ASSESSMENT REPORT

MACKAS SAND PROJECT

Access Road and Extraction Depth Modification (08_0142 MOD 1)

1. BACKGROUND

Mackas Sand Pty Ltd (Mackas Sand) owns and operates the Mackas Sand Project, which extracts a wind-blown dune of marine sand bordering Stockton Bight. The project 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, described as Lot 218 DP 1044608 and Lot 220 DP 1049608 (see Figure 1). The project is operated under an agreement between Mackas Sand and the Worimi Local Aboriginal Land Council (Worimi LALC), which owns Lots 218 and 220.

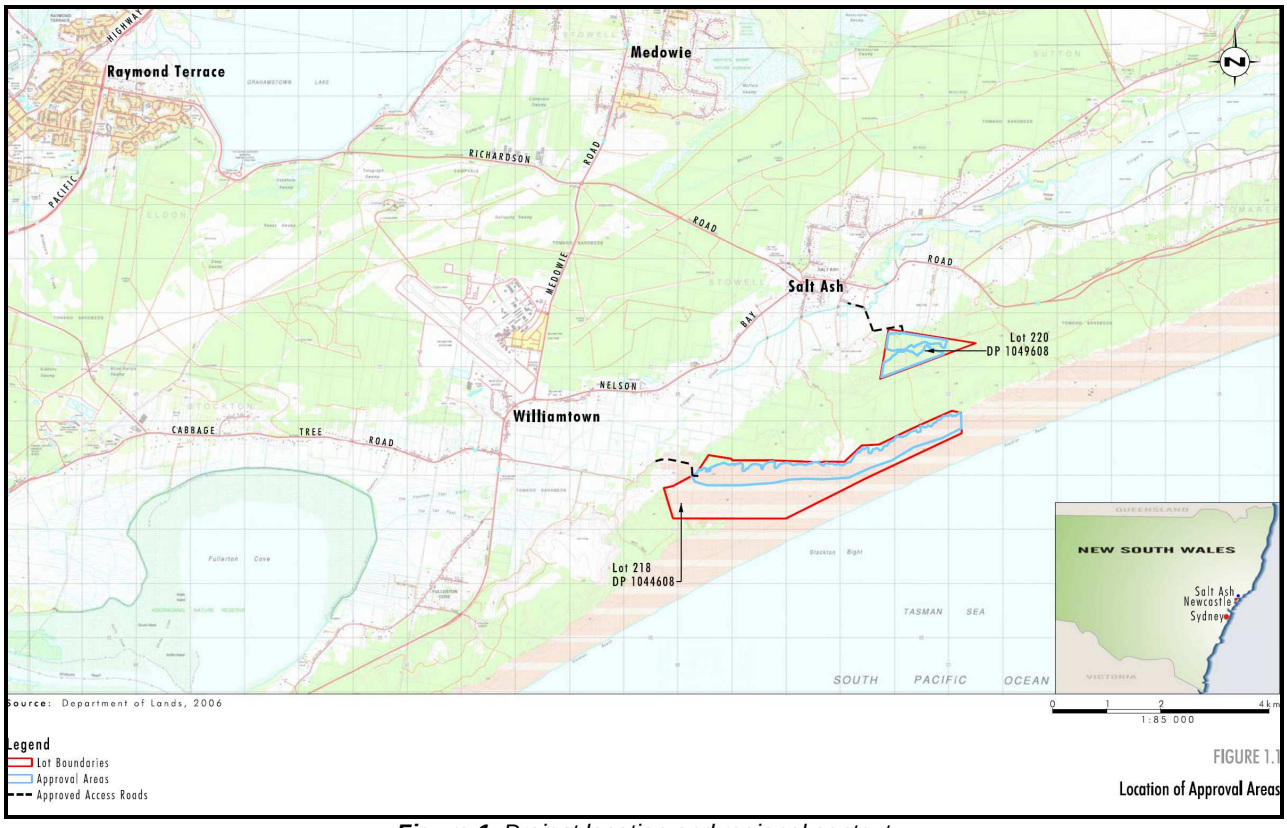

***Figure 1**: Project location and regional context*

The project approval (MP 08_0142) was granted by the then Minister for Planning in September 2009. The 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 also 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 the 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 modify project approval MP 08_0142. The proposed modification involves:

- constructing and operating an alternate access road from Lot 218;
- increasing the approved hours of transportation at Lot 218;
- altering the maximum depth of extraction at both Lot 218 and Lot 220 from 1 metre (m) to 0.7 m above the maximum predicted groundwater level; and
- updating surveying requirements, to allow the project's extraction boundaries to be defined using Global Positioning System (GPS) techniques.

The proposed modification would not change the project's other operating parameters, including its production limits, processing and transportation rates, and rehabilitation requirements. The key elements of the proposed modification are described below.

2.1 Alternate Access Road to Lot 218

The approved access route to Lot 218 (shown as a yellow line on Figure 2) includes Lavis Lane and a portion of the Stockton Bight Track (ie public roads). It also crosses two private landholdings, owned by a local family. Mackas Sand now proposes to not construct the approved access route, but instead to develop an alternate access road (shown as a pink line on Figure 2), which would connect to Nelson Bay Road to the north of Lot 218.

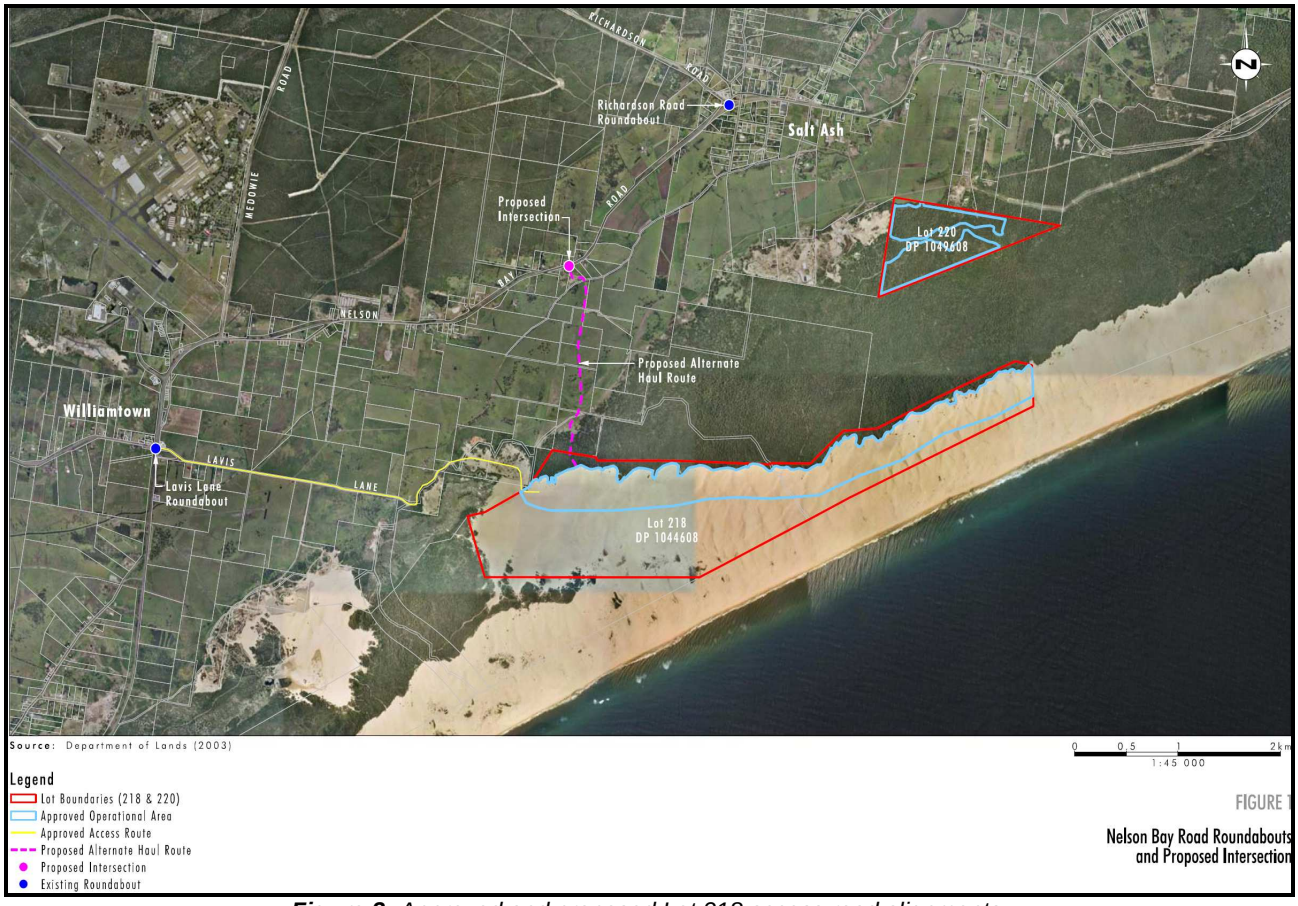

Figure 2: *Approved and proposed Lot 218 access road alignments*

The proposed new intersection with Nelson Bay Road would be constructed to only allow trucks to turn left into, and left out of, the new access road. Empty trucks returning to Lot 218 would therefore be required to travel a further 3 km northeast on Nelson Bay Road, turn at the Richardson Road roundabout, and return to the intersection before turning left into the new access road.

The alternate access road would be approximately 2 km long, and would require a 30 x 30 m turning bay at the base of the mobile dune on Lot 218. The road would be approximately 8 m wide throughout its length, to allow two-directional vehicle movements. Construction of the road would involve vegetation clearing, filling and use of road base or other similar materials.

Mackas Sand states that the proposed change to the approved access road is required for a number of reasons. The key reason is that Mackas Sand has been unable to reach agreement with the owners of the private landholdings on the terms of use of this land. The owners claim that a royalty agreement exists between them and Mackas Sand to transport sand across their land. Mackas Sand considers that any agreement previously entered into is no longer valid, and in any case is not exclusive. Mackas Sand's other reasons for the proposed alternate access road include that:

- an elevated sand knoll which the Worimi LALC uses as a viewing platform for its four-wheel drive tours would have to be removed to construct the approved access road;
- the approved road would be impacted by wind-blown sand, which would require significant road maintenance to be undertaken throughout the life of the project;
- the area where the approved road alignment meets the extraction face is underlain with a vegetated dune structure, which would require additional ecological and archaeological assessment and removal; and
- the approved road alignment could contain historic unexploded ordinance.

Mackas Sand argues that the proposed modification would end uncertainty over the access road caused by these constraints, which has significantly delayed the commencement of extraction of sand from Lot 218.

2.2 Increased Transportation Hours

In order to meet its market demands, Mackas Sand proposes to increase the approved transportation hours at Lot 218. The currently approved transportation hours are:

- 6.00 am – 6.00 pm Monday to Friday (Eastern Standard Time – EST);
- 6.00 am – 7.00 pm Monday to Friday (Daylight Saving Time – DST);
- 7.00 am – 4.00 pm Saturdays; and
- no transportation on Sundays or Public Holidays.

The approval also allows these transportation hours to be extended to 5 am – 10 pm, Monday to Friday, if Mackas Sand is able to secure the written agreement of all residential landowners who front Lavis Lane.

Mackas Sand proposes to increase transportation hours for Lot 218 (via the proposed alternate access road) to:

- 5.00 am – 10.00 pm Monday to Saturday; and
- 8.00 am – 12.00 pm on Sundays or Public Holidays.

2.3 Increased Extraction Depth

The depth of extraction is limited at both Lots 218 and 220 to 1 m above the maximum predicted groundwater level. This limit guards against potential impacts to a nearby emergency water supply borefield operated by the Hunter Water Corporation (HWC) and aims to generally protect groundwater quality. Mackas Sand proposes to lower the extraction depth at both sites to 0.7 m above the maximum predicted groundwater level.

Mackas Sand's stated reasons for this change include that the increased extraction depth would allow easier movement of plant and equipment at the extraction face due to the increased moisture content of the sand at that level. This in turn would increase the efficiency of sand extraction operations and reduce the amount of energy required to operate the machinery.

Mackas Sand proposes to restore the final landform to at least 1 m above the maximum predicted groundwater level on completion of the project.

2.4 Surveying Requirements

Condition 1 of schedule 3 of the project approval requires Mackas Sand to survey the limits of its extraction areas and establish permanent extraction area boundary markers in the stable vegetated dunes. GPS systems are allowed to be used to define the boundaries in the mobile sand dune areas. The proposed modification seeks to allow GPS systems to be used to define all extraction area boundaries.

3. STATUTORY CONTEXT

3.1 Approval Authority

Under section 75W of the EP&A Act, the Minister for Planning and Infrastructure 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 C) for the proposed modification, the Planning Assessment Commission (PAC) 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 and transportation levels. Any resulting environmental impacts would be substantially 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 proposed alternate access road affects a number of privately and publicly-owned land portions (see Figure 2). Clause 8F(1) of the *Environmental Planning & Assessment Regulation 2000* requires that the owner(s) of land affected by the proposed modification must provide their consent to the application. Mackas Sand has provided evidence that the private landowner; the Crown Lands Division (CLD) of the Department of Trade and Investment, Regional Infrastructure and Services; the NSW Aboriginal Land Council (on behalf of the Worimi LALC) and Port Stephens Council have all granted their consent to the application being made.

3.4 Environment Protection and Biodiversity Conservation Act 1999

On 23 November 2012, the proposed modification was declared as a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Mackas Sand therefore needs to obtain an approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities, due to the potential for significant impact to listed threatened species and communities and listed migratory species under that Act.

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities has not accredited the State's assessment process for the proposed modification. Consequently, consideration of State and Commonwealth matters are being assessed separately. The Commonwealth Minister maintains an independent approval role for the proposed modification, and is expected to undertake this determination following the PAC's determination.

4. CONSULTATION

4.1 Exhibition and Notification

Under Section 75W of the EP&A Act, the Department is not required to publicly exhibit the modification application and EA. However the Department:

- publicly exhibited the EA from 7 – 21 November 2012 at:
  - the Department's Information Centre in Sydney;
  - Port Stephens Council; and
  - the Nature Conservation Council;
- notified relevant State government authorities and Port Stephens Council by email; and
- advertised the exhibition of the EA in the Port Stephens Examiner newspaper.

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

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

4.2 Submissions

Following exhibition, the Department received a total of 42 submissions on the proposal, which included:

- 7 from public authorities, including Port Stephens Council (Council);
- 1 from a special interest group; and
- 35 submissions from local community members.

A copy of the submissions is provided in Appendix D.

No public authority objected to the proposed modification. However, concerns were expressed with particular aspects of the proposed modification, and recommendations were provided to address residual impacts. The key areas of concern for public authorities included:

- traffic and transport impacts, including the design and construction of the alternate access road and intersection (Roads and Maritime Services (RMS) and Council, who are the relevant road authorities);
- biodiversity impacts from the proposed additional vegetation clearing (Office of Environment & Heritage (OEH));
- Aboriginal cultural heritage impacts (OEH); and
- maintenance of public access to portions of land set aside as Crown roads (CLD).

HWC and the NSW Office of Water (NOW) indicated that the proposed increased extraction depth at both extraction sites would be acceptable, if carefully managed, and if the final landforms are restored in accordance with the existing conditions of approval. Following initial concerns regarding the potential for groundwater contamination at Lot 218 through the disturbance of potential acid sulphate soils, the Environment Protection Authority (EPA) endorsed the proposed increase to the extraction depth at Lot 218, on condition that Mackas Sand undertakes a sampling program which confirms that extraction to that depth carries a negligible risk to groundwater contamination.

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

- road safety impacts, and the impact of sand trucks on the Level of Service of Nelson Bay Road and the Richardson Road roundabout;
- the safety of access to properties near the proposed intersection of the alternate access road with Nelson Bay Road; and
- the potential noise impacts associated with the proposed increased transportation hours.

Mackas Sand provided detailed responses to the issues raised in submissions (its Response to Submissions, see Appendix E), which were considered in the Department's assessment of the proposed modification (see Section 5 below).

4.3 Community Meeting and Petition

In February 2013, the Port Stephens community held a meeting to discuss potential impacts of the proposed alternate access road. Following the meeting, a community petition was circulated in the following terms:

- *The proposed access onto Nelson Bay Rd is unsafe - it is a single lane arterial road; a blind corner which has previously been designated a 'black spot'; public bus stops, used by school children, are situated beside the proposed access.*
- *It will cause the permanent destruction of significant Aboriginal sites and artefacts.*
- *The combined impact of both mine sites operated by Mackas Sand (Lots 218 and 220) could result in up to 32 trucks entering the Salt Ash roundabout every hour, presenting an unacceptable risk - four roads feed into the roundabout with shops and a primary school adjacent to it; B-doubles performing a U-turn will use both lanes; the camber of the roundabout means there is a significant "tip risk"; an accident at Salt Ash roundabout means the Tilligerry and Tomaree Peninsula residents are cut off from emergency services.*
- *The proposed operating hours of 5am to 10pm will result in unacceptable noise levels for local residents, reducing their quality of life.*
- *The original, approved development application provides for a safe access onto Nelson Bay Rd which does not harm significant Aboriginal sites and does not diminish local residents' quality of life.*

The petition, with over 700 signatures, was delivered to the Minister for Planning and Infrastructure via the local Member for Port Stephens, Craig Baumann MP. The Department notes that the issues raised in the

petition are very similar to those raised in submissions. All issues in the petition have been thoroughly considered by the Department in its assessment of the proposed modification (see Section 5 below).

Some community members also wrote to Craig Baumann MP, who made representations on their behalf to the Minister concerning the potential traffic and transport impacts of the proposal.

4.4 Other Departmental Consultation

Departmental officers visited the site of the proposed alternate access road intersection and the Richardson Road roundabout on 5 February 2013. Throughout the assessment process, the Department made a number of requests for further information to Mackas Sand and government agencies, including RMS and EPA. The Department also discussed the proposed modification by telephone with various community members and with the relevant road authorities.

5. ASSESSMENT

5.1 Key Issues

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

- EA, submissions, Response to Submissions, 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, noise, biodiversity, Aboriginal cultural heritage and groundwater. The Department has also considered the need for the alternate access road in its assessment.

5.2 Traffic & Transport

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

- the proposed intersection would be located on a "blind" corner, and trucks entering Nelson Bay Road would not do so at sufficient speed to merge safely with westbound traffic;
- the subject section of Nelson Bay Road is a bus route, and passengers may join or alight from buses close to the proposed intersection;
- trucks turning at the Richardson Road roundabout would delay access to the roundabout for other vehicles; and
- the cumulative impacts of transport from both extraction sites were not assessed in the current EA.

It is important first to note that the proposed modification does not seek to increase the approved production and transportation limits for the project. Therefore the number of trucks that would enter or leave Lot 218 would not increase over those which are approved for the original project. The proposed modification would only change transport arrangements (and only from Lot 218) by introducing trucks to a section of Nelson Bay Road not previously proposed to be used (ie that section northeast of the proposed access road intersection, as far as the Richardson Road roundabout).

The Department also notes community comments that the cumulative impacts of transport from both sites were not assessed in the EA. The Department notes that the EA contains existing traffic counts and future traffic predictions for the Richardson Road roundabout and that 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.

Intersection Design

Nelson Bay Road is a classified (ie State) road, with a speed limit of 80 km/hour where the proposed alternate access road intersection would be constructed. RMS and Council are the relevant approval authorities for the two arms of the proposed intersection. RMS gave in-principle support to Mackas Sand's concept intersection design (see Figure 3). This support was contingent on Mackas Sand constructing the intersection to the relevant Austroad standard as a left-in/left-out (LILO) only access, with acceleration and deceleration lanes for west-bound truck movements into, and out of, the intersection.

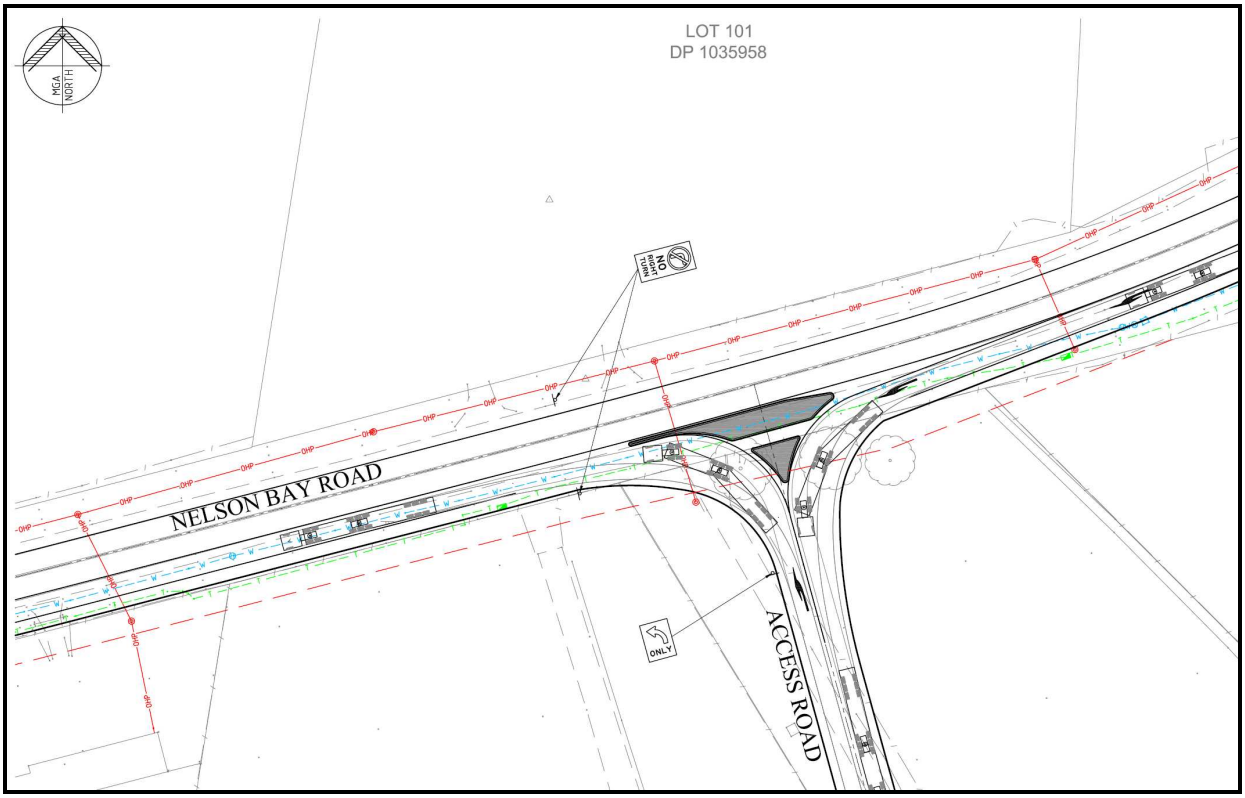

Figure 3: *Proposed LILO intersection*

This intersection treatment would limit potential road safety impacts by preventing returning quarry trucks from turning right across oncoming traffic on Nelson Bay Road. These trucks would travel 3 km further east away from the proposed intersection, turn at the Richardson Road roundabout and then return to the proposed intersection. The proposed intersection location also complies with relevant sight distance requirements for sand trucks entering Nelson Bay Road (see Figures 4 and 5). The proposed acceleration lane would allow trucks to safely merge at a speed consistent with other vehicles on Nelson Bay Road.

Figure 4: *Nelson Bay Road, looking east from the proposed intersection location*

Figure 5: *Nelson Bay Road, looking west from the proposed intersection location*

However the proposed acceleration lane would affect access to one residence (see Figure 5). Mackas Sand has received consent from this landowner to construct the acceleration lane within the existing road easement past the residence. The impacts of the acceleration lane on the safety of access to and from the property would be minimised by upgrading the access point in consultation with the landowner and Council, and by installing appropriate warning signs approaching the access point. Mackas Sand would complete these works prior to the transport of sand from Lot 218. The proposed intersection would not impede the access to any other private property. The final design of the intersection would require approval from RMS in consultation with Council, and Mackas Sand would fund all necessary works.

The Department considers that the proposed LILO intersection would allow trucks to safely enter and leave the alternate access road. This proposed treatment would also minimise impacts to traffic flow. The proposed installation of warning signage on the approaches to the intersection would further address potential road safety impacts.

Nelson Bay Road

Mackas Sand's traffic impact assessment (see Appendix C) considered whether the proposed change in traffic conditions would significantly impact the Level of Service on Nelson Bay Road. Nelson Bay Road was assessed as currently having an excellent Level of Service in both directions. The assessment showed that, even at the maximum modelled peak of 16 project-related truck movements per hour, trucks from Lot 218 would only add 1% to the current peak hour vehicle movements on the affected section of Nelson Bay Road.

Mackas Sand's proposal to restrict sand dispatch to 5 laden trucks per hour during the weekday morning shoulder period (ie 5 – 7 am), primarily to address noise impacts, would also act to limit impacts to the Levels of Service. The Department and RMS consider that the proposed increase in traffic volumes on Nelson Bay Road is minor at worst, and that the current and future Level of Service would not be significantly affected.

Bus Stops

There are no designated bus stops in the vicinity of the proposed intersection; however the Department has been informed that buses do make unspecified stops on Nelson Bay Road on request. The relevant bus company has informed the Department that no school children are currently picked up or dropped off close to the proposed intersection. However, it is possible that passengers (potentially including school children) at sometime over the proposed 20-year life of the project will seek to be picked up or dropped off close to the proposed intersection.

Mackas Sand has committed to implement a driver education program which would include making drivers aware of the potential for buses to make unscheduled stops. It would also install warning signage ("Trucks Entering") at the eastern approach to the intersection. The Department accepts the value of these commitments. However, it considers that the risk would be better managed through seeking to avoid its occurrence. The Department therefore considers that Mackas Sand should also initiate discussions with the bus company to gain its acceptance that unscheduled stops should not be made in or adjacent to the proposed acceleration or deceleration lanes, and has recommended a condition that Mackas Sand should use its best endeavours to gain such acceptance.

Richardson Road Roundabout

The local community has raised considerable concerns over the potential impacts of the proposed modification on delays and safety at the existing Richardson Road roundabout. The Department recognises the strength of these concerns. The Richardson Road roundabout is shown in Figure 6.

Figure 6: *Looking northeast towards the Richardson Road roundabout (source: Google Streetview)*

In response to these community concerns, in February 2013 Mackas Sand undertook a supplementary assessment of the potential impact of the proposed modification on the roundabout's performance. The assessment included a traffic count, an analysis of the effects of the maximum of 16 additional truck movements during peak traffic times, and a review of recent road safety records. This supplementary traffic assessment concluded that the:

- roundabout performs at Level of Service A (ie the best possible performance level) and the additional traffic from the proposed modification would not reduce that level;
- Average Delay at the roundabout would potentially increase by only 0.1 seconds, as a result of the additional traffic;
- Average Queue length at the roundabout would potentially increase by only 0.1 m in the AM peak, and by 0.4 m in the PM peak; and
- accident data for the roundabout over the past 5.5 years, when balanced against intersection usage volumes, does not indicate that the roundabout performs poorly in terms of road safety.

The Department is therefore satisfied that the potential road safety impacts from Mackas Sand's trucks turning at the Richardson Road roundabout would be low and are acceptable. The roundabout already has a four-lane, dual carriageway treatment in both directions for Nelson Bay Road. No additional road works would be required. The Department considers that the situation of trucks queuing to access the roundabout would be unlikely to often occur in practice, since the timing of truck movements to and from Lot 218 would be controlled by the loading process, and by the range of delivery destinations.

Existing Approved Access Route

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. The Department notes that the proposed modification arises from an ongoing commercial dispute between Mackas Sand and a local family. It has no interest in, or view on, the resolution or otherwise of this dispute. However, the existing access road route has been approved, and no substantial reason has been advanced why that approval should be removed. Maintaining the option of developing the existing approved access route continues the existing commercial opportunities of all parties, without requiring or interfering in the resolution of the existing commercial dispute.

The Department notes that, regardless of whether both access route options remain open under the approval, it is highly likely that only one option would eventuate, due to the substantial costs of construction. 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.

Conclusion

The Department and the RMS consider that the proposed intersection of the alternate access road and Nelson Bay Road can be constructed and operated safely. The proposed LILO design is appropriate and has already been given in-principle approval by RMS. The existing Level of Service of both Nelson Bay Road and the Richardson Road roundabout would be essentially unaffected by the proposed modification. The proposed increase in traffic movements is not significant when considered in the context of the total traffic environment of Nelson Bay Road, whether in peak periods or off-peak periods.

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

- construct the intersection at its own cost, to the satisfaction of RMS, and in consultation with Council;
- install warning signage ("Trucks Entering") at the eastern approach to the intersection;
- upgrade the access point at the private residence immediately west of the intersection, including warning signage;
- use its best endeavours to gain acceptance from the local bus company that unscheduled stops should not be made in or adjacent to the proposed acceleration or deceleration lanes; and
- restrict the total laden truck movements from Lot 218 to 5 per hour in the morning shoulder period, and to 8 per hour during all other approved periods.

5.3 Noise

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

Operational Noise

As the proposed alternate access road would be a private road, operational noise criteria established in accordance with the INP (ie Project Specific Noise Levels, or PSNLs) must be applied to trucking operations on that road. Mackas Sand undertook noise modeling at the residences closest to the alternate access road. Two residences are located on Nelson Bay Road within 100 m of its proposed intersection with the proposed alternate access road, and a further two are located at distances of about 125-150 m (see Figure 7). All other residences on Nelson Bay Road are at least 200 m distant from the intersection.

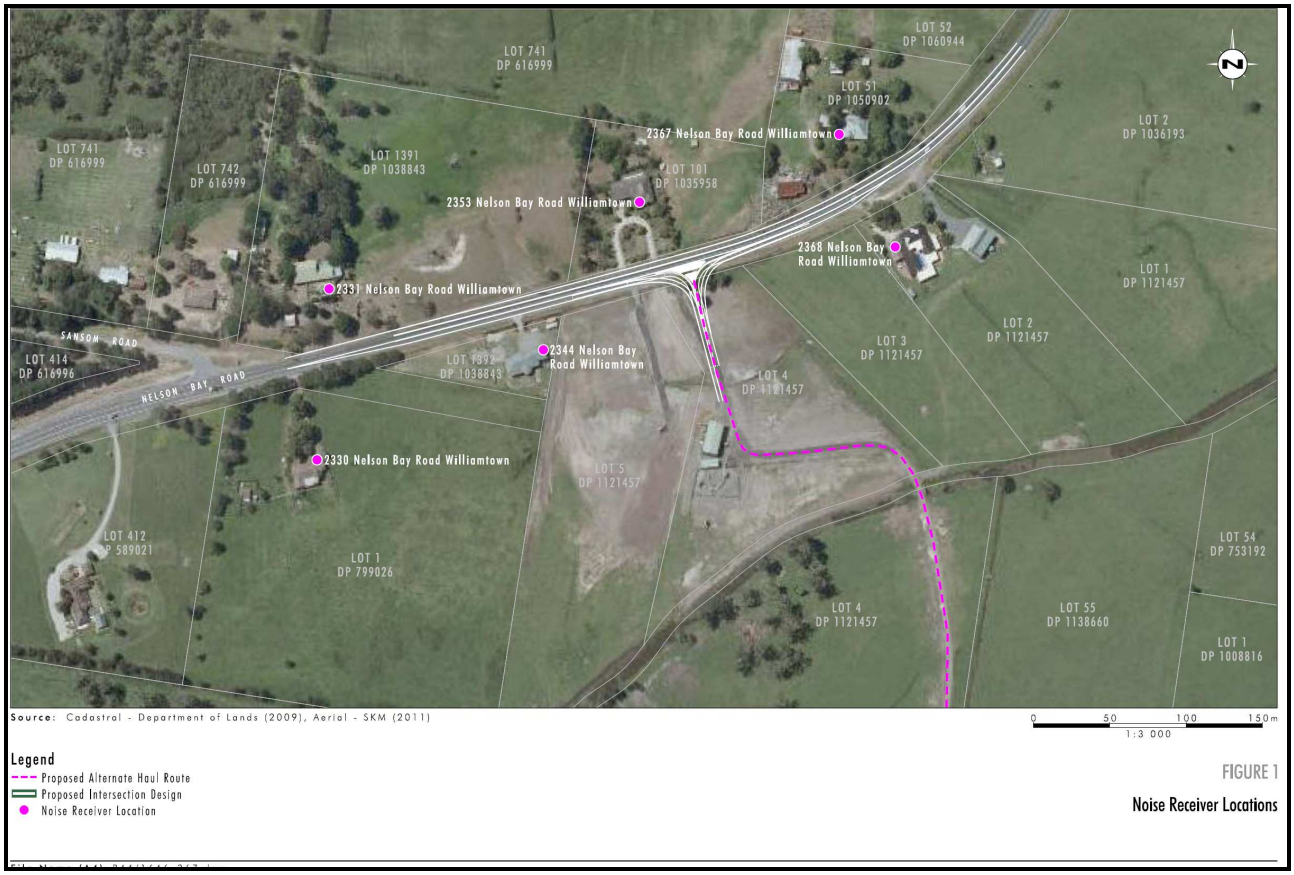

Figure 7: *Noise receiver locations*

Apart from noise assessments for the day, evening and night periods, a further assessment was undertaken for a "morning shoulder" period (ie 5 am – 7 am), which is usually treated as part of the night period under the INP. The NIA reports that background noise levels substantially increase around 5 am, and that these levels are at least as high as (and possibly higher than) those recorded during the day period. Due to this increased background noise during the morning shoulder period, the INP provides for its separate assessment. The NIA then considered two operating scenarios - 16 truck movements per hour (ie 8 laden trucks) on the alternate access road and 10 truck movements per hour (ie 5 laden trucks). The resulting predictions are shown in Table 1.

Table 1: *Alternate Access Road Noise Predictions*

Nelson Bay Road Residence	***PSNL dB(A) LAeq(15 min)***	***Maximum predicted noise level dB(A) LAeq(15 min)***	
	Day/Evening/Night/Morning Shoulder	***16 truck movements per hour***	***10 truck movements per hour***
2330	43 / 43 / 35 / 39	34	32
2344	43 / 43 / 35 / 39	**40**	38
2331	43 / 43 / 35 / 39	34	32
2353	43 / 43 / 35 / 39	**41**	39
2367	43 / 43 / 35 / 39	38	36
2368	43 / 43 / 35 / 39	**40**	38

As Table 1 shows, noise from 10 trucks per hour would meet all applicable PSNLs at all nearby residences. However, during the morning shoulder period, the applicable PSNL would be exceeded by noise from 16 trucks per hour at the 3 closest residences to the intersection (ie those within 125 m of the alternate access road). Consequently, Mackas Sand has committed to limiting its transport operations to 10 trucks per hour during the morning shoulder period, to ensure that it complies with the applicable limit at all nearby residences.

The NIA was based on three important assumptions, as follows:

- noise emissions were modelled for trucks travelling at a speed of 40 km/hour;
- trucks do not employ engine brakes; and
- at least the first 200 m of the alternate access road from Nelson Bay Road is tar-sealed.

The implementation of these assumed actions is critical to the project meeting the predicted noise levels in Table 1. Therefore the Department has recommended conditions of approval which set a speed limit on the alternate access road of 40 km/hour, prohibit the use of engine brakes on the approach to the Nelson Bay Road intersection (either inbound or outbound) and require the first 200 m of the alternate access road to be tar-sealed.

Sleep Disturbance

Mackas Sand also assessed sleep disturbance impacts at residences close to the proposed intersection with Nelson Bay Road. Sleep disturbance is measured over a one-minute time frame, as noise impacts that are likely to awaken persons are usually loud noises of short duration.

However, an unusual set of circumstances apply to the assessment of sleep disturbance impacts for the proposed modification. These circumstances include that:

- no night-time operations are proposed, except for up to 10 truck movements (5 laden) during the "morning shoulder" period of 5.00 am – 7.00 am;
- sleep disturbance criteria (ie night-time criteria) may not be appropriate in a "morning shoulder" period;
- sleep disturbance impacts would only affect the four residences on Nelson Bay Road which are located close enough to the proposed intersection for noise from the access road to be audible;
- between 5.00 am – 7.00 am on weekdays (and particularly between 5.00 am – 6.00 am), Nelson Bay Road carries a large amount of commuter traffic, with high background noise levels – measured to be 59.5 dB(A) averaged over this one hour period; and
- these measured traffic noise levels between 5.00 am – 6.00 am on Nelson Bay Road are already in excess of the worst-case sleep disturbance predictions at the four closest residences for truck movements on the access road.

For example, between 5.00 am – 6.00 am on weekdays, 2353 Nelson Bay Road (see Figure 7) is predicted to receive project noise of 55 dB(A) over a one minute period. It is therefore unlikely that these residents would be able to distinguish between the short-term noise generated by any one of up to five laden sand trucks and the high background traffic noise from Nelson Bay Road (measured at up to 59.5 dB(A) $LAeq_{(60\ min)}$), to the degree likely to result in being woken from sleep.

However, between 5.00 am – 6.00 am on Saturdays, where the measured background noise level is much lower than that of the corresponding weekday period, project noise over a one minute period at 2353 Nelson Bay Road would exceed the applicable sleep disturbance criterion of 51 dB(A).

The Department considers that the proposed mitigation measures (limited total hourly truck movements, prohibition of engine brake use, a 40 km/h speed limit and tar-sealing part of the access road) are more likely to ensure that actual noise levels from sand trucks do not exceed those to which residents on Nelson Bay Road are already subject. It is also important to note that Mackas Sand would be required to comply with the PSNLs in Table 1, including that for the morning shoulder period (39 dB(A) $LAeq_{(15\ min)}$). This level is substantially less than the existing background noise from commuter traffic on Nelson Bay Road.

The Department is therefore satisfied that the proposed mitigation measures and the application of the PSNLs as project noise impact limits would sufficiently reduce the risk of sleep disturbance occurring from trucks on the alternate access road. Accordingly, the Department believes that sleep disturbance criteria are unwarranted for the proposed modification.

Traffic Noise

The EA also included a traffic noise assessment (see Appendix C), which predicted the impact of Mackas Sand's trucks travelling on existing public roads, ie the newly-affected section of Nelson Bay Road. The Department notes that current road traffic noise levels already exceed the relevant road traffic noise criteria at 4 of the 6 assessment locations.

The assessment found that traffic noise from the proposed modification would at worst add 1.4 dB(A) to the total traffic noise level on this section of Nelson Bay Road. Therefore the cumulative traffic noise level, including noise from the modified project, would comply with the allowable increase of 2 dB(A) under the relevant Government policy (the EPA's *Environmental Criteria for Road Traffic Noise*). The Department is therefore satisfied that this predicted increase in traffic noise, over a 3 km section of Nelson Bay Road, would not be significant.

Increased Transportation Hours

Mackas Sand proposes to increase its approved transportation hours for Lot 218. The current approved transportation hours (using the existing approved access road) are:

- 6.00 am – 6.00 pm Monday to Friday (Eastern Standard Time – EST);
- 6.00 am – 7.00 pm Monday to Friday (Daylight Saving Time – DST);
- 7.00 am – 4.00 pm Saturdays; and
- no transportation on Sundays or Public Holidays.

However, these transportation hours can be extended to between 5.00 am – 10.00 pm Monday to Saturday, and between 8.00 am – 12.00 pm on Sundays and Public Holidays, if Mackas Sand secures the written agreement of all residential landowners who front Lavis Lane.

Mackas Sand now wishes to transport sand from Lot 218 using the proposed alternate access road between the following times:

- 5.00 am – 10.00 pm Monday to Saturday; and
- 8.00 am – 12.00 pm on Sundays and Public Holidays.

The Department's consideration of the noise amenity of nearby residents for the original project led to approval conditions requiring Mackas Sand to reach agreement with Lavis Lane residents to extend its transportation hours beyond the approved hours. A similar requirement also applies at Lot 220, where Mackas Sand has since gained the agreement of the landowners of Oakvale Drive for extended transportation hours. The Department considers that the noise amenity of affected residents near the intersection of the alternate access road with Nelson Bay Road is therefore a key issue.

The Department acknowledges that the receiving environment would be different if the alternate access road was used in preference to the approved access road, in that no residences would front this road, and the closest residences instead front Nelson Bay Road (see Figure 7). Mackas Sand provided the following justification for its request for extended transportation hours at Lot 218 using the alternate access road:

- no landowner agreements for extended transportation hours would be required;
- uniform transportation hours would apply across both extraction sites;
- it has committed to restrict total truck movements from both sites on Sundays and Public Holidays to those approved for Lot 220 alone (ie 5 laden trucks per hour); and
- in situations where general construction sand is required on a campaign basis over weekends and/or Public Holidays, Lot 218 would be the preferred supply site, as Lot 220 sand is more suited to specialised uses (ie glass-making).

However, the Department considers that the amenity of the most noise-affected residents should be protected where possible, particularly during periods when traffic levels and resulting noise levels are lower (eg early mornings on weekends, and on Sundays and Public Holidays). The Department's key consideration for this issue is that Mackas Sand's trucks would be a dominant noise source at the closest residences to the intersection during the hours outside the approved transportation hours, and therefore more likely to be noticeable above other noise sources received at those residences.

The Department is therefore not persuaded that the approved transportation hours at Lot 218 should be extended if the alternate access road is used, without Mackas Sand first reaching agreement with the closest affected residents on Nelson Bay Road. The Department has accordingly recommended that the currently approved transportation hours also apply to the use of the alternate access road, and that Mackas Sand must obtain the agreement of the owners of 2344, 2353 and 2368 Nelson Bay Road (ie the most affected

residences in terms of operational noise impacts), before these transportation hours can be increased. Mackas Sand has recently advised that it has already reached agreement with all three affected landowners.

The Department also considers that, as the ability for Mackas Sand to use the approved access road would be retained in the approval, the existing requirement for it to gain the agreement of Lavis Lane residents before increasing its transportation hours from Lot 218 (if the approved access road is used) should likewise be retained.

Conclusion

The Department recognises that the noise environments of the approved access road and the alternate access road are different. The Department believes that the noise impacts of the modified project would not be significant if reasonable and feasible measures, including restricting the total hourly truck movements, speed restrictions and tar sealing part of the alternate access road are implemented. However, the Department considers that increasing the approved transportation hours could reduce the amenity of nearby residents, particularly on weekends and Public Holidays. Therefore the Department considers that transportation hours on the alternate access road should remain as currently approved for the approved access road, unless Mackas Sand reaches agreement with the most affected landowners on Nelson Bay Road to effect an increase to these hours.

The Department's recommended conditions of approval would also ensure that noise minimising driving practices are used on and near the alternate access road. Limits on total hourly truck movements at critical times would also ensure that Mackas Sand is able to comply with its approved noise limits.

5.4 Biodiversity

The EA reviewed the ecological assessments for the original project application, and reported the outcomes of additional on-ground surveys of the proposed disturbance area. The proposed access road uses existing tracks where possible, and would disturb 2.03 hectares (ha) overall. A total of 1.55 ha of native vegetation would be cleared, of which 1.18 ha is disturbed grassland and 0.37 ha is native vegetation (*Coastal Sand Apple – Blackbutt Forest*).

Flora

Flora surveys were undertaken in July and September 2012. No threatened flora species or endangered flora populations were recorded along the proposed alignment of the alternate access road.

Targeted orchid surveys identified Sand doubletail (*Diuris arenaria*) in a previously recorded location adjacent to the alternate access road, but not in the proposed disturbance area. Additional surveys for the previously recorded Newcastle doubletail *(Diuris praecox)*, undertaken in September and October 2012 failed to locate any flowering specimens of this species. OEH raised concerns with the survey effort, as Mackas Sand did not undertake a targeted survey for a small section of the haul road, and also the timing of surveys, as the flowering season for these species is July-August. Mackas Sand justified its survey effort and results, stating that the section of the road not surveyed does not contain habitat for orchid species and would therefore be unlikely to yield any specimens, and also stating that Newcastle Doubletail could have either flowered early or not at all during 2012. It also pointed to a reference site in the local area where this species did not flower during the known season.

The EA also recognised that the Leafless tongue orchid (*Cryptostylis hunteriana*), also listed under the TSC Act, has the potential to occur within the disturbance area. Mackas Sand surveyed for this species in January 2013, and did not record any individuals of this species.

The flora assessment concluded that each of these orchid species are likely to be well-represented in the vicinity of the proposed disturbance area, as a significant amount of suitable similar habitat exists within the Worimi Conservation Lands. The Department is therefore satisfied that the proposed modification would be unlikely to result in significant impacts to these, or any other threatened flora species.

Fauna

No threatened fauna species were recorded within the proposed disturbance area, however one threatened fauna species, the Grey-crowned babbler *(Pomatostomus temporalis temporalis)* was recorded within the wider study area. The EA also found that the disturbance area contains suitable habitat and nesting resources for a number of fauna species.

Council expressed concerns about potential impacts to Koalas. However, the proposal would not disturb core Koala habitat and only disturb 0.09 ha of supplementary Koala habitat. The Department considers that the movement of Koalas would not be significantly impacted by the proposed modification, given the available and significant habitat linkages existing throughout the Worimi Conservation Lands.

Mackas Sand would implement a range of strict measures during construction of the alternate access road, to minimise impacts to threatened fauna species and their habitats. These measures include:

- clear marking of the proposed disturbance area;
- pre-marking all habitat structures;
- gradual disturbance, and slow-felling of trees; and
- capture and relocation of fauna which do not immediately move into adjacent areas.

The Department considers that the clearing of 0.37 ha of vegetation to construct the southern section of the alternate access road would be unlikely to significantly impact any threatened fauna species, given the strict measures that would be applied to clearing, the significant amount of similar habitat which exists in the vicinity of the disturbance area, and that Mackas Sand would provide adequate offsets for the clearing (see "Offsets" section below). The Department is therefore satisfied that the proposed modification would be unlikely to result in significant impacts to threatened fauna species.

Offsets

To offset the proposed native vegetation clearing, Mackas Sand proposes the long-term conservation of a 1 ha area of Lot 122 DP 753192, adjoining the Worimi Conservation Lands. The proposed offset area contains *Coastal Sand Apple – Blackbutt Forest*, and is known to contain populations of Sand doubletail and Newcastle doubletail orchids. This offset is a multiple of 2.7 times the area of undisturbed native vegetation (ie the 0.37 ha of *Coastal Sand Apple – Blackbutt Forest*). OEH has reviewed the offset proposal, and given in-principle approval to it, subject to the application of suitable long-term security arrangements. The Department has accordingly recommended conditions of approval which require:

- the proposed offset area to be secured, in perpetuity; and
- a Biodiversity Offset Strategy to be prepared and implemented for the offset area, in consultation with OEH, and to the satisfaction of the Department.

Controlled Action

It is noted that the proposed modification represents a "controlled action" under the Commonwealth's *Environment Protection Conservation Act 1999*, due to the Commonwealth's view on the potential for the alternate access road to cause impacts to the habitat of:

- Rough Doubletail orchid (*Diuris praecox*);
- Leafless tongue orchid (*Cryptostylis hunteriana*);
- Charmhaven apple (*Angophora inopina*);
- New Holland mouse (*Pseudomys novaehollandiae*);
- Long nosed potoroo (*Potorous tridactylus tridactylus*);
- Grey-headed flying fox (*Pteropus polilcephalus*);
- Large-eared pied bat (*Chalinolobus dwyeri*);
- Spotted-tailed quoll (*Dasyurus maculates*);
- Regent honeyeater (*Anthochaera Phrygia*); and
- Swift parrot (*Lathamus discolour*).

None of the above species were recorded during the site surveys for the proposed modification. However the assessment recognised that the study area contains vegetation which could constitute habitat for most, if not all, of the above listed species.

The Department notes that the Part 3A assessment process has not been accredited for this application, and therefore Mackas Sand would be required to gain a separate approval from the Commonwealth Government prior to disturbing any vegetation to construct the alternate access road.

Conclusion

The Department is satisfied that the proposed modification would be unlikely to cause significant biodiversity impacts due to the minor amount of proposed clearing, that the Worimi Lands represent a large amount of habitat and that an appropriate offset strategy would be implemented.

The Department is also satisfied that with the implementation of Mackas Sand's impact minimisation measures during clearing, and the implementation of a Biodiversity Offset Strategy, including the long-term

conservation of land with similar habitat characteristics, would ensure that the biodiversity impacts of the proposed modification do not

To further mitigate biodiversity impacts, Mackas Sand would also re-establish the vegetation communities that are proposed to be disturbed, as part of its rehabilitation strategy.

5.5 Aboriginal Cultural Heritage

The EA includes a cultural heritage assessment of the lands proposed to be disturbed by the construction of the alternate access road. The assessment located four previously unidentified Aboriginal cultural heritage sites on land owned by Mackas Sand (ie outside of the existing Worimi Conservation Lands) that would be disturbed by the proposed alternate access road. The assessment considered that this archaeological material is likely to be comparable to other sites in the local area, and of not greater than low to moderate scientific significance. However, the local Aboriginal community disagrees with this view, and considers that all Aboriginal heritage sites are of high cultural significance.

To limit potential Aboriginal cultural heritage impacts, Mackas Sand proposes to use existing disturbed and cleared areas wherever possible. Where impacts to cultural heritage sites and/or artefacts cannot be avoided, surface artefacts would first be salvaged in consultation with the Aboriginal community.

The route would be marked prior to construction, and the project's Aboriginal Heritage Management Group (AHMG) would inspect the initial construction works and undertake salvage activities if required. Vegetation clearance would be staged to further limit impacts to sites and artefacts and allow their salvage. After salvage, a layer of geotextile material would be placed on the ground surface of the site, prior to additional fill being placed for road construction. This would offer some protection to any sub-surface artefacts against further disturbance.

Some Aboriginal stakeholders do not support the proposed modification, due to the potential additional impacts to the cultural significance of the wider Worimi Conservation Lands. However the Department considers the proposed road construction would only impact a limited number of sites, and would be unlikely to significantly impact the wider cultural landscape or significance of the Worimi Conservation Lands. The proposed access road would disturb an area of only 2.03 ha, whereas the Worimi Conservation Lands comprise some 5,000 ha.

Mackas Sand's approved Aboriginal Cultural Heritage Management Plan (ACHMP) would also apply to the proposed modification. The plan includes management protocols which cover:

- engagement and consultation with the Aboriginal community;
- consultation and access for the Aboriginal community during initial ground disturbance works;
- salvage and storage of artefacts; and
- impact management and mitigation procedures in the event that unforeseen impacts occur.

The Department considers that these protocols are appropriate to manage any additional Aboriginal cultural heritage impacts during construction and operation of the alternate access road. OEH recommended that the ACHMP should be updated, and that ongoing consultation should occur with the Aboriginal community, given its objections to the proposal. The requirement to update this plan is already provided for in the current approval conditions, and as noted above, the AHMG would be consulted during construction of the road. Therefore the Department considers that no additional conditions of approval are necessary for the proposed modification to address Aboriginal cultural heritage impacts.

5.6 Groundwater

The extraction areas overlie the Stockton Sandbeds, which contain a regionally-significant groundwater source extending from Newcastle to Port Stephens. Existing project approval conditions require the extraction floor to remain no less than 2 m above the groundwater level in an average rainfall year; and no less than 1 m above the maximum predicted groundwater level (see Figure 8). Mackas Sand is proposing to increase the maximum extraction depth to 0.7 m above the maximum predicted groundwater level.

Table 2 compares the proposed modified extraction depths with the approved extraction depths, the average groundwater levels and maximum predicted groundwater levels. The EA's groundwater assessment considered the potential impact of this proposed variation to the HWC's emergency groundwater supply borefield, which is located between the two extraction sites (also see Figure 8).

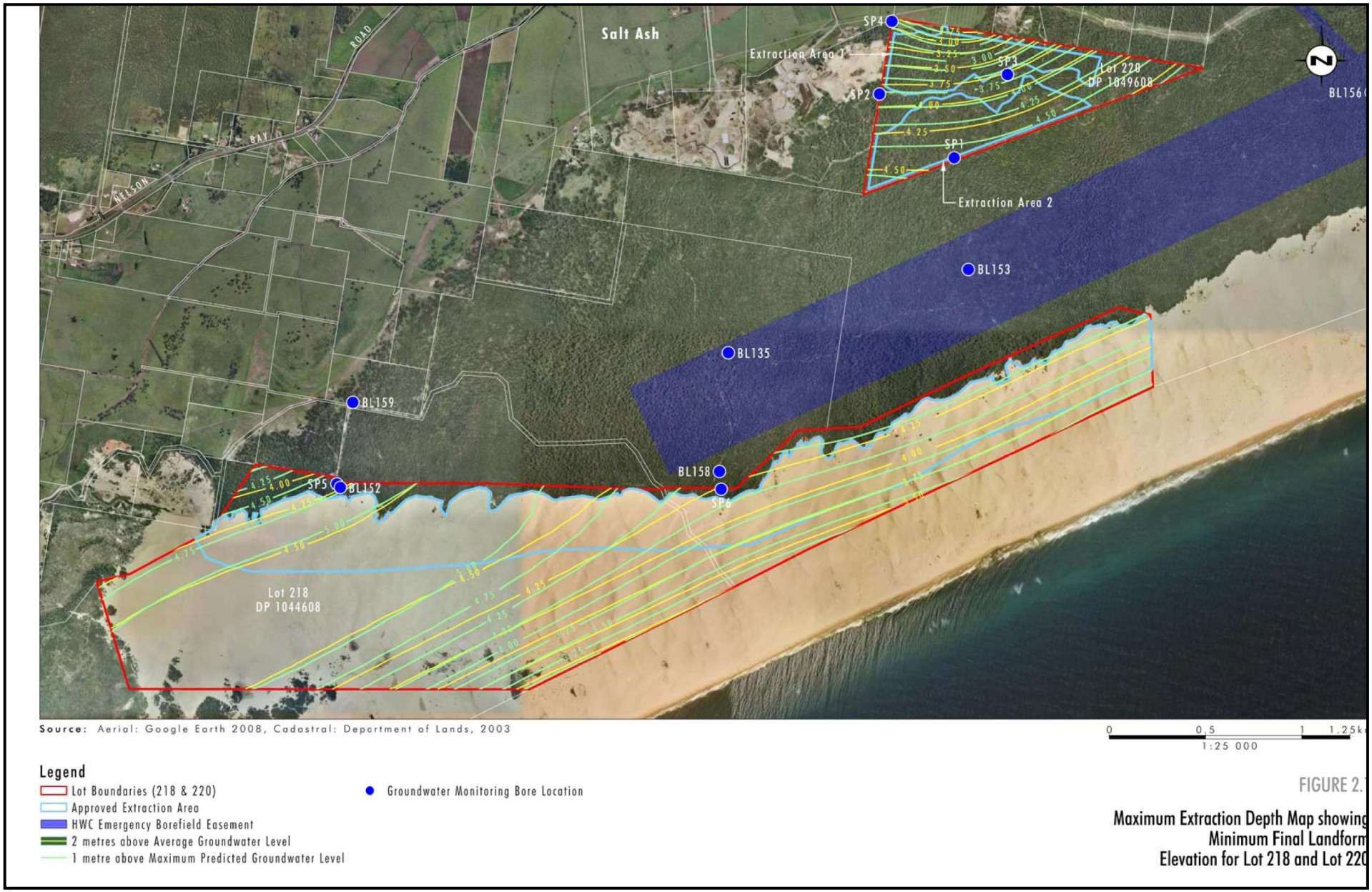

Figure 8: *Groundwater environment at Lot 218 and Lot 220*

Table 2: *Average and maximum groundwater levels, and approved and proposed maximum extraction depths (mAHD)*

Site	***Average groundwater level***	***Maximum predicted groundwater level***	***Approved maximum extraction depth***	***Proposed maximum extraction depth***
Lot 220 (southeast corner)	2.25 m	3.4 m	4.4 m	4.1 m
Lot 220 (northwest corner)	0.75 m	1.25 m	2.75 m	1.95 m
Lot 218 (southeast corner)	1.75 m	2.75 m	3.75 m	3.45 m
Lot 218 (southwest corner)	2.5 m	4.0 m	5.0 m	4.7 m

The assessment determined that groundwater drains from the linear topographic high of the Stockton Bight Sand Dunes to both the northwest and southeast. The groundwater contours on Figure 8 indicate this northwesterly drainage from much of the western part of Lot 218, and the drainage downslope towards the Pacific Ocean from the remainder of the site. Groundwater from the Lot 220 extraction area drains northwesterly towards Tilligery Creek.

Neither site has groundwater drainage predominantly towards the borefield supply area. Therefore, the proposed increase in maximum extraction depths would not be expected to significantly impact the intake of groundwater into the easement, or its drainage paths, as the resulting extraction floor levels would remain well above average and maximum predicted groundwater levels (see Table 2). The project involves harvesting mobile sand dunes, and not the underlying landform. Therefore, any additional impacts to the Stockton Sandbeds groundwater resource from the proposed increase in extraction depth would not be expected to be significant.

HWC and NOW did not object to this proposed modification, providing that Mackas Sand restores the final landform to the approved levels. NOW also indicated that the project's existing approval under clause 10 of the *Hunter Water Regulation 2010* would not require to be modified.

However, the EPA offered a different opinion to that of HWC and NOW, raising concerns with regard to the proposed increase in extraction depth at Lot 218. EPA's position was based on its concern that the Lot 218 extraction face (unlike at Lot 220) would not be revegetated, and that the constant replenishment of wind-blown sand from Stockton Bight and the resulting static nature of the extraction face would delay the restoration of the final approved ground surface for a significant period of time (and possibly decades). EPA further stated that this increased period of exposure at Lot 218 may allow oxidation of significant amounts of metals such as arsenic, iron and manganese to occur, and to a lesser extent, chromium, cobalt and zinc (which have been recorded at sites in the Tomago Sandbeds which have a 1 m buffer to the maximum predicted groundwater level).

Capillary action is the mechanism which drives the oxidation of metals. This process draws water upwards from the saturated zone towards the drier surface. It is precisely this mechanism which Mackas Sand seeks to utilise, to provide a firmer footing for its equipment on the extraction floor. This water contains dissolved metals, which are precipitated primarily due to oxidation in the non-saturated zone, but also when dissolved metal concentrations exceed their solubility curve as a result of evaporation. As pointed out by EPA, this risk could continue for a considerable period of time. The Department shares the EPA's concerns on this issue.

Mackas Sand argued that, since the extraction floor would remain at least 0.7 m above the highest predicted groundwater level, a significant buffer would remain above the groundwater table and therefore its operations would be unlikely to result in the oxidation of metals or acid generating species in the soil profile, such as metallic sulphides, which may consequently form acid sulphate soils. EPA accepted this argument, however it recommended that core sediment test sampling is undertaken at Lot 218 to ensure that the risk of contamination is eliminated before extraction to 0.7 m above the maximum predicted groundwater level is allowed.

The Department also considers that this issue requires careful management, and has recommended that a sampling program is undertaken at Lot 218 in consultation with EPA, prior to the commencement of extraction. This sampling program, which would be an addition to the existing Soil and Water Management Plan for the site, would confirm whether increasing the extraction depth could occur without resulting in the oxidation of metals, and detect the likely presence and depth of acid sulphate soils in the extraction area.

Groundwater monitoring networks established for the project and by HWC (see Figure 8) would continue to monitor the project's groundwater impacts. The proposed change to the maximum extraction depth would also more closely align conditions of approval for the Mackas Sand Project with those that apply to other

sand extraction operations in the Stockton Bight area that have been approved since 2009. These other operations are allowed to extract to within 0.7 m of the maximum predicted groundwater level, and have been supported by NOW and HWC, where applicable. The more stringent conditions first applied to the Mackas Sand Project reflected the uncertainty at that time as to the likely level of impact, which has since been reduced in light of monitoring undertaken in the area, including the monitoring required under the current conditions of approval.

The Department considers that if above risk management framework is applied, the requirement for the extraction depth to also remain at least 2 m above the average groundwater level can be removed from the approval. This is substantiated by groundwater monitoring, which indicates that there is little difference in the maximum and average groundwater levels in the majority of the approved Lot 218 extraction area (see Figure 8).

To ensure groundwater impacts continue to be closely managed for the modified project, the Department has recommended that Mackas Sand reviews and revises its approved Soil and Water Management Plan. The Department is also satisfied that Mackas Sand would be able to successfully rehabilitate the two sites to the approved ground surface levels on completion of the project, and in accordance with the approved Landscape Management Plan.

5.7 Need for an Alternate Access Road to Lot 218

The justification for the alternate access road to Lot 218 can be summarised as the failure of Mackas Sand and the local family to reach a commercial agreement for the use of private lands over which the approved access road must traverse. This dispute is described by the parties as either a dispute over whether an agreement actually exists, or the specific terms of such an agreement. The proposed alternate access road would allow access to Lot 218 using other lands, therefore obviating the need for any commercial agreement.

The EA further justifies the alternate access road on the basis that:

- that potential unexploded ordnance (UXO) areas would be avoided;
- that impacts to a particular high dune used by the Worimi LALC as a viewing platform by tour groups would be avoided; and
- that amenity impacts for Lavis Lane residents from sand haulage trucks would be avoided.

However, these benefits should be weighed against the potential impacts of the proposed modification, which include the requirement for returning trucks to travel up to an additional 6 km via the Richardson Road roundabout to use the proposed LILO intersection, some potential noise impacts for residents near the proposed intersection, potential disturbance of additional Aboriginal cultural heritage sites and artefacts, and biodiversity impacts from the proposed clearing of 0.37 ha of native vegetation.

The Department previously considered all impacts associated with the approved access road in its 2009 assessment of the project. This assessment found these impacts would not be significant if managed carefully, and with the application of strict conditions of approval. In particular, the issue of UXO risk management was addressed through an UXO Management Plan, prepared by an eminent expert, such that any operational risks would be reduced to the lowest levels practicable. Potential impacts at Lavis Lane residences from sand haulage trucks are known, and would be adequately managed and/or mitigated under existing conditions of approval.

In environmental terms, the Department considers both the approved and proposed alternate access roads to be broadly equivalent in terms of benefits and impacts. The proposed alternate access road does not represent a manifestly superior alternative to the approved access road. The application of appropriate and robust conditions (both existing and proposed) would reduce any residual impacts to low levels in each case.

The choice between the two options is largely dependent on Mackas Sand's commercial considerations. However, it is quite reasonable for Mackas Sand to seek to take such considerations into account, and to propose alternatives if it considers that there are good commercial reasons to do so. That is, it is quite reasonable that it seeks to remove any impediment to acting on its existing approval to extract and transport sand from Lot 218.

Neither Mackas Sand nor any other party has advanced strong reasons why the existing approved access route should be deleted from the approved project. The Department therefore considers that the option for Mackas Sand to use the approved access road should remain, subject to one minor change to existing

conditions of approval. This change would accelerate the timing of the approved Lavis Lane upgrade works from "within 6 months of the commencement of operations on Lot 218", to "prior to the commencement of transportation operations on Lavis Lane". This change would align the timing requirements for approved roadworks at the approved access road and for the proposed roadworks at the alternate access road.

Accordingly, while the Department supports the proposed alternate access road, it also supports retaining the option to construct the approved access road, if in future a commercial agreement is reached between Mackas Sand and the private landowners. The Department's recommended modified conditions for the roadworks therefore reflect both outcomes.

5.8 Other Issues

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

Table 3: *Consideration of Other Issues*

ISSUE	CONSIDERATION	RECOMMENDATION
Air quality	• No additional air quality impacts would be expected from the modified project. • Mackas Sand has committed to tar seal the first 200 m of the proposed access road from its intersection with Nelson Bay Road prior to transport commencing from Lot 218. This would limit air quality impacts from the alternate access road at the closest residences to the intersection with Nelson Bay Road. • The remaining sections of the alternate access road would be unsealed, however Mackas Sand would regularly water these sections as necessary, to limit dust generation.	• The first 200 m of the proposed access road from its intersection with Nelson Bay Road to be tar sealed prior to transport commencing from Lot 218.
Surface water	• The proposed modification is not expected to increase the surface water impacts of the project. • The alternate access road would be constructed to avoid flood impacts, and appropriate erosion and sediment control structures would be installed. • The alternate access road would cross Tilligerry Creek, however an appropriate culvert exists at this point which would not require upgrading.	• No additional specific conditions of approval required to manage surface water impacts. • Review and update the Soil and Water Management Plan to reflect the proposed modification.
Rehabilitation	• Rehabilitation would be undertaken in accordance with Mackas Sand's approved Landscape Management Plan (LMP). • The proposed increase in extraction depths would not affect the planned final landforms at both Lot 218 and Lot 220. • Mackas Sand would rip and rehabilitate the alternate access road if it is no longer required for use following the completion of the project, and in accordance with the approved LMP. • Rehabilitation would aim to re-establish the cleared native vegetation communities, and completion monitoring would be undertaken in accordance with processes outlined in the LMP.	• No additional specific conditions of approval required for site rehabilitation. • Review and update the approved LMP to reflect the proposed modification.
Extraction Boundaries Definition	• GPS is a widely used survey technique. • Given its reliability, the Department supports the use of GPS techniques to define all extraction boundaries.	• Permit the use of GPS techniques to define extraction boundaries.
Public Access	• The alternate access road crosses three portions of land which are set aside as undeveloped (ie paper) Crown roads, and also an undeveloped section of a Council-owned public road (Stockton Bight Track). • Mackas Sand has entered into an agreement with CLD to purchase the land which forms the Crown roads. CLD requested that the public's right of access to this land is unaffected until after the purchase is finalised and the land is transferred to Mackas Sand. • Public access to Stockton Bight Track would not be restricted.	• Public access to the affected Crown roads must not be restricted whilever these roads are publicly owned. • Public access to Stockton Bight Track to be maintained.

6. RECOMMENDED CONDITIONS

The Department has recommended conditions of approval for the proposed modification, and has drafted a Notice of Modification (see Appendix A). The conditions are mainly required to:

- ensure that the construction and operation of the alternate access road to Lot 218 occurs with minimal environmental impacts;
- limit the maximum extraction depths at both extraction lots, while minimising the risk to groundwater contamination; and
- provide for the review of approved management plans, strategies and programs.

The Department has also taken the opportunity to contemporise the approval by updating various definitions. Mackas Sand has reviewed and accepts the recommended conditions.

7. CONCLUSION

Mackas Sand wishes to modify the project approval for the Mackas Sand Project, to allow for the construction and operation of an alternate access road to Lot 218, to increase its hours of transportation from Lot 218, to increase the maximum extraction depths at both Lot 218 and Lot 220, and to allow GPS techniques to be used to define its extraction boundaries.

The Department has assessed the modification application, EA, the submissions received during and following the exhibition period, and Mackas Sand's response to submissions, in accordance with the relevant requirements of the EP&A Act. This assessment has found that:

- operation of the alternate access road would not significantly impact existing traffic flows on Nelson Bay Road or at the Richardson Road roundabout;
- noise impacts of the proposed modification would remain within acceptable regulatory limits;
- noise amenity for the closest residents would be protected where possible;
- the cultural heritage values of the Worimi Conservation Lands would not be significantly impacted;
- a proposed increase in the maximum extraction depth would not have any significant groundwater impacts at Lot 220, but any increased extraction depth at Lot 218 should only be allowed following confirmation that increasing the extraction depth would not activate acid sulphate soils;
- native vegetation clearing would not significantly impact any threatened species, and any unforeseen biodiversity impacts would be compensated through a biodiversity offset strategy;
- the ability for the company to develop and use the approved access road to Lot 218 should not be precluded; and
- all other impacts of the proposed modification would not increase over those already assessed and approved for the original project.

The Department is therefore satisfied that the potential environmental impacts of the proposed modification would not be significantly increased over that already assessed and approved. The Department recognises the importance of the proposed modification to the commencement of extraction at Lot 218. The Department also recognises that the modified project would continue to provide considerable socio-economic benefits for the Worimi LALC and the local Aboriginal community, and would generate considerable long-term income to fund the Worimi LALC's cultural heritage programs, social programs and environmental programs.

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 conditions.

8. RECOMMENDATION

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

- **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 A).

Howard C Reed

Howard Reed 19.8.13
Manager, Mining Projects

DKitto 20/8/13

David Kitto
A/Executive Director
Development Assessment Systems and Approvals

APPENDIX A – NOTICE OF MODIFICATION

APPENDIX B – PROJECT APPROVAL (AS MODIFIED)

APPENDIX C – ENVIRONMENTAL ASSESSMENT

APPENDIX D – SUBMISSIONS

APPENDIX E – RESPONSES TO SUBMISSIONS & REQUESTS FOR INFORMATION