



ASSESSMENT REPORT

DUNMORE QUARRY

Road Transportation and Extraction Area Modification
(DA 470-11-2003 MOD 6)

1. BACKGROUND

Boral Resources (NSW) Pty Ltd (Boral) owns and operates the Dunmore Quarry, located approximately 12 kilometres (km) northwest of Kiama and 25 km south of Wollongong, in the Shellharbour City local government area (see Figure 1).



Figure 1: Location of Dunmore Quarry

Dunmore Quarry provides a significant supply of hard rock products to local and regional markets. The site also incorporates the Dunmore Sand and Soil Quarry and the Dunmore Concrete Batching Plant, both of which Boral also owns.

Dunmore Quarry was granted development consent (DA 470-11-2003, see Appendix B) by the Minister under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 19 November 2004. This consent allowed Boral to:

- extract up to 2.5 million tonnes per annum (Mtpa) of hard rock (volcanic breccia agglomerate and latite) for 30 years;
- process the extracted material on site;
- transport the processed material by rail and road; and
- rehabilitate the site.

Dunmore's consent has been modified on five occasions between 2005 and 2008:

- in December 2005 - to construct an amenities block;
- in June 2006 - to amend the quarry's biodiversity offset requirements, water management system and approved transport route;
- in May 2008 - to construct ancillary site infrastructure;
- in November 2008 - to extend the approved extraction area and alter the site's stormwater management design criteria; and
- in November 2008 - to develop a truck parking facility.

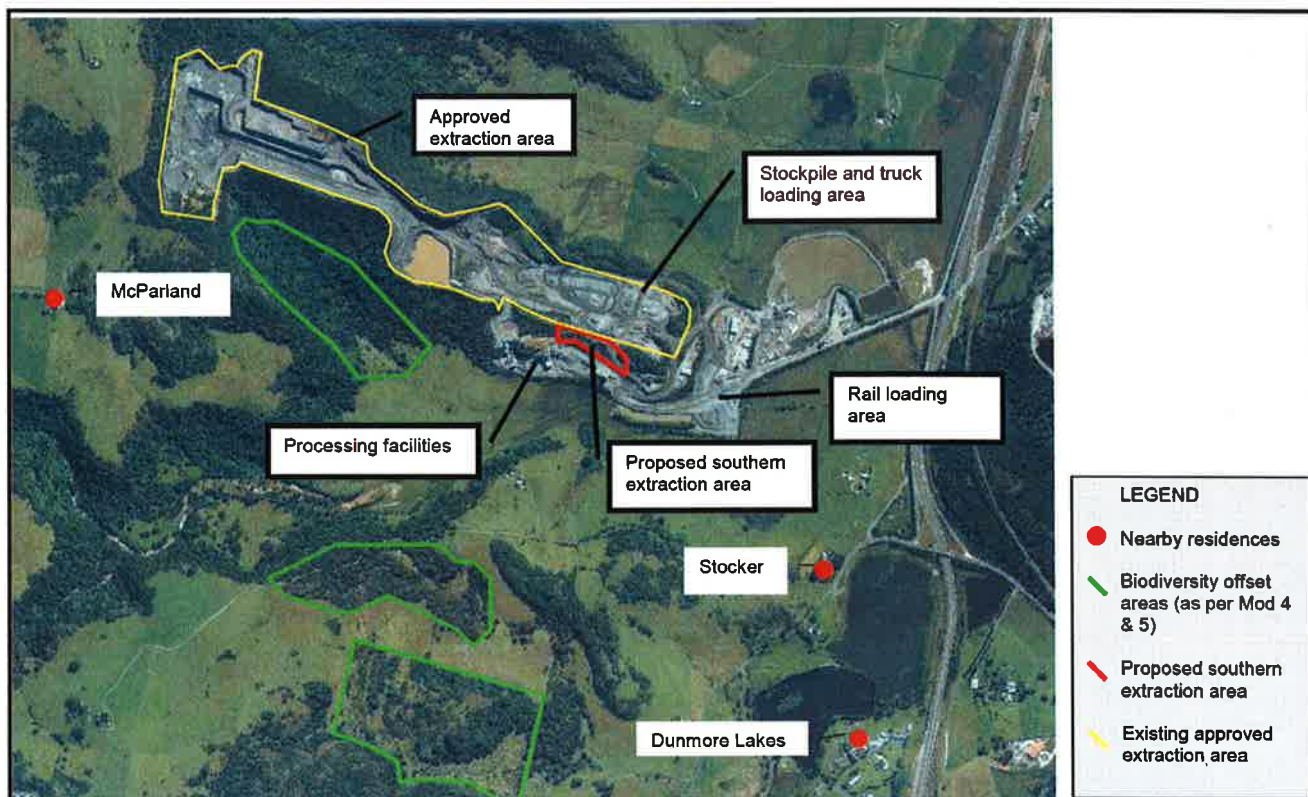


Figure 2: Dunmore Quarry site, showing the proposed southern extraction area

A large amount of land surrounding the quarry site is owned by Boral and is rural in character. A number of rural and rural-residential properties are situated to the north, west and south of the site. Four residences are located between 350 metres (m) and 1 km from the site. Rocklow Creek follows the southern boundary of the quarry. This watercourse is an ephemeral tributary of the Minnamurra River, which discharges to the Pacific Ocean 2 km east of the site. The residential areas of Shellharbour and Kiama, nature conservation areas, the Kiama/Shellharbour waste disposal depot and other commercial activities are also located near the quarry.

2. PROPOSED MODIFICATION

On 29 November 2012, Boral submitted a modification application (DA 470-11-2003 MOD 6) under Section 75W of the EP&A Act. The proposed modification involves:

- increasing the quarry product road transportation limit from 1 to 1.5 Mtpa; and
- extending the approved extraction area by 2.03 hectares (ha).

Road Transport Limit Increase

Dunmore Quarry is currently allowed to transport 1 Mtpa of product by road. Boral now proposes to increase the amount of material transported by road to 1.5 Mtpa as:

- Boral's Enfield rail terminal can accept 0.5 Mtpa of product, which is currently wholly supplied by Dunmore. Boral's Peppertree Quarry in the Southern Highlands will supply this capacity, instead of Dunmore, after it commences production in late 2014;
- Boral is unable to increase the amount of product supplied by rail to its other rail terminal at St Peters beyond that terminal's capacity to receive 1 Mtpa, as it is unable to gain access to additional rail paths or utilise longer trains;
- the forthcoming closure of Boral's Burrier Quarry near Nowra (a source of sand and gravel) and the Bluescope blast furnace at Port Kembla (a source of aggregate and crushed slag), would create an initial local supply gap of up to 0.427 Mtpa of product, and a future supply gap of up to 0.227 Mtpa, which Boral could satisfy only by road; and
- local markets cannot be supplied by rail.

Extraction Area Extension

Boral also proposes to extend its extraction area. The proposed extension area (labelled as the 'proposed southern extraction area' on Figure 2) would allow Boral to access a high quality latite resource. The proposed extension area would require 1.3 ha of regrowth vegetation to be cleared. All soil and overburden removed during development of the southern extraction area would be transferred to other areas of the site for current rehabilitation works or else stockpiled for future rehabilitation.

The current approved 2.5 Mtpa production limit would not change.

3. STATUTORY CONTEXT

3.1 Section 75W Modification

DA 470-11-2003 was granted in 2004, under Part 4 of the EP&A Act. Clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* requires modifications of such development consents to be carried out under section 75W of the EP&A Act. Despite the repeal of Part 3A of the EP&A Act, the effect of section 75W is continued for such consents by the operation of clause 12 of Schedule 6A of the Act.

The Department is satisfied that the proposed modification is within the scope allowed under section 75W of the EP&A Act, and that section 75W is the appropriate approval pathway for the application. The proposal does not represent a new development in its own right. The Department notes that the:

- proposed modification would not change the quarry's extraction method and approved production limit; and
- potential impacts would not substantially change over those already assessed and approved for the original development.

3.2 Approval Authority

The Minister for Planning and Infrastructure is the approval authority for the proposed modification. However, under the Minister's delegation of 14 September 2011, the Director, Mining and Industry Projects, can determine the application as:

- Shellharbour City Council did not object to the proposed modification;
- there were less than 10 public submissions in the nature of objections; and
- Boral has not made any reportable political donations.

3.3 Exhibition and Notification

The Department:

- exhibited the modification application and Environmental Assessment (EA, see Appendix C) from 24 January to 28 February 2013 at the Department's Information Centre, and at the offices of Shellharbour City Council (Council) and the Nature Conservation Council;
- advertised the exhibition in the Shellharbour Lake Times and the Illawarra Mercury;

- invited comment from the Office of Environment and Heritage (OEH), Environment Protection Authority (EPA), Division of Resources and Energy (DRE) of NSW Trade and Investment, Roads and Maritime Services (RMS), and Council; and
- made the relevant documents available on the Department's website.

4. CONSULTATION

4.1 Submissions

The Department received a total of 11 submissions during the exhibition period (see Appendix D):

- 6 from State and local government authorities providing comments; and
- 5 objections from the community.

4.2 Summary of Submissions

The EPA considered that the key environmental issues for the modification included noise and heavy vehicle emissions. RMS stated that, by itself, the proposed modification would be unlikely to significantly affect traffic volumes, although it expressed its preference for rail transport to be maximised whenever possible. OEH considered that the existing establishment biodiversity offset would adequately compensate for the additional clearing required for the proposed modification. Council raised concerns over the adequacy of traffic data in the EA. Wollongong City Council also raised concerns about noise and air pollution, as well as road safety, congestion and road surface degradation.

Community submissions included concerns about the increase in road transport on the condition of the regional road network, and possible resulting impacts such as increased noise, air pollution from vehicle emissions, traffic congestion, safety hazards and road degradation.

Boral provided a detailed response to the issues raised in the submissions (see Appendix E), which has been considered in the Department's assessment of the proposed modification.

5. ASSESSMENT

The Department considers that the key assessment issues relating to the proposed modification are potential traffic impacts, noise impacts and air quality impacts.

5.1 Traffic and Transport

Justification for Increased Road Transport

Table 1 shows Dunmore's total annual production since 2008/09. It also compares the total volumes of product Boral has transported by rail and road, and the total that Boral has transported by road to the Sydney Metropolitan Area. The total road transport figures also include Boral's 'ex-bin' sales, for which it does not record any destination. A proportion of these ex-bin sales would also be transported to Sydney.

Table 1: Dunmore production and transport since 2008/2009 (tonnes)

| | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---------------------------------------|---------|---------|---------|-----------|-----------|
| Total production | 905,902 | 949,543 | 986,663 | 1,366,235 | 1,427,340 |
| Train transport | 568,458 | 611,297 | 598,523 | 760,997 | 890,053 |
| Road transport | 337,484 | 338,246 | 388,140 | 605,237 | 537,287 |
| Road transport to Sydney (Boral only) | 84,586 | 107,220 | 146,524 | 229,788 | 219,563 |

Since 2008/09, the maximum amount transported by road from the quarry has been well below the approved road transport rate of 1 Mtpa. On their face, these figures do not substantiate the need for an increased proportion of total approved quarry production (ie 60%, as against the current 40%) to be transported by road. The Department therefore sought additional advice from Boral to justify its proposed increase in road transport over the short to medium term. Boral considers that these low figures are due to the previous general downturn in the market for quarry products, which it forecasts will steadily recover over coming years.

It is also clear that the quarry has not been dispatching anything like its approved capacity for rail product (1.5 Mtpa). Government policy regarding transport of bulky materials such as coal and quarry products is that rail transport is to be preferred over road transport wherever reasonably achievable. This position is mirrored in the RMS submission and community submissions. At the Department's request, Boral further investigated the possibility of increasing rail transport to St Peters.

Boral currently has the ability to despatch two trains to Sydney daily, each carrying a combined total of 1,600 tonnes of hard rock and sand. Boral's investigation found that:

- additional train paths to St Peters are currently unavailable from Sydney Trains (an entity of Transport for NSW);
- the rail siding at St Peters currently cannot accommodate longer trains; and
- increasing the length of its St Peters siding and train would not be feasible in the short-term.

Boral further argued that the option to increase its current road transport limit is justified, stating that:

- for deliveries to the northwest and southwest Metropolitan Area, it is not economically responsible to deliver product by rail to St Peters or Enfield, and then double (or triple) handle it before final delivery by truck;
- the proposed increase would allow Dunmore to service the supply gaps in western Sydney which will emerge when Boral's Emu Plains operation closes;
- the proposed increase would allow Dunmore to compete for future larger supply contracts in the south-western suburbs of Sydney (ie in areas closer to Dunmore than to St Peters); and
- local (ie South Coast) product transport can only be satisfied by road.

Boral has also stated that road transport to inner Sydney suburbs is only considered, and would continue to be only considered, when train dispatches could not meet confirmed peak demands. Boral has stated that rail transport remains its most cost-effective method of transport, and would continue to be given priority over road transport.

The Department accepts that Boral is currently seeking to ensure the maximum amount of product is railed from the quarry, and that restricting road transport to the currently-approved limit may restrict Boral's ability to service emerging local market gaps and pursue future market growth opportunities in areas where road transport is the most effective delivery method. The Department also accepts that current constraints restrict increasing the amount of product that can be railed to St Peters, and that these constraints would be difficult to overcome in the short to medium-term.

The Department has therefore recommended that the quarry's road transport limit is increased to 1.5 Mpta, albeit subject to further assessment of cumulative trucking impacts (see below). This limit would be the total allowed to be transported from the site by road, including ex-bin deliveries.

However, the Department also believes that increasing the road transport limit should not preclude Boral from further investigating its options to overcome the current constraints on rail transport. The Department has therefore also recommended a condition of consent which requires Boral to maximise rail transport of product, wherever reasonable and feasible, throughout the life of the quarry.

The Department has also recommended that Boral be required to prepare and implement a Transport Management Plan for the quarry, which would describe measures to be implemented to ensure that all drivers of quarry-related vehicles comply with a strict drivers' code of conduct.

Traffic Flows & Intersection Performance

The haulage route from Dunmore Quarry is via Tabbita Road and the Princes Highway (see Figure 1). The Princes Highway is the main road link between Sydney and the South Coast, and carries high traffic volumes. The latest traffic counts are 29,700 vehicles per day (vpd) at Kiama and 49,700 vpd at Albion Park.

A conservative estimate of 110 additional daily truck movements (ie 55 laden trucks) would result if the additional 0.5 Mpta was transported by road from the quarry. Boral predicts that 60% of these laden trucks would travel north and 40% would travel south. The proposed increase is unlikely to significantly affect the current highway traffic flows in either direction, as at worst it would result in a 0.2% increase to daily northbound traffic, and a 0.15% increase in southbound traffic. The Department and RMS concur that these increases are negligible, when considered in isolation.

Further, Boral is likely to have overestimated this worst case increase, as its assessment considered an *additional* 55 laden trucks per day, without considering the increase against the likely reduction in truck movements which would result from the closure of its Burrier Quarry at Nowra and the closure of the Bluescope blast furnace. Therefore, the overall impact of the proposed increased truck movements on traffic flows is likely to be less than presented in the EA. RMS also expressed its satisfaction that traffic flows in either direction on the Princes Highway would not be significantly affected.

The Level of Service at the currently worst-performing intersection north of the quarry would not change in either morning or afternoon peak periods as a result of the proposed modification. At worst, the peak hour traffic queue lengths and associated delay times would increase by less than 1% over current levels.

Road Safety & Road Condition

No upgrades to Tabbita Road or the Princes Highway would be required to service the additional trucks, as appropriate northbound and southbound dual carriageway treatments are already in operation near the quarry. Road safety impacts to other road users approaching the Tabbita Road intersection are managed through left-in/left-out access to the highway, which prohibits Boral's southbound trucks crossing the highway against northbound traffic.

However, submissions from the community and Wollongong City Council included strong concerns about the impact of the proposed modification on the condition of roads north of the quarry, particularly Mount Ousley Road. These submissions were concerned that the EA's traffic impact assessment ignored the potential impacts to Mount Ousley Road.

Following consideration of the EA and further discussions with Boral, the Department considers that a large percentage of additional truck movements from the quarry would be deliveries to the Sydney Metropolitan Area, which must, of necessity, use Mount Ousley Road. This view is supported by the fact that a reason for the proposed modification is that the Emu Plains hard rock gravel quarry, from which Boral receives a proportion of the production, is expected to close during 2014.

Nonetheless, in isolation, the proposed modification would represent a small increase in the total traffic on Mount Ousley Road. Mount Ousley Road has dedicated truck lanes and strict truck speed restrictions in both directions to address road safety issues. However, the Department remains concerned at the risk of potential cumulative impacts to road safety and road condition on Mount Ousley Road resulting from the proposed expansion of three major South Coast hard rock quarries, comprising Dunmore, Bass Point and Albion Park. This issue is discussed under 'Cumulative Impacts' below.

Cumulative Impacts

The EA did not include an assessment of the potential cumulative impact of quarry trucks from Dunmore and other nearby quarrying operations, including Hanson's Bass Point Quarry and Cleary Bros's Albion Park Quarry, which also have applications on foot to increase production and road transport limits. RMS's submission and submissions from the community raised concerns about the potential cumulative traffic impacts on the Princes Highway north of Albion Park, particularly the increased truck movements on Mount Ousley Road.

In the absence of a thorough assessment of potential cumulative trucking impacts, the Department has reviewed the traffic assessments for the Dunmore proposal, Bass Point Quarry and Albion Park Quarry. This review found that limited assessment of the cumulative impact of the three proposals had been undertaken by any of the applications, and that insufficient information is currently available to allow a complete assessment of their cumulative impacts.

The Department notes that the three quarries currently have a combined approved production limit of 4.6 Mtpa, and are proposing to increase this combined limit to 7.4 Mtpa. The current approved road transport component of the three quarries' production totals just 2.6 Mtpa, and actual trucked tonnages are lower. The three applications would increase the combined approved road transport limit to 5.4 Mtpa.

Figures supplied by the three quarry operators have provided little specific indication as to the current and future proportions of road-transported production that would use Mount Ousley Road. However, the three proposals could together result in an expansion to around 330,000 truck movements annually on the classified road network. As a large (but unknown) proportion of these movements would be either to or from the Sydney region, the Department is concerned over potential cumulative traffic impacts, particularly on Mount Ousley Road, which already carries a large and increasing number of heavy vehicle movements, due to continuing expansions in the use of Port Kembla.

The Department also notes RMS's comment: "*whilst this proposal is unlikely to generate significant heavy vehicle traffic on its own, the cumulative impacts of developments in the area reliant on heavy vehicle transport are likely to have a significant impact on traffic efficiency, road safety, increased deterioration of road infrastructure....*".

The Department therefore considers that further assessment of the cumulative traffic impacts of the three quarry proposals is required, to see if any reasonable and feasible measures can be implemented to manage the resulting impacts of quarry trucks on the classified road network.

The Department considers that this assessment should be undertaken by an independent person whose appointment is approved by the Director-General and should be co-funded by the quarry operators. This position is supported by RMS. The Department has therefore recommended conditions which:

- require Boral and the other quarry operators to commission and co-fund an independent assessment of the current and future cumulative impacts of their proposals on the classified road network, and any reasonable and feasible options for minimising these cumulative impacts; and
- require the quarry operators to implement any reasonable and feasible mitigation measures that the study recommends.

5.2 Noise

Operational Noise

The assessment found that the modified quarry operations would continue to comply with the consent's noise criteria at the Stocker residence, which is the closest receiver to the proposed southern extraction area (see Table 2).

Table 2: Noise predictions

| Residence | Consent criteria and predictions (dB(A) L_{Aeq}) | | |
|-----------|---|---------------|-------------|
| | Day 49 | Evening 44 | Night 38 |
| Stocker | 41 | 44 | 37 |

The Department is satisfied that additional noise impacts from the proposed modification would not be significant and would continue to be minimised through Boral's on-site practices, which include:

- restricting drilling operations to the day-time period only;
- no night-time extraction and processing operations; and
- restricting the use of front-end loaders during adverse weather conditions.

Regular attended and unattended compliance monitoring would continue to be undertaken at the site and noise impacts would be managed under the protocols in the quarry's Noise Management Plan. The Department has recommended that Boral updates this plan to reflect the proposed modification.

Blasting

Blast overpressure and vibration levels within the southern extraction area would meet the relevant criteria at all receivers. Blasts would continue to be managed and monitored under Boral's Blast Management Plan. The Department has recommended a condition requiring that this plan be updated to reflect the proposed modification.

Road Traffic Noise

Boral assessed the proposed modification against the EPA's Road Noise Policy. The proposed modification is predicted to result in worst-case road noise increases of 0.2 dB(A) and 1.1 dB(A) to the current day-time and night-time road traffic noise levels, respectively. The applicable road noise criteria would be met, despite these predicted increases.

The Department is satisfied that the proposed modification by itself would not significantly increase the current road traffic noise levels. The Department has recommended that Boral be required to prepare a Transport Management Plan for the quarry. This would include the regularisation of its existing Drivers' Code of Conduct and the measures that Boral would implement to promote responsible, noise-minimising driving practices by both employee and contract drivers.

5.3 Air Quality

Boral monitors the quarry's air quality impacts through a series of dust deposition gauges and a High Volume Air Sampler (HVAS). The results of air quality monitoring have indicated that deposited dust and PM₁₀ levels have consistently remained well below all relevant consent criteria. The following air quality impact mitigation measures would continue to be applied for the modified development:

- regular watering of unsealed surfaces, haul roads and stockpiles;
- collection of or dampening down drill rig cuttings to reduce dust released during a blast;
- confining traffic to identified haul road routes where possible;

- removal and rehabilitation of haul roads as soon as practicable;
- exposed areas are kept to a minimum; and
- reviewing meteorological conditions prior to blasting.

Any residual air quality impacts would be managed in accordance with Boral's existing Air Quality Management Plan (AQMP). The Department has recommended that the AQMP be updated to reflect the modification.

A Greenhouse Gas Emissions (GHGEs) assessment was previously conducted for a 2.5 Mtpa production rate at the quarry. As the modification application proposes no change to the approved production limit, the only potential for increased GHGEs would come from increased road transport. Boral would progressively update its truck fleet to EURO 5 standard (which emit less GHGEs), which would assist it in reducing any additional GHGEs from the proposed modification.

5.4 Other Issues

The Department's consideration of the additional potential impacts of the proposed modification are summarised in Table 3.

Table 3: Other issues

| Issue | Consideration and Assessment | Recommendation |
|----------------------------|--|--|
| <i>Water Management</i> | <ul style="list-style-type: none"> • The proposed southern extraction area is located within the existing quarry catchment, and would not change key water management parameters or requirements. • Appropriate sediment controls would be installed during establishment of the additional extraction area. • No additional groundwater impacts above those already assessed would be likely to result from the proposed modification. | <ul style="list-style-type: none"> • The Department has recommended that the WMP is updated to reflect the proposed modification. |
| <i>Biodiversity</i> | <ul style="list-style-type: none"> • Approximately 1.3 ha of regenerating (ie previously disturbed) vegetation would require to be cleared. • This vegetation has limited ecological value, and is unlikely to contain threatened species habitat. • The Department and OEH are satisfied that any unforeseen biodiversity impacts from the proposed modification would be adequately offset under the existing Biodiversity Offset Strategy, which includes the long-term conservation of native vegetation near the quarry. | <ul style="list-style-type: none"> • No additional conditions of consent are required to manage biodiversity impacts. |
| <i>Aboriginal Heritage</i> | <ul style="list-style-type: none"> • The proposed southern extraction area does not contain any known Aboriginal cultural items or sites. It is unlikely that additional Aboriginal cultural heritage impacts would result from the proposed modification. | <ul style="list-style-type: none"> • No additional conditions of consent are required to manage Aboriginal heritage impacts. |
| <i>Visual</i> | <ul style="list-style-type: none"> • Site topography would shield views of the proposed southern extraction area from nearby residential areas. | <ul style="list-style-type: none"> • No additional conditions of consent are required to manage visual impacts. |

6. RECOMMENDED CONDITIONS

The Department has prepared a notice of modification (see Appendix A) to manage the proposed modification and a proposed consolidated consent (see Appendix B). The recommended conditions are aimed at:

- allowing flexibility in transport methods, while promoting the maximisation of rail transport;
- strengthening the consent's reporting and information access requirements; and
- ensuring the quarry's management plans are up-to-date and reflect the modified development.

The Department has also taken the opportunity to contemporise the consent in terms of updating various definitions. Boral has reviewed and accepted the additional conditions of consent.

7. CONCLUSION

Boral proposes to increase the amount of hard rock product that it transports by road from the Dunmore Quarry from 1 Mtpa to 1.5 Mtpa. It also wishes to extend its approved extraction area by 2.03 ha. None of the quarry's other operating functions, or its production limit, would change as a result of the proposed modification.

The increased road transport of product is primarily required to offset the diversion of Dunmore product currently railed to Boral's Enfield Terminal, to allow this allocation to be satisfied by Boral's new Peppertree Quarry, and to allow Boral to take advantage of market opportunities arising from the closure of its Burrier and Emu Plains quarries and the Bluescope blast furnace. The proposed modification would allow local supply gaps to be satisfied by road, but would also assist in meeting the peak demand at Boral's St Peters terminal when rail transport is unavailable. Increasing the approved road transport limit would allow deliveries to occur to areas within the Sydney Metropolitan Area without double-handling of this product through the St Peters terminal.

The Department considers that, if additional product could be railed from the quarry instead of being delivered by road, then fewer environmental impacts would result. However, it recognises that some markets exist in locations which can only be satisfied by road transport, and it accepts that certain current raiiling constraints, including that longer trains cannot currently be accepted at St Peters, means that Boral is unable to rail additional product to satisfy these markets.

Therefore the Department considers that the proposed road transport increase is justified, subject to a study of cumulative trucking impacts being undertaken, and the adoption of any reasonable and feasible mitigation measures that the study recommends.

The proposed extension to the currently approved extraction area would allow Boral to access a high quality hard rock resource, and the Department considers that the proposed extension area forms a logical progression in the development of the quarry, and should be permitted.

The Department has assessed the modification application in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development. The assessment found that the environmental impacts of the modified development would, with the exception of potential cumulative road haulage impacts, not be significantly different from the existing development. The Department considers that any additional impacts would be appropriately mitigated and managed under existing on-site management systems and conditions of consent.

Overall, the Department is satisfied that, with the implementation of the recommended conditions and the proposed mitigation measures, the additional impacts of the proposed modification would be minor and can be adequately managed. The Department is satisfied that the benefits of the proposal outweigh any residual costs, that it is in the public interest and should be approved, subject to conditions.

8. RECOMMENDATION

It is RECOMMENDED that the Director, Mining and Industry Projects, as delegate of the Minister:

- **considers** the findings and recommendations of this report;
- **determines** that the proposed modification is within the scope of section 75W of the EP&A Act;
- **approves** the proposed modification under section 75W of the EP&A Act; and
- **signs** the attached Notice of Modification (Appendix A).

Howard Reed
 Howard Reed
 Manager
 Mining Projects
 31.1.14

DKitto 7/2/14
 David Kitto
 Director
 Mining and Industry Projects