



ASSESSMENT REPORT

MACKAS SAND PROJECT Increased Truck Movements Modification (MP 08_0142 Mod 2)

1. BACKGROUND

Mackas Sand Pty Ltd (Mackas Sand) owns and operates the Mackas Sand Project, which is located approximately 33 kilometres (km) northeast of Newcastle in the Port Stephens local government area. The project involves extracting sand from two separate lots - Lot 218 DP 1044608 (Lot 218) and Lot 220 DP 1049608 (Lot 220). The project is operated under an agreement between Mackas Sand and the Worimi Local Aboriginal Land Council (Worimi LALC), which owns both Lot 218 and Lot 220. The project extracts from two vegetated sand dunes on Lot 220 and from wind-blown sand dunes bordering Stockton Bight on Lot 218 (see **Figure 1**).

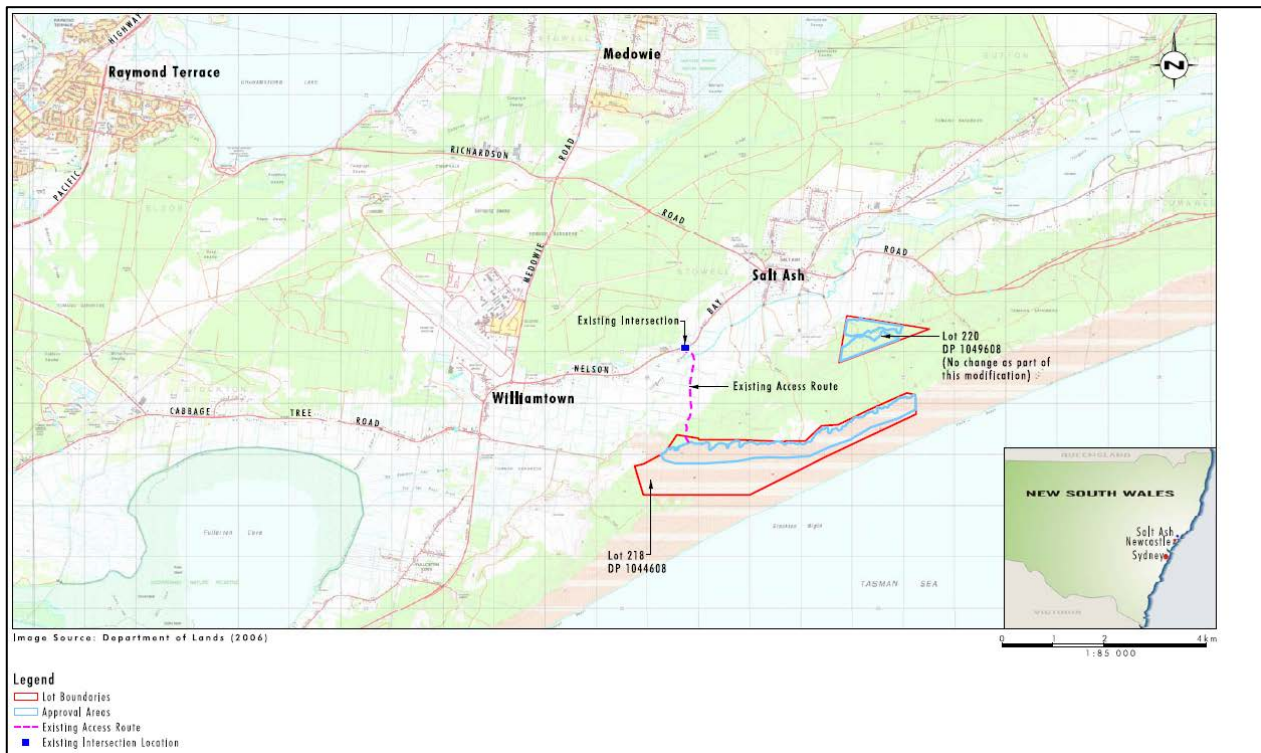


Figure 1: Project location and regional context

Project approval (MP 08_0142) was granted by the then Minister for Planning in September 2009. This approval allows Mackas Sand to:

- extract 1 million tonnes of sand a year from each of Lot 218 and Lot 220, for up to 20 years;
- process this sand on-site; and
- transport the processed sand to market by road.

The approval was modified by the Planning Assessment Commission (the Commission) on 30 September 2013 to permit establishment of an alternative access route to Lot 218 and incorporate additional approval conditions relating to impact assessment and operational criteria.

The approval includes strict requirements to:

- comply with noise and air quality emission criteria;
- prepare and implement management plans to limit biodiversity, Aboriginal cultural heritage and transport impacts;
- undertake regular monitoring of environmental impacts;
- regularly report on approved operations;
- operate a Community Consultative Committee; and
- progressively rehabilitate the two extraction sites to restore any disturbed vegetation.

2. PROPOSED MODIFICATION

Mackas Sand has applied under section 75W of the *Environmental Planning & Assessment Act 1979* (EP&A Act) to further modify project approval MP 08_0142. The proposed modification involves increasing truck movement intensity from that currently approved at Lot 218 via the alternate access road (see **Figure 1** – labelled as 'Existing Access Route') and Nelson Bay Road.

The current approved maximum (laden plus unladen) truck movements ie (in plus out) are detailed below:

- Lot 218 only:
 - 10 per hour between 5 am and 7 am Monday to Friday;
 - 16 per hour between 7 am and 10 pm Monday to Saturday;
 - 10 per hour between 5 am and 7 am Saturdays;
 - 16 per hour between 7 am and 4 pm Saturdays; and
- Lot 218 combined with Lot 220:
 - 10 per hour between 8 am and Noon on Sundays and Public Holidays.

Mackas Sand's proposed modification would increase maximum truck movements (in plus out) at Lot 218 as detailed in **Table 1** below. The proposed modification would not alter truck movements for Lot 220.

Table 1: Approved Truck Movements vs Proposed Truck Movements

Transportation Period		Approved Truck Movements per hour (in plus out)	Proposed Truck Movements per hour (in plus out)
Monday to Friday	5 am to 7 am	10	28
	7 am to 10 pm	16	48
Saturdays	5 am to 6 am	10	No change
	6 am to 7 am	10	18
	7 am to 4 pm	16	48
Sundays and Public Holidays	8 am to 12 noon	10	No change

Note: Approved truck movements on Sundays and Public Holidays are for Lot 218 and Lot 220 combined.

MP 08_0142 permits Mackas Sand to extract up to 1 million tonnes per calendar year (Mtpa) of sand from Lot 218. Mackas Sand considers that the current limits on trucking movements do not allow it to practically transport the maximum allowable production to its markets. Mackas Sand claims it would need to operate at maximum permitted truck movements per hour plus extend its hours of operation to include the shoulder period (between 5 am and 7 am Monday to Friday) and on Sundays and Public Holidays to transport 1 Mtpa of sand from Lot 218.

The Department inspected trucking records of sand dispatches from Lot 218 in the period April/May 2015 and found that transportation of sand from Lot 218 usually does not extend past 6 pm. Mackas Sand has stated that where it is able to meet market demand by operating shorter-than-approved hours it will do so and believes that reducing evening hours of work is beneficial to the family life of its employees.

The proposed modification does not involve changes to any other aspect of the project, including production limits, processing rates and rehabilitation requirements.

3. STATUTORY CONTEXT

3.1 Approval Authority

Under section 75W of the EP&A Act, the Minister for Planning is the approval authority for the modification application. However, as more than 25 public objections were received by the Department during the exhibition of the Environmental Assessment (EA, see **Appendix A**) for the proposed modification, the

Commission must determine the application, in accordance with the Minister's delegation dated 14 September 2011.

3.2 Section 75W Modification

The Department has considered the nature of the proposed modification and is satisfied that it can be characterised as a modification to the approved project. The proposed modification would not result in any change to the quarry's production limits, hours of operation or operational procedures. The only changes proposed relate to the intensity of trucking operations. Any resulting environmental impacts would be substantially, although not entirely, the same as those of the approved project. Consequently, the Department is satisfied that the proposed modification is within the scope of section 75W of the EP&A Act.

3.3 Landowners' Consent

The alternate access road now mainly affects land owned by Mackas Sand and the Worimi Local Aboriginal Land Council. Clause 8F(1) of the *Environmental Planning & Assessment Regulation 2000* requires that the owner(s) of land to which the proposed modification applies must provide their consent to the application. Mackas Sand has provided evidence that the Worimi Local Aboriginal Land Council and Port Stephens Council, as landowners, have all given their consent to the application being made. The Land Council's consent has been endorsed by the NSW Aboriginal Land Council.

3.4 Environment Protection and Biodiversity Conservation Act 1999

On 29 November 2013, Mackas Sand received approval under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* from the Commonwealth Department of Environment, for the construction of an alternate route to Lot 218 (EPBC 2011/6214). This approval is not affected by the proposed modification.

4. CONSULTATION

4.1 Exhibition and Notification

The Department:

- publicly exhibited the modification application and EA from 6 – 19 August 2015 at:
 - the Department's Information Centre in Sydney;
 - Port Stephens Council's offices in Raymond Terrace; and
 - the Nature Conservation Council's office in Newtown;
- notified relevant State government authorities and Port Stephens Council by email; and
- advertised the exhibition of the EA in the *Port Stephens Examiner* newspaper on 6 August 2015.

During its assessment of the application, the Department also made relevant documents publicly available on its website. These documents included:

- the modification application and EA (see **Appendix A**);
- the submissions received during, and following, the exhibition period (see **Appendix B**); and
- Mackas Sand's responses to the issues raised in submissions (RTS, see **Appendix C**).

4.2 Submissions

The Department received a total of 74 submissions on the proposal, which included:

- 5 from public authorities, including Port Stephens Council;
- 3 from special interest groups; and
- 66 submissions from local community members.

A summary of the issues raised in submissions is provided below, with a copy of all submissions provided in **Appendix B**.

4.2.1 Submissions from Public Authorities

No public authority objected to the proposed modification. However, some agencies expressed concerns over particular aspects of the proposal, and provided recommendations to address particular impacts.

The **Roads and Maritime Services** (RMS), which is the relevant roads authority for Nelson Bay Road, does not support increased truck movements from the quarry during the AM peak traffic period of 6 am to 9 am, other than a marginal increase in the hour 6 - 7 am. However it accepted the other increases in trucking numbers proposed by Mackas Sand.

RMS's submission stated that microsimulation modelling of traffic flows was needed to ascertain the effect of trucks entering and exiting the intersection of the quarry's access road with Nelson Bay Road. RMS was unable to obtain the level of detail it needed from the traffic impact assessment included in the EA and therefore undertook its own site visits and traffic modelling. It concluded that the existing heavy traffic flows in the weekday AM peak traffic period (6 am to 9 am) would not allow a safe and efficient merge of more than eight trucks per hour from the Mackas Sand site onto Nelson Bay Road.

Mackas Sand's RTS did not address the issue of microsimulation of merging trucks. Instead, it repeated information about the predicted high level of service for the Nelson Bay Road/Richardson Road roundabout at Salt Ash and provided a commitment *"to work with RMS to explore the ability to meet this demand [for its sand] in a manner that is safe and does not impact on traffic efficiency"*.

In response, RMS stated that the issues raised in its submission had not been adequately addressed in the RTS and confirmed its earlier position. The Department advised Mackas Sand to engage directly with RMS, which led to Mackas Sand's traffic consultants providing RMS with extensive additional material. Nonetheless, following consideration of further site observations of truck merging activities as well as this material, RMS repeated its position in later advice to the Department dated 9 December 2015.

Essentially, RMS considers that no more than a total of 8 laden trucks per hour could safely merge from the access road into AM peak traffic on Nelson Bay Road. **Table 2** provides a summary of RMS's recommended trucking movements, with the green highlight indicating where RMS's recommendations differ from the number of truck movements proposed by Mackas Sand.

Table 2: RMS's Recommended Truck Movements

Transportation Period		RMS Proposed Truck Movements per hour (in plus out)
Monday to Friday	5 am to 6 am	28 (as per proposed modification) (although RMS found that up to 48 truck movements could be safely merged into low early-morning traffic flows)
	6 am to 9 am	16 (increase of 6 truck movements for 6 - 7 am) (no increase in truck movements for 7 - 9 am)
	9 am to 10 pm	48 (as per proposed modification)
Saturdays	5 am to 6 am	10 (no change proposed)
	6 am to 7 am	18 (as per proposed modification)
	7 am to 4 pm	48 (as per proposed modification)
Sundays and Public Holidays	8 am to 12 noon	10 (no change proposed)

Note. Approved truck movements on Sunday and Public Holidays are combined from Lot 218 and Lot 220.

RMS accepts the truck movements proposed for the first hour of Mackas Sand trucking operations (5 - 6 am) as traffic on Nelson Bay Road is relatively light that early in the morning. It is a feature of traffic flows on Nelson Bay Road that they are substantial from 6 am onwards. Commuters exit the Nelson Bay area, travelling to the south, and a large number of flights begin to leave the nearby Williamtown Airport from 6 am, generating substantial local traffic. Heavy traffic flows continue until 9 am, when commuter traffic and that associated with the transport of schoolchildren ceases.

RMS also doesn't have concerns with the PM peak in traffic movements as traffic flow is concentrated in a northerly direction, passing the Mackas Sand site entry on the other side of the road. Accordingly, there are no truck merging interactions with the PM peak traffic flows (as the intersection is required to operate on a Left In – Left Out basis). Consequently, RMS supports Mackas Sand's proposed increases in trucking movements from 9 am to 10 pm.

RMS plans to finalise a Corridor Strategy for Nelson Bay Road by mid-2016. This will set out the NSW Government's 20-year plan to manage and guide the development of Nelson Bay Road to improve safety, traffic efficiency and sustainability. An opportunity will be available for the community to provide feedback on the draft corridor strategy.

The **Environment Protection Authority** (EPA) made recommendations regarding noise impacts from the increase in vehicle movements. The EPA has identified that the proposed cumulative road traffic noise levels exceed criteria under the *NSW Road Noise Policy* (RNP) at some residences. The RNP requires that reasonable and feasible noise mitigation measures are investigated. This is problematic for Nelson Bay

Road which is a public arterial road, with most traffic noise experienced by residents caused by general traffic, rather than by trucks from Mackas Sand.

The RTS directly addressed the issues raised by EPA and committed to the implementation of measures to ensure that trucks hauling sand from the site are of modern manufacture, well-maintained and driven by personnel educated in their responsibilities to drive to a 40 km/hour limit on the access road and in a manner that minimises truck noise emissions. Existing conditions of approval mandate this 40 km/hour speed limit on the access road and require sand transport to be in accordance with an approved Traffic Noise Management Plan. The Department has not recommended any change to these requirements.

The **Department of Primary Industries** (DPI) raised no objection or requirements in relation to the proposed modification.

The **Department of Industry – Geological Survey of New South Wales** (GSNSW) raised no objection or requirements in relation to the proposed modification.

The **Port Stephens Council** (Council) has no in-principle objection to the proposed modification, provided that existing traffic safety is maintained or improved. Council requested that the Department consider the potential impacts of the proposed modification on threatened fauna. In particular, Council considered that increased truck movements during night, dawn and dusk periods would place threatened fauna at increased risk of injury or death.

The RTS pointed out that, as most of the access road passes through cleared pasture lands, the proposed modification would not cause any vegetation to be cleared or become more fragmented. The RTS acknowledged the sensitivity of the dawn and dusk periods. Mackas Sand considers that measures such as the 40 km/hour speed limit and driver-training has and would continue to minimise risk to native fauna. It also committed to erecting warning signs in the area of fauna crossings, provide annual reporting of any fauna deaths and an on-going review of data to check that its measures are effective and whether any further preventative measures would be needed.

4.2.2 Submissions from Special Interest Groups

Three submissions were made by special interest groups. Of these submissions, two objected to the proposed modification and the other raised concerns about it.

The **Tomaree Ratepayers and Residents Association Inc** (TRRA) objected to the proposed modification, questioning its necessity, claiming that the proposal is not justified because of the approved Lavis Lane access to Lot 218, previous compliance activity and differences between public comments made by the proponent and the EA. TRRA advocated an alternative truck management system involving an arrival time booking system. TRRA also expressed concerns over the validity of the proponent's traffic impact assessment and asserted that increased truck movements would increase safety risks on the affected roads.

The **Port Stephens Greens** objected to the proposed modifications and deferred to the TRRA submission for detailed arguments.

The **Salt Ash Public School P&C** raised concerns about the speed limit near Paul's Corner which provides access to the school. It recommended that the speed limit in the vicinity of the roundabout be reduced to improve the safety of children accessing the school and bus stops.

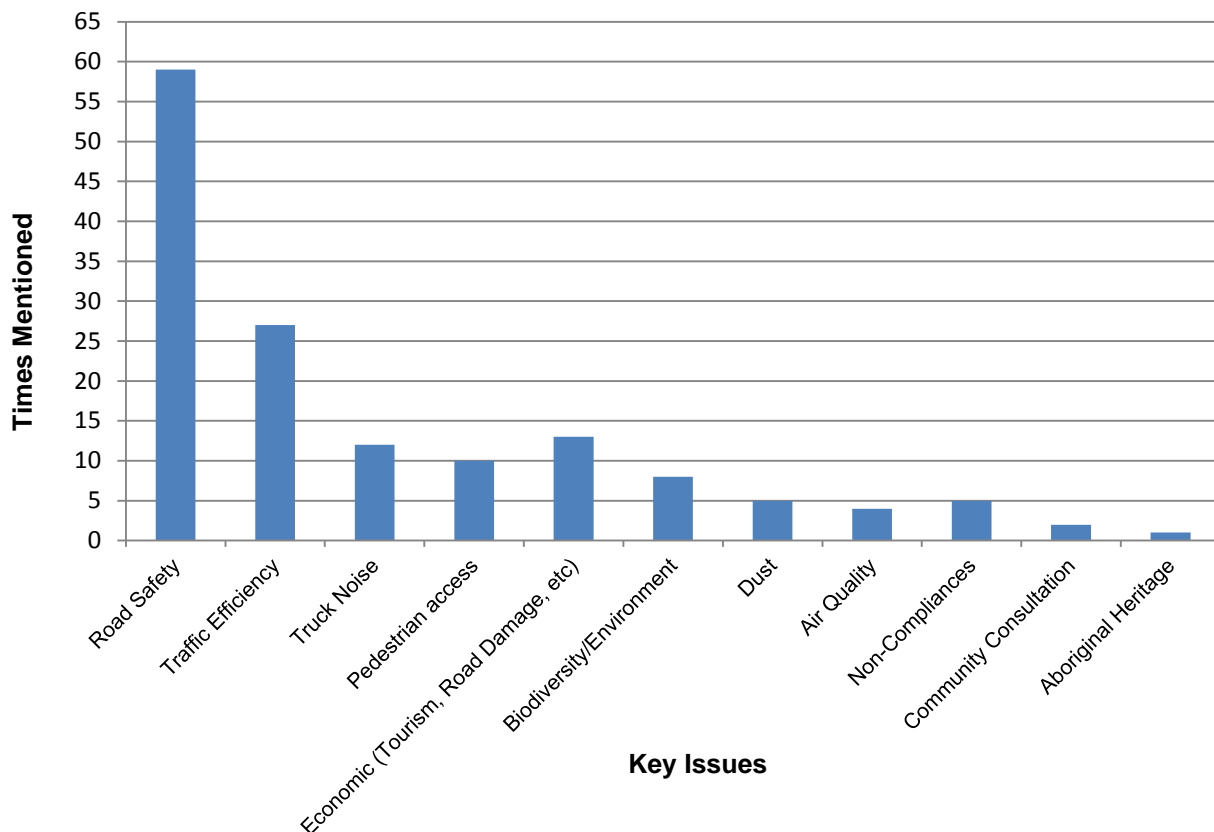
4.2.3 Public Submissions

The key issues raised in public submissions related to potential traffic and transport impacts, economic impacts and noise impacts, including:

- Traffic:
 - *Road Safety* – particularly regarding school children and the residents of Banksia Grove Village as the trucks pass the only entries to these facilities;
 - *Efficiency* – additional trucks lowering the Level of Service for Nelson Bay Road and the Pauls Corner roundabout for other road users;
 - *Noise* – from the increased intensity in truck movements; and
 - *Pedestrian Access* – the increased intensity of truck movements would further limit pedestrians' ability to cross Nelson Bay Road to access bus stops;
- Economic – in terms of impacts on tourism, other quarry businesses and road degradation;
- Biodiversity/Environment – increased risk of fauna fatalities on the access road;

- Dust and Air Quality impacts – from additional trucks on the road;
- Previous Non-Compliances – by Mackas Sand relating to numbers of truck movements;
- Community Consultation – considered to have been limited and misleading; and
- Aboriginal Heritage – one submitter raised a concern that Aboriginal relics could be lost.

Graph 1 below depicts the number of times each of these issues was raised in submissions.



Graph 1: Submissions Key Issues

Mackas Sand provided responses to the issues raised in submissions through its RTS (**Appendix C**). The RTS did not propose any further alterations to either the project approval or the proposed modification. Following the Department's request, Mackas Sand made corrections to its RTS in respect of clarifications, missing text and typos. The revised RTS was made publicly available on the Department's website, and was reviewed by the relevant government agencies including Council.

EPA reviewed the RTS and considered it adequate in addressing its issues. Council relies on, and referred to, its original submission on the proposal. RMS reviewed the RTS and advised that it did not adequately consider its issues, and thus maintains its objection and recommendation.

4.3 Community Meeting

On 7 August 2015, Ms Kate Washington, Member for Port Stephens, convened a community meeting at the Williamstown Community Hall to discuss potential impacts of the proposed modification. This meeting was attended by Departmental, RMS and Mackas Sand representatives and by 100-120 members of the public.

The matters discussed at the meeting included:

- history of the Mackas Sand Project;
- RMS's role in the assessment of the proposed modification;
- impacts to road safety and pedestrian safety, especially at Banksia Grove estate;
- whether cumulative traffic effects were considered in the methodology of traffic impact assessments;
- who polices any wrong-doing of truck drivers on public roads; and
- the Department's compliance activities for the Mackas Sand Project.

The meeting was dominated by the issue of the proposed truck numbers and the effects on road safety, pedestrian safety, truck noise and policing of out-of-hour's operations. The Department provided information and answered questions on the modification process, where to obtain information about the modification application, timelines and mechanisms for making submissions, and the likelihood the modification would be determined by the Commission. It also indicated that the Department's audit of the project on 14 May 2015 had been followed up by three spot inspections of truck numbers since June.

4.4 Other Departmental Consultation

A Departmental officer observed traffic flows in the area from Lavis Lane at Williamstown to Paul's Corner at Salt Ash prior to the meeting of 7 August 2015.

On 19 August 2015, Departmental officers conducted a site visit to the project on Lot 218 and observed sand extraction and transportation operations. Following this visit, the officers travelled on the sand transport routes along Nelson Bay Road (from Newcastle to Anna Bay and return), with particular consideration given to the functioning of roundabouts on Nelson Bay Road with Cabbage Tree Road, Medowie Road and Richardson Road. During a break at Paul's Corner, the opportunity was taken to watch traffic flows. An on-foot inspection was made of the intersection of the access road with Nelson Bay Road and at the nearest privately-owned residence to this intersection (ie the nearest residence at that time without an agreement in place with Mackas Sand to accept the predicted impacts of the proposed modification). Discussions were held with these landowners and observations were made of the use of the acceleration lane from the access road intersection and of truck noise, both from general truck traffic and from the trucks sourced from Lot 218.

Throughout the assessment process, the Department made a number of requests for further information to Mackas Sand and to government agencies, including RMS. The Department also discussed the proposed modification by telephone with various community members and with the relevant road authorities.

4.5 Residents Identified in Approval as Affected Residents

MP 08_0142 identifies four residences adjacent to the intersection of the access road and Nelson Bay Road that are predicted to be affected by noise generated by project-related trucks on the access road. Mackas Sand has now provided signed confirmation of these residents' agreement to Mackas Sand having unrestricted hourly truck movements within the applicable transportation hours.

5. ASSESSMENT

5.1 Key Issues

In its assessment of the proposed modification, the Department has considered the:

- EA, submissions, RTS, and additional information provided by Mackas Sand and public authorities;
- the existing project approval;
- relevant environmental planning instruments, policies and guidelines;
- the suitability of the site;
- the public interest; and
- relevant provisions of the EP&A Act, including the objects of the Act.

The Department considers the key issues in assessing the proposed modification are potential impacts regarding traffic and transport and truck noise. The Department has also considered the need for the proposed increase in truck movements.

5.2 Traffic & Transport

The key traffic and transport issues raised in community submissions were that:

- the additional truck movements proposed to enter and exit the intersection of the alternate access road with Nelson Bay Road would negatively impact road safety at the intersection and along Nelson Bay Road, particularly near the Salt Ash Public School and Banksia Grove Village;
- the subject section of Nelson Bay Road is a bus route, and passengers may join or alight from buses close to the alternate access road intersection; and
- the EA's traffic impact assessment was not adequate.

It is important to appreciate that the proposed modification seeks increased flexibility in truck movements to and from Lot 218, but does not seek to increase the approved production of sand from the site (and hence total truck movements), which remains at one million tonnes per calendar year. Nor has Mackas Sand sought to alter the speed limits that apply to the project.

Several of the community submissions put the view that the cumulative impacts of transport from both Lots 218 and 220 were not assessed in the EA. The EA contains existing traffic counts and future traffic predictions for Nelson Bay Road and the Richardson Road roundabout. The existing truck movements from Lot 220 are included in this data. Therefore the Department is satisfied that the EA has assessed the approved Lot 220 transport impact, as well as the proposed additional impact at Lot 218, and a cumulative assessment of the traffic impacts from both sites has been undertaken.

Traffic Impact Assessment Adequacy

The local community raised concerns over the adequacy of the EA's traffic impact assessment. The traffic impact assessment was accepted by RMS as being undertaken in accordance with appropriate guidelines, although it contained insufficient data relating to merging of trucks onto Nelson Bay Road.

The issues raised by the community related to the time of year at which traffic data was recorded (ie (Winter, which is out of peak tourist season). The Department recognises the strength of these concerns. However, the assessment showed that the proposed intensification of trucking operations would deliver Level of Service (LoS) A (highest level) at the Salt Ash roundabout (see below). With increased traffic flows during the Christmas holidays peak, the amount of traffic through this roundabout would substantially increase, but would have to significantly deteriorate before becoming problematic and causing substantial traffic delays.

While it is correct that traffic flows increase substantially during the Summer holiday period, this time also includes the traditional construction industry shutdown/slowdown. Sand truck movements to and from Mackas Sand would be much reduced at the time of highest holiday traffic. The holiday traffic also tends to avoid the AM traffic peak of 6 am to 9 am, during which time Mackas Sand seeks to service the early-morning demand from the Sydney construction industry. Additionally, truck driver behaviour is such that, where possible, drivers avoid heavy holiday traffic as this would lengthen travel times and impact on their efficiency and costs (ie less deliveries possible for any driver if their journeys mix with holiday traffic).

The Department considers that, based on the data available, the roundabout at Paul's Corner would usually perform with the minimum of traffic queuing or delays for travellers. However, the impact of additional truck numbers during heavy holiday traffic should be avoided if possible. One way to achieve this aim is by way of implementation of a Drivers' Code of Conduct for Mackas Sand which should include information about the times of expected heavy holiday traffic and point out to drivers and their employers the benefits in avoiding hauling sand during these times. Although not currently required by conditions of approval, the Department understands that Mackas Sand implements a Drivers' Code of Conduct. The Department has recommended a new condition of approval that requires a Drivers' Code of Conduct to be approved by the Department which includes consideration of relevant matters including holiday traffic volumes. The Drivers' Code of Conduct is communicated to all drivers that haul sand from both Lot 218 and Lot 220 sites, as trucks from both sites use the roundabout at Paul's Corner.

Although the Department and the RMS identified minor issues with the configuration of the SIDRA modelling submitted in support of the traffic impact assessment, RMS found that the data used in Mackas Sand's modelling was recorded in accordance with relevant guidelines. RMS undertook additional SIDRA and microsimulation traffic modelling, and visited the site to ensure that the traffic modelling undertaken accurately reflected current operating conditions.

The Department is satisfied that the EA's traffic impact assessment is adequate for its assessment purposes, particularly given the additional modelling undertaken by the RMS.

Site Access to Nelson Bay Road

The EA assessed the intersection of Nelson Bay Road and the alternate access road as having good operation and spare capacity in both the AM and PM peak periods, under both existing traffic conditions and the modification as sought. RMS concurred with the majority of this assessment.

However, RMS considered that the SIDRA modelling of the access road/Nelson Bay Road intersection had not been "*configured appropriately*" and undertook additional SIDRA and microsimulation modelling as well as several site visits to confirm that the modelling accurately reflected the current operating conditions of the intersection. RMS concluded that an increase in truck movements could not be safely accommodated during the weekday AM peak period, as truck merging movements onto Nelson Bay Road exhibited an unstable and over-capacity LoS F. Outside of the AM peak period RMS's modelling and observations confirmed that there is sufficient capacity on Nelson Bay Road to accommodate the additional proposed truck movements.

To minimise the impacts of additional truck movements, in terms of road safety and traffic efficiency, the Department and RMS initially recommended limiting truck movements to 16 per hour between 6 am and 9 am Monday to Friday. For other time periods, the Department and RMS considered that the proposed increase in traffic volumes on Nelson Bay Road is minor at worst, and that its current and future LoS would not be significantly affected by the proposal.

However, only after the Department had produced its initial version of draft conditions of approval based on this position (in early November 2015), did Mackas Sand seek to directly address the key issue of safe merging of laden sand trucks onto Nelson Bay Road during the weekday AM peak traffic flow.

Mackas Sand engaged GHD to undertake a form of traffic simulation modelling known as VISSIM. VISSIM is able to produce a video output that shows the intersection with traffic flows on Nelson Bay Road that reflect recorded traffic flows during the AM peak. These traffic flows were increased by 20% to account for traffic growth over the life of the quarry. Inputted into this model were trucks exiting from the Mackas Sand access road at the maximum rate proposed in the modification application.

The model is also able to mimic the behaviour of truck drivers as they seek a sufficient gap in the Nelson Bay Road traffic flow to allow their truck to merge with traffic flow as they travel the 160 metre length of the merge lane. This information addresses the safety issue that was identified by the RMS which had not been addressed by Mackas Sand in its RTS.

This information is of great importance for this assessment. Initial runs of the model were presented to RMS and the Department on 12 November 2015 and were found to be informative, and were then formally presented to RMS for further technical consideration. At this time, Mackas Sand explored with RMS the option of not seeking an increase in the 8 laden truck dispatches in the period from 7 am to 9 am, thus providing a measure to substantially address the issue of safe merge of trucks during the AM peak traffic flow. However, this option also sought to allow for up to 24 laden trucks per hour between 5 am and 7 am.

This meant that further consideration between RMS and Mackas Sand concentrated on the safe merging of trucks in the period from 5 am to 7 am. This included a proposed increase from 14 to 24 laden trucks for the 5 am to 6 am hour, which did not form part of the exhibited modification application.

Mackas Sand provided additional support from its customers (mainly Sydney-based) stating that:

- early dispatch of sand from Mackas Sand's quarry is needed to enable deliveries into Sydney to meet morning demand at concrete batching plants, followed by regular deliveries during the day;
- storage space for sand supplies at these sites is generally quite restricted, not allowing large quantities of sand to be stockpiled;
- later dispatches would enter Sydney during its morning peak and lead to longer travel times, with added problems over truck maneuverability in bumper to bumper traffic;
- truck drivers would be at risk of not having enough time to get a second load in during their 'logbook' hours if they got caught up in the Sydney morning peak traffic;
- alternatives to using Mackas Sand to supply fine sand would reduce with closure of the Penrith Lakes Scheme in December 2015, leading to likely increased demand for sand from Port Stephens; and
- early dispatches would allow better driver fatigue management.

The Department accepts that these benefits would accrue from the early dispatch of sand from Mackas Sand, but also considers that every journey must commence with a safe merge of each and every truck into the traffic stream on Nelson Bay Road.

Following GHD's presentation of the targeted VISSIM modelling of this key aspect of the proposal, RMS confirmed its view that weekday early morning traffic flows on Nelson Bay Road were such that up to 24 laden trucks per hour could be safely merged between 5 am and 6 am. This due to the relatively low traffic volumes of Nelson Bay Road at this time of the morning, which provides much larger gaps in the traffic flow for trucks exiting from the access road to safely merge into the southbound traffic stream.

However, RMS's direct field observations of the interaction of traffic on Nelson Bay Road with trucks merging into the weekday AM traffic peak concluded that there were insufficient gaps to allow an increased number of sand trucks to safely merge into this traffic stream between 6 am and 9 am. Some of the behaviours observed were that drivers in the general traffic flow did not appreciate how slowly trucks were exiting the merge lane (40 to 45 km/hour) into traffic travelling at the speed limit of 80 km/hour. Several vehicles were

observed to brake suddenly and very hard, when the car driver realized, at a late juncture, that there was insufficient room to overtake the truck before the end of the merge lane.

There are two other measures that could be theoretically undertaken to increase the safe operation of the merge lane but these are not available to the consent authority for this modification application. One is to reduce the posted speed limit on Nelson Bay Road which would reduce the disparity of speeds between merging trucks and the general traffic. Speed limits for Nelson Bay Road are determined by the RMS, which has indicated that, although speed limits are subject to regular review, a reduction in speed limit would not be considered as part of this modification application process. The other would be to increase the length of the merge lane. The Department understands that this option is not available as an extension would interfere with the safe operation of the intersection of Samson Road and Nelson Bay Road.

Based on the RMS's clear and consistent advice, the Department is unable to support an increase above 8 laden trucks per hour during the AM traffic peak between 6 am and 9 am. This is based on safety concerns of laden sand trucks merging with heavy traffic on Nelson Bay Road. The Department also recommends that no more than 8 laden trucks are dispatched between 5 am and 6 am. While RMS considers that it would be safe to dispatch up to 24 laden trucks in this hour, the Department considers that concentrating trucks for this one hour, followed by three hours during which truck dispatches reduce to 8 laden trucks per hour would not deliver appropriate amenity outcomes for affected residents. In other words, there is a significant chance that they would be woken an hour by truck movements than they would be by the start of the morning peak. In any event, the Department considers that not more than 14 laden truck dispatches should be considered for this hour, as this is one of the bases of the exhibited modification application.

However, the Department has recommended the lower rate of 8 laden truck dispatches. This would provide a weekday dispatch pattern of up to 8 laden trucks each hour from 5 am to 9 am, followed by up to 24 laden trucks each hour until 10 pm. Overall, this would allow six additional trucks to be dispatched at the start of the working day for Mackas Sand, but would not deliver its proposed additional 56 truck dispatches prior to 9 am. Obviously this would have an effect on the commercial outcome that Mackas Sand hoped to achieve, but the Department considers that such outcomes should not come at the expense of road safety. Accordingly, the Department has recommended conditions of approval that allow for increased truck dispatches as originally proposed by this modification application, except for the period between 5 am and 9 am, where truck dispatches should be limited to 8 per hour.

Nelson Bay Road, Richardson Road and Salt Ash Avenue roundabout (known as Paul's Corner)

The EA assessed the roundabout at the intersection of Nelson Bay Road, Richardson Road and Salt Ash Avenue (see **Figure 2**) as currently having LoS A ('good') with acceptable delays and spare capacity in both the AM and PM peak periods. The assessments by both RMS and the Department concur with this finding. The Department considers that the situation of trucks queuing to access the roundabout would be unlikely to occur often in practice, since the timing of truck movements to and from both Lot 218 and Lot 220 would be controlled by both the loading process and the range of delivery destinations.



Figure 2: Looking northeast towards the Richardson Road roundabout (source: Google Streetview)

Bus Stops and Pedestrian Safety

Several community submissions raised concerns over potential impacts of the proposal on pedestrian access to bus stops on Nelson Bay Road. Some were concerned about crossing Nelson Bay Road to reach a bus stop and that this would be more difficult with increased truck movements from Lot 218. The two locations most mentioned in submissions were pedestrian access for Salt Ash Public School (near the roundabout) and Banksia Grove Village (residential premises with senior residents).

The broader issue of pedestrian crossings for Nelson Bay Road (pedestrian traffic lights, zebra crossings or underpasses or overpasses) is a matter for RMS. RMS considers the need for such facilities for all its roads on a regular basis. It does not have any immediate plans to install pedestrian crossings on the relevant sections of Nelson Bay Road. However, RMS (on behalf of Transport for NSW) is developing a Corridor Strategy for Nelson Bay Road, with a draft planned for release in mid-2016, which will set out the Government's 20-year plan to manage and guide the development of this important regional road, to improve both road safety and traffic efficiency. The RMS states that an opportunity will be available for the community to provide feedback on the draft corridor strategy.

The Department considers that this consultation process is the most appropriate mechanism to raise the issue of pedestrian access on Nelson Bay Road, as trucks associated with Mackas Sand, while forming part of the traffic flow along the road, constitute only a small portion of the traffic with which pedestrians contend.

Speed Limit

The current speed limit for Nelson Bay Road between Williamtown and Salt Ash is 80 km/hour. Some submissions advocated a reduced speed limit of 70 km/hour. Speed limits are set by RMS, which stated in November 2013 as part of a review of a Road Safety Audit undertaken as a requirement for the previously approved MOD 1 to the Mackas Sand Project, that *"The existing speed zone was reviewed in March 2012 and is considered that the current zone (implemented in December 2006) is appropriate for this section of the road and is consistent with other similar road environments in the region"*.

The matter of speed limits remains with RMS and is regularly reviewed. It is not a matter that can be altered by this modification application.

Existing Approved Access Route

Several community submissions, including those from the TRRA and Port Stephens Greens, questioned the need for an increase in truck movements as Lavis Lane is an approved sand haulage route for Lot 218. The Department considers that the already-approved Lavis Lane/Stockton Bight Track/private land access route should be retained as an option for the transportation of sand from Lot 218. This option was thoroughly assessed in 2009 and found to be acceptable, subject to specific conditions relating to hours of operation and upgrades to the surface of Lavis Lane and construction of the road on the private landholdings.

However, it is important to note that Mackas Sand does not currently hold the necessary landholder agreements to use Lavis Lane for truck movements and the necessary road upgrades have not been undertaken. Further, the current access road has not only been approved but has been constructed and is in use. No substantial reason has been advanced why this approval should be either removed or diminished.

The Department notes that, regardless of whether both access route options remain open under the approval, it is highly likely that Mackas Sand will continue to only use one option, due to the substantial costs of road upgrades for Lavis Lane. Further, the total tonnage of sand transported from Lot 218, and any consequent traffic impacts, would not be varied by the availability of two alternate access roads.

Terminology Used in the Approval

The Department considers that the terminology used in the approval could be improved to remove any doubt as to the number of trucks that may leave the site per hour.

Firstly, the Department has recommended that a new definition be included in the approval that identifies that 'trucks per hour' refers to the number of trucks in a particular 60 minute period that commences when the hourly numeral advances. It is not to be considered as a rolling hour. Example hours would be the 60 minutes commencing at 5.00 am, the 60 minutes commencing at 6.00 am, and so on.

Secondly, the Department considers that truck movements could be more precisely defined as 'laden truck movements per hour'. This approach means that no other interpretation is possible other than the number of trucks carrying sand dispatched from the site during a 60 minute period described above.

Implications for Early Arrival Trucks

Current conditions of approval regulating trucks at the project primarily regulate the number of trucks dispatched from the site per hour. They do not specifically address the timing of the arrival of empty trucks to the site. However, at the August public meeting and also in several public submissions, the impacts of trucks travelling on roads such as Cabbage Tree Road and Nelson Bay Road in the early hours of the morning (well-before 5 am) was a source of complaint.

As was acknowledged at the public meeting, some truck drivers have an economic imperative to be at the head of the trucking queue to be loaded as early as possible so that the driver may be able to fit an extra load into their working day. Therefore they travel early to the site and this may cause disturbance to residents located close to these public roads.

It is important to note that the roads used are public roads and all drivers (including truck drivers) have a right to use them when it suits them. Attempts at other quarry sites to control truck queuing, by locking site access gates, has historically resulted in trucks pulling over and parking as close to the site entry as possible. Such parking areas have not always been perfectly legal and may cause increased disruption to nearby residents, from truck deceleration and acceleration, noise from drivers' cabs, and sometimes littering.

The Department's inspection of Nelson Bay Road indicates that there are no suitable areas along the road in the vicinity of the Mackas Sand entry for parking and laying over of trucks. The Department's view is that the better outcome is for early-arriving trucks to continue to do as they have previously done and park on the Mackas Sand site, which is well-away from residences. This may not be the perfect outcome but is much better than the alternative of trucks parking by the side of public roads in the vicinity of the quarry.

Some submissions, such as TRRA, suggested that Mackas Sand should either voluntarily operate, or else have imposed on it by conditions of consent, a 'booking system' to allocate truck arrival times. At the public meeting, Mackas Sand responded by stating that it does not know even a day in advance how many trucks would arrive at Lot 218 to be loaded. It cites the absence of demand from concrete batching plants, should the day turn out to be wet and concrete pours be cancelled. The Department accepts this line of reasoning and agrees with Mackas Sand that a booking system is not practical for a sand quarry.

The Department's general experience of complaints made about driver behaviour is that often complaints are difficult to deal with in the absence of hard evidence, and result in claim and counterclaim. The company's digital recording of the time of use of the weighbridge at the project site has provided hard evidence that is useful in the Department's investigations of complaints from residents and other local community members.

The Department believes that this should be supplemented by the use of closed circuit television (CCTV) monitors adjacent to the quarry access road at a point about 100 metres from Nelson Bay Road. This would enable sufficient care to be exercised to ensure that CCTV monitors are in accordance with privacy legislation and with fixed mounts so that the possibility of inappropriate use does not arise. The recordings of these CCTV monitors must then be securely stored and made available to the Department's Compliance Branch. This evidence would enhance investigations of inappropriate truck dispatch times, hourly rates of dispatch, or trucks incorrectly using the exit lane of the intersection to gain entry to the site. Once this suggestion was raised by the Department, Mackas Sand committed to its implementation. It would therefore form part of Mackas Sand's Statement of Commitments attached to the project approval.

Conclusion

The Department accepts that the interaction of the proposed increases in trucking intensity at the Mackas Sand Project is a difficult issue, and a vexed one for a significant part of the local community. However, in regard to the critical issue, which is the capacity of Nelson Bay Road to absorb increased truck numbers, it would appear that this can be safely achieved in the manner proposed by Mackas Sand with the key exception of the 5 am to 9 am period on weekdays.

The Department has therefore recommended conditions of approval which require Mackas Sand to:

- abide by the laden truck numbers as set in its application, except for weekdays between 5 am and 9 am when laden truck dispatches are recommended to be not greater than 8 per hour, and
- produce and implement a Drivers' Code of Conduct that includes consideration of interactions between sand trucks and holiday traffic on Nelson Bay Road.

5.3 Noise

The EA's noise impact assessment considered whether the proposed increased truck movements would create any additional noise impacts at residences near the alternate access road. The assessment was undertaken in accordance with the *NSW Industrial Noise Policy* (INP) and *NSW Road Noise Policy* (RNP).

The RNP was issued in 2011. Previously, the *Environmental Control of Road Traffic Noise* (ECRTN) provided the applicable criteria for traffic noise. The RNP introduced a number of revisions to the ECRTN, including the use of 'periods', rather than one hour assessment intervals, for the assessment of traffic noise on arterial roads, such as Nelson Bay Road. One of the elements of this modification application is a request that the road traffic noise impact assessment criteria for Nelson Bay Road be modified to reflect the RNP.

The Department believes this request to be reasonable and in keeping with contemporary regulation of traffic noise. In practical terms, this change would not cause any residence along Nelson Bay Road to be treated differently than under existing conditions of approval. This is because the applicable criteria for residents near the road are exceeded by traffic noise, whether assessed on a one-hourly basis or a periodic (ie Day or Night) basis. The relevant criterion is that a development should not cause existing road traffic noise levels to increase by more than 2 decibels, provided that the proponent has undertaken (or would undertake) all reasonable and feasible noise mitigation measures.

The EPA was concerned that the EA did not present such an investigation. It also recognised that:

- identifying such measures for a public arterial road may be difficult, particularly when in a location where a number of activities contribute to road traffic; and
- the quarry's production limit was approved with the original project approval.

In its RTS, Mackas Sand outlined the measures it would take to manage truck noise, including the use of modern well-maintained trucks, a speed limit of 40 km/hour on its access road and the implementation of a truck driver training program. Mackas Sand has also secured agreement with the four closest residents to its access road to accept the proposed increase in trucking intensity (shown as N1, N2, N4 and N6 in **Figure 3**).

In November 2015, Mackas Sand informed the Department that had agreed to contribute to the cost of the construction of a noise attenuation fence for the residence located at 2331 Nelson Bay Road (shown as N3 in **Figure 3**). Once constructed, this fence would reduce noise from accelerating trucks merging onto Nelson Bay Road, as well as general road traffic noise for this residence. The Department is satisfied that the noise impacts of trucks under acceleration in the merging lane have been reasonably and feasibly addressed by Mackas Sand.

In its noise assessment, Mackas Sand demonstrated that the predicted increase in traffic noise levels associated with the proposed increase in trucking intensity would be either:

- less than the Day-time $LA_{eq(15 \text{ hour})}$ criterion of 60 dB(A) where applicable; or
- less than the Night-time (ie early morning) $LA_{eq(15 \text{ hour})}$ criterion of 55 dB(A) where applicable; or
- less than the maximum increase of 2 dB(A) recommended in the RNP.

Several submissions raised concerns that additional trucks during the shoulder period would disrupt their sleep patterns. The Department has considered the competing arguments of the legal use of a public arterial road and the desire of residents close to the road not to experience any additional road noise. As set out in **Section 5.2**, the Department considers that there should be no more trucks dispatched from Lot 218 between 5 am and 6 am weekdays than during the weekday AM peak hours. Consequently, the Department is recommending that a maximum of 8 laden trucks/hour be dispatched between 5 am and 9 am. RMS identified that Nelson Bay Road has the capacity to handle up to 24 laden trucks in the hour from 5 am. However, the Department considers that the regulation of truck numbers should be aimed at preserving early morning residential amenity and also be as straightforward as possible.

In its RTS and additional information provided on 16 December 2015, Mackas Sand advocated that it has strong demand for the supply of its sand and that it needs more early morning truck dispatches to serve its significant Sydney markets. The Department considers that the RTS and additional information failed to adequately address the issue of merging trucks from Lot 218 into the AM peak traffic flows on Nelson Bay Road. It is on this basis that the Department has recommended a small increase of 3 laden trucks/hour between 5 am and 7 am; no increase between 7 am and 9 am; and the trucking intensity requested by Mackas Sand between 9 am and 10pm weekdays, and as proposed for weekends.



Figure 3: Location of Potentially Noise Affected Residences

5.4 Other Issues

The Department has considered other potential impacts of the proposed modification, which are summarised in **Table 3** below.

Table 3: Consideration of Other Issues

Issue	Consideration	Recommendation
<i>Economic Impacts</i>	<ul style="list-style-type: none"> Several submissions considered that the proposed modification was of a negative economic benefit to the community and that the modification would only deliver economic benefits to Mackas Sand. There would be a cost to the community as trucks clogged the local roads, interfered with holiday traffic, impacted the tourism industry and caused damage to roads, thereby impacting local businesses. The Department accepts that most economic benefits would accrue to Mackas Sand, as it would be more able to efficiently serve the Sydney construction sand market. There would be little change to overall local benefits as there would be no increase in approved sand extraction tonnages, and little change to employment or purchases. Impacts to road surfaces would remain the same, as there is no proposed increase in the tonnage of sand to be extracted and transported. 	<ul style="list-style-type: none"> No change to conditions.
<i>Biodiversity</i>	<ul style="list-style-type: none"> Increase in truck movements along the alternate access track could increase the number of vehicle strikes of threatened fauna species. Mackas Sand would implement additional mitigation measures to minimize impacts to threatened fauna species and their habitats. These measures include: <ul style="list-style-type: none"> erect wildlife warning signs in known areas of high fauna activity or adjacent woodland vegetation to alert truck drivers; communicate the risk of vehicle strikes to fauna during site inductions; take animals injured by vehicle strike to veterinary clinic or a wildlife carer for assessment and treatment; and report incidents of threatened species injuries in the Annual Report and assess need for further prevention measures. 	<ul style="list-style-type: none"> Review and update the approved Landscape Management Plan (LMP) to reflect the proposed modification.
<i>Air Quality & Dust</i>	<ul style="list-style-type: none"> The proposed modification would not increase the amount of sand extracted from Lot 218, nor would there be an overall increase in approved trucking numbers. Accordingly, there would be no increase in dust emissions from the project 	<ul style="list-style-type: none"> No change to conditions.
<i>Aboriginal Heritage</i>	<ul style="list-style-type: none"> The proposed modification would not increase the area of approved sand extraction. Accordingly there would be no increased risk of impact to Aboriginal heritage items. 	<ul style="list-style-type: none"> No change to conditions.
<i>Community Consultation</i>	<ul style="list-style-type: none"> Some community submissions claimed that Mackas Sand had conducted inadequate community consultation, that submitters were unaware of Mackas Sand's Community Consultative Committee and that the exhibition period for the modification was too short. The Department is satisfied that there has been adequate consultation, particularly following the public meeting called by Kate Washington MP, where representatives of Mackas Sand, RMS and the Department responded to questions from the meeting, which contained around 120 persons. The receipt of 69 community submissions also indicates that the community is generally aware of the proposed modification. 	<ul style="list-style-type: none"> No change to conditions.
<i>Compliance History</i>	<ul style="list-style-type: none"> The Department's Compliance Officers audited the existing Mackas Sand's operations as part of a district quarry compliance campaign in May 2015. This was 	<ul style="list-style-type: none"> No change to conditions. The Compliance Branch will continue to follow-up on the

Issue	Consideration	Recommendation
	<p>followed by three inspections of trucking operations.</p> <ul style="list-style-type: none"> The results of this audit are available on the Department's website, indicating areas for environmental improvement, but general compliance with the existing project approval. 	<p>environmental performance of the quarry.</p>

6. RECOMMENDED CONDITIONS

The Department has recommended conditions of approval for the proposed modification and has drafted a Notice of Modification (see **Appendix D**). The amended conditions reflect the Department's proposals for a modified increase in trucking intensity from Lot 218. The Department has also taken the opportunity to contemporise the approval by updating various definitions.

Mackas Sand has reviewed the proposed conditions, and objects to the Department's proposal to restrict laden truck dispatches to only 8 per hour from 5 am to 9 am weekdays. It believes that the economic case for additional truck dispatches is compelling and can be achieved with minimal environmental impact.

7. CONCLUSION

Mackas Sand wishes to modify the project approval for the Mackas Sand Project, to allow increased flexibility in its truck dispatches from Lot 218 to better serve its markets for construction sand. It is seeking to increase the maximum allowable number of laden trucks permitted to be dispatched per hour from the site for most currently-permitted product dispatch hours.

Importantly, Mackas Sand is not seeking to extend its trucking hours, change its sand extraction operations, or increase the annual maximum permitted quantity of sand extracted from Lot 218 (1 million tonnes).

The Department has assessed the modification application, EA, submissions received during and following the exhibition period, information presented at a public meeting and obtained from several site visits, Mackas Sand's RTS and additional information provided on 16 December 2015, in accordance with the relevant requirements of the EP&A Act. This assessment has found that:

- the merging of increased truck numbers from the project's access road onto Nelson Bay Road between 6 am and 9 am on weekdays would cause potentially unsafe interactions with general traffic on Nelson Bay Road;
- not more than 8 laden trucks per hour should be dispatched from Lot 218 between 5 am and 9 am;
- the impacts for other times of proposed increased trucking intensity are acceptable;
- noise impacts of the proposed modification would remain within acceptable regulatory limits;
- noise amenity for the closest residents would continue to be protected;
- biodiversity impacts (potential for increased road kill at dawn) could marginally increase and that additional mitigation measures should be included in the site's Landscape Management Plan;
- CCTV monitors should be installed 100 m from the entry of the access road from Nelson Bay Road in order to better manage driver behaviour and help resolve any community complaints that may arise about trucking operations;
- a Drivers' Code of Practice should be included as a requirement of conditions of approval and incorporate consideration of holiday traffic interactions with sand trucks;
- the proposed modification would deliver operational efficiencies for Mackas Sand in the supply of its construction sand markets, and hence deliver significant economic benefits for the company;
- economic benefits for the local economy would remain much the same as at present as there would be no increase in employment or increase in approved sand production; and
- all other impacts of the proposed modification would not increase over those already assessed and approved for the project.

The Department is therefore satisfied that the potential environmental impacts of the proposed modification would not be significantly greater than those previously assessed and approved. On balance, the Department is satisfied that the project's benefits would outweigh any residual costs, that the proposed modification is in the public interest, and that it should be approved, subject to the recommended conditions.

8. RECOMMENDATION

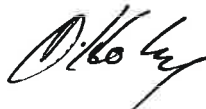
It is RECOMMENDED that the Planning Assessment Commission, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report;
- **determines** that the proposed modification falls within the scope of section 75W of the EP&A Act;
- **approves** the modification application, subject to conditions, under section 75W of the EP&A Act; and
- **signs** the attached Notice of Modification (see **Appendix D**).



Howard Reed
Director
Resource Assessments

28-1-15



Oliver Holm
Executive Director
Resource Assessments and Compliance

28/1/16

APPENDIX A – ENVIRONMENTAL ASSESSMENT

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7178

APPENDIX B – SUBMISSIONS

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7178

APPENDIX C – RESPONSE TO SUBMISSIONS

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7178

APPENDIX D – NOTICE OF MODIFICATION

APPENDIX E – PROJECT APPROVAL (AS PROPOSED TO BE MODIFIED)