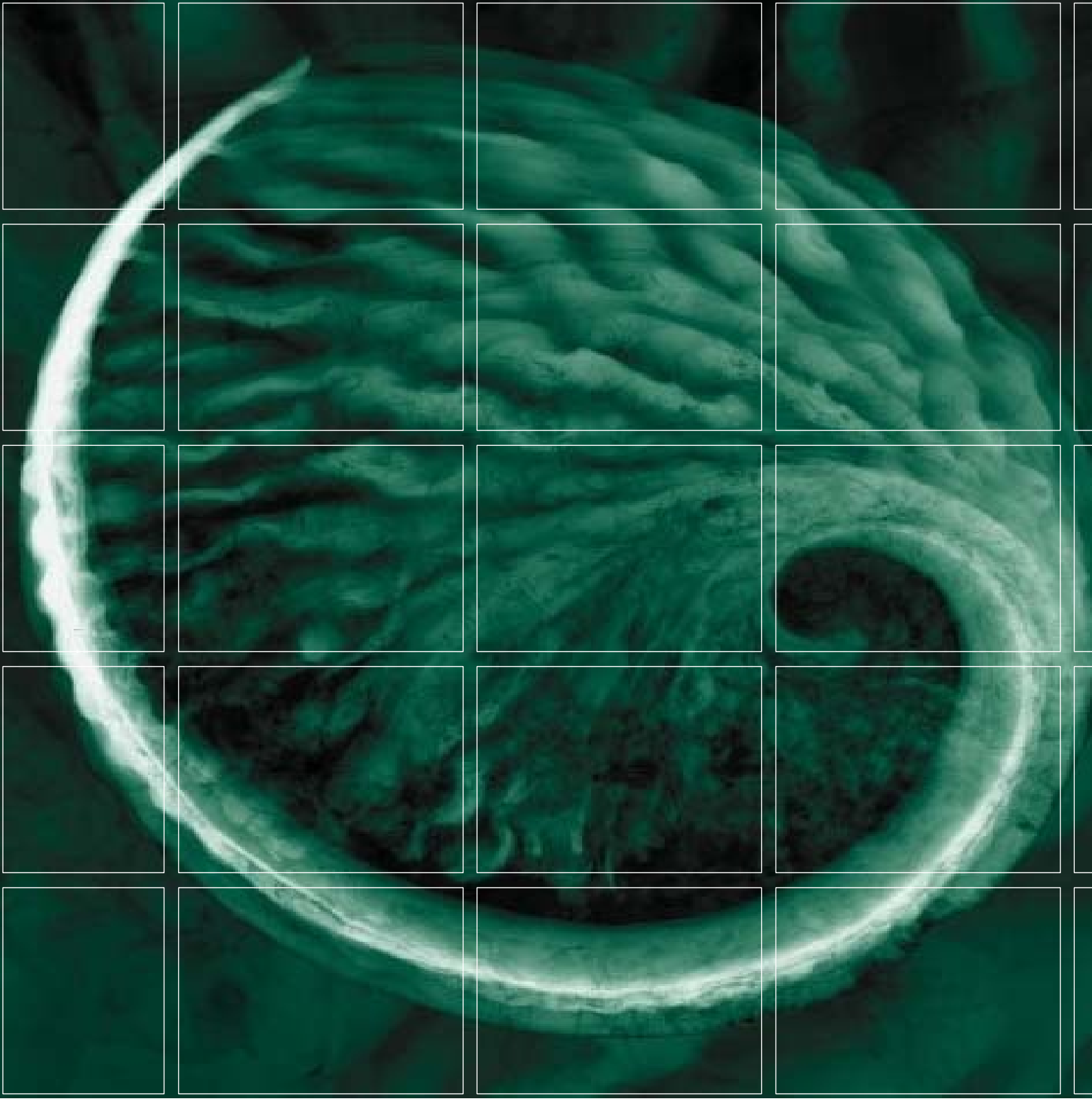

Section 96 Modification for Dixon Sand Pty Ltd

Statement of Environmental Effects

Dixon Sand (Penrith) Pty Ltd

August 2007
0069309S96 Final
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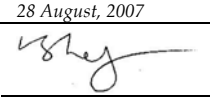
ERM

Approved by:	*Tanya Phillips*
Position:	Project Manager
Signed:	
Date:	*28 August, 2007*
Partner:	
	Mike Shelly

Environmental Resources Management Australia Pty Ltd Quality System

Section 96 Modification for Dixon Sand Pty Ltd

Statement of Environmental Effects

Dixon Sand (Penrith) Pty Ltd
August 2007
0069309S96 Final

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This report has been prepared in accordance with the scope of services described in the contract or agreement between Environmental Resources Management Australia Pty Ltd ABN 12 002 773 248 (ERM) and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and ERM accepts no responsibility for its use by other parties.

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EXECUTIVE SUMMARY

This Statement of Environmental Effects accompanies a modification application for Development Consent 250-09-01 which covers the operation of a sand quarry and processing facilities on Lots 1 and 2, DP 547255 and Lots 196 and 29 DP 752025 Old Northern Road, Maroota.

In summary, this application is seeking to modify the existing consent conditions to enable the number of truck movements to be increased from 120 to 180 per day. There would be no increase in the total volume of fill removed from the site.

The report and the accompanying Traffic Impact Assessment dated May 2007 (Annex A) demonstrate that the proposed modification would have minimal impact on the surrounding environment.

The traffic assessment report concluded the following:

- *access to the site is provided by a Type BAR intersection off Old Northern Road. The proposed additional truck movements will continue to operate well through this intersection. There will be minimal changes to the operation of this intersection and the traffic flows will be well within the threshold limits identified by Austroads for at grade intersections;*

- *the existing intersection provides a clear and safe egress/entry point. The visibility splays have been checked and exceed the requirements of the RTA Road Design Guide; and*

- *there have been no reported accidents at the site entry associated with the truck movements. Additional truck movements will have a minimal impact upon existing road safety. The additional 60 truck movements per day represent an increase of 1.8% over the current flows along Old Northern Road.*

1 INTRODUCTION

1.1 BACKGROUND

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by Dixon Sand (Penrith) Pty Ltd (Dixon Sand) to prepare a Statement of Environmental Effects to accompany a Section 96 modification application to the Department of Planning. The application proposes to increase the number of truck movements at Dixon Sand's Old Northern Road quarry, Maroota.

1.2 THE SITE

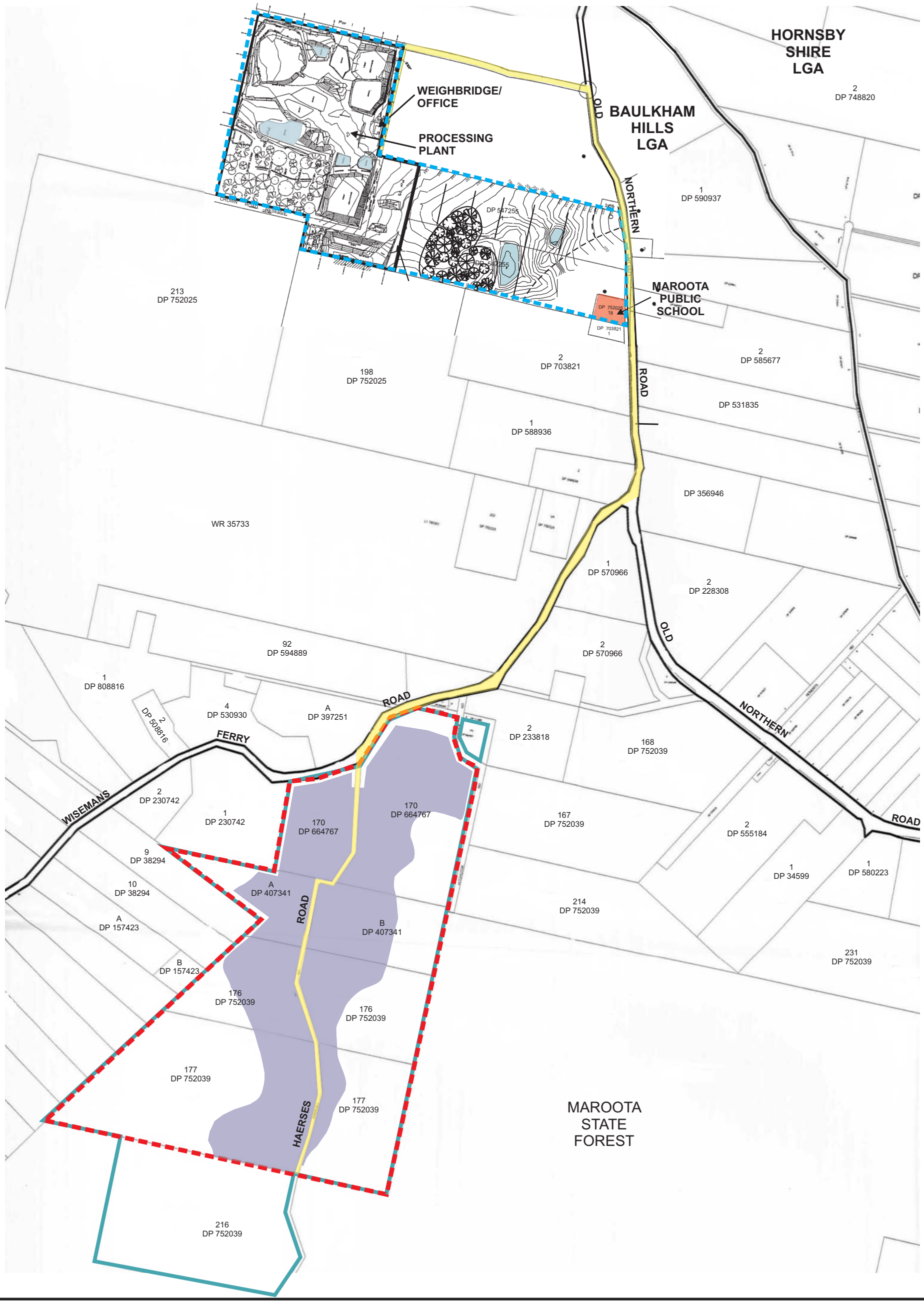
Dixon Sand currently operates sand quarries off Old Northern Road and Haerses Road, Maroota NSW (*Figure 1.1*). The quarry off Old Northern Road incorporates extraction areas, a processing plant and a weighbridge for the preparation and distribution of product. The Haerses Road extraction site has limited screening facilities, and distributes from the site both to the Old Northern Road processing plant and directly offsite.

This application is to modify DA 250-09-01.

1.3 APPROVALS HISTORY

Development consent for the Old Northern Road quarry on Lots 29 and 196 and extension into Lots 1 and 2 was issued by the Land and Environment Court on 7 July 2000 (796/00/HE) and 24 May 2004 (250-09-01) respectively. Consent No. 796/00/HE applies to Lots 29 and 196 DP 752025 and allows sand extraction, processing within the plant on Lot 196, and rehabilitation of the site. Consent No. 796/00/HE lapses on 22 March 2010. Consent No. 250-09-01 applies to Lots 29 and 196 DP 752025 and Lots 1 and 2 DP 547255 and enables sand extraction on Lots 1 and 2, continued use of the central processing plant on Lot 196, transport of product from the site, and water management and rehabilitation operations over Lots 29, 196, 1 and 2. Consent No. 250-09-01 lapses on 24 May 2022.

Development consent was granted by the Minister for Planning on 14 February 2006 (165-7-2005) for the extraction of sand from Dixon Sand's Haerses Road property at Lot 170 DP 664767, Lots A and B DP 407341, and Lots 176 and 177 DP 752039.



Legend

- Old Northern Road Site
- Haerses Road Site
- Haul Route
- Approved Extraction Area
- Dixon Sand (Penrith) Pty Ltd Freehold Land

Figure 1.1

Locality Plan

Client:	Dixon Sand		
Project:	Maroota Quarry Section 96		
Drawing No:	0069309hv_Sect96_01		
Date:	24/07/07	Drawing size:	A3
Drawn by:	JD	Reviewed by:	DP
Source:	Baulkham Hills Shire Council, 2000		
Scale:	Refer to Scale Bar		

N

0 100 200 300m

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ERM

1.4 PROPOSED MODIFICATION

Two modifications are requested to the conditions of development consent DA 250-09-01. Consent conditions 3.30 and 3.31 are requested to be modified in the following manner:

Existing Condition 3.30

Traffic and Transport Impacts – Total vehicle movements at the site, including those provided for in consents 796/00/HE, 250-9-01 and 165-7-2005, shall not exceed a combined total of 88 laden movements per day or 120 vehicle movements per day.

Modified Condition 3.30

Traffic and Transport Impacts – Total vehicle movements at the site, including those provided for in consents 796/00/HE, 250-09-01 and 165-7-2005, shall not exceed a combined total of 180 vehicle movements per day.

Existing Condition 3.31

Traffic and Transport Impacts – The number of vehicles permitted to enter and leave the subject site between the hours of 6.00am and 7.00am is 15 laden vehicles, subject to compliance with EPA noise limits.

[*ie. 15 outbound laden movements, therefore 30 total movements*].

Modified Condition 3.31

Traffic and Transport Impacts – A total number of 40 vehicle movements are permitted at the subject site between the hours of 6.00am and 7.00am, subject to compliance with EPA noise limits.

1.5 JUSTIFICATION

The proposed vehicle numbers have been arrived at, giving consideration to truck movements associated with both the Old Northern Road quarry and Haerses Road quarry consents.

The current restriction on truck numbers limits Dixon Sand's ability to service a changing market. As residential and commercial development spreads further from the Sydney CBD, the demand for small loads of sand and gravel increases. The traditional, large truck and trailer combinations cannot meet consumer demand and Dixon Sand needs to produce the same approved volume of sand but deliver it in smaller loads.

2 STATUTORY CONTEXT

2.1 STATUTORY PROCEDURES AND APPROVAL PROCESS

In order to amend the development consent (DA 250-09-01) to increase the number of truck movements at the quarry there are certain procedures specified in Section 96 of the *Environmental Planning and Assessment Act*, 1979 (EP&A Act). Under Section 96(1A) of this Act the consent authority, in this case the Minister for Infrastructure and Planning can agree to modify the development consent if:

'(a) it is satisfied that the proposed modification is of minimal environmental impact; and

(b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and

(c) it has notified the application in accordance with:

(i) the regulations, if the regulations so require, or

(ii) a development control plan, if the consent authority is a council that has made a development control plan under section 72 that requires the notification or advertising of applications for modification of a development consent, and

(d) it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.'

As specified in Section 96(3) of the EP&A Act, in determining an application for such a modification the consent authority must take into consideration matters referred to in section 79C(1) of the Act which are relevant to the modification. These matters are as follows:

'(a) the provisions of:

(i) any environmental planning instrument, and

(ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority, and

(iii) any development control plan, and

(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),

that apply to the land to which the development application relates,

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

(c) the suitability of the site for the development,

(d) any submissions made in accordance with this Act or the regulations, and

(e) the public interest.'

Relevant planning instruments, development control plans and legislation to the proposed modification are addressed in this chapter. The likely environmental, social and economic impacts of the proposed modification are addressed in *Section 3* of this report.

2.2 *LOCAL PLANNING*

The site is zoned 1(b) Rural under the Baulkham Hills Shire Council Local Environment Plan 2005 (LEP 2005). Extractive industries or industries directly associated with or dependent upon extractive industries are permitted with development consent within this zone.

The objectives of the 1(b) Rural Zone as set out in clause 13 of LEP 2005 are:

'(a) to ensure that existing or potentially productive agricultural land is not withdrawn unnecessarily from agricultural production, and

(b) to maintain the rural character of the locality without adversely affecting the carrying out of agricultural activities;

(c) to ensure that development is carried out in a manner that minimises riskes from natural hazards and does not unreasonably increase demand for public services and public facilities;

(d) to provide land on which development may be carried out that assists the operation and functioning of development in adjoining residential areas and appropriate locates for tourist facilities,

(e) to protect and enhance those areas of particular scenic and environmental value;

(f) to ensure that development is designed and carried out to the rural and heritage character of the surrounding land; and,

(g) to ensure that development is designed and carried out having regard to adjoining land uses and the natural environment.'

Clause 32 of the LEP stipulates that consent must not be granted to carrying out the development for the purpose of extractive industries unless the consent authority has given consideration to the following:

(a) social, economic and environmental impacts of the proposed development and the management of those impacts,

(b) the extent to which internationally and nationally recognised environmental standards may be implemented in carrying out the proposed development,

(c) the extent of community consultation about and involvement in all phases of the proposed development,

(d) the existence, nature and level of detail of sound technical parameters for carrying out the proposed development in an environmentally sensitive manner,

(e) the conservation of the biological and cultural diversity and quality of land within the Baulkham Hills local government area,

(f) the impact of the proposed development on the archaeological resources of the site,

(g) the impact on the cultural landscape, including any significant views and vistas to or from heritage items located in the vicinity of the proposed development,

(h) a proposed program for remediation of the site and for post extractive industry usage,

(i) the impact of the proposed development on surface water and groundwater resources,

(j) the impact of the proposed development on native vegetation (trees, shrubs and groundcover species) including threatened species,

(k) the impact of the proposed development on native fauna habitat,

(l) the provision of an adequate setback of not less than 40 metres from the top bank of a watercourse to the extraction operations.

The quarry will continue to operate in accordance with consent conditions and the approved Site Environmental Management Plan (ERM, 2005). Extraction of material on Lots 29, 196, 1 and 2 will not occur beyond the approved period. The socio-economic, cultural, ecological and environmental impacts of the quarry will not alter and the approved community relations plan will remain in force. The quality of the surface water and groundwater resources of the site will be maintained by the implementation of approved drainage and erosion and sediment control measures.

Clause 34 of LEP 2005 relates to extractive industry and environmental management and monitoring. Consent must not be granted to development within Zone 1 (b), unless the consent authority is satisfied that the proposed development takes into account the following environmental features adequately and that those features will continue to be monitored:

(a) *water quality;*

(b) soil erosion;

(c) air quality;

(d) noise;

(e) salinity;

(f) bush fire hazard;

(g) flora and fauna; and

(h) the continued monitoring of the above issues.

The proposed modification will not affect the management of those issues.

The proposed modification will not alter the design of the existing quarry nor the way in which it operates. The continued operation of the site will not adversely impact on the heritage character or long term rural character of Maroota, as the site has low archaeological and European heritage significance and will be progressively rehabilitated to bush and agricultural land following extraction. The proposed modification will maintain the existing quarry buffer zones to adjoining land uses.

2.3 DEVELOPMENT CONTROL PLAN NO.1 – RURAL 1(A), 1(B) AND 1(C) ZONES

Baulkham Hills Shire Council Development Control Plan No.1 – Rural 1(a), 1(b) and 1(c) Zones (DCP 1) acts as a guideline for development in rural areas.

Section 2.2 of DCP 1 states that the planning intent of the Rural 1(b) zone "*recognises the need to protect areas of scenic and environmental quality, to maintain the rural character of the area, provide for the agricultural use of land and to provide opportunities for the development of tourist facilities.*" Further, the objective of the Rural 1(b) zone is "*to provide for a wide range of activities which maintain the rural, agricultural and environmental qualities of the area*". The standards relating to the Rural 1(b) zone require a minimum site area of 10 hectares and minimum frontage of 60 metres for development.

The existing approved quarry complies with these provisions and the proposed modification will not alter this state.

2.4 *DEVELOPMENT CONTROL PLAN NO. 16 – EXTRACTIVE INDUSTRIES*

Development Control Plan No. 16 – Extractive Industries (DCP 16) supersedes Development Control Plan No. 500 – Extractive Industries and applies to the site. The principal objectives of this DCP relate to social, economic and environmental issues, community participation, the use of technical parameters in development, the conservation of biological and cultural diversity and quality, and the requirements of the EP&A Act.

The proposed modification will not create significant adverse social, economic or environmental issues. The quarry will continue to operate in accordance with the consent conditions, including community consultation and involvement.

DCP 16 comprises a number of development control elements, of which one relates directly to the Maroota area. The objectives of development control element 3.16 – Maroota are:

- *to facilitate and ensure extraction occurs in a controlled and environmentally acceptable manner;*
- *to facilitate Community participation and encourage local employment;*
- *to maintain and upgrade the safety and efficiency of the existing external road networks;*
- *to protect and maintain the safety and amenity of the Maroota Public School and residences not associated with extraction;*
- *to conserve the biological and cultural diversity of Maroota; and*
- *to conserve and protect the integrity pattern and quality of the Maroota ground water regime.*

The quarry operates in consultation with the local community and various government authorities. The proposed modification will support the continued employment of local workers. The proposed modification will not adversely impact on the amenity of the surrounding area or the safety of students of Maroota Public School (further discussed in *Section 3*). The proposed modification will not significantly impact the biological or cultural diversity of the area, nor the quality or quantity of the Maroota groundwater regime. Traffic impacts of the proposal are addressed further in *Section 3* of this report.

2.5 REGIONAL PLANNING

2.5.1 Sydney Regional Environmental Plan No. 9

The Sydney Regional Environmental Plan No. 9 – Extractive Industry (No 2 – 1995) (SREP 9) applies to the Baulkham Hills local government area and therefore the site. The relevant aims of SREP 9 as they apply to the quarry are:

> *"(a) to facilitate the development of extractive resources in proximity to the population of the Sydney Metropolitan Area by identifying land which contains extractive material of regional significance, and*
>
> *(b) to permit, with the consent of the council, development for the purpose of extractive industries on land described in Schedule 1 or 2, and*
>
> *(c) to ensure consideration is given to the impact of encroaching development on the ability of extractive industries to realise their full potential, and*
>
> *(d) to promote the carrying out of development for the purpose of extractive industries in an environmentally acceptable manner."*

The site is within the SREP 9 Extractive Industries Designated Area and is identified in Schedule 2 of SREP 9 as Maroota Sand and clay/shale. The proposed modification will assist in the continued quarrying and transport of sand for the Sydney construction market.

Clause 7 of SREP 9 states that with the consent of the Minister, development for the purpose of an extractive industry may be carried out on land described in Schedule 2. In this instance, the Minister must not grant consent unless:

- *the effect of the development on flood behaviour, the water quality, quantity and hydrodynamics of any surface or ground waters are considered;*
- *a rehabilitation plan has been prepared;*
- *noise and vibration levels will generally be in accordance with the EPA guidelines; and*
- *rehabilitation will be carried out in accordance with the guidelines in the Urban Erosion and Sediment Control Handbook (1992) prepared by the Department of Conservation and Land Management.*

The quarry impact on surface and ground water were assessed as part of the original development application and the proposed modification will not affect these matters. A rehabilitation schedule has been approved, and management of the site will be undertaken in accordance with the Site Environmental Management Plan and the Urban Erosion and Sediment Control Handbook (Department of Conservation and Land Management, 1992), Managing Urban Stormwater (Landcom, 2004), and Best Practice Environmental Management in Mining – Rehabilitation and Revegetation

(EPA, 1995). Noise impacts of the proposal are addressed in *Section 3* of this report.

Clause 11(2) of SREP 9 details special requirements for extractive industry at Maroota. This clause is reproduced below along with the proposed development's compliance with these requirements.

"The council must not grant consent to the carrying out of development for the purpose of extractive industry on land to which this clause applies unless the council is satisfied that the proposed development:

(a) is unlikely to have a significant adverse impact on the Maroota groundwater resource or on other groundwater users in the region, and

The proposed modification, as it does not involve extraction, will not impact on groundwater.

(b) will conserve the environmentally sensitive and significant areas and features of the Maroota locality, including the environment of threatened species, populations and ecological communities, and

The proposed modification will not result in any adverse impacts on environmentally sensitive or significant areas and features of Maroota.

(c) will involve controlled and limited access points to main roads, and

Sand transported from the Haerses Road site to the existing processing plant on Lot 196 will be hauled via Haerses Road, Wisemans Ferry Road, Old Northern Road and the quarry access road. Access points to Old Northern Road or Wisemans Ferry Road will not be increased.

(d) will result in a final landform capable of supporting sustainable agricultural production or other post-extraction land uses compatible with the established character and the landscape and natural quality of the Maroota locality."

The final landform will be in accordance with the approved rehabilitation works and final landform plan.

2.5.2 *Sydney Regional Environmental Plan No. 20*

The Sydney Regional Environmental Plan No. 20 Hawkesbury-Nepean River (No. 2 – 1997) (SREP 20) applies to the Baulkham Hills local government area and therefore the site. The aim of SREP 20 is *"to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context."*

Clause 6 of SREP 20 identifies specific planning policies and recommended strategies for development. Those specific strategies applicable to the extractive industries are reproduced below and comments are provided in response to each strategy.

'(1) Total catchment management:

(b) Consider the impact of the development concerned on the catchment.

(c) Consider the cumulative environmental impact of development proposals on the catchment.'

The impact of the proposal on the hydrology and ecology of the area was considered at the time of the assessment of the original application. The proposed modifications will not affect these impacts. The impact of the proposal on traffic and noise is discussed in *Section 3* of this report.

'(2) Environmentally sensitive areas

(b) Minimise adverse impacts on water quality, aquatic habitats, riverine vegetation and bank stability.

The existing quarry incorporates approved erosion, sediment and stormwater controls to divert clean runoff away from disturbed areas, and dirty runoff into sediment basins and catch ponds. The proposed modification will not affect these controls.

(c) Minimise direct and indirect adverse impacts on land reserved or dedicated under the National Parks and Wildlife Act 1974 or the Forestry Act 1916 and conservation area sub-catchments in order to protect water quality and biodiversity.

The proposed modification will not have adverse impacts on these areas.

(d) Protect wetlands (including upland wetlands) from future development and from the impacts of land use within their catchments.

The proposed modification will not significantly impact the quality or amount of surface or ground water leaving the site or the integrity of wetland areas in the catchment.

(e) Consider the need to include buffer zones (such as adequate fire radiation zones) for proposals on land adjacent to land reserved or dedicated under the National Parks and Wildlife Act 1974 or the Forestry Act 1916.

The proposed modification will not impact on these areas.

(g) Consideration should be given to the impact of the development concerned on the water table and the formation of acid sulphate soils.'

The proposed modification will not affect the water table or potential acid sulphate soils.

'(3) Water quality:

(a) Quantify, and assess the likely impact of, any predicted increase in pollutant loads on receiving waters.

The approved erosion, sediment and stormwater controls will be maintained and the proposed modification will not result in an increase in any pollutants leaving the site. The additional trucks entering and leaving the site will be managed under the current approved methods for managing spills and preventing dirt from being tracked onto local roads.

(f) Consider the need for an Erosion and Sediment Control Plan (to be in place at the commencement of development) where the development concerned involves the disturbance of soil.'

An erosion and sediment control plan has been approved for the quarry.

'(4) Water quantity:

(b) Ensure the amount of stormwater run-off from a site and the rate at which it leaves the site does not significantly increase as a result of development. Encourage on-site stormwater retention, infiltration and (if appropriate) reuse.

The proposed modification will not increase the amount of stormwater run-off leaving the site.

(d) Consider the impact of development on the level and quality of the water table.'

The proposed modification will not result in any impacts on the water table.

'(5) Cultural heritage:

(b) Protect Aboriginal sites and places of significance.

The proposed modification will not impact on any protected Aboriginal sites or places of significance.

(c) Consider an Aboriginal site survey where predictive models or current knowledge indicate the potential for Aboriginal sites and the development concerned would involve significant site disturbance.'

The archaeological assessment carried out for the original development did not identify any Aboriginal archaeological sites or areas of potential archaeological deposit.

'(6) Flora and fauna:

(a) Conserve and, where appropriate, enhance flora and fauna communities, particularly threatened species, populations and ecological communities, aquatic habitats, wetland flora, rare flora and fauna, riverine flora, flora with heritage value, habitats for indigenous and migratory species of fauna, and existing or potential fauna corridors.

The proposed modification to increase the number of truck movements per day will not affect threatened species, populations or ecological communities, or existing conservation areas on the site.

(c) Minimise adverse environmental impacts, protect existing habitat and, where appropriate, restore habitat values by the use of management practices.

The proposed modification will not increase any environmental impacts on existing habitats.

(e) Consider the range of flora and fauna inhabiting the site of the development concerned and the surrounding land, including threatened species and migratory species, and the impact of the proposal on the survival of threatened species, populations and ecological communities, both in the short and longer terms.

The proposed modification will not impact on threatened or migratory species, populations or ecological communities of the area or impact their long term survival.

(f) Consider the need to provide and manage buffers, adequate fire radiation zones and building setbacks from significant flora and fauna habitat areas.'

The proposed modification will not alter existing buffers or setbacks.

2.6 STATE PLANNING

2.6.1 State Environmental Planning Policy No. 11

State Environmental Planning Policy No. 11 – Traffic Generating Developments (SEPP 11) aims to ensure that the Roads and Traffic Authority (RTA) is made aware of and given the opportunity to make representations in respect of developments such as extractive industry. Under Clause 7 of SEPP 11 the Minister is required to forward a copy of the application to the RTA and cannot determine the application until it has received representation.

The proposed Section 96 application will increase the overall number of truck movements from 120 to 180 per day. A Traffic Impact Assessment was undertaken for the proposal and is attached as *Annex A*. The proposed modification will maintain the current traffic management measures employed by Dixon Sand.

2.6.2 State Environmental Planning Policy No. 33

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) relates to "potentially hazardous" or "potentially offensive" developments, such as quarries, and requires specified matters to be considered by consent authorities when assessing such applications.

Assessment of the quarry found that with the implementation of safeguards and compliance with the EPA Environment Protection Licence, the proposal would not be offensive. The proposed modification will not alter required

safeguards or EPA licence conditions and will therefore not result in the proposal becoming an 'offensive industry'.

2.7 *PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997*

The *Protection of the Environment Operations Act, 1997* (POEO Act) provides an integrated system of licensing for polluting industries.

As the quarry extracts and processes more than 30 000 cubic metres of extractive material per year it currently operates under an environment protection licence which authorises extractive industries on the site. The environment protection licence (#3916) will not need to be modified as a result of the proposed Section 96 modification.

3 ENVIRONMENTAL ASSESSMENT

3.1 ACCESS, TRANSPORT AND TRAFFIC

A Traffic Impact Assessment has been prepared for the proposed modification by Mark Waugh Pty Ltd (*Annex A*). This report assessed the impact of the proposal on;

- site access;
- road network performance;
- intersection safety;
- road amenity; and
- road safety.

The report found that the proposed increase in truck numbers can be accommodated on the road network with minimal change to the existing road user conditions. It also found that the existing site access and local road network have adequate capacity for the increased truck movements, and there are no road upgrades required to accommodate the proposal. The report concluded that the proposal could be approved on traffic and access grounds.

3.2 NOISE

A noise assessment was carried out for the proposal by ERM's acoustic engineers. The assessment is presented below.

3.2.1 *Method*

Traffic volume data was sourced from the Mark Waugh Pty Ltd traffic impact assessment titled, 'Proposed Amendment to Material Delivery Operations, Dixon Sand Mine, Maroota, NSW 2007'.

This assessment applies the Department of Environment and Climate Change NSW (DECC) guidelines.

Receiver locations, as presented in the results, are shown on *Figure 3.1*.

3.2.2 *Results*

The Annual Average Daily Traffic (AADT) volume for 2006 for the Old Northern Road adjacent to the Dixon Sand Quarry is 1660. The average heavy traffic content was assessed at 21% of this. The speed limit through the applicable section of the Old Northern Road adjacent to the site is 70 km/h.

Legend

- Existing Development
- ⑤ Receiver

Figure 3.1

Noise Receiver Locations

Client:	Dixon Sand		
Project:	Maroota Quarry Section 96		
Drawing No:	0069309hv_Sect96_02		
Date:	27/08/07	Drawing size:	A4
Drawn by:	SP	Reviewed by:	TP
Source:			
Scale:	Refer to Scale Bar		

N

0 100 200 300m

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The Old Northern Road will for the purposes of this report be classed as an arterial road.

The DECC's 1999 guideline, the Environmental Criteria for Road Traffic Noise (ECRTN), sets the applicable LAeq(15hour) daytime (7:00am until 10pm) and LAeq(9hour) night-time (10pm until 7am) criteria. *Table 3.1* shows these criteria and the estimated noise levels at each receiver from both current and proposed traffic volumes.

Table 3.1 Noise contribution from current and proposed truck movements along Old Northern Road

Receiver	Leq(15hr) with Modification			Leq(9hr) with Modification			Criteria	
	Existing with site	Existing w/o site	Future	Existing with site	Existing w/o site	Future	Leq (15hr)	Leq (9hr)
R1	56	55	57	48	48	49	60	55
R2	62	61	62	54	54	54	63 *	55
R3	53	52	53	45	45	45	60	55
R4	58	57	59	50	50	51	60	55
R5	58	57	58	50	50	50	60	55

1. *Where existing noise levels exceed criteria then new developments cannot increase these noise levels by more than 2dB.
2. All noise levels represented are in dB(A).

ECRTN calculations assume that any increase in traffic volume is evenly distributed across the night-time period. This method may under-represent the potential for noise impact at receivers if all heavy vehicle movements occur during the last hour of the period. *Table 3.1* shows that the proposed modification in the trucking would not lead to any noise exceedances.

In assessing the proposal to increase the number of haul trucks from 15 to 20 during the 6:00am to 7:00am time period (ie from 30 to 40 truck movements), it may be more representative to assume the pre-morning peak hour (6:00am to 7:00am) has the same hourly volume as the morning peak (7:00am until 9:00am). The Mark Waugh Pty Ltd traffic study measured 168 vehicles per hour, with 21% heavy vehicles during the morning peak (7:00am until 9:00am). With this assumption *Table 3.2* shows the estimated noise impact from the proposed increase during that period.

Table 3.2 ***Proposed truck movements on Old Northern Road variation from 6:00am to 7:00am***

Calculated Noise levels, dB(A)				
Receiver	**Existing with site**	**Existing w/o site**	**With modification**	**Increase, dB**
R1	58	57	59	1-2
R2	64	62	65	1-3
R3	55	53	56	1-3
R4	61	59	61	0-2
R5	60	58	61	1-3

Using the assumption of morning peak traffic volumes *Table 3.2* shows that increasing the number of truck movements from 30 to 40 between 6:00am and 7:00am marginally increases traffic noise levels during this period along the Old Northern Road. It should be noted that there is no criteria strictly applicable to such a peak hour period for arterial roads.

Trucks reach Old Northern Road from the quarry via the Crown Access Road which is considered a local road for this assessment. The nearest potentially affected receiver not covered by a specific noise agreement is R2. Based on the July 2007 truck log, *Table 3.3* shows the $L_{eq(1hour)}$ noise levels at R2 from truck movements along the access road between 6:00am and 7:00am.

These results are based on previously measured sound exposure levels from loaded haul trucks moving at 30km/h over dense graded asphalt.

Table 3.3 ***Estimated noise levels at R2 from access road truck movements from 6:00am to 7:00am***

Description	**Logged trucks, July 2007**	**Truck movements**	**Leq,1 hour**	**ECRTN Criteria**
	6am - 7am	**6am - 7am**	**dB(A)**	**dB(A)**
Minimum	1	2	37	50
Average	7	14	46	50
Maximum	14	22	48	50
Current limit	15	30	49	50
Requested Limit	20	40	50	50

1. All noise levels represented are in dB(A).

Table 3 shows there will be no exceedance of the ECRTN for a local road at R2. These levels assume no other vehicle movements at his time.

3.2.3 Conclusion

No exceedances of ECRTN criteria have been predicted to occur at the identified residential receivers along the Old Northern Road or Crown Access Road from the proposed changes in traffic volumes. The results for access road noise indicate the criteria will be reached at 40 movements. A more conservative estimate during the 6:00am until 7:00am period, using measured morning peak traffic volumes did predict marginal increases in traffic noise at residences.

3.3 SOCIAL AND ECONOMIC IMPACT

The modification to truck numbers has been proposed to ensure the practical and efficient transport of construction materials from Dixon Sand to the Sydney metropolitan area. This proposal has come about due to the reduced availability of such materials from other sites around Sydney.

Modification of the consent to allow increased truck numbers will ensure that current and future development in Sydney can proceed, uninterrupted by material shortages. Sydney is an essential zone for economic development in NSW, and both construction and general business in this area is a significant contributor to employment in the State.

3.4 SAFETY

The main safety issue arising from the proposal is increased truck movements on local roads, particularly through the Maroota Public School zone. Trucks accessing Dixon Sand and other quarries currently pass the school, which is situated on Old Northern Road, approximately 700m from the Dixon Sand access road. The school has associated school speed zones, and it is of concern to local residents that trucks passing the school present a hazard. There have been no accidents associated with the existing quarry operations.

Dixon Sand does not own any trucks, nor employ drivers to haul their product offsite. Trucks entering the site, including those picking up product, servicing equipment and delivering goods, are employees of other businesses. This means that Dixon Sand has only limited control over drivers' conduct on surrounding roads. Dixon Sand has measures in place, however, to make drivers commit to safe driving to and from their quarry, and to make them aware of local road issues such as Maroota Primary's school zones. These measures include:

- site induction for all drivers entering the property – all personnel entering the Dixon Sand site must undertake the site specific induction which includes special consideration to adjoining land owners and the nearby school;

- a "Three strikes and you're out" Policy for truck drivers in the area. This is an initiative whereby if three complaints are received from any of the neighbouring quarries for a single driver, that driver is no longer permitted to visit the quarries. This policy has been very successful in strengthening and improving Dixon Sand's clients commitment to road safety; and

- reminders on weighbridge window when school holidays are coming to an end.

The modification being proposed to Consent Condition 3.31 aims to reduce the number of truck movements within the School Safety Zone speed restricted hours of 8.00am and 9.30am. An increase in truck movements between the hours of 6.00am and 7.00am, allows the trucks to enter and depart the quarry site before 8.00am and not return before 9.30am, avoiding the School Safety Zone period.

Safety issues also extend to the destination of the increased truck movements. The manoeuvrability of trucks in the Sydney metropolitan area is one of the reasons behind Dixon Sand's modification proposal, which is both an issue of safety and practicality. Increasing the number of truck movements from the Dixon Sand site will enable trucks without trailers to deliver small loads to the Sydney metropolitan area.

3.5 PUBLIC INTEREST

This modification is being proposed due to an increased demand for Dixon Sand's quarry material in the Sydney metropolitan area, resulting from the reduced availability of material from other sites around Sydney. The proposal is in the public interest as it will facilitate the continued provision of construction sand to the Sydney market.

The proposed modification will not have a significant social impact as truck movements will be timed, wherever possible, to avoid peak traffic times and appropriate measures will continue to be employed to minimise impacts on the environment and the community.

4 CONCLUSION

This consent modification application proposes to amend conditions 3.30 and 3.31 of DA 250-09-01, relating to traffic movements at the Old Northern Road quarry. This modification is being proposed due to a continuing demand for Dixon Sand's quarry material in smaller loads.

Currently, much of the material being removed from site is hauled in truck and trailer combinations, capable of carrying approximately 32 tonnes each load. These trucks can not easily manoeuvre in a city environment, and therefore, a greater proportion of trucks without trailers are necessary. This has resulted in the proposed amendment to condition 3.30.

The modification being proposed to condition 3.31 aims to reduce the number of truck movements within the School Safety Zone between the hours of 8.00am and 9.30am. An increase in truck movements between the hours of 6.00am and 7.00am allows the trucks to have departed before 8.00am and not returning before 9:30am, avoiding School safety zone period. It is not proposed to increase the total volume of material hauled from the site.

Overall the proposal will optimise delivery of product from Dixon Sand with minimal impact on the surrounding environment, noise and traffic conditions.

Annex A

Traffic Impact Assessment

Better Transport Futures

Mark Waugh Pty Limited
ABN 67 106 169 180
Transport Planning & Engineering

Proposed Amendment to Material Delivery Operations, Dixon Sand Mine, Maroota, NSW

Dixon Sand (Penrith) Pty Ltd

Traffic Impact Assessment

May 2007

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Contents

Mark Waugh Pty Limited
ABN 67 106 169 180
Transport Planning & Engineering

Document History and Status

Issue	Rev.	Issued To	Qty	Date	Approved
Draft	01	Dixon Sand (Penrith) Pty Ltd	1 (electronic)	13th April 2007	M Waugh
FINA	01	Dixon Sand (Penrith) Pty Ltd	1 (electronic)	10th May 2007	M Waugh

Printed:	10 May, 2007
Last Saved:	6 May, 2007
File Name:	C:\Documents And Settings\All Users\Documents\MW Pty Ltd\Projects\Projects ON HOLD\P339 ERM Maroota\Report\P339 Maroota Quarry TIS Rev02.Doc
Author:	Sean Morgan
Name of Organisation:	Dixon Sand (Penrith) Pty Ltd
Name of Project:	Proposed Operational Changes, Dixon Mine, Maroota, NSW
Name of Document:	Traffic Impact Assessment Report
Document Version:	FINAL
Project Number:	P339

1. Introduction

Mark Waugh Pty Ltd was commissioned by Dixon Sand (Penrith) Pty Ltd to prepare a Traffic Impact Assessment for a proposed alteration to the quarry transport operations off Old Northern Road, Maroota NSW. The work is required to support an application to the Department of Planning.

The purpose of this report is to assess the current operations and to determine the impact of the altered work patterns associated with hauling material from the quarry. The proponent has indicated that due to the changing size of trucks accessing the site, the number of trucks accessing the site will increase but the total volume of material will remain as per the current consent conditions.

This report presents material addressing the traffic and transport matters in relation to the assessment of the proposal. It is structured as follows:

- **Chapter 2** outlines the existing situation in the vicinity of the subject site, including discussion on planned development growth within the vicinity and road network changes to support it.

- **Chapter 3** describes the traffic and parking features of the proposal, access arrangements and how these meet Council's and road authority guidelines.

- **Chapter 4** details the assessment of traffic operations related to the proposal

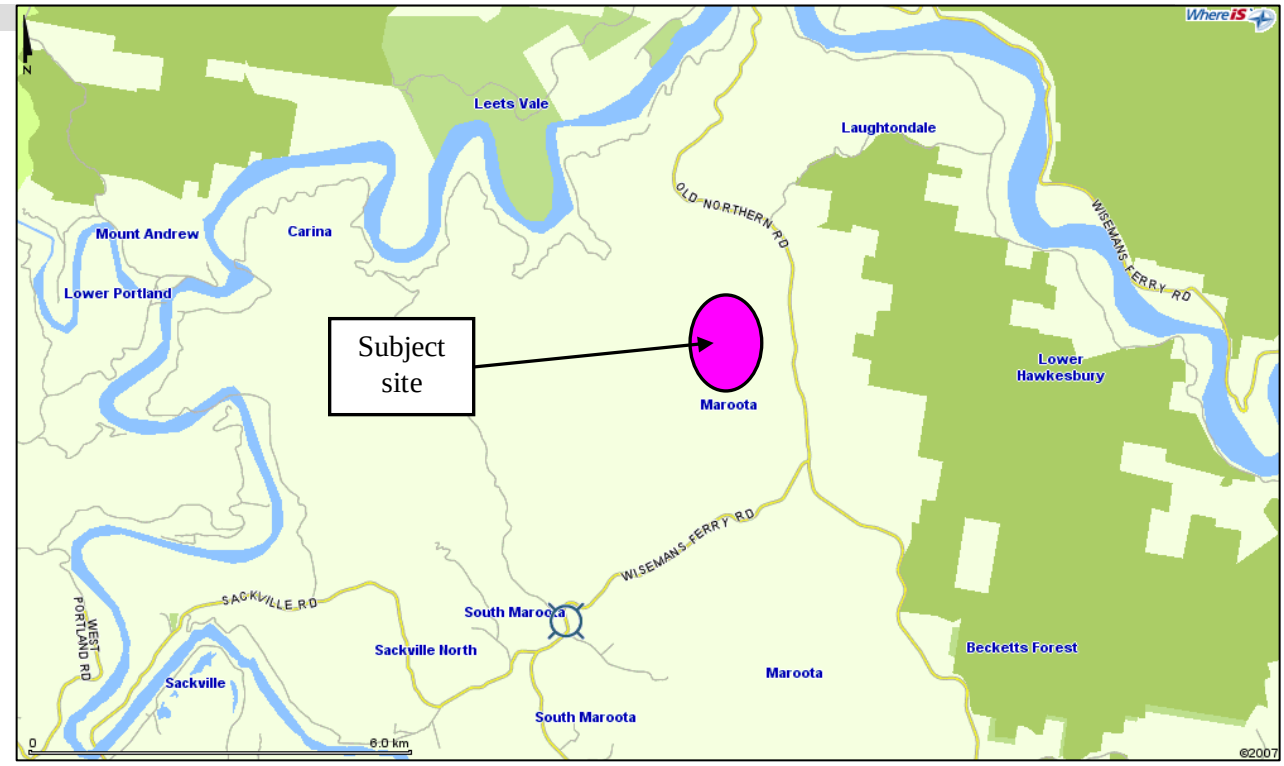
- **Chapter 5** summarises the findings of this investigation, outlining conclusions and recommendations for the traffic operations of the site to support the development application for the proposal.

2. Existing Situation

2.1 Background and Site Location

The subject site is located off Old Northern Road, approximately 2 kms north of Maroota. The subject site is the Dixon Sand Mine, which has been extracting sand from this area for a number of years 15 years. Access to the subject site is available via a sealed access road that connects direct with Old Northern Road.

The locality of the site in the context of the greater road network is illustrated in **Figure 2.1** below whilst **Figure 2.2** shows the location on the local road network.



Source: WhereIS.com.au

Figure 2.1 – Site Location

2.2 Local Road System

2.2.1 Road Characteristics

Old Northern Road

Old Northern Road is the main road through the locality. It provides an important link between Wisemans Ferry to the north of the site and greater Sydney to the south. It provides an important link for the towns and villages along its length and the rural living and farming with the greater Sydney district. It is also a popular weekend destination providing access to tourist facilities to the north of the site. It is a classified main road (number 160) and as such any new works along its length require concurrence from the Roads and Traffic Authority for NSW (RTA) as a well as consent from Council.

In the general vicinity of the site Old Northern Road provides a single lane of travel in both directions with varying speed limits. The speed limit is generally 90 km/h with reduced speeds through the various towns as well as reduced speed in certain sections due to the poor road alignment. In the vicinity of the access to the subject site the posted speed limit is 70 km/h. There are generally no footpaths along the majority of its length and street lights are only provided within the built up areas, reflecting its rural nature. At key intersections, there is localised road widening to allow for the turning movements.

Photo 1 – View north along Old Northern Road showing typical road cross-section

Access to the subject site is via a sealed haul road. This haul road provides a single lane of travel in both directions and provides an overall width in the order of 13 metres. There are no sealed shoulders along its length. It is a private road providing access to the subject site only, with no through traffic movements occurring along its length.

The haul road connects with Old Northern Road via a give way controlled 3-way intersection.

South of the site is the township of Maroota. There are limited facilities within the town, with a number of houses located to both sides of the road and a school with associated school speed zone on Old Northern Road.

Photo 2 – View south along Old Northern Road showing school zone and associated parking

Further to the south Old Northern Road connects with Wisemans Ferry Road, via a 3-way give way controlled intersection.

2.3 Traffic Volumes

2.3.1 Traffic Surveys

Traffic volume data for the project was collected during a survey of traffic movements at the junction of Old Northern Road and the subject site on Monday 5th February and Tuesday 6th February 2007 for both the morning and afternoon peak periods. The morning period was between 7.00 to 9.00 AM whilst the afternoon period was from 2.30 to 5.00 PM.

These time periods were chosen to coincide with operations at the site, as well as peak movements along Old Northern Road associated with commuter trips and school drop off/pick up movements.

The traffic surveys provide details on the number of light vehicles on Old Northern Road, the number of trucks and the volume of trucks associated with the Dixon Sand existing operations. The surveys show similar values over the two days and reflect typical travel patterns in the vicinity of the site. During the morning peak, the two-way hourly traffic flows south of the Dixon Sand access was some 168 vehicles per hour. Of this, some 38 vehicles (or 22 %) were trucks, generally associated with mining operations at the subject site or sites further to the north.

During the corresponding afternoon peak period, the hourly two-way traffic flow south of the Dixon Sand access was 165 vehicles per hour with some 33 of these vehicles being trucks (20%).

From the RTA Guide to Traffic Generating Developments, the following information is provided for level of service for roads:

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

It is considered that in the general locality of the site Old Northern Road provides a rolling alignment. With the observed traffic volumes in the morning peak of 168 vehicles (two-way) it can be seen that the current level of service for traffic is B, whilst during the afternoon peak the current two-way flow of 165 would also be operating at a level of service of B.

Level of service B is defined as "*This level is in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is less than that of the level of Service A*".

It can be seen that the current traffic volumes along Old Northern Road are well within the existing limits of the road and that existing road users suffer from minimal delays.

2.3.2 RTA Traffic Data

The daily traffic volumes provided by the RTA in their publication "Traffic Volume Data for Sydney Region, 2002" has also been reviewed. The RTA traffic count station number 73.026 (Maroota south of Bay Road, MR 181) indicates that the Annual Average Daily Traffic flow

(AADT) in 2004 was 2,212 on Old Northern Road whilst count station number 73.035 (Maroota north of Bay Road) the AADT was 2,408 vehicles per day.

The peak hour traffic flows typically represent 10% of the daily traffic flows. From the traffic surveys completed as part of this survey, the average between the morning and afternoon peak period were 166 vehicles per hour. This would indicate the AADT is 1,660 which is similar to the data available from the RTA count stations.

These volumes reflect the rural nature of the locality of the site. Given the road configuration supplemented with turn lanes at key intersections they are well within the traffic carrying capacities of these routes.

2.4 Intersection Controls

The major junction is the intersection of the subject site access and Old Northern Road. This intersection is well laid out, with a left turn deceleration lane for trucks entering the site from the south. Given the low volume of traffic there is no current requirement to provide a right turn acceleration lane out of the access to the quarry.

Other access points in the vicinity of the site are generally simple driveways or gated access points to rural lots.

2.5 Road Network Improvements

It is understood there are no road network improvements planned in the vicinity of the subject site, apart from normal road maintenance works performed by Council and the RTA. This is due in the main to the low overall traffic flows in the vicinity of the site and accordingly the spare capacity in the road network.

2.6 Public Transport, Pedestrians and Cyclists

Public transport in the vicinity of the site is limited. There is a school bus run along Old Northern Road that provides transport to the local school in Maroota. There are no other regular services available.

Cyclists are able to utilise the road carriageway or occasional shoulders of Old Northern Road. There are no pedestrian facilities in the vicinity of the site.

3. Proposed Operational Changes

3.1 Existing Conditions

The extraction works at Dixon Sand's Old Northern Road quarry are governed by consent conditions issued by the Minister for Planning in 2004, and modified in 2006 (DA 250-7-2005). Consent conditions 1.6 and 1.7 limit the combined annual production from the Old Northern Road quarry (the subject site) and Dixon Sand's nearby Haerses Road quarry to 495,000 tonnes with daily limits of 1,750 tonnes. Consent condition 3.30 limits truck movements at the subject site to 88 laden movements per day, including those transporting product from Haerses Road quarry to the subject site for processing, and those transporting processed materials outbound from the subject site. The total number of truck movements is still however limited to 120 per day, resulting in 60 outbound laden truck movements from the subject site per day.

As part of the study work, the volume and weight of trucks has been obtained for a typical working week at the Dixon Sand site. The results of this survey are summarised below:

- Average daily number of trucks (without trailers) was 15,
- Average daily number of truck and trailer combination was 22,
- The trucks on average carry 13.8 tonnes of material,
- The truck and trailer combination on average carry 32.2 tonnes of material,
- During the morning School Zone period (7.30 to 9.00 AM) there was typically 6 outbound truck movements, and
- During the afternoon School Zone period (2.30 to 4.00 PM) there were typically 2 outbound truck movements.

3.2 Proposed Changes

Advice from the owner of the quarry indicates that the characteristics of the removal of the material from the site is changing and in particular the type and size of truck. A large portion of the material associated with the development is transported to the Sydney CBD. Whilst construction sites use to source material from further south of the subject site, changes in demand and the reduced volume of material available to the south of the site means that there is increased demand from sites in the CBD to obtain material from the subject site.

Due to the physical constraints of sites within the CBD as well as limitations associated with road rules and weight limits, the client has become aware of the increased demand for material to be transported from the site using trucks only, with no trailers. The effect of this is that whilst the total volume of extraction and transportation of material will remain as per the existing consent, the number of truck movements needs to increase so that the volume of material removed form the subject site can be maintained at the approved rate.

Using the approved rate of 1,750 tonnes per day and the average tonnage of 32.2 tonnes for a truck and trailer combination, it can be seen that the material could be removed from site in 54 laden trucks, within the daily allowed limit of 60 outbound loads per day. However, the trucks without trailers can only carry on average some 43% of the volume of a truck and trailer combination. Thus if **ALL** material was removed from the site in trucks only with no trailers, there would need to be some 126 laden outbound truck movements to remove 1,750 tonnes of material as per the consent conditions.

The owner of the quarry wishes to change the consent conditions with regard to the number of trucks that can use the intersection of Old Northern Road and the site access to beyond the current limit of

120 vehicles day and the 60 outbound movements per day. The total volume of extracted material will however remain at 1,750 tonnes per day and 495,000 tonnes per annum maximum.

Whilst the worst case scenario would be all outbound movements via truck only with no trailers, giving 126 outbound loaded truck movements per day, it is considered that the volume would be lower than this as some material will continue to be removed via truck and trailer combinations. Advice from the client indicates that the quarry wishes to raise the limit from 60 outbound laden movements per day to 90 movements per day. This would increase the current typical hourly flow of 6 or 7 per hour to 9 or 10 trucks per hour.

3.3 Traffic Distribution

Truck movements associated with the subject site will remain as per the existing operations i.e. all truck movements will be from and to the south of the site along Old Northern Road.

3.4 Site Operations and Access Arrangements

The access arrangement is proposed to remain as per the existing situation. A review has been completed by the client to determine other options to provide access to the subject site but due to 3rd party land constraints access can only be provided via Old Northern Road and the existing site access.

4. Assessment of Transport Operations

4.1 Site Access Operations

The critical intersection on the road network is the access to the site on Old Northern Road. As indicated above, the consent for the development currently allows a maximum 120 trucks a day to use this intersection, giving 60 outbound truck movements per day.

It is useful to consider the Austroads threshold levels for intersection capacity under uninterrupted flow conditions. **Table 4.1** below presents these thresholds. Where traffic flows fall within these limits intersection operation is essentially at no delay or interruption for approaching drivers other than to obey the requisite road rules.

Table 4.1 Intersection Capacity – Uninterrupted Flow Conditions

Road Type	Light Crossing or turning volumes Maximum Design Hour Volumes, Two-way (vph)		
Two Lane through Roadway	400	500	650
Cross Road	250	200	100
Four Lane through roadway	1000	1500	2000
Cross road	100	50	25

Source: Austroads Guide to Traffic Engineering Practice - Part 5, 1988

It can be seen that the existing traffic flows are well within these limits and with the additional development flows will remain at low levels well within these limits. The current observed through traffic movements along Old Northern Road are 168 vehicles in the AM peak and 165 in the PM peak. The hourly traffic flows in and out of the Dixon Sand site are less than 20 vehicles two-way per hour. It is therefore considered that no Sidra modelling is required for this intersection.

The data from the weighbridge indicates that typically the maximum number of outbound loads is 6 or 7 loads per hour. This gives some 12 or 14 trucks movements two-way. The trucks movements are well spread out during the working day, although the numbers do decrease after 12 noon due to construction timetables generally occurring from 7.30 AM to 3.30 PM.

It can be seen that in terms of capacity, the intersection could accommodate considerable more truck movements in and out of the intersection. Based on the existing two-way flow on Old Northern Road i.e. afternoon peak of 165 vehicles the turning movements could increase to some 250 vehicles per hour, giving 125 in and 125 out. With an absolute peak movement of 90 trucks outbound per day, this would typically give some 12 trucks maximum per hour.

It is considered the possible additional volume of trucks associated with the altered operations on site can be accommodated by the existing intersection.

4.2 Road Network Performance

From the data presented in **Section 2.3** it can be seen that the current hourly traffic flows along Old Northern Road in the vicinity of the site operate at acceptable levels of service (B). With the possible increase in truck movements of 3 per hour two-way (from 12 currently to 15 maximum) the existing levels of service for existing road users will remain similar to the existing situation.

It is considered that there is adequate capacity in the adjacent road network to accommodate the additional flows created by the change in material deliveries associated with the subject site. However, an important consideration is road safety, both at the site entry point and for traffic flows along Old Northern Road.

4.3 Intersection Safety

The existing intersection of Old Northern Road and the subject site access has been reviewed on site. The intersection is well laid out and has been designed in accordance with the RTA Road Design Guide (RTA type BAR intersection). The intersection was upgraded in accordance with RTA requirements under the original consent conditions and as part of the works, the RTA would have reviewed and approved the intersection layout.

The posted speed limit adjacent to the intersection is 70 km/h. The intersection provides a left turn deceleration lane trucks entering the site. In addition, the southbound through traffic lane has been widened with shoulder widening, to provide a 6.0 metre wide through lane. This allows southbound through traffic movements to continue without being impeded by vehicles turning right into the subject site.

Discussion with the owner indicates that the vast majority of traffic movements are to and from the south, giving left turn in movements and right turn out. The trucks associated with the material removal all have a destination/origin form the south with none heading north from the site.

Photo 3 – View south along Old Northern Road showing overall intersection layout

Photo 4 – View north along Old Northern Road showing the overall intersection layout

4.3.1 Visibility Splays

The visibility splays have been measured on site, to assess the safety of the intersection. The visibility to the left (looking north) for drivers exiting the site has been measured and there is some 240 metres of visibility available for drivers exiting the side road. To the right the visibility splay available is some 230 metres.

Visibility requirements for the intersection are given below.

Design speed (major road) (km/h)	Deceleration (g)[1]	ESD - entering sight distance (1.05m to 1.05m) (m)	ASD - Approach sight distance (1.05m to 0.0m)				SISD - Safe intersection sight distance (1.05m to 1.05m)			
			Absolute minimum 2.0 secs		Desirable 2.5 secs		Absolute minimum 2.0 secs		Desirable 2.5 secs	
			m[2]	min K[4]	m[2]	min K[4]	m[2]	min K[4]	m[2]	min K[4]
40	0.56	100	33	5	39	8	66	5	72	6
50	0.52	125	47	11	54	14	89	9	96	11
60	0.48	160	63	19	71	25	113	15	121	17
70	0.45	220	82	32	91	40	140	23	149	27
80	0.43	305	103	51	114	63	170	34	181	39
90	0.41	400	126	78	140	94	203	49	215	55
100	0.39	500[3]	157	117	170	139	240	69	253	76
110	0.37	500[3]	190	172	205	200	282	94	297	105
120	0.35	500[3]	229	250	245	286	329	129	345	142

For the posted speed limit of 70 km/h, it can be seen that the desirable sight distance for drivers at the intersection is 149 metres. The visibility splays measured on site comfortably exceed this requirement.

Photo 5 – View to left (north) for drivers exiting the access to the subject site

Photo 6 – View to right (south) for drivers exiting the access to the subject site

The stopping sight distance has also been measured for vehicles southbound on Old Northern Road approaching the intersection. The measured stopping sight distance is 210 metres to the centre line of the side road. From the RTA Road Design Guide the Stopping Sight Distance for the posted speed limit of 70 km/h is 80 metres. This is easily exceeded with the measured value of 210 metres equating to a vehicle speed of 110 km/h, some 40 km/h greater than speed limit. Allowing for the speed limit to the north of the intersection being 90 km/h, it is considered that there is adequate stopping sight distance for vehicles approaching the intersection.

Photo 7 – View north along Old Northern Road showing forward visibility to intersection to subject site

Photo 8 – View south along Old Northern Road showing forward visibility to intersection to subject site

It is considered that the visibility requirements for the intersection are exceeded and therefore the intersection provides a safe and appropriate layout to accommodate the additional truck movements required as part of the continual movement of material from the subject site.

4.4 Impact on road amenity

It can be seen that the increase in truck movements could impact upon the amenity and road safety for existing road users as well as residents etc along Old Northern Road. The RTA Guide to Traffic Generating Developments provides details on the environmental capacity of roads. The highest level of road covered by this guide is a collector road. Whilst Old Northern Road performs the function of a major collector road (and therefore has higher limits) it is worth considering the limits for a collector road, as for the local community the Old Northern Road performs the function of a collector type road.

The environmental limits for a collector road are given in Table 4.6 below. For a collector road the environmental limit is 500 vehicles per hour maximum, with 300 desirable per hour. For the existing morning flows along Old Northern Road, it can be seen that the existing two-way flows are considerably less than 300 vehicles per hour (168) and well within the desirable limit. During the afternoon peak, the current flows are 165, again well within the desirable limits. The additional trucks movements associated with the change in truck size at the subject site will have a minimal impact upon these thresholds. The morning and afternoon peak period would remain well within the environmental limits.

It is therefore considered that the additional trucks would have a minimal impact upon the road environmental limits along Old Northern Road.

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

4.5 Impact of road safety

Advice from the owner indicates that there have been no recorded accidents at the site access associated with the movement of trucks in and out of the site. It is not considered that there will be a noticeable change in road safety created by the additional truck movements.

Base on the current Annual Average Daily Traffic flows along this length of Old Northern Road being 1,660 vehicles per day, the additional truck movements per day of 30 movements two-way represents an increase of some 1.8% over the current flows. This will again have a negligible impact upon the general road safety along this length of the Old Northern Road.

5. Conclusions

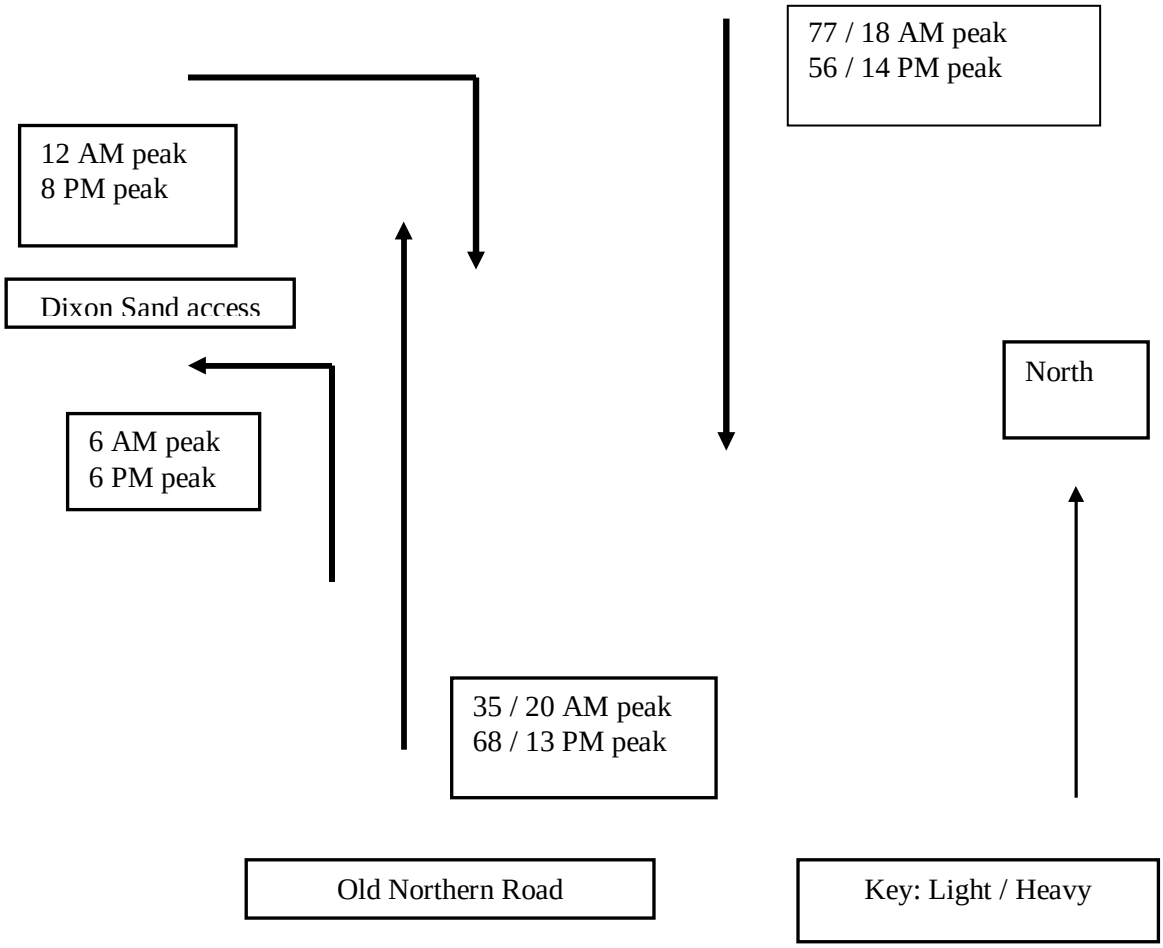
The following conclusions are drawn from the investigations into the proposal for increased truck movements in and out of the Dixon Sand site off Old Northern Road, Maroota NSW:

1. The subject site is located off Old Northern Road to the north of Maroota. Access to the site is provided by a Type BAR intersection of Old Northern Road.
2. The quarry has an existing consent to mine some 495,000 tonnes of material per annum, with a limit of 1,750 tonnes per day being transported from the site. The existing consent allows a maximum of 120 vehicles per day to use the access point on Old Northern Road.
3. The proposal seeks to alter the development consent by allowing increased numbers of trucks to use the access to and from the site. The owner is seeking an amendment to the consent due to the altered working methods associated with haulage of material from the quarry. There will be no increase in the total volume of fill removed form the site, but the owner wishes to increase the daily volume from 120 trucks a day to 180 trucks per day two way i.e. 90 outbound laden trucks.
4. Existing traffic flows along Old Northern Road have been surveyed as part of the study and the current overall traffic flows are very low and well within the limits. The existing flows at the site entry create minimal delays for other roads users.
5. The additional truck movements associated with the change to the consent conditions will continue to operate well through this intersection. There will be minimal changes to the operation of this intersection and the flows would be well within the threshold limits identified by Austroads limits for at grade intersections.
6. The additional traffic associated with the revisions will have a minimal impact on traffic flows along Old Northern Road, with the future level of service remaining unchanged form the current observed limits.
7. The site entry point has been reviewed and the intersection provides a clear and well laid out layout. The visibility splays have been checked on site and exceed the requirements of the RTA Road Design Guide.
8. There have been no reported accidents at the site entry associated with the truck movements. It is not considered that the additional truck movements will have a noticeable impact upon existing road safety in the general vicinity of the site. The additional 60 truck movements per day represent an increase of some 1.8% over the current flows.
9. The existing amenity for residents etc along the length of the Old Northern Road will remain at the current levels and well within environmental limits.

The proposed changes to the material delivery operations from the site can be accommodated on the adjacent road network with minimal change to the existing road user conditions. The existing site access and local road network have adequate capacity and there are no road upgrades required to accommodate this proposal. It is recommended that the proposal be approved on traffic grounds.

Appendix A Traffic Survey Results

AM Peak 8.00 to 9.00, PM peak 4.30 to 5.30



Appendix B Truck Load Survey Results

	Tues 30/1/07		Wed 31/1/07		Thurs 1/2/07		Friday 2/2/07		Monday 5/2/07	
Number	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small
1.0	26.7	9.6	33.4	11.8	30.5	13.1	40.6	18.3	33.1	13.8
2.0	30.2	11.0	32.2	16.1	33.2	13.2	33.2	13.2	33.8	13.2
3.0	30.7	11.5	33.5	15.6	34.4	13.0	33.8	14.4	32.8	13.8
4.0	31.9	12.3	33.2	14.2	34.5	15.5	33.7	14.2	32.7	14.7
5.0	31.9	13.0	33.6	13.0	28.7	17.1	33.3	9.7	33.4	13.8
6.0	31.9	13.0	31.7	15.1	32.3	14.0	33.7	13.2	33.0	13.3
7.0	32.1	13.4	32.7	12.1	33.1	12.6	31.2	13.7	34.5	13.7
8.0	32.1	13.9	32.5	16.7	31.1	14.8	34.0	16.7	33.3	13.9
9.0	32.1	14.0	31.6	13.8	31.4	14.3	31.9	16.6	27.4	13.5
10.0	32.2	14.0	25.0	15.8	29.0		32.7	8.3	33.0	14.2
11.0	32.4	14.1	32.2	13.9	33.6		32.6	17.0	32.0	13.0
12.0	32.4	14.1	31.0	3.3	33.8		33.2	14.6	33.0	12.6
13.0	32.6	14.3	29.6	14.3	32.6		32.2	10.0	29.0	12.0
14.0	32.7	14.4	32.5		32.5		33.3	13.1	33.0	13.0
15.0	33.2	14.7	31.7		33.0		27.0	14.3	32.5	14.5
16.0	33.3	14.9	32.3		31.7		31.7	16.7	32.0	16.5
17.0	33.4	14.9	33.8		33.4		33.0		33.0	11.9
18.0	33.6	14.9	32.1		31.7		32.8		31.0	12.4
19.0	35.0	15.3	32.4		34.1		26.8		32.9	
20.0					30.5		26.9		32.2	
21.0					31.2		40.7		32.6	
232.0					32.1		32.2		26.8	
23.0					32.8		31.7		32.6	
24.0					32.3		32.5		31.7	
average load (tonnes)	32.1	13.5	31.9	13.5	32.2	14.2	32.7	14.0	32.1	13.5
Number of movements	19	19	19	13	24	9	24	16	24	18

Average number light trucks	15	Average load	13.8
Average number large trucks	22	Average load	32.2

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