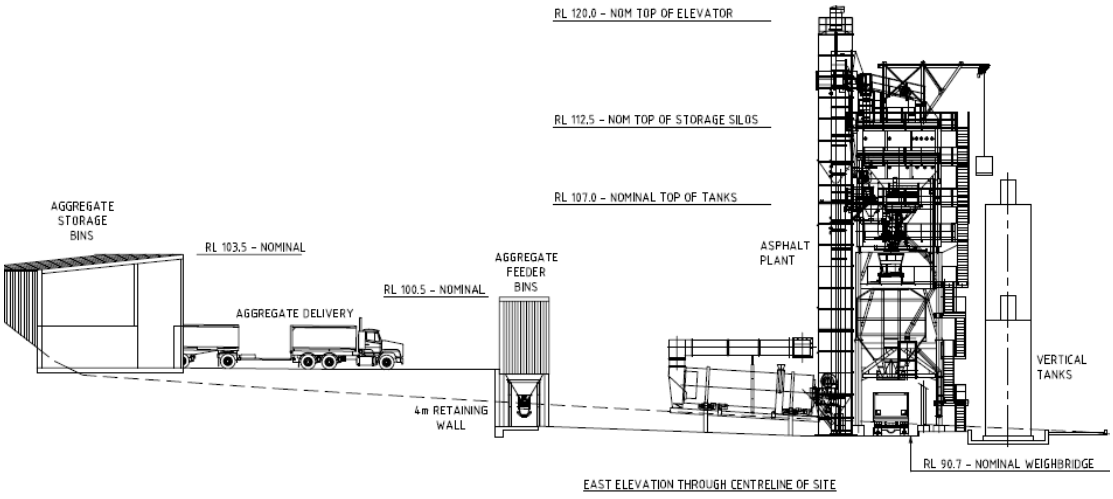

Figure 4 – East Elevation

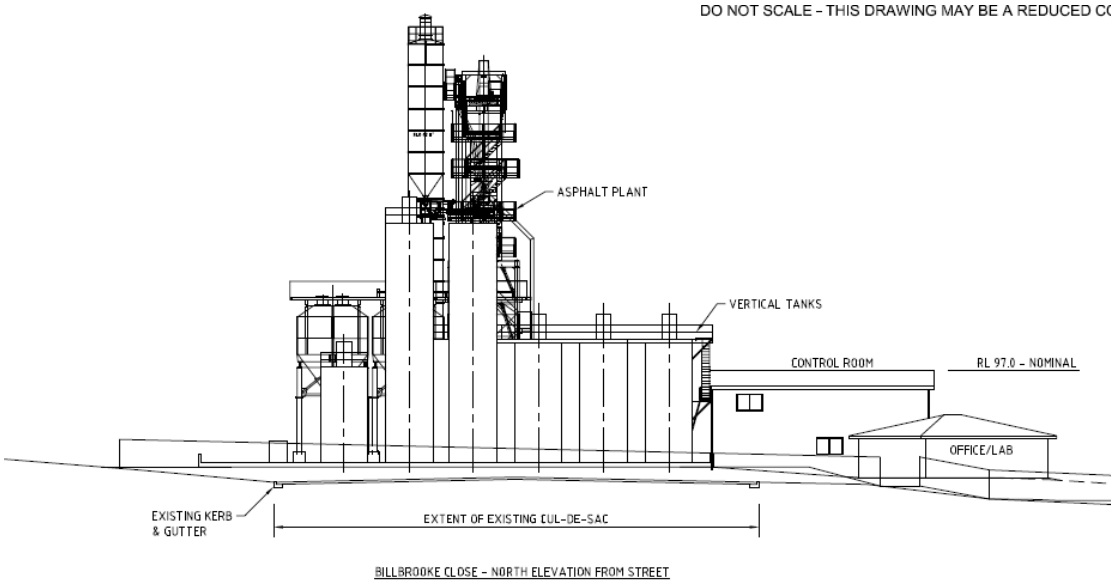

Figure 5 – North Elevation

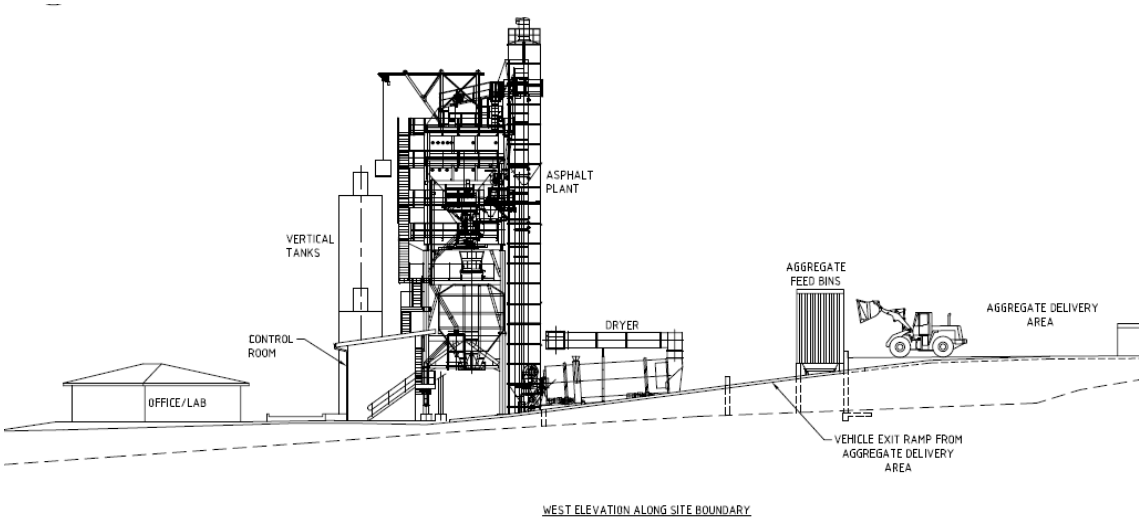

Figure 6 – West Elevation

Photo 1 – Montage view from Billbrooke close looking south

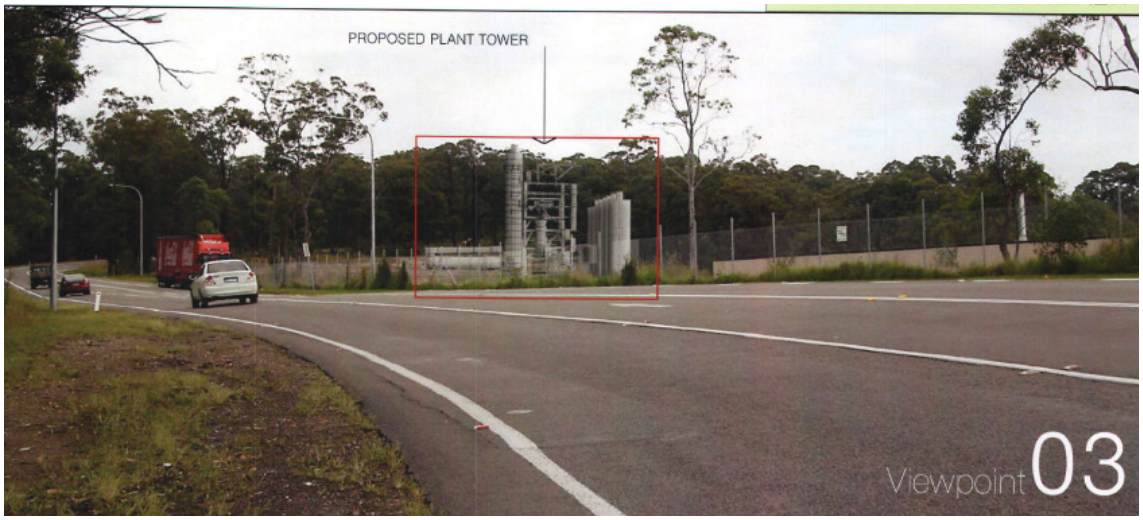

Photo 2 – Montage view from Cameron Park Drive looking south

Land Zoning

The land is zoned 4(1) Industrial (Core) Zone under the Lake Macquarie Local Environmental Plan 2004. The proposal is defined as an Industry and is permissible in the zone with consent.

The development is Designated Development, pursuant to the Environmental Planning and Assessment Regulation 2000, as it is identified as a bitumen pre-mix and hot mix industry that has an intended production capacity of more than 30,000 tonnes per year. The plant proposes to produce 200,000 tonnes per year.

The Assessment

This report provides an assessment of the material presented in the application against all relevant State and local planning legislation and policy.

Environmental Planning and Assessment Regulation 2000

Clause 4 of the Regulation defines Designated Development in Schedule 3 as:

5 Bitumen pre-mix and hot-mix industries

(1) Bitumen premix or hot-mix industries (being industries in which crushed or ground rock is mixed with bituminous materials):

(a) that have an intended production capacity of more than 150 tonnes per day or 30,000 tonnes per year, or

(b) that are located:

(i) within 100 metres of a natural waterbody or wetland, or
(ii) within 250 metres of a residential zone or dwelling not associated with the development.

(2) This clause does not apply to bitumen plants located on or adjacent to a construction site and exclusively providing material to the development being carried out on that site:

(a) for a period of less than 12 months, or

(b) for which the environmental impacts were previously assessed in an environmental impact statement prepared for the development.

The proposal is for an annual production of approximately 200,000 tonnes per year and is therefore classed as "Designated Development". It is for this reason that the application is determined by the Hunter and Central Coast Joint Regional Planning Panel, and not Lake Macquarie City Council. (see also SEPP Major Developments section of this report).

Section 79C: Potential Matters for Consideration

79C(1)(a)(i) the provisions of any Environment Planning Instrument (EPI)

State Environmental Planning Policy 19 (SEPP 19) – Bushland in Urban Areas

The land is land which adjoins bushland zoned or reserved for public open space purposes. As such, a public authority must not consent to the development until the following has been considered:

(c) the need to retain any bushland on the land,

(d) the effect of the proposed development on bushland zoned or reserved for public open space purposes and, in particular, on the erosion of soils, the siltation of streams and waterways and the spread of weeds and exotic plants within the bushland, and

(e) any other matters which, in the opinion of the approving or consent authority, are relevant to the protection and preservation of bushland zoned or reserved for public open space purposes.

The applicant successfully demonstrates in further information dated 2 November 2010 that the impacts of the development on the adjacent bushland are acceptable against the above criteria.

State Environmental Planning Policy 33 (SEPP 33) – Hazardous and Offensive Development

As part of the assessment process Council staff engaged the services of an independent consultant GHD Pty Ltd to review the development application, including the EIS. The consultant provides the following summary with regard to SEPP 33 (the full report may be seen at Appendix A of this report).

"Preliminary Risk Assessment"

There are some fundamental errors in the way the risk of fatality (3.10^{-7} deaths per annum) is reported and compared with the risk criteria of NSW DoP Hazardous Industry Planning Advisory Paper (HIPAP) No 4. Firstly, the 3.10^{-7} deaths per annum is actually the accident frequency or likelihood as calculated in section 4.2.4.2 and is not the risk of fatality. The risk of fatality should be the product of likelihood and consequence. Secondly, the risk of fatality given in HIPAP No 4 is based on 'Individual Fatality Risk' (IFR) which is the risk of fatality to a person at a particular point, the method selected to calculate risk in this PRA is not suitable to compare risk against HIPAP No 4 criteria.

A conclusion cannot be drawn with respect to compliance or non-compliance with the risk criteria of HIPAP No 4 without assessing the risk of the facility against each of the IFR criteria given in HIPAP No 4. The risk criteria of concern in this case would be the $50x10^{-6}$ per year, which shouldn't exceed the site boundary and could be affected by the location of the LPG storage vessel.

The risk assessment methodology selected for this PRA is not suitable to be compared against HIPAP No 4 risk criteria, therefore, decision regarding compliance with the risk criteria with respect to land use planning cannot be made.

In order to gain a clear understanding of the risk profile of the proposed Asphalt plant and its impact to the surrounding land it is recommended to undertake a full QRA in order to be able to use the HIPAP No 4 risk criteria to assess the risk of the LPG storage."

The above comment is concurred with by Council staff. The information as submitted is not sufficient for a full and proper assessment of the impacts.

State Environmental Planning Policy (Major Development) 2005

The proposal is Designated Development pursuant to Clause 4 of the Environmental Planning and Assessment Regulation 2000. Pursuant to Clause 13B of this SEPP, the Regional Panel has exercised the functions of the Council in the determination of this Development Application.

Lake Macquarie Local Environmental Plan 2004 (LMLEP)

Clause 16 Development Consent – matters for consideration

(a) Lifestyle 2020 Vision, Values and Aims

12 Vision

The vision for land to which this plan applies is described in the Lifestyle 2020 Strategy, which is available from the office of the Council.

13 Values

The 4 core values of that strategy are sustainability, equity, efficiency and liveability.

14 Aims

The aims of the Lifestyle 2020 Strategy are to:

(a) provide the community with realistic expectations about the future development patterns for land in Lake Macquarie City, while retaining flexibility for land use decision making in the longer term, and

(b) reinforce and strengthen centres so that a wide range of commercial and community services may be provided in a timely and accessible manner, and

(c) provide local employment opportunities for residents and promote economic development consistent with the City's natural, locational and community resources, and

(d) guide the development of urban communities that are compact, distinct and diverse and include a range of housing types and activities, and

(e) achieve a strong sense of positive community identity, through the development of local communities that are safe and liveable and offer a diversity of uses, economic opportunities and ready access to services, and

(f) develop an attractive urban setting for the City which reflects its physical and natural environment, and visual character, and

(g) manage the City's natural environment so that its ecological functions and biological diversity are conserved and enhanced, and contribute to the City's overall well being, and

(h) manage the City's heritage and economic resources in a way that protects the value of these resources and enhances the City's character, and

(i) integrate land use with the efficient provision of public and private movement systems.

Based on the information currently before Council, it is not clear whether the asphalt plant proposal is consistent with the aims and objectives of Lifestyle 2020 in terms of sustainability and liveability. Specifically, the air quality impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

(b) Objectives of Zone

The land is zoned 4(1) Industrial (Core) zone. The objectives of the zone are to:

(a) provide land for a wide range of employment-generating industries, including manufacturing, processing, assembly, storage and distribution uses, and

(b) provide land for a range of industrial uses that, because of their nature, require large areas of land or separation from more intensive forms of employment generating industries, and

(c) ensure that industries are designed and located so as not to cause unacceptable environmental harm or adversely affect the amenity of the environment, including residential neighbourhoods, and

(d) provide for sustainable water cycle management

It is not clear whether the asphalt plant proposal is consistent with objective (c). Specifically, the air quality impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

Clause 17 Provision of essential infrastructure

The plans have been endorsed by the Hunter Water Corporation. Energy Australia have not responded to referrals made to it.

Clause 21 Development the subject of SEPP 1 application

Not applicable.

Clause 23 Foreshore development and development below DP high water mark

Not applicable.

Clause 24 Subdivision

The land consists of three separate allotments. As the development is over all allotments, they require consolidation. A condition of any consent shall require the consolidation of the three allotments.

Clauses 26, 27, and 28A

Not applicable.

Clause 29 Building heights

The LMLEP requires that the consent authority take into consideration whether the height is compatible with other buildings in the vicinity of the site, and is compatible with the site attributes and existing or proposed uses of the land and other requirements of the LMLEP and any DCP.

The height is not compatible with existing buildings within Billbrooke Close, which have been designed and erected as generally large two storey industrial warehouse / technology land uses. Regarding likely proposed uses, there is one vacant allotment within Billbrooke Close that given its size and dimensions, would most likely not be developed at a height comparable to the proposal.

The development is not compatible with existing or proposed uses within Billbrooke Close. It should be noted that there are two concrete batching plants within 1 kilometre of the site. Concrete batching plants are similar in type of construction to an asphalt plant (although significantly smaller). One is under construction (95 Stenhouse Drive) and was approved by the Joint Regional Planning Panel on 4 March 2010. The other has been operating for some years (1 Stenhouse Drive). It could be said that these developments were in the vicinity of the site as they are in the same "Cameron Park Industrial Estate", however regarding context they are unable to be viewed together, utilise different road systems, and were approved prior to a contextual setting of low level light industrial, technological industries on sites adjacent. The proposal remains inconsistent with the context of Billbrooke Close.

The DCP 1 provides an indicative height of 15 metres, with performance based criteria indicating that the visual impact is minimised and enhanced by landscaping (Section 3.6.3, P3).

The proposed landscaping does not completely shield the tower components from view from external areas including Cameron Park Drive which is a collector road feeding significant traffic volumes to and from the Newcastle Link Road. Its exposure to this road especially when travelling west will impact views to the distant Watagan mountain range.

The height of the development is one aspect its non-compatibility from a contextual viewpoint, however in this instance the development does not comply with Clause 29.

The above photographs serve to demonstrate the existing high quality, low scale light industrial context of Billbrooke Close.

Clause 30 Control of pollution

The development application does not demonstrate that all reasonable and practicable control measures will be implemented to minimise pollution, specifically air pollution.

Clause 31 Erosion and sediment control

The proposal includes the disturbance of the majority of the site through construction, but then the sealing of the site for operation of the facility. A Soil and Water Management Plan was lodged with the application. The plans has been assessed as acceptable and no objections are raised with the development in this regard.

Clause 32 Flood prone land

Not applicable.

Clause 33 Bush fire considerations

The land is bushfire prone. The application was referred to the NSW Rural Fire Service for its comment. The RFS advised by letter dated 18 August 2010 that it raises no concerns or issues in relation to bush fire.

Clause 34 Trees and native vegetation

Where required the application has been assessed for compliance with ecological requirements / recommendations detailed in the LMCC LEP (2004), DCP 1, TSC Act (amended 2004), Lake Macquarie Flora and Fauna Survey Guideline (2001), Lake

Macquarie *Tetratheca juncea* Management Plan (Payne 2001), Lake Macquarie Wetlands Management Study, Lake Macquarie Coastal Management Plan, SEPP 14, 19, 26 & 44, FM Act 1994 and EPBC Act 1999.

The proposal is considered acceptable provided that following are adhered to:

- Retainment of one *Angophora costata* tree located on the north western boundary of the subject site (clearly shown in Appendix C)
- Sediment and nutrient control measures are implemented both pre and post construction to control runoff from entering the adjoining wildlife corridor on the western boundary of the subject site.

These matters may be subject of conditions of any consent issued.

Clause 35 Acid sulfate soils

Not applicable.

Clauses 36, 37 and 39-42

Not applicable

Part 6 – Heritage Provisions

Clauses 43 – 54; 56, 59 and 62

Not applicable

Clause 60 Development on land adjoining Zones 5, 7(1), 7(4) and 8

The land adjoins land Zone 5 (Cameron Park Drive) to the east and south. Clause 60 of the LMLEP provides:

(1) Consent must not be granted for development on land adjoining land within Zone 5 unless the consent authority is satisfied that the proposed development will be consistent with the efficient operation of the potential or existing infrastructure development within the zone.

The existing infrastructure within the zone is Cameron Park Drive, a single lane road providing access to the Cameron Park Industrial Subdivision from the Newcastle – Sydney Freeway via George Booth Drive to the south and the Newcastle Link Road to the north.

The efficient operation of Cameron Park Drive is not adversely impacted by the development in terms of traffic generation or types of traffic servicing the site. However an in depth SIDRA analysis should be undertaken to ascertain the specific impacts of the 24 hour use of the development and routes most likely to be undertaken.

79C(1)(a)(ii) the provisions of any draft EPI

Not applicable.

79C(1)(a)(iii) the provisions of any Development Control Plan (DCP)

Development Control Plan No. 1 – Principles of Development

Section 1.9 – Development Notification Requirements

The application was notified to residents in the locality, generally in the village of Seahampton, the Cameron Park Industrial Estate and surrounding land in West Wallsend and the Northlakes Estate. The original notification period was 16 August 2010 until 17 September 2010. An extension of time to 1 October 2010 was granted. A sign was also erected on the site.

The application was advertised three times in the Newcastle Herald on Saturday 14 August 2010, Saturday 21 August 2010, and 18 September 2010.

A total of 120 submissions and three petitions containing 602, 70, and 14 signatures were received. Six of the submissions were received after the notification period.

The application was also referred to (then) Energy Australia (now Ausgrid); Department of Environment, Climate Change and Water; Department of Planning; NSW Rural Fire Service; and the Mine Subsidence Board.

The Mine Subsidence Board provided its General Terms of Approval on 11 August 2010.

The NSW Rural Fire Service advised of no issues on 18 August 2010.

The Department of Environment, Climate Change and Water advised that it has no comment on the proposal, on 25 August 2010.

The Department of Planning and Energy Australia (Ausgrid) did not respond.

Section 2.1 – Environmental Responsibility and Land Capability

2.1.1 2.1.2

No issues are raised regarding ecological impacts of the development.

2.1.3 Scenic Values

The scenic impact of the development is mitigated to some degree by proposed landscaping and existing surrounding vegetation, however there is still impact on views from public places including Billbrooke Close and Cameron Park Drive, to distant mountain ranges.

2.1.4 Tree Preservation and Management

One Angophora Costata located on the northern boundary of the site shall be retained. No other issues are raised regarding flora and fauna on the site.

2.1.5 Bushfire Risk

The land is bushfire prone. The application was referred to the NSW Rural Fire Service for its comment. The RFS advised by letter dated 18 August 2010 that it raises no concerns or issues in relation to bush fire.

2.1.6 - 2.1.8

Not applicable.

2.1.9 Sloping Land and Soils

The land was originally engineered to a generally level site during creation of the allotments. Further cut and fill is proposed to allow for the industrial process including top loading of feeder bins to the facility. No objections are raised regarding the extent of cut and fill on the site.

2.1.10 Acid Sulfate Soils

Not applicable.

2.1.11 Erosion Prevention and Sediment Control

Plans submitted with the application, combined with appropriate conditions of consent is consent is issued, satisfy the intent of the DCP in this regard.

2.1.12 Mine Subsidence

The Mine Subsidence Board provided its General Terms of Approval on 11 August 2010.

2.1.13 Contaminated Land

Investigations at rezoning and subdivision stage and subsequent earthworks under the previous approval indicate that. The land is not known to be contaminated.

2.1.14 Energy Efficiency

The land use necessarily utilises electricity and LPG gas to support the industrial process. No objections are raised in this regard.

2.1.15 Noise and Vibration

Performance Criteria 1

Development is carried out so that no intrusive or offensive impacts from noise are caused to the surrounding population now or in the future.

Performance Criteria 2

The construction of development is carried out so that no intrusive or offensive impacts from noise are caused to the surrounding population, now or in the future.

Performance Criteria 3

The operation of development is carried out so that no intrusive or offensive impacts form noise are caused to the surrounding population, no or in the future.

Initial Assessment

The acoustic report PR_1707 RevC dated July 2010 prepared by Parsons Brinkerhoff Australia Pty Limited (PB) was reviewed by Council

The consultant used government and acoustic industry recognised noise modelling software program known as "SoundPLAN" to determine the predicted acoustic impact of the asphalt plants operation to residential and commercial receivers.

There was some confusion and misunderstanding from local residents when Council recently dealt with acoustic issues associated with the nearby recently approved concrete batching plant. Residents were not aware that an approved noise modelling had been used. Their concerns mainly related to whether the amphitheatre topographic effects of noise had been included in any assessment. The methodology used in this report has addressed this issue.

The assessment has been carried out in accordance with the NSW DECCW Industrial Noise Policy and has determined project specific noise levels at residential areas of West Wallsend, Seahampton, Cameron Park (interface of proposed residential zone) and the existing industrial zone.

The rationale for determining the project specific baseline noise levels from the proposed asphalt plant to the residential areas was also influenced by the predicted noise levels from the proposed concrete batching plant (95 Stenhouse Drive, under construction) to those areas. A cumulative assessment has been applied to take into account simultaneous operation of both plants.

The report has determined a 24 hour compliance with the operation of the plant subject to compliance with the recommendations outlined in section 9 of the report.

Predicted Construction Site noise levels are well within DECCW acceptable limits, and daytime construction will most likely be inaudible at residential premises and compliant at the adjoining and nearby industrial site property boundaries. Vibration, according to the report, will not be an issue during construction activities.

Construction site traffic noise has been calculated and is within acceptable daytime limits. There are no night time construction activities proposed.

Operational traffic noise requires 24 hour vehicle movement, and has been calculated by the consultant to comply with the RTA criteria, however, compliance does not mean that there will be no impact to residents, particularly those at Seahampton.

If approval is recommended, a traffic management plan should be required to address traffic directional movements and the potential intrusiveness to residents, particularly during late evening and night time hours.

Additionally, if approved, the acoustic consultant shall be intimately involved in the completed design proposal, acoustic treatment, noise management plans, monitoring and certification after commissioning.

Independent Acoustic review

An independent external consultant – GHD Pty Ltd – was contracted by Council to undertake assessment of acoustic impacts of the proposal. GHD reviewed the original EIS and application, and the additional information submitted by Parsons Brinckerhoff on 2 November 2010.

In summary, GHD provides the following advice:

Review of Appendix D of the EIS reveals some inconsistencies and shortcomings with regards to the following:

- Quality of the baseline noise monitoring data and its implications on site specific noise targets.
- Adopted traffic noise targets.
- Modelling process and recommendations.

The above should be clarified before the findings of the NIA can be relied upon.

The complete GHD report may be seen at Appendix A of this report.

Council comment on Independent Review

Meteorological conditions were monitored by PB, using weather data from the Bureau of Meteorology (BOM) weather station at Nobbys signal station, however GHD has argued against that data, on the basis that data from Cooranbong should have been used due to its inland location. The NSW INP accepts weather monitoring stations within a 30km radius of the site, provided that it is within the same topographical basin.

Previous acoustic studies for the assessment of the recently approved concrete batching plant (95 Stenhouse Drive, Cameron Park) used data from Williamtown and qualified this by stating that the Cameron Park area was not subject to wind drainage flows and that noise enhancing wind gradients do not need to be considered. This is in keeping with the PB report.

In the absence of a weather station at or close to the test area, there may be differing opinions on the effect of meteorological conditions. GHD has also challenged the amount of data culled during testing and argue that PB should consider the data as invalid.

Whilst one could argue the merits or otherwise of the above, a search of comparable logged data prepared by Hunter Acoustics in 1977 for the recently approved Daracon concrete batching plant was undertaken. The logged background noise data for that survey of daytime evening and night time aligns closely with that logged by PB. PB's data is one or two decibels higher that the 2007 data. On that basis the background dataset provided by PB is acceptable.

The high unattended noise levels measured in Bombay Close Cameron Park residential area may be attributable to house construction and earthmoving activities in that area, as it is a

new residential subdivision. Motocross motorbikes are also a possibility. GHD are correct in questioning those readings.

GHD have questioned the methodology used by PB in their traffic noise objectives for construction and operational noise levels, which were carried out using predictive modelling. PB should use actual logged or attended traffic monitoring data to enable an accurate assessment, which would ensure that traffic noise objectives are not overstated. The predicted levels may also change if the plant is utilised on a 24 hour basis.

GHD have questioned the plant source noise levels, for which PB have not provided tonal or low frequency details, and therefore those characteristics have to be taken on the face value of the proponent.

GHD's review of PB's "SoundPLAN" modelling suggest that the overall results provided by PB are understated by 2 to 3 dB at receivers 5, 6 and 19. They further suggest that the operational noise targets provided by PB may not be realistic and cannot be relied upon. The "SoundPLAN" information can be viewed within the EIS submitted with the development application.

Conclusion

Although not all of the issues raised by GHD are concurred with, there are findings within the EIS and additional information that are not sufficient to allow a full and proper assessment of the application, particularly relating to operational noise targets and traffic noise methodology.

2.1.16 Air Quality and Odour

Performance Criteria 1

Development illustrates that, when in operation and when all measures proposed to minimise its impact have been employed, no negative emissions will result that would diminish the amenity of adjacent properties, the surrounding area or water bodies, waterways and wetlands.

Initial Assessment

The EIS (specifically Appendix C Air Quality Assessment) provides insufficient information to conclude that the development proposal will meet relevant air quality assessment criteria.

The Air Quality Assessment raised concern regarding the predicted cumulative impacts of 24-hour concentrations of PM_{10} and $PM_{2.5}$, especially within the Cameron Park Industrial Area and at the industrial zoning boundary. [Note: The term 'PM' means Particulate Matter and the subscript indicates the maximum diameter of the particle in micrometres].

The Air Quality Assessment argued that the pollution mitigation measures and management systems will ensure compliance with air quality standards. However, the assessment methodology raises concern regarding the assessment of all potential sources of odour, particulate matter and gases typically associated with hot asphalt manufacturing. In particular, the qualitative rather than quantitative assessment of fugitive emissions of odour, particulates, and gaseous emissions raises concern.

Modelling of odour, particulate matter, and gaseous emissions focused on the point source, single stack, associated with the rotary drum dryer emission point. The Air Quality Assessment includes a sample CALPOST output file (Californian Air Pollution Simulation computer program to analyse raw data into meaningful parameters variables). However, in the absence of sample CALPUFF input files (Californian Air Pollution Dispersion Simulation computer program to estimate the direction and magnitude of air pollution impacts) for the odour simulations and the particulate matter and gaseous pollutant simulations, the precise detail of modelling inputs was not clear.

As a result of the initial Council assessment, a request that the proponent provided the following information was made on 28 September 2010:

- A discussion of the potential particulate matter and gaseous emissions sources, with reference to the potential sources presented in Figure 1 of the National Pollutant Inventory Emissions Estimation Technique Manual for Hot Mix Asphalt Manufacturing (Environment Australia, 1999:3), including an explanation if potential sources are not relevant.
- A quantitative discussion of emission rates for particulate emissions and key pollutants in fumes from ducted sources that vent via the emission point associated with the rotary drum dryer, e.g. the screen, hot elevator, mix and weigh and associated areas, as implied in the Air Quality Assessment.
- A description for the method used to derive emission rates for the rotary drum dryer emission point, based on stack monitoring data from the Ballarat asphalt plant, including examples. A clarification is also required of the potential ducted sources that may also vent via the stack associated with the rotary drum dryer emission point at the Ballarat plant.
- A sample CALPUFF input file for dispersion modelling of odour, including sources that vent via the single stack point source and all potential fugitive emission sources of odour associated with storage tank facilities for bitumen, diesel, liquid petroleum gas and waste oils.
- A sample CALPUFF input file for dispersion modelling of particulates and gaseous emissions including sources that vent via the single stack point source and all potential fugitive emission sources including pre-production and production related sources.
- A discussion of the quality of recycled asphalt product (RAP). For example, Environment Australia (1998) notes that RAP typically includes recycled tyres, a potential source of particulate and gaseous emissions when re-processed.
- A discussion of the cumulative impact of potential emissions from the two concrete batching plants recently approved and operating within the Cameron Park Industrial Area, and any other source of air emissions within the locality.
- A quantitative assessment of ozone impacts. Bitumen manufacture is a source of Volatile Organic Compounds (VOCs) emissions, which act as ozone precursors in combination with Oxides of Nitrogen (NO_X) emissions and sunlight. The site is located in proximity to NO_X and VOCs emissions from motor vehicles on George Booth Drive, the F3 Expressway, and the proposed Hunter Expressway, as well as in proximity to VOCs emissions from vegetation.

In response the applicant lodged additional information on 2 November 2010.

Secondary Assessment following additional information:

1. Potential particulate matter and gaseous emission sources

Parsons Brinkerhoff (PB) provided a more comprehensive discussion of potential emission sources, confirming that multiple emission sources vent through the main emission point source, i.e. the rotary drum drier.

The cold aggregate storage area is not considered in the dispersion modelling, since the area is roofed and enclosed on three sides and therefore is considered an insignificant source of particulate emissions.

This confirms that the rotary drum dryer is the single emission point source included in dispersion modelling for odour.

An independent technical review should confirm that this is a reasonable assumption for modelling the impact of the asphalt plant. (Note: This review was undertaken by GHD Pty Ltd – see Appendix A for report).

2. Emission rates for particulate and key pollutants in fumes from the rotary drum dryer

PB did not provide quantitative emission rates for particulate and gaseous/odorous emissions for the individual sources that vent via the rotary dryer emission point. However, the information provided, considered with reference to Figure 1 (Environment Australia, 1993:3), clarifies that the following sources emit the following pollutant types:

- rotary dryer – particulate matter, gases/odours
- bucket elevator- particulate matter
- screening and grading particulate matter
- hot bins- particulate matter
- weigh hopper - particulate matter
- mixer - particulate matter, gases/odours
- conveying- particulate matter
- classifying - particulate matter
- mixing equipment - particulate matter, gases/odours

3. Example calculation of emission rates

PB provided a worked example of the calculation used to derive the PM_{10} emission rate for the rotary dryer emission point, based on stack monitoring at the Ballarat Plant, at stack conditions of 335 K and 810 m^3/m^2.

4. Sample CALPUFF input file for odour modelling

PB provided a sample CALPUFF input file, which indicated a single stack point source (rotary dryer). Emission rates in file correlate with Table 6-3.

PB noted that the potential odour source, 'breathing losses from the bitumen storage tanks', was not included in the modelling. PB notes that VOC emissions from the tanks will be minimised via carbon filtration units and that fugitive emissions would be localised and volatilise quickly upon release.

An independent technical review should confirm that this is a reasonable assumption for modelling the odour impact of the asphalt plant. (Note: This review was undertaken by GHD Pty Ltd – see Appendix A for report).

5. Sample CALPUFF input file for modelling particulates and gaseous emissions

PB provided sample CALPUFF input files for Total Suspended Particles, PM_{10}, $PM_{2.5}$, NO_X as NO_2, Arsenic and Benzene. Files indicate a single stack point source (rotary dryer). Emission rates in file correlate with emission rates Table 6-3.

CALPUFF input files for Total Suspended Particles, PM_{10}, $PM_{2.5}$ indicate 8 area sources, which are not described individually. Correlation of emission rates in file with emission rates in Table 6-4 is less clear.

An independent technical review should confirm the validity of Parsons Brinckherhoff's assumptions for modelling the impact of particulate and gaseous emissions from point and area sources associated with the asphalt plant. (Note: This review was undertaken by GHD Pty Ltd – see Appendix A for report).

6. Quality of Recycled Asphalt Product

PB confirmed that:

- Particulate matter emissions from Recycled Asphalt Product (RAP) are included in the estimates of emission rates for crushing and storage activities
- Bitumen used to combine the RAP may include recycled tyre or specialised binder additives
- Dust mitigation methods, including dust controls, exist on the RAP mechanical crusher and an adjacent barrier wall
- RAP is introduced directly to the pug-mill, thus bypassing the burner, i.e. not burnt at any stage
- PB explains that the RAP process is an unlikely source of odour. PB clarifies that odour emissions from bitumen and specialised binder additive are not included in odour modelling.

An independent technical review should confirm the significance of this potential odour source, namely bitumen and specialised binder additive used in recycled asphalt production, and the likely area of impact.

7. Cumulative impact of potential emissions from the two concrete batching plants recently approved and operating within the Cameron Park Industrial Area

PB provided a discussion of the cumulative impacts in terms of estimated particulate matter concentrations. PB's discussion focused on the cumulative impact at the sensitive receiver, AMPControl, an electronics manufacturing and service industry located adjacent to the proposed site of the asphalt plant.

PB reported that no information was available regarding the existing Redicrete Concrete Batching Plant. PB estimated cumulative impacts of the asphalt plant in conjunction with the Daracon Concrete Batching Plant, based on the findings of the report entitled, Air Quality Assessment; Proposed Concrete Batching Plant', prepared by PAE Holmes, in August 2009.

PB presented two scenarios:

- Scenario 1 – normal production at the proposed Boral asphalt plant and average production at the Daracon plant.
- Scenario 2 – peak production at the proposed asphalt plant and peak production at the Daracon plant. [Note: Scenario 2 is described in Section 1.7, page 5/14 as 'peak production at the proposed asphalt plant and <u>average</u> production at the Daracon plant (worst-case)'. Two references to peak production in Section 1.7 (Table 2 page 6/14 and the 4th dot point page 7/14) suggest that 'average' in the description on page 5/14 is a misprint and the correct scenario is for peak production at the Daracon plant.]

PB predicted compliance with DECCW criteria for PM_{10}, annual average cumulative impact of the worst-case scenario (peak production at both the proposed asphalt plant and the proposed concrete batching plant).

PB's estimated PM_{10} 24 hour average concentration for incremental and cumulative impacts of the worst-case scenario (peak production at both the proposed asphalt plant and the proposed concrete batching plant) failed to comply with DECCW criteria.

PB listed the assumptions in the assessment methodologies, which provided conservative results (i.e. results that over-estimate the likely concentrations).

PB concludes that the management of the operational stage of the asphalt plant (including the implementation of air quality response levels) will ensure compliance with air quality criteria.

Summary of Secondary Assessment undertaken by Council

Although Parsons Brinkerhoff responded to the specific issues requested, it was recommended that an independent technical review of the appropriateness of the modelling methodology be undertaken, and the validity of the assumptions, methodology and conclusions regarding the cumulative impact of the asphalt plant, combined with existing and approved emission sources, be undertaken. Such a review would assist LMCC to make a technically informed assessment as to whether the proposal will meet the relevant air quality and odour assessment criteria.

An independent external consultant – GHD Pty Ltd – was contracted by Council to undertake assessment of air quality impacts of the proposal. GHD reviewed the original EIS and application, and the additional information submitted by PB on 2 November 2010.

With regard to air quality, GHD report the following:

The predicted impacts on air quality of the proposed asphalt plant given in the AQIA cannot be relied on as:

- *The meteorology synthesised for the Cameron Park site is not plausibly representative of that site.*
- *The dispersion modelling presented using CALPUFF was conducted using an inadequate grid resolution.*
- *In relation to odour (the constituent known to have least margin of compliance to regulatory criteria at most asphalt plants) the loadout and tarping sources have not been modelled - these sources are at least an order of magnitude more important than the main stack.*
- *The peak-to-mean ratios required to convert the 1-hour averaged 99-percentile predictions of odour to 1-second averaged predictions have not been applied, and as a consequence the impact from the stack emissions will be under-estimated by approximately 20 fold.*
- *The odour emissions appear to have been based on the use of Shell bitumen, and if the Cameron Park plant is to use Mobil sourced bitumen in the future, the emissions will need to be factored higher by approximately 8:1.*

The complete response may be seen as Appendix A of this report.

Council's Response to GHD Report

GHD's conclusion that 'the predicted impacts on air quality of the proposed asphalt plant given in the AQIA (Parsons Brinkerhoff report) cannot be relied on' is supported.

GHD presents technical evidence to demonstrate that the Air Quality Assessment is inappropriate in terms of the configuration of the air dispersion model CALPUFF; and inadequate in terms of modelled emission sources.

In summary:

<u>The meteorology synthesised for the Cameron Park site is not plausibly representative of that site</u>:

- GHD strongly contests the assumptions underlying PB's selection of the modelled wind flow patterns.

- GHD presents an analysis of the modelled wind flows, in comparison with annual wind rose data recorded at Tomago and Edgeworth, to demonstrate that PB's modelling of the site-representative wind climate:
    - Fails to reproduce the calms and light wind frequencies likely to prevail at Cameron Park. In effect, the model set up is too windy for an inland site (albeit within 20 km of the coast) that also is sheltered from the winter westerlies of the Hunter Valley by the inland topography of the Sugarloaf Range. This results in the modelling of an alarmingly reduced incidence of calms and low wind speeds typically associated with least dispersion of emissions. The model simulates rapid dispersion of emissions, inappropriately.
    - Fails to reproduce wind directions likely to prevail at Cameron Park. GHD argues that PB's model assumes the influence of Hunter Valley NW-SE wind directions, rather the SW-NNE air flows expected at Cameron Park due to the topographical influences from the Sugarloaf Range.
    - Misrepresents worst case dispersion conditions. GHD contests the assumptions underlying PB's definition of worst case dispersions. The PB report claims that "Worst case dispersion conditions for the site (least dispersion) would normally be associated with F-class stability conditions (stable conditions, minimal uplift)". GHD counters that 'this is a true statement for ground based sources but is NOT true for a 29 metre stack source'. Further, GHD notes the data in the meteorology file that drives the model CALMET has F-class stability less than 4% of the time, while measurements for Edgeworth show F-class stability for about 29% of the time.
    - GHD notes that the statement "With the exception of local meteorological variation" is curious as this is just what a properly configured CALMET model (Californian Air Pollution Simulation Model – Meteorological Component) with full and comprehensive diagnostic input is supposed to do.

It is noted that the SW-NE axis of wind rose data and the incidence of stable atmospheric conditions for Edgeworth, recorded at the Pasminco Cockle Creek smelter, may reflect the influence of the steep topography of Munibung Hill, and the relative location of the adjacent smelter site.

Nevertheless, it is concluded that GHD's case demonstrates that the validity of assumptions underling the modelling of prevailing air flows is questionable and unlikely to represent the site.

<u>The dispersion modelling presented using CALPUFF was conducted using an inadequate grid resolution:</u>

- GHD questions the validity of numerous assumptions underlying PB's modelling methodology. For example:
    - PB's choice of CALPUFF rather than AUSPLUME (Australian Air Pollution Dispersion Model), given the short range between receptors and the plant in undulating terrain
    - PB's absence of detail on the source of surface and upper air data, such as Bureau of Meteorology hourly observations of temperature, humidity, pressure, wind speed and direction at Williamtown, Nobbys and Norah Head
    - PB's lack of detail on ten building structures and modelling of associated building downwash
- GHD contests, of most importance, the grid resolution (spacing) as coarse as 1km when the majority of receptors are within 0.5 to 1.5 km range as this will result in the

misapplication of the model. When the grid resolution is not significantly finer than the source-receptor distances, then the advantages of CALPUFF's capacity to curve pollutant trajectories and to model shear dispersion are lost and one may as well adopt a steady-state model (which assumes straight line pollutant trajectories), such as AUSPLUME. GHD notes that this misapplication is manifest in the unrealistic contour patterns plotted in section 7. Ground level impacts expectantly radiate outward from the stack source beyond 10-times the stack height (290 metres in this case) and this is not seen in the contour plots.

- In effect, the coarse resolution of the Cartesian grid results in an unrealistic spatial pattern of ground level concentrations of pollutants.

In relation to odour (the constituent known to have least margin of compliance to regulatory criteria at most asphalt plants) the asphalt loadout and tarping sources have not been modelled - these sources are at least an order of magnitude more important than the main stack:

- GHD strongly contests PB's comment that product loadout is a negligible odour source and therefore to be excluded from model inputs. GHD states that such a comment is 'simply wrong' and that the odour emission rate during loadout is the single largest odour emission rate on the site and therefore essential to model.

- GHD presents odour measurements from asphalt plants in Victoria, including Boral plants, to demonstrate that the magnitude of the loadout odour source is approximately twice that of the major stack.

The peak-to-mean ratios required to convert the 1-hour averaged 99-percentile predictions of odour to 1-second averaged predictions have not been applied, and as a consequence the impact from the stack emissions will be under-estimated by ~ 20 fold

- GHD notes that peak to mean concentration ratios are used to convert 1-hour averaged odour levels to 1 second levels, the unit required for the DECCW regulatory criterion for odour. Peak to mean concentration ratios depend on the type of source, atmospheric stability and the distance downwind from the source to the receptor. GHD notes that for a tall wake-free source (such as the 29m stack) the ratio is 35:1 for unstable atmospheres and 17:1 for stable atmosphere. Alternatively, peak to ratios may be introduced by means of a variable emissions file. GHD's review of the CALPUFF control file for odour simulation, provided by PB, concluded that a variable emission file was not used. Thus, GHD concluded that odour impact results will be under-estimated by a factor ranging from 17 to 35, depending on atmospheric stability classes.

The odour emissions appear to have been based on the use of Shell bitumen, and if the Cameron Park plant is to use Mobil sourced bitumen in the future, the emissions will need to be factored higher by ~ 8:1.

- GHD presents odour emission testing results from Scoresby asphalt plant to demonstrate that emissions from Mobil asphalt generally are 8 fold higher than Shell asphalt.

Summary of Air Quality Data and Impacts

The proponent commissioned the EIS to accord with the *Approved Methods and Guidance for the Modelling of Air Pollutants in NSW* (DEC 2005), the *Technical Framework for Assessment and Management of Odour from Stationery Sources in NSW* (DEC 2006), the *Protection of the Environment Operations (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005* and other relevant guidelines.

The AQIA assessed air and odour. The AQIA concluded that incremental impacts at the adjoining property (Receiver 16) failed to comply with maximum 24-hour average $PM_{2.5}$ goal

during peak production (2,500 tonne /day). The AQIA report did not included results for a modelling scenario based on capacity production (4,800 tonne/day).

Review of the AQIA by Council staff and external consultants with technical expertise in air impact of asphalt plants concluded that the predicted impacts given in the AQIA report cannot be relied upon for the following reasons:

- The AQIA is inadequate in terms of modelled emission sources, omitting to include major sources emissions from outloading and tarping activities, which are at least an order of magnitude more important than the main stack, as well as omitting emissions from the recycled asphalt product stockpile;
- The AQIA is inappropriate in terms of the configuration of the air dispersion model CAPUFF, thus inaccurately simulating rapid dispersion of air pollutants from the main stack;
- The post processing of modelling results presented in AQIA underestimates the impact of the modelled stack by approximately 20 fold; and
- If the plant is to use Mobil sourced bitumen, rather than Shell bitumen,(assumed in the modelling), then emissions will need to be factored higher by approximately 8:1.

The AQIA report indicates broad management practices and mitigation measures, recommending incorporation into a Construction Environmental Management Plan and an Air Quality Management Plan, including Air Quality Response Levels for controlling dust impacts and odour controls for bitumen vapours (Section 5.1.3). The absence of detailed site-specific environmental management plans prevents assessment of proposed solutions against relevant Australian Standards.

Considering the inadequacies of the modelling methodology and the absence of site-specific detail relating to mitigation measures, the Air Quality Impact Assessment Report fails to illustrate the achievement of the intent to protect air quality.

Performance Criteria 2

Development encourages the use of public transport.

Assessment

Council welcomes the location of new industries within the industrial area and encourages the use of public transport to achieve the intent of improving air quality by reduction of motor vehicle emissions. Currently, no public transport services extend to the Cameron Park Industrial Estate. As industries continue to locate within the estate, the number of employees may reach a critical mass that makes public transport service provision economically feasible. No objection based on this criterion.

Performance Criteria 3

Development reduces vehicle kilometres travelled by the creation of compact multi- use centres.

Not Applicable.

Performance Criteria 4

Development provides for cycling and walking as a mode of transport.

Not applicable.

Performance Criteria 5

Development minimises both workplace and community exposure to toxic chemicals.

Assessment

The Air Quality Impact Assessment (AQIA) report, prepared for the proponent by Parsons Brinkerhoff, lacks a detailed technical assessment of workplace air quality with reference to NOHSC 1995.

By inference, results in Table 5-11 adhere to national exposure standards (NOHSC 1995). Table 5-11 shows predicted concentrations of gaseous emissions (arsenic, beryllium, cadmium, nickel and mercury) at levels well within the one hour air quality goals at all receptor locations. Thus by inspection and direct comparison, the values in Table 5-11 adhere to national exposure standards (NOHSC 1995).

The AQIA states that the greatest risk to workers is the risk of burn injuries from the hot-mix asphalt.

However, considering the inadequacies in the air dispersion modelling methodology listed above, the results of the AQIA present unreliable basis for meeting this criterion.

The AQIA's scientific literature review showed no evidence for any significant health risk to the community.

The AQIA report acknowledges community concern regarding the dust impact on the quality of water in rainwater tanks, particularly in the community of Seahampton, which lacks a connection to town water.

The AQIA's proposed solution recommends an Air Quality Management Plan and an associated site-specific Environmental Management System.

However, the absence of detailed site-specific environmental management plans, prevents assessment of proposed solutions against relevant Australian Standards.

The Clean Air (Plant and Equipment) *Regulation 2010* Part 5 sets maximum limits on emissions from activities and plant for a number of substances, including solid particles and toxic chemicals. The limit on emissions of solid particles is 100 mg/m^3 (for activities from Group C, non-scheduled premises to be carried out after 1 September 2005.).

Prior to the amendment of the Protection of the Environment Operations Act 1997, in 2009 and the associated *The Clean Air (Plant* and Equipment) *Regulation 2010,* asphalt plants were considered as scheduled premises. AQIA Appendix C Section 6.3 and Table 6-5, infers that the emissions for the proposed plant are within acceptable limits set for asphalt plants, as per the earlier regulation of scheduled premises [*Protection of the Environment Operations (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005*].

In summary, the EIS states that the development is designed to adhere to the emission limits set by the relevant legislation.

However, considering the predicted exceedences of the maximum incremental 24 hour concentration of $PM_{2.5}$ at the adjoining property during peak production; the inadequacies in the air dispersion modelling methodology and the lack of site-specific detail regarding an Environmental Management Plan to mitigate air impacts, the proponent's case presented in the EIS fails to meet this criterion.

Performance Criteria 6

Development minimises odour nuisance.

Assessment

The proponent commissioned the EIS to accord with the *Technical Framework for Assessment and Management of Odour from Stationery Sources in NSW* (DEC 2006).

Evidence/reasons for objection based on this criterion:

- Failure to apply appropriate peak to mean ratios in post processing of model raw data output of odour productions – may underestimate impact by 17 to 30 fold.
- Odour emissions based on Shell bitumen, if based on Mobil, then emissions need to factored higher by 8:1.
- Odour emission sources not included in the modelling loading and tarping activities, sources with an order of magnitude at least equal to the major stack emission source.
- Lack of site-specific detail for an Environmental Management Plan to mitigate odour impacts.
- Full capacity production scenario (4,800 tonnes/day) not modelled.

In summary, considering the significant underestimation of odour impacts, due to (1) inappropriate post processing of model outputs; (2) the omission of major fugitive odour emission sources; (3) the absence of site specific version of an Environmental Management Plant; and (4) failure to assess the impact of a capacity production scenario, the development proposal fails to minimise the odour nuisance.

2.1.17 Building Waste Management

Not applicable.

Section 2.2 – Social Impact

2.2.1 Social Impact Assessment

Council's Coordinator Social and Community Planning advises that the findings of the assessments that the main negative social impacts are those that relate to noise, air quality, odour, visual, traffic and health impacts are agreed with. It is also noted that there are a number of social benefits associated with the proposal including employment and economic benefits to the local and regional communities.

The negative impacts identified by the assessments are likely to be minimal on the local communities of West Wallsend, Cameron Park and Seahampton. Furthermore, the measures identified in the Social Impact Assessment, the Environmental Assessment and other associated documentation, adequately address these potential negative social impacts, and therefore resulting in minimal negative social impacts arising from the proposal.

Section 2.3 – Economic Impact

2.3.1 Economic Impact Assessment

It is recognised that the erection of the plant replace two existing facilities of the same output and utilises six employees. Although curious, it appears that the plant will not be utilised at maximum production and as such will simply be replacing existing output from the two existing plants. As such the economic impact is negligible.

Section 2.4 – Heritage

2.4.1 - 2.4.4

Not applicable.

Section 2.5 – Stormwater Management, Infrastructure and On-site Services

2.5.1 - 2.5.4

Council's Subdivision Engineer advises that the final solutions to stormwater detention and harvesting are satisfactory and comply with the performance criteria for this aspect of the development.

2.5.5 Waste Management for Multi-Unit Dwellings

Not applicable.

Section 2.6 – Transport, Parking, Access and Servicing

2.6.1 - 2.6.3

Not applicable.

2.6.4 Pedestrian and Cycle Paths

The development does not adversely impact upon pedestrian and cycle paths.

2.6.5 Public Transport

Not applicable.

2.6.6 Vehicle Parking Provision

The parking provided on site is adequate for staffing numbers.

2.6.7 Car Parking Areas and Structures

The parking provided on site is of sufficient dimensions and locations.

2.6.8 Vehicle Access

Heavy and light vehicle access is separated and designed in accordance with this section of the DCP.

2.6.9 Access to Bushfire Risk Areas

There are no access issues relating to bush fire risk areas.

2.6.10 Servicing Areas

The servicing areas of the development comply with this section of the DCP.

2.6.11 On-Site Bicycle Facilities

There is space on the site for the provision of bicycle facilities.

2.6.12 Non-Discriminatory Access and Use

Council's Community Planner (Ageing and Disabilities Services) advises that appropriate access has been applied to the office and car parking area of the development.

Section 2.7 – Streetscape and the Public Realm

2.7.1 Streetscape and Local Character

Performance Criteria 1

The scale and appearance of development is consistent with the street character or its desired character.

The scale and appearance of the development is not consistent with the street character or its desired character.

Performance Criteria 2

Development contributes to streets as a pleasant, safe and lively public space for community and social activity.

The contribution to the street is one of highly intensive industrial activity and as such the ability of the proposal to comply with this aspect of the DCP is limited.

Performance Criteria 3

Development for the purposes of:

- *Large subdivision,*
- *Development on sites over 5000m^2,*
- *Development in the Urban, Residential, Tourism and Recreation and Industrial Zones, that has a main street frontage of greater than 32 metres, incorporates suitable streetscape treatments into the design.*

The proposal strives to incorporate a landscape response to mitigating the impact on the streetscape. No treatments of the building incorporate streetscape element sin the design.

2.7.2 Landscape

The landscaping plan and documentation lodged with the application strives to mitigate the significant visual impacts of the asphalt plant by screen planting to boundaries, including relying on some planting off the site on road reserve.

The landscaping in itself complies with DCP and is acceptable, however the intent of the landscaping being screening of the asphalt plant, is not fully achieved and the plant will remain visible from Cameron Park Drive, Billbrooke Close and further afield, to a lesser extent.

2.7.3 Public Open Space

Not applicable.

2.7.4 Pedestrian Networks and Places

Not applicable.

2.7.5 Light, Glare and Reflection

The impact of lighting of the development, particularly with regard to 24 hour and night time operations, is required to be assessed by a submitted light design and spill diagram. Due to the advances in lighting design and ability to shield safety and operational lighting from neighbours, such a plan shall be required as a condition of any consent issued.

2.7.6 Views

The impact of the development on views to and from the site is due to the high tower elements (up to 29 metres). This however is mitigated (although not totally ameliorated) by the fact that the site lies within and among tall vegetation however this vegetation does not completely shield the tower components from view from external areas including Cameron Park Drive which is a collector road feeding significant traffic volumes to and from the Newcastle Link Road. Its exposure to this road especially when travelling west will impact views to the distant Watagan mountain range.

2.7.7 Signs

Not applicable.

2.7.8 Fences

The proposed boundary fencing is suitable for the industrial site and acceptable.

2.7.9 Safety and Security

Council's Community Planner (Youth and Safety) advises that Crime Prevention Through Environmental Design (CPTED) is based upon the principle of designing out crime by making the chances of being caught in the act of crime outweigh the benefits of the criminal activity. The four broad principles for assessment are Surveillance, Access Control, Territorial Reinforcement and Space Management.

Based upon the NSW Bureau of Crime Statistics and Research (BOCSAR) report for the Lake Macquarie Local Government Area, crimes of increased risk in the vicinity of the site suggest the following criminal activity:

- Break and Enter Dwelling
- Malicious Damage to Property
- Motor Vehicle Theft
- Steal from Motor Vehicle
- Steal from Dwelling

The following recommendations take into consideration the BOCSAR report and CPTED principles:

Concern	Crime	CPTED Principle
A lighting maintenance policy shall be established for the development based upon the 24 hour operation	Break and Enter General Security	Space Management Surveillance
Landscaping should not inhibit natural surveillance (block sight lines) or provide concealment and entrapment opportunities. Shrubs should be less than 1.2 metres.	Break and Enter, Malicious Damage, and Theft	Surveillance, Space Management
A long term maintenance plan is to be developed. This is to cover maintenance of vegetation, graffiti management and malicious damage. Graffiti is to be removed within 24 hours, and lighting, if damaged or broken should be restored within 48 hours.	Break and Enter, Malicious Damage and Theft	Territorial Reinforcement Space Management
Trees are not to be located close to the boundary fencing as they can be used as natural ladders and provide concealment opportunities. Trees should be regularly maintained to ensure branches cannot act as a natural ladder to gain access to the facility.	Break and Enter, Malicious Damage and Robbery	Space Management, Access Control
Directional signage is to be provided throughout the development. The signage is to be clear, legible and useful, to aid way finding throughout the area (particularly around the entry and car park areas)	General Safety for mixed vehicle use.	Space Management, Territorial Reinforcement, and pedestrian Safety.
Buildings to have a security alarm system fitted, with remote monitoring and response.	Break and Enter	Access control

Generally, this location has a relatively low rate of crime and therefore the considerations for this development are focussed upon general safety for employees, sub-contractors and visitors to the plant.

Documents and plans submitted with the Construction Certificate application shall demonstrate that these security measures have been implemented. Such requirement will be included as a condition of consent, should consent be granted.

Section 3.1 - Lake, Waterway and Coastline Development

3.1.1 - 3.1.2

Not applicable.

Section 3.2 – Subdivision

3.2.1 - 3.2.6

Not applicable.

Section 3.3 - Urban Centre Development

3.3.1 - 3.3.3

Not applicable.

Section 3.4 - Housing – Building Siting, Form and Design

3.4.1 - 3.4.8

Not applicable.

Section 3.5 – Housing - Specific Housing Types

3.5.1 - 3.5.5

Not applicable.

Section 3.6 – Industrial, Bulky Goods and Utility Installation Development

3.6.1 Environmental Performance

Performance Criteria 1

Noise and Vibration

Noise generated by the development is within acceptable limits.

Vibration emitted from the development does not unreasonably affect the well being of the community, or any individual.

It is not demonstrated that noise from the development will be within acceptable limits.

Performance Criteria 2

Air Quality

The ambient air quality standard does not affect the well being of the community or any individuals.

Emissions of precursors to photochemical smog (including nitrogen oxides and volatile organic compounds) are minimised.

Emissions of greenhouse gases are minimised.

Emissions of air pollutants especially sulphur compounds (including sulphur dioxide and lead) are minimised.

Particulate and dust emissions at the boundary of the site do not result in environmental degradation or nuisance to the surrounding area.

Performance Criteria 4

Odour

Odours at the boundary of the site do not result in environmental nuisance.

It is not demonstrated that the air quality and odour emissions from the development are acceptable.

Performance Criteria 4

Visual Impact

The development maintains the scenic quality of the locality and environment.

The development impacts on the visual quality of the locality in respect of the impact on the context of Billbrooke Close.

Performance Criteria 5

Waste and Stormwater Management

The production of solid and liquid wastes is prevented or minimised, to the greatest extent practicable.

Stormwater does not contaminate surface or ground water.

Waste and stormwater management on the site and for the development is acceptable.

Performance Criteria 6

Environmental and Safety Hazards

Risks and hazards associated with the development are within acceptable levels and adequate safety measures are in place.

It is not demonstrated that the development's hazards are within acceptable levels.

3.6.2 Site Layout

The development has been designed as an efficient use of the three allotments of land. it is apparent however that building to the boundary to the neighbouring AMP Control site, and close to the street in this location, may result in the need to increase the site setback and provide an increase in landscaping to these areas. Generally the development is supported with regard to site layout.

3.6.3 Building Design and Appearance

The asphalt plant's design and appearance is borne from the industrial process involved in the manufacture of asphalt and in this regard it is reasonable to expect a heavy industrial outcome. Unfortunately this building design and appearance is contrary to the existing and likely future context of Billbrooke Close and as such the development is not acceptable in this regard.

Section 3.7 – Specific Land Uses

3.7.1 - 3.7.8

Not applicable.

Part 4 – Area Plans

4.1 - 4.20

Not applicable.

79C(1)(a)(iiia) any planning agreement that has been entered into or any draft planning agreement that the developer has offered to enter into

Not applicable.

79C(1)(a)(iv) any matters prescribed by the regulations

The Regulation 2000 provides:

(1) For the purposes of section 79C (1)(a)(iv) of the Act, the following matters are prescribed as matters to be taken into consideration by a consent authority in determining a development application:

(a) in the case of a development application for the carrying out of development:

(i) in a local government area referred to in the Table to this clause, and
(ii) on land to which the Government Coastal Policy applies,

the provisions of that Policy,

(b) in the case of a development application for the demolition of a building, the provisions of AS 2601.

Not applicable.

79C(1)(b) the likely impacts of the development

The following matters were considered and, where applicable, have been addressed elsewhere in this report.

Context & Setting
Access, transport & traffic
Public domain
Utilities
Heritage
Other land resources
Water
Soils
Air & microclimate
Flora & fauna
Waste
Energy
Noise & vibration
Natural hazards
Technological hazards
Safety, security & crime prevention
Social impact on the locality
Economic impact on the locality
Site design & internal design
Construction

79C(1)(c) the suitability of the site for development

Does the proposal fit the locality?

The proposal is not suited to the locality which is one of industrial uses, however those industries of lower scale, built form and less intense or “heavy industrial” type land uses. The local meteorological conditions are not known to an extent to allow as assessment of the air pollution impacts of the proposal, and nor the suitability of the site in this regard.

Are the site attributes conducive to development?

The site attributes as they stand physically, are suited to the development.

79C(1)(d) any submissions made in accordance with this Act or the Regulations?

Public submissions:

A total of 119 submissions and three petitions containing 602, 70, and 14 signatures were received. Six of the submissions were received after the notification period. A complete list of objectors may be found at Appendix B of this report.

All submissions indicated objection to the proposal. The reasons for objection are summarised below, noting that some submissions raised more than one issue:

Objection Reason / Issue	**Number**
Air pollution including odour, contaminants, and impact on public health	110
Traffic impacts including noise, safety and amenity	47
Water quality including drinking water	32
Visual pollution	12
Negative economic and employment impacts	11
Industrial Estate Amenity	32
Property Values	16
Home Grown food impacts	3
Stormwater impacts	3
Accuracy of EIS data, mainly associated with air quality assessment	13
Flora and Fauna	5

It is clear from the submissions that the main issues of concern to the local communities in the vicinity of the site and the existing neighbouring light industrial uses, are air quality and pollution, traffic impacts and noise, and water quality impact (as a direct result of air pollution).

As other sections of the assessment indicate that the air quality information is not complete enough for full and proper assessment, the issues raised by objectors cannot be confirmed or disputed and a precautionary approach should be employed in this instance.

Submissions from public authorities:

The Rural Fire Service, Mine Subsidence Board, Department of Environment, Climate Change and Water and Hunter Water provide endorsement or indicate that they do not wish to comment on the development. The Department of Planning and Energy Australia (now Ausgrid) did not respond to the proposal.

79C(1)(e) the public interest

Given the lack of certainty regarding the environmental impacts of the proposal, and the significant public objection to the proposal, the development is not perceived to be in the public interest.

Conclusion:

Based on the above assessment it is concluded that the information submitted with the application is not sufficient to form an opinion or make a recommendation on air quality, odour, acoustic and hazardous development issues.

Recommendation:

It is recommended that the application be refused for the following reasons:

1 The development application including the EIS and additional information does not provide a sufficient level of information to enable a full and proper assessment of air quality impacts, including odour, of the Asphalt Plant. The air quality impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

2 The development application including the EIS and additional information does not provide a sufficient level of information to enable a full and proper assessment of acoustic impacts of the Asphalt Plant. The acoustic impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

3 The risk assessment methodology selected for the Preliminary Risk Assessment is not suitable to be compared against HIPAP No 4 risk criteria, and does not provide a sufficient level of information to enable a full and proper assessment of risk impacts of the Asphalt Plant. The risk impacts of the development are to date unknown and a precautionary approach would indicate that without full knowledge of the impacts, approval is not justified.

Chris Dwyer
Principal Development Planner
Lake Macquarie City Council

APPENDIX A – GHD Assessment

CLIENTS | PEOPLE | PERFORMANCE

Lake Macquarie City Council

Report on Asphalt Plant DA 1282/2010

Environmental Impact Statement Review

March 2011

Revision 0

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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Reviewers Details

INTRODUCTION

GHD was commissioned by Lake Macquarie City Council (LMCC) to undertake a review of the Environmental Impact Statement (EIS) submitted as part of a Development Application (DA) for the erection and operation of an Asphalt Plant on behalf of Boral, at 11, 15 and 18 Billbrooke Close, Cameron Park NSW 2285.

The review focused on the following:

- Air quality impacts, including emissions and odour.
- Acoustic impacts.
- Hazardous and Offensive Industry Analysis.
- Community Health Risk Assessment.

SCOPE OF WORK

GHD's tasks were as follows. Curriculum Vitae of the reviewers are provided in Appendix A.

Air Quality Impacts

- EIS and related documentation review and background research.
- Review of EIS Section 5.1.
- Review of EIS Appendix C – Air Quality Assessment.
- Identification of gaps and required additional EIS information.
- Discussion on the likely impact on air quality if production capacity were increased above 200,000 tonnes per annum.

Acoustic Impacts

- EIS and related documentation review and background research.
- Review of EIS Section 5.2.
- Review of EIS Appendix D – Noise Impact Assessment.
- Identification of gaps and required additional EIS information.

Risk Management

- EIS and related documentation review and background research.
- SEPP 33 Analysis - Review of EIS Section 5.4.
- SEPP 33 Analysis - Review of EIS Appendix H – Preliminary Hazard Analysis (PHA).
- SEPP 33 Analysis - Review of EIS Appendix K – Environmental Management System (EMS).
- Review of Community Health Risk Assessment (EIS Section 5.4).
- Identification of gaps and required additional EIS information.

LIMITATIONS

This Environmental Impact Assessment Review ("Report"):

- Has been prepared by GHD Pty Ltd for Lake Macquarie City Council (LMCC).
- May only be used and relied on by LMCC.
- Must not be copied to, used by, or relied on by any person other than LMCC without the prior written consent of GHD.
- May only be used for the purpose of the review (and must not be used for any other purpose).

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than LMCC arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in Section 0 of this Report.

AIR QUALITY REVIEW

This review is not exhaustive and has a focus on those aspects that have a material effect on the predicted impacts with respect to compliance to the Department of Environment, Climate Change and Water (DECCW) criteria.

For convenience the EIS section structure has been used and shown in italics.

Review of EIS Section 5.1 Air Quality (2117105A PR_1782 Rev B)

Section 5.1 generally is a summary of the findings of the Air Quality Impact Assessment (AQIA) detailed in Appendix C of the EIS. Review of Appendix C is provided in the section below.

Review of EIS Appendix C – Air Quality Impact Assessment (2117105A PR_5193 Rev C)

3. Adopted Standards and Guidelines

The list is comprehensive and relevant to the NSW jurisdiction.

4. Existing Air Quality and Meteorology

4.2 Existing Ambient Air Quality

The site is approximately 17 kilometres west of Newcastle, and the use of Air Quality data from Newcastle will be a conservative measure of the Air Quality at the site.

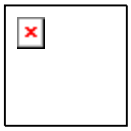
4.3 Meteorology

Section 4.3 deals with existing conditions concerning meteorology. While it is true that topography, wind speed and wind direction all affect plume dispersion, atmospheric stability is also an important consideration.

The available regional and local data are used to define the Project dispersion meteorology. As discussed in the review comments, GHD contends that the Bureau of Meteorology (BoM) data used are more representative of the Hunter Valley than the actual site which is to the south of the Hunter Valley, and with a different drainage pattern into Lake Macquarie.

The BoM stations identified are Newcastle Nobbys Signal Station (NNSS - 20 kilometres East and on the coast) and Newcastle University (NU - 10 kilometres inland and 11 kilometres from the Project site). While these stations record rain and wind, they are both reported as limited to just twice daily spot observations at 9 am and 3 pm. Moreover, NNSS is overly exposed to coastal and Hunter Valley influences compared to the subject site.

Continuously recording BoM Automatic Weather Stations (AWS) in the area (which can give hourly data) include Williamtown RAAF, Norah Head Lighthouse, Lake Macquarie - Cooranbong and, since October 2001, NNSS. The first two are also exposed to coastal influences similar to



that at NNSS. While Cooranbong is some 20 kilometres to the south, it can be considered to be a similar distance inland (with allowance for Lake Macquarie) with resultant sheltering from the influences of the Hunter Valley by the inland topography of the Sugarloaf Range rising further to the Great Dividing Ranges to the West.

4.3.1 BoM Newcastle Meteorological Data

The wind speed paragraph of section 4.3.1 compares similarities between the two BoM sites (NNSS and NU). However, the most obvious fact that NNSS is overly exposed to the stronger coastal winds is ignored. On an annual basis, mean wind speeds are 3.6 times stronger on the coast at 9 am than at the inland site, and are still a significant 2.4 times higher at 3 pm. Calm conditions are discussed in the wind direction section/paragraph but once again this highlights how the coastal site records less calm conditions than the inland site (9% to 33% at 9 am and 2% to 10% at 3 pm).

The wind direction analysis of Section 4.3.1 and the plots in Appendix A of the AQIA indicate a clear NW-SE bias. This is most obviously due to the Hunter Valley influence along this same axis orientation for both of these BoM sites. The report makes no mention of the Cameron Park site being sheltered from this influence to the NW.

4.3.2 TAPM Generated Meteorological Data

Section 4.3.2 reports on the the TAPM prognostic meteorological modelling for the Project site with 'TAPM Newcastle (2006)' wind roses presented in Appendix B of the AQIA.

The annual wind rose is remarkably circular at between 6% and 8% incidence for almost all wind directions. The statement is made that the site representative winds are "generally consistent with a [sic] wind flow patterns for the 9 am and 3 pm data sets at NNSS and NU." This can be easily contested and strongly so by GHD. The very next statement is that "for some of the summer months, south-easterly wind directions dominated." The wind rose plots of Appendix B (site representative) are clearly from the north-east quadrant during the summer months of December, January and February (albeit more of an easterly component during February). This is consistent with the expected result that TAPM is modelling the influence of an afternoon sea-breeze from the NE quadrant and the synoptic easterly flow as the sub-tropical ridge moves south during the Austral summer months. Both NNSS and NU indicate that (at 3 pm during summer) sites in the Hunter Valley have a modified preference for SE quadrant winds.

The TAPM generated data also indicate (in a general sense) that during winter the Project site is outside the influence of the Hunter Valley. The differing percentile rings of the monthly wind rose plots of Appendix B do not help in making the comparison, but between April and August the prevailing wind is from the SW quadrant. For the same months at the BoM sites, the wind is rarely from this quadrant (a heavy bias to NW during the morning; down-valley flow due to the Hunter River topography).

So it can be demonstrated that the Project site is outside of the Hunter Valley topographical influences on prevailing winds. Indeed an annual wind rose for the Tomago Refinery area (located at the mouth of the Hunter valley), Figure 0-1, shows the topographic influences of the Hunter River Valley similar to those at NNSS and NU - except this is for the diurnal changes of

24 hours over a one-year period rather than just 9 am and 3 pm spot readings. When this is compared to a similar annual wind rose for the Edgeworth area, Figure 0-2, the expected sheltering from the Hunter Valley influences at Cameron Park can be clearly seen. Note that the prevailing wind axis shifts from NW-SE along the Hunter river valley to SW-NNE due to the topographical influences from the Sugarloaf Range.

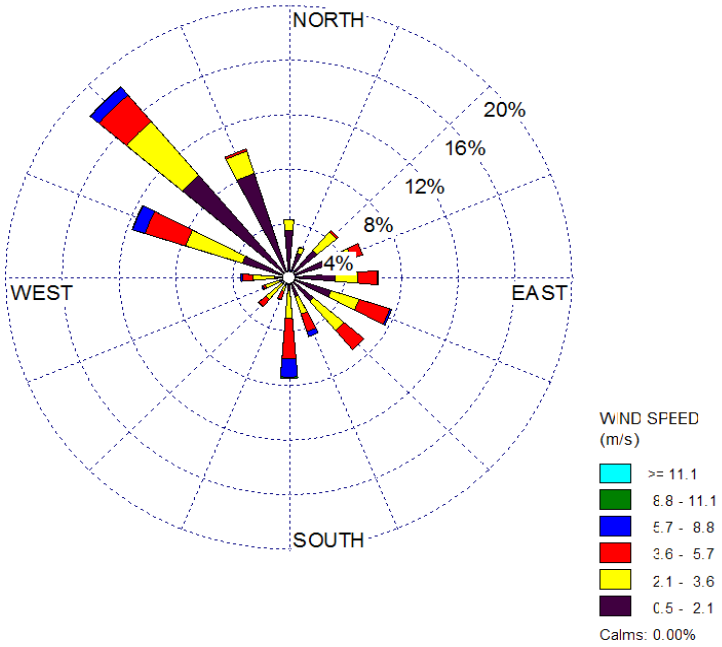


Figure 0-1 Annual Wind Rose for Tomago

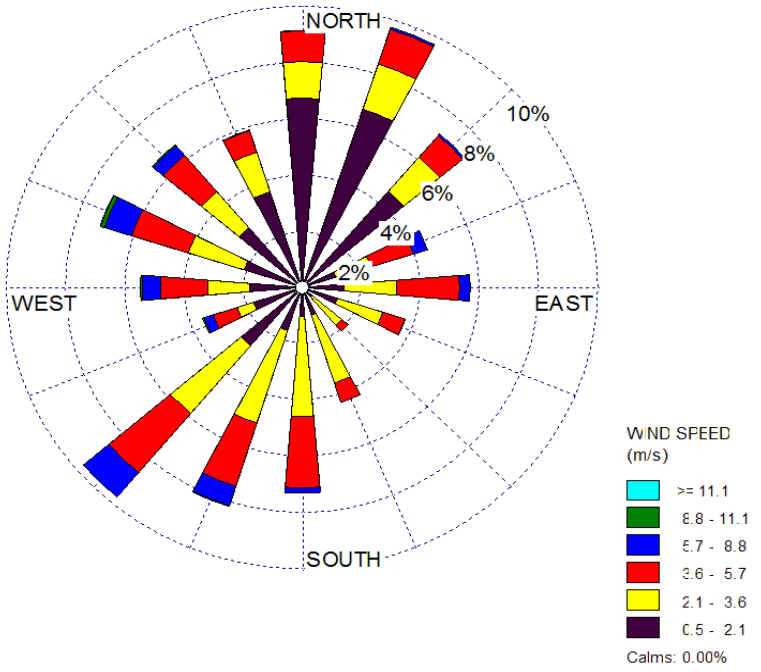


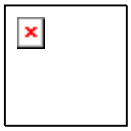
Figure 0-2 Annual Wind Rose for Edgeworth (Recorded at Pasminco, Cockle Creek)

The reduced incidence of slower, and indeed calm, winds being generated by the TAPM model for such an inland site is alarming. No statistics on average wind speeds are given. An incidence of just 1% of winds 0.5 m/s or less is contentious for a site some 20 kilometres inland with considerable sheltering (Great Dividing Ranges) from the winter westerlies. Even the coastal NNSS site has 2% calms during the afternoons on an annual basis. No information is given on the TAPM version used. The latest version of TAPM V4 has a known correction to increase light wind preference from that given in TAPM V3: "TAPM tends to under predict calm conditions and over predict the frequency of high wind speeds." [Kaniyal and Mackenzie, 2008, p.4, http://www.acoustics.asn.au/conference_proceedings/AAS2008/papers/p29.pdf].

Note that as shown in Figure 0-2, for actual wind data recorded near Cameron Park, there are less than 1% of winds above 8.8 m/s inland of Newcastle and on the coastal side of the Sugarloaf Range. This does not compare with the high frequency of winds above 11.1 m/s (cyan rose petal in Appendix B of the AQIA) which was generated by TAPM.

So it can be seen that the TAPM modelling of the site representative wind climate outlined in the Air Quality Impact Assessment is:

- Too windy for an inland site (albeit within 20 kilometres of the coast).
- Unable to reproduce light wind frequencies.
- Amazingly circular in the incidence of wind direction frequency compared to reality of a NW to NE bias; which is also Contrary to the Hunter Valley NW-SE axis used in the 'verification' to the spot readings in Newcastle.



The AQIA report in this section claims that "Worst case dispersion conditions for the site (least dispersion) would normally be associated with F-class stability conditions". This is a true statement for ground based sources but is not true for a 29 metre stack source. Moreover, the TAPM generated file has just 4% of F-class stability. The Edgeworth area has been measured, see Figure 0-2 above, to have F-class stability for close to 29% of the time. This becomes an important difference when using the TAPM synthesised data in the CALMET model and the further implications of modelling plant odour emissions from just a stack source rather than fugitive ground level sources (see below).

The final paragraph of Section 4.3.2 discusses the TAPM generated meteorological file being used as input to the CALMET model. However, no information is given on how this was done (upper air treatment, for example), and even what version of CALMET was used (see below). The statement "with the exception of local meteorological variation" is curious as this is just what a properly configured CALMET model with full and comprehensive diagnostic input is supposed to do.

5. Air Emission Sources

5.1 Construction Phase

General dust and vehicle exhaust emissions are identified as the main sources. GHD agree that the latter need not be modelled.

5.2 Operational Phase

5.2.1 Pre-production and Production Related Emissions

The AQIA identify all the significant operations that can emit particulates. GHD agree that the filler bin need not be included as a dust source.

5.2.2 Production Emissions

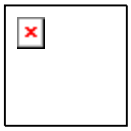
GHD agree that the drier stack is the main emission source in this category.

5.2.3 Other Production Related Fugitive Emissions

Storage tank filling would result in a significant odour source except for the mitigation by carbon canister.

The comment on product loadout to dismiss this as a negligible odour source is simply wrong. In fact the odour emission rate during loadout is the single largest odour emission rate (OER) source on the site and must be modelled. The reason given is that it is claimed that the loadout takes approximately 10 seconds. Even were the loadout so quick, it could still give rise to off-site odour impact as the human olfactory system responds to odour transients in order 1 second duration or less. And at the maximum throughput of 2500 tonnes per day and a 30-tonne load, this will give loadout odour spikes every 2500/30/24 = 17 minutes.

However, the loadout in fact takes about 1 minute, as the truck has to advance slowly during the dump so as to uniformly load the tray. Further, the loadout OER has been measured several



times - in 2002 and 2007 at the Citywide plant in North Melbourne, and in Boral plants as follows:

- 2005 - Montrose Plant (Mobil bitumen).
- 2006 - Scoresby temporary Plant for Eastlink (Mobil bitumen).
- 2007 - Scoresby temporary Plant for Eastlink (Shell bitumen).

The Scoresby tests were the best controlled as the loadout was into the ceiling of a tunnel and onto the truck tray. An air extraction system through a manifold ducted the emissions released in the tunnel to a fan and stack. Measurements of OER in the stack gave 33,300 OUm^3/s for Mobil bitumen and 4,300 OUm^3/s for Shell bitumen. These figures compare to the main stack 2700 OUm^3/s OER given in Table 6-3 of the AQIA. That figure was based on measurements at the Boral Ballarat plant in February 2010, and from the very low odour level (200 OU) was almost certainly using Shell bitumen. Hence the loadout OER is around twice that of the main stack (assuming the proposed plant will only use Shell bitumen or similar. Further, since the loadout source is near ground-level, whereas the main stack emission releases at 29 metre height, the impact of the loadout source will be many fold (approximately 20 - 50) that from the main stack.

There is also a lesser but still significant odour source - that of the truck load while being tarped ready for off-site transport. Measurements at North Melbourne and Montrose gave the tarp to loadout OER ratio of 0.06. So, depending on the number of trucks on-site being tarped, the tarp source would be an additional 6%, 12 % or 18% (for 1, 2 or 3 trucks).

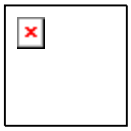
In GHD's modelling of the Boral Penlink temporary asphalt plant, the contribution of the 6 metre main stack compared to the loadout plus tarping fugitive sources at the nearest two residences were as follows:

Source	Predicted 99.9%ile Odour levels	
	Residence # 1	Residence # 2
Main Stack (6 m height)	0.051	0.05
Loadout + Tarping	0.92	0.60
Fugitive /Stack Ratio	18 :1	12 :1

The ratio of fugitive to main stack contribution to off-site peak odour levels varies from 12:1 to 18:1. While the ratios will of course vary for different meteorology and different percentile criteria, it is clear that the ratio at Cameron Park will be substantially greater, simply because the increase in stack height to 29 metres will substantially reduce the stack odour 'signal' off-site, while the fugitive source 'signal' will remain unaltered.

As can be seen in the above data, it will be essential to specify whether the plant will only source bitumen from a Shell refinery source or similar - if other sources of bitumen are envisaged to be used then some supporting OER data will be required to give confidence that the predicted odour levels will not be exceeded when other bitumen sources are to be used.

6 Air dispersion modelling



6.1 CALPUFF Model

It is true that CALPUFF has been approved by DECCW as an advanced dispersion model. The advantages of CALPUFF over AUSPLUME, or indeed TAPM, are to do with complex terrain and non-steady state scenarios. Neither is relevant in this instance. As stated in the Approved Methods "AUSPLUME should not be used for terrain where the height of any receptor exceeds the lowest release height." The choice between CALPUFF and AUSPLUME should have been more carefully evaluated - the latter may well have been adequate given the short range between receptors and the plant in undulating terrain.

6.2 Model Characteristics

6.2.1 Meteorological Input Data

CALMET was used as the meteorological input to drive the CALPUFF model. Surface and upper air data are required. The AQIA gives no detail on how this was done. Only the (supposedly) surface data generated by TAPM is mentioned in section 3. Moreover, the full diagnostic power of CALMET is best utilised by incorporating as many observations as possible, including from outside the modelling domain. So why is there no mention of hourly observations of temperature, humidity, pressure and wind (and even cloud and upper air measurements at the RAAF base) at Williamtown, NNSS (operating as an AWS since October 2001) and even at Norah Head AWS?

6.2.2 Terrain Effects

GHD agrees that the use of GTOPO30 data is suitable to define the terrain in CALMET and CALPUFF to 1 kilometre resolution. It is noted that the AQIA describes the terrain as 'undulating' (rather than 'complex').

6.2.3 Building Downwash

The AQIA only refers to modelling a stack source of 29 metre height. Ten building structures are mentioned as being considered with no details given in the report on their dimensions. Each building height would need to exceed 40% of the stack height (i.e. above 11.6 metres) before having any significant effect.

6.2.4 Cartesian Grid and Site plan

Grids of 10 kilometre square size with 1 kilometre resolution were used for both the meteorology and pollution cartesian grids. This is not a large scale as claimed and, for example, does not extend to the coast to incorporate coastal effects. There is an error in the claim that the south-west corner is at 323.200 km-Easting (km-E) and 6240.000 km-Northing (km-N) (stated twice) as this is some 40 kilometre west and 120 kilometres south of the Cameron Park Industrial Estate (see Table 2-1 where receptor #16 is at 368.649 km-E and 6359.102 km-N).

Of most importance is the grid resolution as coarse as 1 kilometre when the majority of receptors are within 0.5 to 1.5 kilometre range as this will result in the misapplication of the model. When the grid resolution is not significantly finer than the source-receptor distances, then the advantages of spatial variation in the wind field to curve pollutant trajectories and to model shear dispersion are lost and one may as well adopt a steady-state model, such as

AUSPLUME. This misapplication is manifest in the unrealistic contour patterns plotted in section 7 of the AQIA. Ground level impacts should radiate outward from the stack source beyond 10-times the stack height (290 metres in this case) and this is not seen in the contour plots. The coarse resolution of the cartesian grid is not helping and it may be that the contours are simply defined by the spot concentrations at the individual receptors.

6.2.6 Emission Factors and Rates

No reference is made to the inclusion of peak-to-mean factors to apply for the odour impact modelling. As the DECCW regulatory criterion is set for a 1-second averaging period, peak to mean ratios provided in Table 6.1 of the 'Approved Methods - Modelling and Assessment of Air Pollutants in NSW' are used to convert the 1-hour averaged odour levels to the 1 second levels. In the case of a tall wake-free point (applicable for the 29 metre stack) this ratio is 35:1 for unstable atmospheres, and 17:1 for stable and neutral atmospheres. These ratios can be introduced by means of a variable emission rate file, however the CALPUFF control file for the odour simulation (Run 22) provided to GHD shows that a variable emission file was not used, and the constant value of 2700 OUm^3/s specified in Table 6.3 was applied as a fixed emission rate. Hence the results will be under-estimates by a factor ranging from 17 fold to 35 fold - depending on the stability categories in the top 1-percentile of predicted odour levels at each grid receptor.

Summary

In summary, the predicted impacts on air quality of the proposed asphalt plant given in the AQIA cannot be relied on as:

- The meteorology synthesised for the Cameron Park site is not plausibly representative of that site.
- The dispersion modelling presented using CALPUFF was conducted using an inadequate grid resolution.
- In relation to odour (the constituent known to have least margin of compliance to regulatory criteria at most asphalt plants) the loadout and tarping sources have not been modelled - these sources are at least an order of magnitude more important than the main stack.
- The peak-to-mean ratios required to convert the 1-hour averaged 99-percentile predictions of odour to 1-second averaged predictions have not been applied, and as a consequence the impact from the stack emissions will be under-estimated by approximately 20 fold.
- The odour emissions appear to have been based on the use of Shell bitumen, and if the Cameron Park plant is to use Mobil sourced bitumen in the future, the emissions will need to be factored higher by approximately 8:1.

NOISE REVIEW

This review is not exhaustive and has a focus on those aspects that have a material effect on the predicted impacts with respect to compliance to the Department of Environment, Climate Change and Water (DECCW) criteria.

For convenience the EIS section structure has been used and shown in italics.

Review of EIS Section 5.2 Noise (2117105A PR_1782 Rev B)

Section 5.2 generally is a summary of the findings of the Noise Impact Assessment (NIA) detailed in Appendix D of the EIS. Review of Appendix D is provided in the section below.

Review of EIS Appendix D – Noise Impact Assessment (PR1701 Rev C)

3 Baseline Noise Survey

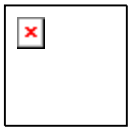
3.3 Meteorological Conditions During Baseline Noise Survey

As suggested in Appendix A of the Noise Impact Assessment (NIA), a substantial amount of baseline noise data has been filtered out of the analysis due to adverse weather conditions.

The NIA states that 'for a representative dataset unsatisfactory meteorological conditions during baseline noise surveys should occur for less than 30% of the measurement period'. This statement is incorrect. Appendix B of DECCW's Industrial Noise Policy (INP) outlines data exclusion rules and the circumstances where re-monitoring should be undertaken.

Adverse weather during baseline noise monitoring has been based on the Bureau of Meteorology (BoM) Newcastle Nobbys Signal Station (NNSS - 20 kilometres East and on the coast). It is noted that there was a high proportion of adverse weather conditions (ie. rain and/or wind in excess of 5 m/s) at NNSS during the monitoring period. This may have two consequences on the baseline monitoring:

- If NNSS is more exposed to high winds than the subject site, it is possible that too much data has been excluded from the data set and the criteria derived from the baseline data may not be representative of the proposed site.
- If the proposed site was indeed subject to winds comparable to those measured at NNSS, weather during the baseline monitoring period was consistently inclement and the dataset should be considered as invalid.



3.4 Existing Noise Environment

3.4.2 Unattended measured noise levels

The following comments are made with regards to the noise levels presented in Table 3-2 of the NIA:

- Some of the baseline L_{eq} levels are between 70 and 80dB(A). It is understood that the noise levels presented in the table excludes data affected by adverse weather. There should be some explanation as to what may have caused such high levels and wether they should be included in the analysis.
- L_{eq} and L_{90} levels are described as Assessment Background Levels (ABL) and Rating Background Levels (RBL) regardless of the noise descriptor. The correct terminology is for processed L_{90} levels to be defined as ABL and RBL, while L_{eq} levels are a measure of the existing ambient noise levels.
- While the RBL is defined in the INP as the median value of the monitored ABL's, the existing L_{eq} levels should be determined as the logarithmic average of the measured L_{eq} (see Table 3.2 of the INP). Recalculation of the overall L_{eq} may lead to substantially different results.

4 Adopted Noise and Vibration Objectives

4.6 Road traffic noise objectives

Initially, Section 4.6 correctly identifies the road traffic noise objectives as being 60dB(A) $L_{eq,1hr}$ daytime and 55dB(A) $L_{eq,\ 1hr}$ night-time, with consideration to DECCW Environmental Criteria for Road Traffic Noise (ECRTN).

However, existing traffic noise levels are then calculated using the UK Calculation of Road Traffic Noise (CoRTN) and the ECRTN target is ultimately derived from the calculated levels. The following comments are made:

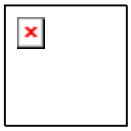
- Typically, existing traffic noise levels would be determined from the noise monitoring results. It is not clear why a calculation had to be undertaken in this case.
- The NIA does not clearly identify which receivers are concerned with traffic noise issues.
- The calculation does not take into account corrections for ground absorption, road gradient and angle of view. Also it does not outline the correction to convert L_{10} into L_{eq}.

With regards to the above, the use of 69dB(A) as daytime road traffic noise criteria does not appear justified and is questionable.

5 Regional Meteorological Conditions

Section 5 discusses the use of a TAPM model for the site. It is assumed that this is the same model as established in the Air Quality Impact Assessment (Appendix C of the EIS). Section 4.2 of this review outlines a number of issues with the TAPM Model.

As such the outputs of the TAPM model should be taken with caution and may not be valid.



7 Construction Noise and Vibration Impact Assessment

7.2 Predicted Construction Noise Impacts

7.2.1 Construction Road Traffic Noise

The same calculation methodology as in Section 4.6 has been used. Again, the calculation does not seem to account for the range of possible CoRTN corrections and does not outline which receivers may be concerned with construction road traffic noise.

Results are checked against the daytime road traffic noise criterion, which is questioned in this review.

8 Operational Noise Impact Assessment

8.1 Asphalt Plant Source Noise Levels

It is reported that 1/3 octave band source noise levels have been analysed for potential annoying tonal and low frequency characteristics. The NIA concludes that no correction is required. The noise source spectra are not provided in the NIA so this cannot be verified. The modelled noise spectra should be provided in the report to support the modelling methodology.

It may be appropriate to consider the asphalt plant to operate intermittently and/or have a number of intermittent noise sources, in which case a 5dB penalty may apply to the night-time noise levels with consideration to the INP. This is not discussed in the report.

The NIA notes that a -6dB correction was applied to the stack tip sound power level (SWL) to account for directivity. Such directivity correction would be frequency dependent and the report should provide further details to justify this correction.

The NIA notes a 20 dB(A) noise attenuation performance of the stack façade. Again, this is typically frequency dependent and it is not clear how this was applied to the model.

The NIA notes that there was no noise data available for the Recycled Asphalt Pavement (RAP) crushing and screening plant. This is potentially a major site noise source.

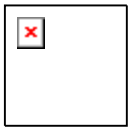
8.2 Predicted Operational Noise Impacts

Table 8-2 presents the modelling results under ‘neutral’ and ‘adverse’ conditions. It is not clear what ‘adverse’ means given the NIA states in Sections 5.1 and 5.2 that adverse wind and temperature gradients were not going to be addressed in the operational noise impact assessment.

The NIA identifies an exceedance of the 39dB(A) target under ‘adverse’ conditions and compliance at all receivers under neutral conditions. However, it does not consider a potential +5dB penalty for intermittency at night-time, in which case the target would be exceeded at Receiver 18 under ‘neutral’ conditions.

8.3 Assessment of Sleep Disturbance Potential

Table 8-3 mentions ’50-55 internal’ for all receivers. It is unclear what this means.



8.5 Operational Road Traffic Noise

Again, the CoRTN methodology is used in this case, without the full range of potential corrections (e.g. angle of view, gradient). There is still no clarification on the subject receivers.

Use of the 69 dB(A) target is not justified and, as such, the stated compliance requires more clarification.

The report concludes that, at night-time, the 55 dB(A) target would be exceeded by up to 5.5dB(A) unless operational road traffic volumes are within 15 heavy vehicles per hour.

9 Recommended Noise Management and Mitigation Measures

9.2 Operational Noise Management Measures

One of the conditions to be met for the site to meet operational noise targets is for the RAP crushing plant and screen deck individual SWL's not to exceed 91dB(A). This may not be a realistic target without the implementation of site specific noise control.

NIA Appendix C SoundPlan Sample Output Files

Overall results shown on the SoundPlan sample files are 2 to 3 dB higher than the corresponding results shown in Table 8-2 for Receivers 5, 6 and 19.

Summary

Review of Appendix D of the EIS reveals some inconsistencies and shortcomings with regards to the following:

- Quality of the baseline noise monitoring data and its implications on site specific noise targets.
- Adopted traffic noise targets.
- Modelling process and recommendations.

The above should be clarified before the findings of the NIA can be relied upon.

RISK MANAGEMENT REVIEW

For convenience the section structure has been used and shown in italics.

Review of EIS Section 5.4 Hazards and Risks (2117105A PR_1782 Rev B)

5.4 Hazard and Risks

The Risk Assessment does not identify all expected hazards, for instance:

- Risks associated with the storage and handling of Dangerous Goods/Hazardous Substance other than bitumen, emulsions and hydrocarbons.
- Traffic risks.
- Risks from breakdown or failure of processes or facilities.
- Risks from exposure of the project to natural disasters.

5.4.1 Mitigation of Impacts

Mitigation not compliant with State Environmental Planning Policy No 33—Hazardous and Offensive Development (SEPP 33), SEPP 33 (Hazardous Industry Planning Advisory Paper: No. 3) requires that the Preliminary Hazard Assessment (PHA) include:

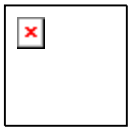
- A comprehensive description of all proposed safeguards and hazards control systems, with particular emphasis on the relevancy and effectiveness of such safeguards.
- A comprehensive outline of organisational safety controls including: the principles of emergency procedures and plans; fire prevention and protection measures; and, monitoring, auditing, operators' training and safety management systems.
- Whether there are existing codes, standards or guidelines that apply, and whether the proposal complies with these standards.

These should be added to the PHA with an overview provided in Section 5.4.1.

Review of EIS Section 5.15 Health

General Risk-based comment on Boral Asphalt Community Health Hazard Assessment (Butler, Nov 2009)

The report is a thorough investigation of available scientific literature. Sampling of some of the references such as the World Health Organisation (WHO) and the Centres for Disease Control and Prevention (NIOSH) confirmed the accuracy of information. The conclusions of the report appear to rely on the legal aspect of available scientific research not being able to unequivocally support a causal relationship between bitumen and cancer in humans. The WHO (Ref.1) concludes the following:



'Studying the possible health effects attributed to chemical mixtures, including resulting fumes and vapours, is complex. Despite the uncertainties, limitations, and mixed study results, what is clear is that asphalt fume condensates produce malignant skin tumours in mice; and that, when exposed to airborne concentrations of asphalt or asphalt fumes and vapours, workers report symptoms of irritation of the eyes, nose, and throat and, in some, lower airway changes and demonstrate metabolism of the chemical constituents of asphalt fumes and vapours. Taken as a whole, these results suggest that effects do occur in mammalian systems and that the limitations or uncertainties should not preclude taking steps to manage human exposures. Under various performance specifications, it is likely that asphalt fumes and paints contain carcinogenic substances.'

In line with the 'precautionary principle' (a good definition is provided in the NSW Protection of the Environment Administration Act 1991):

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

The Butler report relies to a certain degree on the lack of full scientific certainty of the carcinogenic effects of bitumen on humans. GHD comments have been made below against Appendix H of the EIS - Preliminary Risk Assessment (PRA) regarding the requirement to identify adequate safeguards to minimise the risks of emissions.

Ref.1 - Concise International Chemical Assessment Document 59 World Health Organization, 2004.

5.15.1 Assessment of Impacts

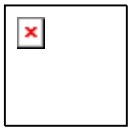
A statement is made regarding burns as the greatest occupational risk. There appears to be avoidance in discussing the serious occupational risks of asphalt fumes (acute and chronic bronchitis etc.), well documented in the scientific literature (WHO - Ref.1).

Review of EIS Appendix H – Preliminary Risk Assessment (2117105A-RPT-002-A-aw)

4 Risk Assessment

4.1 Hazard Identification

An important part of the PRA is the hazard identification. This PRA gives details of chemical and physical properties of LPG but fails to list other hazardous materials that could be present in the Asphalt plant. The completion of hazard identification is poor in this PRA, Section 4.2.1 presents the potential consequences of release of LPG but fails to identify the causes of releases and the safeguards to prevent or mitigate an event. Hazardous Industry Planning Advisory Paper (HIPAP) No 6 provides guidelines on how to complete a PRA and a sample hazard identification is presented in Appendix 4 of HIPAP No 6.



4.2 Risk Evaluation

The PRA does not calculate cumulative risk from all hazardous materials. In line with the SEPP 33 requirements, the PRA fatality calculations should cover all materials (not just LPG/butane/propane) that may present a hazard and not just those where the quantities are above the screening threshold (see NSW DoP Applying SEPP 33, page 54).

The PRA calculations should combine the effects of all relevant hazardous materials, i.e. include LPG/butane/propane, diesel and methylated spirits.

4.2.3 Risk Assessment Methodology

In addition to the Individual Fatality Risk (IFR) criteria, HIPAP No 4 contains other criteria that have not been assessed in this PRA and they include:

- Injury Risk with respect to heat radiation and explosion overpressure as given in HIPAP No 4.
- Risk of Property Damage.
- Societal Risk.

4.2.4 Risk Evaluation [sic]

4.2.4.1 Consequence Calculations

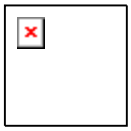
The consequence assessment in this PRA does not quantify the thermal radiation or explosion overpressure as a result of LPG fire or explosion. Therefore, the impact distances are unknown and it is an important parameter in calculating the risk of fatality at a specific location. Impact distance can also assist in ensuring a safe layout of the facility with respect to locating the protected or occupied buildings.

The consequence assessment should consider the analysis and the subsequent impact of thermal radiation from fire involving LPG, potential for Vapour Cloud Explosion (VCE) and Boiling Liquid Expanding Vapour Explosion (BLEVE) in order to be able to correctly determine the harm to people, property and environment. The method used in this PRA fails to accomplish this.

4.2.4.2 Estimation of Probabilities

The purpose of estimation of probabilities or equipment failure frequency analysis is to understand how often a release can occur and the nature of the release based on the historical failure data of the equipment, in this case the LPG storage vessel and associated equipment including the loading hose.

The PRA is not clear on what type of failure is represented by the accident frequency of $3x10^{-7}$ per year (catastrophic failure or leak). The catastrophic failure rate of a pressure vessel given in TNO 'Purple Book' Table 3.3 (Ref.2) is $5x10^{-7}$ per year, this compares well with the figure calculated in this PRA. However, catastrophic hose failure rate given in TNO 'Purple Book' Table 3.19 (Ref.2) is $3.5x10^{-2}$ per year. Allowing for use factor based on 27 unloading/loading per year and assuming 1 hour duration it gives $1.1x10^{-4}$ per year failure rate. This is a much higher failure rate compared to the failure rate calculated in this PRA. The consequence of a



hose failure can be much smaller than the failure of the storage tank but it will depend upon what safeguards are provided to prevent or minimise the release from the hose.

Ref 2. - TNO Guideline for Quantitative Risk Assessment 'Purple Book' CPR 18E

Review of EIS Appendix K – Environmental Management Systems (BA-PEOP-01 Rev 1 to BA-PEOP-05 Rev 1)

Note that Section 6.1 of the EIS states that a site specific Environmental Management System (EMS) will be provided. Appendix K (Boral's generic EMS) appears to have been included to give an indication as to possible future contents. No major benefits will be gained from a thorough review of Appendix K until the site-specific version is received later in the process.

The procedures included within Appendix K are not written to an acceptable industry standard:

1. Incomplete referencing throughout the text to applicable Boral documentation, legislation, Codes of Practice and Standards.

   E.g. no reference in BA-PEOP-01 (regarding bunding) to DECC Storing and Handling Liquids: Environmental Protection - Participants Manual.
   E.g. Dangerous Goods Code 7 Compatibility not included in reference list.

2. Poor document structure - No table and figure headings, incomplete acronym listings, lack of titles on figures, no proper references to figures within body of document.

3. Unidentified Risk categories (e.g. 'M' – page 2 BA-PEOP-01).

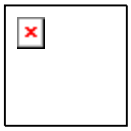
4. Imprecise/unclear statements (e.g. 'Maintain training records', what type of training records are being referred to? Safety Training, Operational training, First aid training etc.).

BA-PEOP-04 – Bitumen, Emulsion and Other Hydrocarbon Storage, Handling and Spill Response

The scope details bitumen, emulsion and hydrocarbons but proceeding impact register also includes the effects of 'other' chemicals'.

The contents of the procedure are not fully consistent with the referenced Standard and Codes of Practice. Appendix K does not address the expected full range of minimum requirements included in Australian Standard 1940:2004 The storage and handling of flammable and combustible liquids such as:

- Initial commissioning procedures.
- Normal handling procedures.
- Liquid transfer procedures.
- Monitoring of essential functions and components.
- Control of hazards, including ignition sources.
- Manufacturer's operating instructions for equipment.



- Earthing and bonding.
- Fault conditions.
- Housekeeping and site upkeep.
- Isolation, deactivation and identification of equipment not in use.
- Maintenance of clear spaces for access.
- Management of leakage, spillage and clean-up.
- Personnel safety and protective equipment.
- Environmental monitoring.
- Operation of utilities.
- Fire protection systems.
- Control of access, movement and activities.

Further examples of missing information includes no mention of worker's Personal Protective Equipment (PPE) or the requirement to maintain a Hazardous Substances and Dangerous Goods register.

Summary

Preliminary Risk Assessment

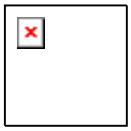
There are some fundamental errors in the way the risk of fatality (3.10^{-7} deaths per annum) is reported and compared with the risk criteria of NSW DoP Hazardous Industry Planning Advisory Paper (HIPAP) No 4. Firstly, the 3.10^{-7} deaths per annum is actually the accident frequency or likelihood as calculated in section 4.2.4.2 and is not the risk of fatality. The risk of fatality should be the product of likelihood and consequence. Secondly, the risk of fatality given in HIPAP No 4 is based on 'Individual Fatality Risk' (IFR) which is the risk of fatality to a person at a particular point, the method selected to calculate risk in this PRA is not suitable to compare risk against HIPAP No 4 criteria.

A conclusion cannot be drawn with respect to compliance or non-compliance with the risk criteria of HIPAP No 4 without assessing the risk of the facility against each of the IFR criteria given in HIPAP No 4. The risk criteria of concern in this case would be the $50x10^{-6}$ per year, which shouldn't exceed the site boundary and could be affected by the location of the LPG storage vessel.

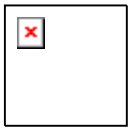
The risk assessment methodology selected for this PRA is not suitable to be compared against HIPAP No 4 risk criteria, therefore, decision regarding compliance with the risk criteria with respect to land use planning cannot be made.

In order to gain a clear understanding of the risk profile of the proposed Asphalt plant and its impact to the surrounding land it is recommended to undertake a full QRA in order to be able to use the HIPAP No 4 risk criteria to assess the risk of the LPG storage.

Environmental Management System



Appendix K (Boral's generic EMS) appears to have been included to give an indication as to possible future contents. No major benefits will be gained from a thorough review of Appendix K until the site-specific version is received later in the process.



Appendix A

Reviewers Details

GHD

Level 3 GHD Tower 24 Honeysuckle Drive Newcastle NSW 2300
PO Box 5403 Hunter Region Mail Centre NSW 2310
T: (02) 4979 9999 F: (02) 4979 9988 E: ntlmail@ghd.com.au

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	V Chavand	C Evenden		A Lewis		24/02/11

APPENDIX B – List of Objectors

SUMMARY OF OBJECTIONS

DA/1282/2010

Submission Period 16 August 2010 - 1 October 2010

Proposed Asphalt Plant 11, 15 and 18 Billbrooke Close, Cameron Park

	Name	Address	Date Received at LMCC
1	Acland, Greg and Flo	3 Tanunda Close, Holmesville NSW 2286	20 September 2010
2	Adamthwaite, Brian	6 Fifth Street, Seahampton NSW 2286	27 September 2010
3	Adamthwaite, Debbie	6 Fifth Street, Seahampton NSW 2286	28 September 2010
4	AEH Group – Sugar Valley Golf Course and Lifestyle Estate (Michael Rabey, Marketing and Development Manager)	Level 30, 88 Phillip Street, Sydney NSW 2000	1 October 2010
5	AMP Control (Daniel Davis, Contracts Manager)	7 Billbrooke Close, Cameron Park NSW 2286	1 October 2010
6	Andrews, Anne	55 Earl Street, Holmesville NSW 2286	30 September 2010
7	Austin, Michelle	4 Robertson Street, West Wallsend NSW 2286	29 September 2010
8	Australian Labor Party – West Wallsend Branch (Bernard Griffin, Branch Secretary)	c/- 46 Elizabeth Street, Holmesville NSW 2286	28 September 2010
9	Ball, Kirsten	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	16 September 2010
10	Barnsley, Janelle and Mark	38 Charlton Street, Barnsley NSW 2278	30 September 2010
11	Barton, Joanne and Peter	36 Brown Street, West Wallsend NSW 2286	15 September 2010
12	Beath-Starr, Kris	48 Carrington Street, West Wallsend NSW 2286	24 September 2010
13	Blackburn, Pauline	21 Fifth Street, Seahampton NSW 2286	29 September 2010
14	Blackburn, Tony	21 Fifth Street, Seahampton NSW 2286	29 September 2010
15	Blissett, Jennifer and Raymond	26 Wilson Street, West Wallsend NSW 2286	30 September 2010
16	Boag, Janelle	110 Carrington Street, West Wallsend NSW 2286	10 September 2010

17	Bradley, Leonie	5 Carrington Street, West Wallsend NSW 2286	28 September 2010
18	Brealey, Craig	43 Carrington Street, West Wallsend NSW 2286	30 September 2010
19	Brealey, Jillian	43 Carrington Street, West Wallsend NSW 2286	30 September 2010
20	Brennan, Michelle	27 Earl Street, Cameron Park NSW 2285	1 October 2010
21	Brigden, Amanda	44 Fourth Street, Seahampton NSW 2286	29 September 2010
22	Buchanan, Leah	16 Seaham Street, Holmesville NSW 2286	30 September 2010
23	Bunnings Group Limited (Michael Jones, Senior Property Manager)	Locked Bag 30, Granville NSW 2142	27 September 2010
24	Burton, Mrs A	13 Carrington Street, West Wallsend NSW 2286	24 September 2010
25	Butterworth, Natalie	45 Carrington Street, West Wallsend NSW 2286	30 September 2010
26	Butterworth, Scott	45 Carrington Street, West Wallsend NSW 2286	30 September 2010
27	Cardillo, Adam	33 Wigeon Chase, Cameron Park NSW 2285	17 September 2010
28	Carter, Christian	36 Seaham Street, Holmesville, NSW 2286	30 September 2010
29	Carter, Louise	36 Seaham Street, Holmesville, NSW 2286	30 September 2010
30	Chilsholm, Jenny and Webb, Graham	3 Fourth Street, Seahampton NSW 2286	15 September 2010
31	Colquhoun, Jenelle	7 George Booth Drive, Cameron Park NSW 2286	31 August 2010
32	Cooke, Phillip and Freer, Annie	9 Brooks Street and 15 Wallace Street, West Wallsend NSW 2286	1 October 2010
33	Cooper, Lindsay	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	1 October 2010
34	Coupe, Bronwyn	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	13 September 2010

35	Crockett, Ben	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	30 September 2010
36	Curran, Kathryn	5 Watkins Street, West Wallsend NSW 2286	1 October 2010
37	Curran, Peter	5 Watkins Street, West Wallsend NSW 2286	15 September 2010 and 27 September 2010
38	Date, Scott	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	30 September 2010
39	Deal, Kevin	111 Woodford Street, Minmi NSW 2287	1 October 2010
40	Dodd, Mr and Mrs	6 Carrington Street, West Wallsend NSW 2286	24 September 2010
41	Evans, Betty	27 St Helen Street, Holmesville NSW 2286	1 October 2010
42	Ferguson, Jade	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	29 September 2010
43	Ferguson, Julie	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	9 September 2010
44	Fletcher, Alana	6 Northview Street, Rathmines NSW 2283	9 September 2010
45	Freer, Ann and Robert	11 Laxton Crescent, Belmont North NSW 2280	1 October 2010
46	Gibson, Teresa	38 Fourth Street, Seahampton NSW 2286	24 September 2010
47	Grant, David	43 Seaham Street, Holmesville NSW 2286	21 September 2010
48	Griffin, Bernard and Doris	46 Elizabeth Street, Holmesville NSW 2286	1 October 2010
49	Guider, Jenny	36 Carrington Street, West Wallsend NSW 2286	24 September 2010
50	Haggarty, Noel	15 Fifth Street, Seahampton NSW 2286	11 September 2010
51	Halpin, Gabriele and Dove, Peter	60 Wilson Street, West Wallsend NSW 2286	18 September 2010
52	Hannan, Susan	23 Teralba Road, West Wallsend NSW 2286	1 October 2010
53	Harvey, Allan	19 Wilson Street, West Wallsend NSW 2286	24 September 2010

54	Hawkins, E	5 Carrington Street, West Wallsend NSW 2286	29 September 2010
55	Hayward, Jeanette and Terry	12 Second Street, Seahampton NSW 2286	1 October 2010
56	Heath, Denise	50 Elizabeth Street, Holmesville NSW 2286	28 August 2010
57	Heemskirk, Alexandra	13 Seaham Street, Holmesville NSW 2286	5 October 2010
58	Heemskirk, Janet	13 Seaham Street, Holmesville NSW 2286	
59	Heemskirk, Jessica	13 Seaham Street, Holmesville NSW 2286	5 October 2010
60	Hofman, Haylie	2 Lakeside Circuit, Cameron Park NSW 2285	29 September 2010
61	Holmesville Progress Association Inc	PO Box 122 Wallsend NSW 2286	3 September 2010
62	Holmesville 'Where Old Friends Meet' (L J Price, Secretary)	PO Box 122, West Wallsend NSW 2286	1 October 2010
63	Jensen, Belinda	55 Earl Street, Holmesville NSW 2286	24 September 2010
64	JJMAC Pty Ltd (John McInnes)	6-10 Billbrooke Close, Cameron Park NSW 2285	20 August 2010
65	Johnson, Alison	40 Park Street, Killingworth NSW 2278	30 September 2010
66	Jones, Nora	3/42 Martin Street, Warners Bay NSW 2282	30 September 2010
67	Knezevic, George	62 Wilson Street, West Wallsend NSW 2286	18 September 2010
68	Knezevic, Lisa	PO Box 67 West Wallsend NSW 2286	30 September 2010
69	Lacey, Jordyn	83 Constitution Drive, Cameron Park NSW 2285	21 September 2010
70	Lake Macquarie City Council	126-138 Main Road, Speers Point NSW 2284	1 October 2010
71	Lewis, Lyn	9 McCarthy Street, Minmi NSW 2287	1 October 2010
72	Lewis, Rob	9 McCarthy Street, Minmi NSW 2287	1 October 2010

73	Maccauley, Daniel	5 Fifth Street, Seahampton NSW 2286	29 September 2010
74	Maddock, David, Kate, Molly and Tom	30 Edden Street, West Wallsend NSW 2286	29 September 2010
75	March, Ian	34 St Helen Street, Holmesville NSW 2286	28 September 2010
76	March, James	43 Seaham Street, Holmesville NSW 2286	30 September 2010
77	March, Monica	43 Seaham Street, Holmesville NSW 2286	29 September 2010
78	March, Vicki	34 St Helen Street, Holmesville NSW 2286	16 September 2010
79	McCloy Group (Brian Swaine, Managing Director)	Suite 1 Level 3 426 King Street Newcastle West NSW 2300	1 October 2010
80	McInnes, John	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	30 September 2010
81	McKinnon, Dr Louise	PO Box 91 West Wallsend NSW 2286	30 September 2010
82	Middlemas, J	11 George Street, Holmesville NSW 2286	24 September 2010
83	Morris, Wendy	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	1 October 2010
84	Murdoch, Kevin	18 Buni Street, Holmesville NSW 2286	19 September 2010
85	Northlakes Community Association (Pat Mitchell, President)	5 Coromandel Cove, Cameron Park NSW 2285	23 September 2010
86	Nosworthy, Ann	West Wallsend High School 2 Appletree Road, West Wallsend NSW 2286 (staff member)	24 September 2010
87	Oldham, Sasha	41 Wallace Street, West Wallsend NSW 2286	24 September 2010
88	Peter McInnes Pty Ltd (Alan Coupe, General Manager)	6-8 Billbrooke Close, Cameron Park NSW 2285	30 September 2010
89	Pirillo, Emilia	31 Wigeon Chase, Cameron Park NSW 2285	17 September 2010

90	Powell, Brian and Jan	35 Carrington Street, West Wallsend NSW 2286	22 September 2010
91	Prahl, Torben	3/183 Kings Road, New Lambton NSW 2305	30 September 2010
92	Price, John and Lillian	PO Box 122, West Wallsend NSW 2286	1 October 2010
93	Sinclair, Joanne	13 George Booth Drive, Seahampton NSW 2286	1 October 2010
94	Sinclair, Thelma	5 George Booth Drive, Seahampton NSW 2286	1 October 2010
95	Smith, Stephen and Michelle	71 Seaham Street, Holmesville NSW 2286	23 September 2010
96	Sorcevski, Peter	12 Saxon Street, West Wallsend NSW 2286	17 September 2010
97	Stark, Meaghan	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	27 September 2010
98	Starr, Robert	48 Carrington Street, West Wallsend NSW 2286	28 September 2010
99	Sugarloaf and Districts Action Group Inc (Anne Andrews)	55 Earl Street, Holmesville NSW 2286	30 September 2010
100	Walmsley, Greg and Jenny	14 Carrington Street, West Wallsend NSW 2286	1 October 2010
101	Watters, Jacob	4 Carrington Street, West Wallsend NSW 2286	14 September 2010
102	Watters, Karen	4 Carrington Street, West Wallsend NSW 2286	16 September 2010
103	Watters, Matilda	4 Carrington Street, West Wallsend NSW 2286	14 September 2010
104	Watters, Paul	4 Carrington Street, West Wallsend NSW 2286	14 September 2010
105	Watters, Samuel	4 Carrington Street, West Wallsend NSW 2286	14 September 2010
106	West Wallsend Chamber of Commerce (Brian Adamthwaite, President)	c/- 6 Fifth Street, Seahampton NSW 2286	27 September 2010
107	West Wallsend High School (Ann Campbell,	West Wallsend High School, 2 Appletree Road, West	21 September 2010

	Principal)	Wallsend NSW 2286	
108	West Wallsend High School OHS Committee (Ann Nosworthy, Chair)	West Wallsend High School OHS Committee, 2 Appletree Road, West Wallsend NSW 2286	24 September 2010
109	West Wallsend Planning District Precinct Committee (Bernard Griffin, Convenor)	c/- 46 Elizabeth Street, Holmesville NSW 2286	1 October 2010
110	West Wallsend Primary School P&C Committee (Sally-Ann Easlea – President)	West Wallsend Primary School P&C, Brown Street, West Wallsend NSW 2286	25 September 2010
111	Wilcher, Craig and Wendy	12 Kirkwood Close, Cameron Park NSW 2285	20 September 2010
112	Williams, Lauren	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	9 September 2010
113	Wilson, Adam	8 Brown Street, West Wallsend NSW 2286	29 September 2010
114	Wright, Aleta	6-8 Billbrooke Close, Cameron Park NSW 2285 (workplace)	14 September 2010
	PETITIONS		
1	Sugarloaf and Districts Action Group Inc and Save Our Suburbs	602 Signatures	30 September 2010
2	Daniel Davis	70 Signatures	1 October 2010
3	Gordon Clarke (Bunnings)	14 Signatures	6 October 2010
	REQUESTS FOR ADDITIONAL TIME		
1	Adamthwaite, Brian (request extension of time)	6 Fifth Street, Seahampton NSW 2286	5 September 2010
2	AMP Control (request extension of time) (Daniel Davis, Contracts Manager)	7 Billbrooke Close, Cameron Park NSW 2285	3 September 2010
3	Baldwin, Coral and Garry (request extension	PO Box 18 West Wallsend NSW 2286	5 September 2010

	of time)		
4	Brindle, Linda (request extension of time)	54 Carrington Street, West Wallsend NSW 2286	30 August 2010
5	Holmesville Progress Association Inc (request extension of time)	PO Box 122 Wallsend NSW 2286	3 September 2010
6	Knezevic, Lisa (request extension of time)	PO Box 67 West Wallsend NSW 2286	6 September 2010
7	Maddock, David (request extension of time)	30 Edden Street, West Wallsend NSW 2286	3 September 2010
8	Mullins, Carmen and Said, Dorothy (request extension of time)	18 Brown Street, West Wallsend NSW 2286	9 September 2010
9	Pryce, Kristy (request extension of time)	56 Fifth Street, Seahampton NSW 2286	4 September 2010
10	Hickey (Member for Cessnock), Kerry on behalf of Brian Adamthwaite (request extension of time)	PO Box 242, Cessnock NSW 2325	13 September 2010
	LATE OBJECTIONS		
1	Allen, Joanne (by Member for Cessnock, via Minister for Planning)	39 Fifth Street, Seahampton NSW 2286	15 October 2010
2	AMP Control (Daniel Davis, Contracts Manager)	7 Billbrooke Close, Cameron Park NSW 2286	18 February 2011
3	Dever, Jason	39 Mowbray Avenue, Argenton NSW 2285	14 December 2010
4	Hay, Rod and Louise	14 Wallsend Road, West Wallsend NSW 2286	16 October 2010
5	McCarthy, Greg and Simone	O'Donelltown Road, West Wallsend NSW 2286	20 January 2011
6	Park, Dawn	27 Kinross Avenue, Cameron Park NSW 2285	23 December 2010