



**SITEGOAL PTY. LIMITED**

A.C.N. 052 317 503

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# **SUPPLEMENTARY REPORT**

*to*

# **ENVIRONMENTAL IMPACT STATEMENT**

## **PROPOSED WALLERAWANG QUARRY**

**Pacrim**  
ENVIRONMENTAL  
Report 02/206.1  
July 2002



**Sitegoal Pty Ltd**

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**ENVIRONMENTAL IMPACT STATEMENT**

**PROPOSED WALLERAWANG QUARRY**

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Report 02/206.1  
July 2002



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## PROPOSED HARD ROCK QUARRY AT WALLERAWANG SITEGOAL PTY LTD

The information below supplements that provided in the environmental impact statement (EIS) for the proposal which was made available for public review from December 2001 to February 2002. This supplementary information is presented in the form of answers to 147 questions asked by New South Wales Government authorities, the Council of the City of Lithgow, businesses and the community in the course of the public review of the EIS.

### 1.0 NOISE

#### 1.1 Planning NSW

1. *Identify the noise and vibration impact of a front end loader or traxcavator or excavator with backhoe that would be used to move quarried material at the closest sensitive receptors.*

Noise emissions for all equipment were addressed in the EIS (s5.8.4, p44) and in Appendix 9 of the EIS (in particular s5.0, s6.0, s7.0 and appendices). It was stated in both the EIS and Appendix 9 that the assessment was conducted against a worst case scenario with all equipment operating simultaneously under full load capacity. Noise exposure was modelled using the Integrated Noise Model approved by the NSW EPA.

Vibration associated with equipment operation is not significant at the distances, approximately 500 metres, of the closest receptors from the quarry site. Vibration is a matter associated with blasting and is dealt with there.

2. *Identify the noise and vibration characteristics and mitigation of the rock crusher(s).*

See response to 1. above

3. *Identify measures to reduce noise, including reflection of noise off surrounding hills and provide details of the frequency or conditions under which noise monitoring would be undertaken during the life of the mine.*

Measures to reduce noise were outlined in the EIS and Appendix 9 of the EIS. Significant among the measures was the commitment to maintain a "high wall" at the northern edge of the excavation, monitor weather and noise emissions and respond to the results of the monitoring. The modelling and analysis of noise used the Integrated Noise Model which is the model approved by the NSW EPA. This model takes topography into account.

A commitment was given in the EIS (s4.3.2, p22) to prepare and implement a noise monitoring program using attended or unattended recorders at the nearest receptors to the north, north-east and east of the quarry. Details of noise monitoring will be developed in the course of preparing the noise monitoring program. The nature of management responses to excessive noise impacts and conditions under which responses might be taken will be set out in the noise management plan for the quarry's operation.

4. *Identify the impacts of early morning haulage operations and those of trucks in general and provide measures to minimise these impacts against the current ambient noise levels at residences in the vicinity of the quarry rather than along the Great Western Highway. For an estimated 500,000 tpa it is anticipated that there would be approximately 80 (160 truck movements) truck loads of 25t capacity per day, provide information on how many trucks would be loaded outside of working hours. The number of trucks that can be stored on the site overnight should also be provided.*

Although the assessment of sleep disturbance normally applies to night-time, Atkins Acoustics reviewed the  $L_{Amax}$  levels from impact noise (such as loading of trucks) in regard to sleep disturbance during proposed early morning operations and for shift workers. The EPA requires the  $L_{A1,1min}$  noise level not to exceed the background level by more than 15dB(A) for the assessment of sleep disturbance.

The night-time rating background noise level documented by Atkins Acoustics (Report No. 31.5130.R3:DD16 Rev02 (May 2001), "Noise and Blast Impact Assessment, Wallerawang Hard Rock Quarry", EIS Appendix 9) was 34dB(A). Accordingly, impact noise levels should not exceed 49dB(A)  $L_{A1,1min}$  for the assessment of sleep disturbance at night.

The daytime and evening rating background noise levels documented in the above report by Atkins Acoustics range from 38(A) to 41dB(A). Hence, the assessment goal for sleep disturbance during the day is 53-56dB(A)  $L_{A1,1min}$ .

Sound power levels of impact noise from trucks loading are typically 113-118dB(A). The nearest residences are approximately 560m from the quarry. The predicted  $L_{Amax}$  levels at the nearest receptors from impact noise are 35-45dB(A) and hence satisfy the assessment goals for sleep disturbance of 49 dB(A) for night-time and 53-56dB(A) for daytime operations (Atkins Acoustics 8/3/02).

The need to load trucks outside normal working hours would depend upon the volume and location of demand, the delivery times required by clients and the schedules of contract truck operators. It is therefore, impracticable to provide estimates of the numbers of trucks that would be loaded outside normal working hours, operate early in the morning or be parked at the quarry site overnight. These estimates are not significant in the light of estimates of noise exposure (above) prepared by Atkins Acoustics. Monitoring to confirm the noise levels for early morning loading and the mitigation of out-of-hours noise exposure will be addressed in the noise management plan.

5. *Identify how noise and vibration would be restricted under adverse weather conditions, if high production rates are required at that time. As drilling is anticipated on 45 days per year for 125,000tpa and 180 days per year for 500,000tpa, the impact may be significant.*

Commitments were given in the EIS (s 4.3.2) and in Appendix 9 of the EIS (s7, s8 and s9) to conduct a noise monitoring program and to modify or suspend operations if noise or blasting impacts due to bad weather were excessive. A wind speed and direction monitor will be located on-site to provide data for weather assessments. Maintaining a drilling program to meet demand is a management issue for the quarry operator which would be conducted within commitments given and constraints imposed by authorities. There would be sufficient time available, both in the available number of days and hours in each day, to allow flexibility in



the drilling program. Drilling on 180 days of a year, necessary to maintain peak production, would leave 70 out of the 250, or 20% of, available working days, free for program management. At lower production levels the proportion of time available for program management would be much greater.

6. *Provide the noise and vibration characteristics of an excavator and hydraulic hammer working together with the frequency of the hammer impact and the length of time per day this would be in operation.*

See the response in 1. above. Usage times for quarry equipment were set down in Appendix 9 of the EIS (s2.6). Appendix 9 of the EIS (s9.0) noted that the main contribution to noise exceedances would be due to the operation of the hydraulic hammer drill on the quarry surface. An undertaking was given that, even at anticipated peak production level, it would be possible to restrict operational hours of the drill during adverse weather conditions without affecting the desired quarry production level. Although the drill will not be operated outside normal quarry operating times, it is not practicable to specify its hours of operation within the day.

## 1.2 Lithgow Council

7. *Address the impact of noise and vibration on shift workers and mitigation for sleep disturbance.*

See response to 4. above. The noise and vibration caused by blasting would be spasmodic. The frequency of blasting would vary from once every two months for a production of 125,000 tonnes per annum to once every two weeks for peak production, although the use of packaged explosives in that part of the quarry closest to the Great Western Highway is likely to increase the frequency of blasting to approximately once every two weeks when blasting is within 300 metres of the highway. Blasting would occur between 9am and 5pm, Monday to Saturday (EIS Appendix 9). Ground vibration and air-blast overpressure will be monitored for all blasting but are expected to be within assessment goals. The noise of blasting would be of very short duration, less than a second, and should, therefore, be a very minor and occasional factor in sleep disturbance for shift workers.

## 1.3 EPA

8. *Early morning loading of trucks would need to be justified by monitoring and would only be allowed if there were no complaints.*

See response to 4. above. Estimates of noise exposure from the loading of trucks indicated levels below goals based on EPA requirements. Unless the expected levels were to be exceeded in actual operations, there would be no grounds to prevent early morning operations.

## 1.4 NPWS

9. *Effect of noise on proposed Mt Walker Nature Reserve.*

In accordance with the EPA Industrial Noise Policy (INP), the recommended noise assessment goal for passive recreational areas is 50dB(A)  $L_{Aeq,15min}$ .

The predicted noise contours presented in Appendices 6 and 7 of Atkins Acoustics' Report No. 31.5130.R3:DD16 Rev02 (EIS Appendix 9) indicated that the  $L_{Aeq,15min}$  noise levels beyond the quarry boundary range from 35dB(A) to 45dB(A) and, therefore, satisfy this assessment goal (Atkins acoustics 8/3/02).

## 1.5 Community

### 10. *Noise impacts from blasting and heavy vehicles.*

See responses above.

11. *The issue of wind direction and frequency has not been adequately addressed. Noted that only one of the three noise monitors used is in a direct line from the quarry site towards Wallerawang residential area. Issue of wind direction is crucial – the wind roses for Mount Piper Power Station do not reflect the true nature of the local environs wind patterns. The noise pollution that will be created and maintained is not suitable for being in such close proximity to local populations, especially when southwest and east winds prevail.*

Meteorological data from the vicinity of the Mt Piper meteorological station is considered to be representative of the general meteorological conditions of the proposed quarry site and for the modelling of potential noise and air quality impacts. Meteorological data will be collected at the quarry site as an integral part of the program to monitor quarry operations and to assist in identifying adverse weather conditions where an operation response might be required.

12. *The location of the crusher has not been finalised and may be located away from the trench and the high earth wall – therefore the crusher may not be bundled for noise. No noise estimates are made for the noise that would be generated by the rock breaker.*

See response to 1. above. Noise estimates for all equipment proposed to be used in the quarry, including both a mobile and a permanent crusher and the rock breaker, can be found in Table 6, p17 of Appendix 9 of the EIS. As flexibility in the location of the crusher is necessary until final designs of the quarry are prepared, the noise of a crusher located within the pit or outside the pit was included in the modelling.

13. *Too many variables that make a definitive impact statements on noise pollution impossible to produce eg. location of crusher.*

All known variables were taken into account in modelling noise exposure. See response to 1. and 12. above.

14. *Low cloud./ mist and fog in autumn and spring when generated by the lake associated with easterly wind conditions will carry noise pollution. These conditions are not addressed.*

See responses to 3., 5., 6. and 11. above.

15. *The EIS does not take into account the many residents in the Lakeside Estate and adjoining streets who will be affected.*

Figure 1 on page 3, Figure 4 on page 14 and Appendices 2 to 7 inclusive of Appendix 9 to the EIS identify residential areas that might be affected by quarry operation and the impacts that might be experienced in these areas.

16. *No specific mention is made of the effects of the development to the south. No mention of containment of noise nor are there any monitoring locations.*

The only development to the south of the quarry site that might be affected by quarry operations or blasting is an area of grazing land located 1.5 to 3.0km from the quarry site. There is no residence on this land. Marrangaroo is 3km to the south east of the quarry and shielded by intervening topography.

17. *Hours of operation are able to be extended for peak demands – this is too open ended and the EIS has not assessed the impacts of working outside the proposed operational hours.*

Noise exposure from quarry operations would be similar during extended hours of operation to those during normal hours. Based on a worst case scenario with all equipment operating simultaneously, operational noise goals would be exceeded only occasionally and in particular weather conditions. Blasting would be conducted only within the hours of 9am to 5pm Monday to Saturday and then infrequently as stated in the EIS Appendix 9. Out of hours operations would be managed under noise monitoring and management responses identified in the noise management plan.

18. *Early morning loading and departure of trucks prior to 5 am will generate a range of adverse noise impacts not addressed.*

See response at 4 above.

19. *Noise and vibration impacts modelling has been carried under calm conditions. The EIS states that noise will be acceptable in calm conditions but is likely to exceed desired levels when windy. Calm conditions are not common. EIS also seems to model noise on the basis of noise emanating from inside of the quarry yet the loading is to occur outside of the quarry and from a distance much closer to the nearby residence.*

Modelling was carried out for a range of conditions and all operations associated with the quarry, including the loading of trucks, using the Integrated Noise Model approved by the NSW EPA. The noise management plan will specify operational constraints to be adopted during periods of adverse weather conditions.

20. *Shift worker – feel would be greatly impacted in sleep during the day.*

See response to 4. and 7. above.

## 2.0 BLASTING

### 2.1 Planning NSW

#### 21. *Identify measures to avoid exceedences for blast overpressure.*

Measures to avoid exceeding blast overpressure and vibration guidelines were explained in s3.4, pages 11 and 12 and in s5.9, pages 46 to 48 of the EIS. These measures include using a small drill hole diameter (89mm), sequential firing of charges, trialling explosives including packaged explosives and monitoring overpressure and vibration to ensure compliance with the EPA's comfort criteria levels for overpressure and ground vibration.

The blasting program will be developed and conducted by a reputable blasting contractor in accordance with all relevant standards and guidelines, undertakings contained in the EIS and the noise management plan. The blasting program will take account of ambient weather conditions. The program will evolve as quarrying proceeds based on experience gained and the need to meet all constraints. Initial blasts will be small in size until adequate site rules are established.

The drilling pattern and charge size will be determined as part of the progressive design of the blasting program. The blast design will vary depending on a number of factors including explosive type, location within the quarry, the amount of natural rock fracturing encountered during drilling and experience with prior blasts as quarrying proceeds. The intent of trialling different forms of explosive, for example packaged explosives instead of bulk explosives and different sized charges, is to minimise the impacts of blasting, avoid noise and overpressure goals being exceeded and to maximise safety.

The overall goals will be to achieve best practice, to meet all requirements, standards and guidelines and to meet duty of care obligations.

#### 22. *Demonstrate that the 50 m set back from the Delta Electricity power pylon has a reasonable safety margin.*

Initial blasting will be conducted at a point furthest from the power pylon and vibration monitoring will be conducted at the base of the pylon (see EIS s5.9, page 48). Data from initial blasts will be used in blast design as the quarry progresses to ensure that recommended vibration levels at the base of the pylon are not exceeded. Although 50 metres has been selected as an appropriate minimum setback distance, blast design will be more significant in achieving vibration limits than the setback distance. If vibration at the base of the pylon does cause problems, a cut-off trench will be cut along the edge of the easement approximately 30 metres from the pylon to attenuate surface waves which carry vibration energy.

No blasting is proposed within the 60 metre wide power line easement.

#### 23. *Clarify how the conclusion of "blasting vibrations will not affect the integrity of the rock barrier between the quarry and the Cox's River for more than a few metres from the low wall" was reached.*

This is a conclusion of the stability analysis undertaken by G E Holt and Associates, Geotechnical Engineers (EIS Appendix 5). Clarification of this conclusion is contained within Holt's report which is attached.

24. *Provide information about charge size and estimated impact as work progresses from the initial stages near the road.*

See response to 21 above.

25. *Provide information on what the frequency or intensity of blasting would be under the conditions outlined in a meeting held on Monday 25 February 2002.*

See response to 21 above.

26. *Identify the implications for local community and the fibre optic cable of use of a rock breaker after blasting.*

The impacts of the operation of the rock breaker were taken into account in the noise assessment of quarry operations (see response to 1 above). Operation of the rock breaker would not affect the optical fibre cable which is on the opposite side of the Great Western Highway to the proposed quarry.

27. *Identify the impacts associated with using a different form of explosive, as discussed on 25 February 2002, and provide mitigation measures for them.*

See response to 21 above.

## 2.2 RTA

28. *Opposes the closure of the Great Western Highway and requests that an alternate form of blasting or rock fragmentation be put in place.*

It will not be necessary to close the Great Western Highway during blasting.

The Department of Mineral Resources no longer requires the closure of a public road during blasting that takes place less than 500 metres from the road and does not specify any other separation distances between roads and blasting sites. However, quarry operators are required to demonstrate a duty of care to ensure that fly rock from blasting does not reach a road.

Sitegoal proposes to meet its duty of care through the following management procedures:

For blasting within 300m of the Great Western Highway.

- Smaller blasts using packaged explosives (rather than bulk ANFO explosive) would be detonated at approximately two weekly intervals. The use of packaged explosives provides a higher level of security against the risk of overfilling holes compared with when bulk explosives are used.
- Blasting mats will be used when within 150m of the highway or power pylons and powerlines.
- Holes can be angle drilled to ensure any flyrock is thrown away from the Highway.

For blasting between 300m and 500m of the Great Western Highway.

- The option of using bulk explosives (ANFO) will be trialed, resulting in one blast approximately every two months.

All Blasts.

- The measurement of stemming material will be undertaken for all holes to ensure that the specified depth is achieved. This is critical to minimise the generation of flyrock from drill hole collar materials.

### 2.3 Lithgow Council

29. *Identify impacts on the high-pressure gas pipeline and other utilities including fibre optic cable and water pipeline.*

See response to 26 above and 30 below.

The nearest Telstra trunk cables to the quarry are located on the northern side of the Great Western Highway. They would not be vulnerable to impacts from blasting. Telstra has advisory arrangements and penalties in place to deal with direct physical damage by machinery.

### 2.4 Agility

30. *Provide an assessment of the impact of vibration from blasting on the gas pipeline.*

Additional assessment was conducted by consultants Colmine Consulting on the possible effects of blasting on the Agility high-pressure gas pipeline. The advice received confirmed that the effects on the pipeline, which is 480m from the quarry site at its closest point, would not be significant. Based on the formula, where  $D/W^{1/2} = 50$ , and the blast design recommendations contained in the EIS, negligible damage would be expected at surface structures beyond 197 metres from the blasting site. At more than twice this distance, no impact would be expected at the pipeline, provided that it has been constructed to the applicable standards.

It is impossible to calculate precisely the vibration expected at the pipeline, as the factors affecting transmission of energy are too numerous to model with any level of reliability. Given the steep ground and the alluvials along the river, transmission would be poor, but this could be offset by the very elastic nature of quartzite and some of the host rock observed. However, the test blast, which is proposed for the electricity pylon, would provide reliable estimates of vibration transmission in the ground surrounding the quarry site and allow vibration levels to be predicted with a sufficient level of accuracy for Agility's purposes.

For the test blast, monitoring would be conducted at a few points along the pipeline at change of grade such as ridges where vibration energy could be focussed and higher than average amplitudes experienced. Monitoring would be undertaken, in particular, on the crest of the ridge immediately to the west of the river and 50 metres east and west of that point. This is the only location where potential problems might be anticipated. The test blast would be conducted in consultation with Agility.

Vibration from blasting travels in surface waves and the deeper a facility is buried, the less likely is the chance of damage. As the pipeline is buried between 1.2 and 1.5 metres below ground level (Agility), the chance of damage is reduced. The transmission of vibration could be reduced further by constructing a cut-off trench parallel to the pipeline. This would be done only if monitoring of the test blast indicated a risk to the pipeline.

## 2.5 Community

31. *Closure of the Great Western Highway is a hindrance to the community and emergency crews – contrary to the reasons of having the highway upgraded, will hinder emergency vehicle access including transfers from Lithgow Hospital to Bathurst, GWH is known for high accident rate and black spot areas.*

The Great Western Highway will not be closed during blasting. See response to 28. above.

32. *Told that one of the main reasons the GWH would be closed was due to mobile phones altering the start detonators – what about residents using mobile phones in backyards of their homes?*

The effects of radio and mobile phone transmissions are relevant only to electrical detonation systems. Electrical detonation of charges will not be used in the quarry.

33. *Damage to home and impacts on property values. Potential structural damage from blasting – insurance does not cover this type of damage. Will Sitegoal be willing to accept liability for damage from blast impacts? Residents upset that they are made to get a certification for their homes at their own expense prior to blasting. If damage occurs they are upset again that they have to prove it at their own expense and time.*

See response to 21 and 30 above. Analysis conducted by Colmine Consulting indicated that negligible damage would be expected at surface structures beyond 197 metres from the blasting site. The closest dwelling is more than 500 metres from the quarry. It seems highly unlikely, therefore, that vibration from blasting would affect dwellings in the area. Unless blasting trials cause levels of vibration significantly greater than estimated, in which case that question of property inspections would be re-examined, the onus of proof must remain with residents.

34. *Blasting impacts on the walls of the Lake Wallace Dam*

See response to 30 above. The Wallace Dam wall is located more than 1km from the quarry site and would be beyond the distance within which there might be damage to surface facilities (ie 197 metres).

35. *Inconsistencies between Section 5.7.4 and Section 3.4 as to how often blasting will occur.*

The inconsistency is in section 5.7.4 related to air quality. Holmes Air Sciences confirmed that the low estimate of blasting frequency used for their analysis did not affect the results or conclusions.

36. *Will all areas around the blast site for 500 metres be vacated and kept clear for the period of blasting eg. trail-bike riders, people using the Cox's River?*

See response to 21 above.

The following safety arrangements will be in place for each blast:

- blast signage will be placed at all entry points to the quarry site;
- a siren warning will be given before each blast;
- sentries will be posted at all entry points to the quarry site.

37. *Impact on their horses, risk to health and wellbeing – particularly frightening the horses during the blasting.*

Arrangements will be made to notify the nearest residents at an agreed time prior to the blast.

38. *Gas line running approximately 400 m from the site not considered. Concerned that gas leaks will be caused by the associated activity.*

See response to 30 above.

39. *Main electricity lines are located only 85 m from the proposed quarry site.*

Blasting will not occur within 50 metres of the closest electricity pylon. Vibrations will be monitored at the base of the tower to ensure that vibration limits are not exceeded. Blasting will be managed to avoid excessive vibration and to ensure that the power infrastructure is not damaged by flyrock.

40. *Impact on schools and community facilities – potential of flyrock hitting children or damaging buildings.*

Blasting will be managed to contain flyrock within the quarry. Particular precautions, including the use of blast mats, will be taken to prevent flyrock reaching the Great Western Highway, 150 metres from the quarry site at its closest point, and to prevent damage to the power transmission line. The nearest buildings to the site, 700m away in Barton Avenue, and the school, 2km away from the quarry, are well beyond the extent of any flyrock.

41. *Questions whether an optic fibre is also running along this route*

See response to 29 above.

### **3.0 ROAD INTERSECTION & TRAFFIC**

#### **3.1 RTA**

42. *RTA seeks an alternative entry and exit for the proposed development – the current proposal will create a hazardous and dangerous merge.*

See Figures 5 and 6.



43. *The RTA will require a full set of drawings prior to determination.*

Once Development Approval obtained.

44. *An appropriate warning system is to be put in place to advise the approaching motorists of the heavy vehicle slowing, stopping and turning manoeuvres.*

An automatic sensor can be placed at the exit to the site that would be activated by heavy vehicles, triggering flashing "truck entering" signs.

45. *No haulage is to take place in adverse weather conditions.*

The EIS contained a commitment not to allow truck movements during poor visibility (EIS Table 5.15, Page 60). A reference point will be established on site prior to exit, where trucks will not be allowed to leave the site if the sign cannot be read.

### 3.2 Lithgow Council

46. *Provide recent annual road accident statistics for this section of the GWH together with atmospheric information which accurately identifies the frequency, duration and severity of fog.*

We are endeavouring to obtain accident statistics for the Great Western Highway/Barton Road junction. See response to 131.

### 3.3 Community

47. *The "sea-gull" highway interchange is designed in an inappropriate location under inappropriate conditions.*

The location of the interchange has been agreed to by RTA as being appropriate.

48. *Impact increased traffic, heavy vehicles – already difficult to merge and cross. How can trucks merge safely with trucks when there are heavy fogs.*

See response to 42 and 44.

49. *Proposal compromises all aspects of safe traffic management.*

See response to 42 and 44

50. *EIS states that truck movements will not occur while heavy fog hinders vision to enter the GWH – what is acceptable level for trucks leaving the site under fog conditions - the area suffers this natural state for about 5 months of the year until mid morning - sceptical that the owners would find this viable and expected to ignore this rule.*

See response to 45.

51. *Would the GWH and the Castlereagh Hwy at Tunnel Hill be able to cope with the increase heavy traffic – an estimated 73%.*

Both are highways and are designed for the carriage of heavy traffic.

52. *Would trucks returning from the proposed industrial park travel along the Castlereagh Highway or would they take the more direct route through the Wallerawang shopping centre?*

Via Castlereagh Highway.

53. *Is it proposed to light the intersection of the proposed quarry.*

The intersection will be lit in accordance with RTA requirements.

54. *Concerned about heavy vehicle movement during the night.*

The majority of heavy vehicles movements from the quarry are likely to be in the daytime.

55. *Impacts from heavy vehicle movement across Blue Mountains.*

The Great Western Highway is the main route for heavy traffic across the Blue Mountains and is designed for heavy traffic.

## 4.0 FLORA AND FAUNA

### 4.1 Planning NSW

Matters raised by Planning NSW, State Forests of NSW and NSW National Parks and Wildlife Service (56 to 68 below) were referred to *Wildthing Environmental Consultants* who prepared the Statement of Effect on Threatened Flora and Fauna for the EIS. *Wildthing* conducted a further field visit on 27 and 28 March 2002 and responded to the matters raised by these agencies in a report dated April 2002 (Attached). Matters raised by the Lithgow Council and the Community (68 to 72 below) are generally addressed by the *Wildthing* April 2002 report (Appendix 1).

56. *Provide general weather conditions experienced during fauna surveys, including approximate temperatures, wind speed and rainfall.*

See *Wildthing*, April 2002.

57. *Map potential habitat for the Bathurst Copper butterfly.*

See *Wildthing*, April 2002.

58. *Clarification on amount of habitat to be removed for each threatened species.*

See *Wildthing*, April 2002.

59. *Grey-headed flying fox – prepare an assessment of significance.*

See *Wildthing*, April 2002.

60. *Provide further information on wildlife corridors for each threatened species.*

See *Wildthing*, April 2002.

## 4.2 NPWS

61. *The NPWS does not support the recommendation to relocate any Yellow-Bellied Sheathtail Bats and it is not an effective mitigative measure.*

See *Wildthing*, April 2002. Although clearing of the site would remove up to 82 potential roosting hollows for the Yellow-bellied Sheathtail Bat (*Falsistrellus tasmaniensis*) (shared among possibly other birds and mammals identified in the *Wildthing* report), this loss appears not to be significant on a regional basis. The proponent notes that the NSW National Parks and Wildlife Service does not support relocation of any individuals of the bat identified on the site but has not proposed an alternative management approach. The proponent will, therefore, consult with the NSW National Parks and Wildlife Service regarding the management of fauna located prior to and during clearing of the site once a determination has been issued for the proposal.

62. *Further surveys for Purple Copper Butterfly. The SEE would not have detected this species because the survey was conducted in December when the species is not flying.*

See *Wildthing*, April 2002. Habitat for the Purple Copper Butterfly (Bathurst Copper Butterfly) was detected around the quarry site although not on the site itself. A survey for the Bathurst Copper Butterfly will be conducted in September 2002. Recommendations to preserve and protect habitat around the quarry site will be adopted.

63. *Concerned about impacts on Mt Walker Nature Reserve from diversion of water-courses into Cox's River. This could impact on the endangered Booroolong Frog and the vulnerable Eucalyptus pulverulenta.*

See *Wildthing*, April 2002.

## 4.3 NSW State Forest

64. *Should consider alternative sights for surface facilities – preferably outside State forest that does not require clearing of native vegetation.*

The impacts of siting the surface facilities elsewhere than proposed would cause greater impacts than would siting them on the presently proposed site. For example, an alternative site for surface facilities to the north of the quarry was considered but found to be unsuitable because of constraints of slope and proximity to the Cox's River.

65. *Potential habitat for the Bathurst Copper Butterfly does exist on the site. Surveys were undertaken outside the flying season – makes conclusion in EIS difficult to support.*

See response to 62 above.

66. *Additional threatened species within 10 km that have not been considered in the EIS including Booroolong Frog, Rufous Betong, Masked Owl, White-eared Monarch, Bush stone Curlew, Red Goshawk and eucalyptus pulverulenta.*

See *Wildthing*, April 2002.

67. *Conservation status of woodland community towards achieving catchment management and native vegetation goals is not assessed.*

See *Wildthing*, April 2002.

#### 4.4 Lithgow Council

68. *Provide information about the impacts on the flora and fauna surrounding the Cox's River.*

See EIS section 5.5, Appendix 4 of the EIS and *Wildthing*, April 2002.

69. *Provide analysis on aquatic habitat impacts including potential impact on released trout and native fauna in the waterways.*

See *Wildthing*, April 2002, in particular the conclusion that, "The proposed quarry is unlikely to impact on the Cox's River and the flora and fauna that depend on it due to run-off generated from disturbed areas of the site being captured and diverted through large trapezoidal channel structures to the Water Management Dam, . . . " (page 36).

70. *Address impacts on flora and fauna in the Mt Walker Nature Reserve.*

See *Wildthing*, April 2002.

#### 4.5 Community

71. *Impact on wildlife and bushland – including Bathurst (Blue) Copperwing Butterfly, Platypus, Gang Gang and Wedgetail Eagle not adequately addressed.*

See *Wildthing*, April 2002.

The Bathurst Copper Butterfly was assessed in accordance with section 5A of the Environmental Planning and Assessment Act. The Gang Gang and Wedge Tailed Eagle were listed in Appendix 4 of the EIS as species expected to inhabit the region. Neither the Platypus, Gang Gang or Wedge Tailed Eagle are listed as endangered or threatened species in regard to the Wallerang areas.

72. *Impact on the Yellow Bellied Sheath Tail bat, which can be found on site. No mention given to the colony of platypus situated in the nearby Cox's River. Habitat impact on the local platypus and fish population are not discussed.*

See *Wildthing*, April 2002 and response to 69 above.

### 5.0 WATER

#### 5.1 Planning NSW

73. *Provide a clear definition of the location of water collection and storage facilities including proposed catch drains and irrigation system.*

Refer to Figure 1 – Water Management, attached.

74. *The estimated untreated runoff based on maximum daily rainfall for the area needs to be provided together with mitigation measures to minimise the impacts of this. Also, address how it will be ensured that treated water does not contaminate the Cox's River and other land within SEPP 58 - Protecting Sydney's Water Supply.*

The highest recorded daily rainfall at Lithgow is 192 mm (Bureau of Meteorology Website). The volumes of runoff from the site assuming a runoff rate of 50% are shown in the table below.

Stage	Area	Volume Runoff (ML) (for maximum daily rainfall)
1	Quarry	4.9
	Other disturbed areas	6.6
2	Quarry	6.9
	Other disturbed areas	4.6

During periods of heavy rainfall the quarry floor will be used as a temporary storage. The runoff from other disturbed areas will be collected within the Main Water Management Dam. The Water Management Dam has a capacity of 7.7 ML, including a maintained freeboard of 4.4 ML. The runoff from disturbed areas will be almost completely contained within the freeboard, with approximately 0.2 ML being discharged off-site.

The quality of treated water will be monitored prior to discharge off-site. A detailed monitoring program will be included in the Water Management Plan for the site, which will be approved by the EPA and DLWC prior to commencement of construction. The monitoring program is likely to include analysis for pH, EC, TSS and, periodically, hydrocarbons. Also refer to response for 78.

75. *A summary of all the water requirements (maximum and minimum seasonal requirements) from various uses together with a breakdown of the waste and collection volumes is required. As well, the position of the collection systems for each waste stream and the treatment of these wastes need clarification.*

The water uses on the site would include dust control, irrigation, and uses in the office, workshop and truck wash. The water used in dust control, irrigation and truck wash will be recycled from the water management dam. Potable water will be collected rainwater or imported by tanker.

Waste streams will include office waste, general rubbish, including food scraps, waste oil, grease, vehicle and plant parts and effluent. The waste streams, with the exception of effluent, will be collected by contractors and will be recycled where possible.

Further details will be included in the water management plan, which will be prepared for the site prior to construction.

76. *Supply information about the maximum period for the breakdown of the biodegradable surfactant which would be used on site?*

The EIS proposed the use of Shell Teepol as the surfactant. Shell Australia Product Department provided the following information:

"Shell Teepol Household meets the Australian Standard AS 4351.2 for Biodegradability, as tested by an independent laboratory in 2000 [Determination by analysis of dissolved organic carbon (DOC)]. The standard is technically equivalent to ISO 7827-1994 and is based on OECD "Ready Biodegradability" tests 301 and 301E.

"The product was evaluated under the following test conditions:

- Initial Organic Carbon Range: 35mg/L
- Biodegradation and Toxicity Control: Sodium Benzoate
- Microbial Inoculum: Mixed active sludge and secondary effluent
- Microbial Inoculum Level: 0.05mL/1000mL
- Incubation Temperature: 20-25°C

"The test was performed over a 21-day period with evaluations performed at 0, 3, 7, 14 and 21 day intervals.

**Table 1 – Results of testing**

Time (Days)	Mean Doc (mg/L)	%Biodegradability
0	34	-
3	19	49
7	6	81
14	10	71
21	10	70

"We report the results as showing that SHELL TEEPOL HOUSEHOLD is 70% biodegradable over 21 days in accordance with AS 4351.2.

"In addition, we have investigated the MSDS sheets as supplied by the suppliers of the ingredients/additives present in concentrations greater than 5% in the formulation of SHELL TEEPOL HOUSEHOLD, and each of those ingredients/additives are reported by the suppliers as being biodegradable.

"Therefore, we can claim the Product listed to be;

The product meets the requirements for ready biodegradability of a formulated product or mixture when tested according to AS 4351.1 – 1996."

77. *Provide information about how a run off rate of 30% was calculated, as run off rates in rocky outcrop areas may be considerably greater than 50%.*

During a year there will be a large number of rainfall events, which will vary in size. Some of these rainfall events will be small and result in no runoff, while some large events may have a

much higher runoff than the 30%. The assumed runoff rate for the water balance is 30% of the annual rainfall. This takes into account evaporation, infiltration and storage within the site.

78. *It is assumed that runoff from rainfall will be stored in the on-site Water Management Dam (EIS, p 19). Given that run off may exceed 30% at times and that the on-site dam has a total capacity of 7.7ML if the free board is used as well (and a capacity of 3.3ML if a freeboard of 4 metres is provided), the details of the frequency of storm events should be provided. Also, while average monthly rainfall figures are provided on page 38, the maximum rain falls need to be estimated for the site. The information provided should also consider various runoff percentages in excess of 30%.*

The Water Management Dam will hold runoff from the site for storm events up to the 1 in 50 year, 2 hour event (59.6 mm) during maximum disturbance of the site. This was calculated using the RAFTS-XP model.

79. *Identify the impact of redevelopment of the former Hoskins quarry for use as a Water Management Dam, including how it would be redeveloped and what type of access would be required to redevelop this site and for maintenance purposes.*

The details of the construction of the water management dam have not been completed. These details will be included in the detailed construction plans for the site. An access track will be required to the dam, wide enough to allow access for an excavator or similar machine. The access track would be located on the upslope side of the catch drain.

80. *Only one of the coarse sediment traps mentioned appears to be present in figures (in the vicinity of the road). As the whole surround is to be bunded, it is unclear where the others would be placed. Also, the coarse sediment traps may be concrete lined for maintenance purposes. It is unclear how the Applicant would ensure that the impact of these works does not affect the Cox's River.*

Figures 4.2 and 4.3 of the EIS show two coarse sediment traps, one is located on the drainage line from the quarry area, the other is located on the drainage line which runs behind the surface facilities. These coarse sediment traps are also shown on Figure 1 in this report.

During construction of the coarse sediment traps, temporary sediment and erosion controls will be used to minimise the impact of the works on the Cox's River. These temporary controls will include silt fences, hay bales and sediment traps. Details of the controls will be included in the erosion and sediment control plan which will be developed for the site prior to construction.

81. *It is unclear how discharge to the Cox's River would occur. A spillway is indicated for discharge from the site during "larger events and longer duration events" but is unclear where the spillway would be located. Also, it is indicated that clean water would be "diverted only to the south of the quarry". This diversion needs to be shown and the circumstances under which it would be used.*

The spillway and clean water diversions are shown on Figures 4.2 and 4.3 of the EIS for Stage 1 and Stages 2 and 3 respectively. The location of these structures is also indicated on Figure 1 included in this report. All rainfall falling on undisturbed areas (ie. clean water) will be diverted from the site to natural watercourses in the area.

82. *Some of the proposed woodlot for irrigation is steep and may be subject to high percentages of runoff. It is unclear how the Applicant would ensure that suitable measures avoid flooding of the irrigation site and also the contamination of the Cox's River if runoff is high. Also, the earthen bund shown in Fig 4.3 shows an escape point towards the Cox's River and the Stage 2 Quarry Bench may have a potential sediment escape area on the western side. Both elements need to be discussed.*

The irrigation area will be used to discharge water from the water management dam. Sediments in the discharge water will have already settled out in the water management dam. The irrigation area is an undisturbed area and therefore contamination of the water is unlikely. Also discharge will not occur during wet weather. Also see response to question 85.

83. *Show the bunded area, proposed for the maintenance and refuelling of plant and equipment on plans.*

Details of the exact location of the bunded area have not been finalised but it would be within the surface facilities area. These details will be included in the final construction plans for the site.

## 5.2 DLWC

84. *The survey results, applying to the perimeter water management contour bank, are not to scale or detailed enough to determine their feasibility.*

Refer to Figure 1 – Water Management, attached.

85. *Some very steep slopes in the vicinity of these proposed banks may make the length of the system difficult or impossible to construct and/or maintain adequately. These structures would seem to be critical to the on and off-site clean and dirty water systems, so are an important aspect of the proposal.*

These catch drains / banks will run around a contour, at approximately 900 m AHD, and therefore will have a relatively low grade. The irrigation system and catch drains will not be located on the steepest land to the south-east of the quarry. Land to the east of the quarry has slopes of up to 27°, this may present some issues for construction and maintenance. Areas of more gentle slope, located to the north and north-east of the quarry, will be more frequently utilised for irrigation than the area to the east of the quarry.

To ensure adequate construction and maintenance of catch drains within the steep areas, geotextile and/or geogrid will be used to stabilise the drains. Details of construction will be included in the final construction plans.

## 5.3 EPA

86. *The management of wet-weather flows and wastewater management need to be included in a Water Management Plan for the site.*

These issues will be included in the detailed Water Management Plan, which will be developed for the site prior to commencement of works.



## 5.4 SCA

87. *The level of detail provided regarding the layout of the water management system is particularly disappointing given that water management is one of the key environmental issues.*

The layout of water management structures is shown on Figure 1 in this report. A detailed Water Management Plan will be developed for the site prior to commencement of the project, subsequent to approval of the location of surface facilities etc. This plan will show the locations of the proposed water management structures.

88. *Concerned about apparent inconsistencies in the conceptual layout.*

Refer to Figure 1 – Water Management, in this report.

89. *EIS has not satisfactorily addressed Clause 10 – SEPP No. 58 “Protecting Sydney’s Water Supply”. Requires an assessment of whether the development will have a neutral or beneficial effect on water quality or rivers in the hydrological catchment. Concerned about drainage lines and safe discharge of excess water from dams.*

The Quarry will have a neutral effect on water quality in the catchment as the site will have zero discharge, except possibly during periods of constant high rainfall exceeding 48hrs. Any water intentionally released from the site will be monitored prior to discharge. Present runoff from the site represents a very small proportion of the total flow of the Cox’s River downstream from Lake Wallace. Any decrease in runoff reaching the river as a result of quarrying operations is, therefore, unlikely to adversely effect downstream water users.

A detailed Water Management Plan will be developed for the site detailing exact catch drain and outlet locations subsequent to approval. This management plan will also include a water quality monitoring program.

90. *Water quality standards have not been defined for discharge that may be required in storm events.*

Water quality standards for periods of constant high rainfall will be developed in conjunction with the EPA.

91. *Clause 10(b) requires consideration of whether the proposed water management practices will be sustainable over the long term. Constraints of the site need to be addressed.*

Appendix 3 Section 5.1.7 of the EIS indicates that the drains constructed on steep slopes will have rip-rap protection installed at approximately 50 m intervals to dissipate flows. The construction method for catch drains and dam outlets has currently not been considered, but will be addressed in the Water Management Plan which will be developed for the site. Also refer to Response 85 and 89.

92. *Insufficient information has been provided about the proposed aerated wastewater treatment system.*

A detailed on-site effluent disposal assessment will be conducted to address the suitability of the site for effluent irrigation following approval of the development. This will include assessing the most appropriate location and the required size of the system.

93. *The proponent should be required to undertake a hydraulic and nutrient balance for the on-site effluent disposal.*

A hydraulic and nutrient balance will be included as part of the effluent disposal assessment mentioned above.

## 5.5 NPWS

94. *Concerned about impacts on Mt Walker Nature Reserve from diversion of water-courses into Cox's River.*

See response to 69 above.

## 5.6 Community

95. *A biodegradable surfactant will be used at the quarry site – what are the impacts in the event of a major storm event. Will by-products of the surfactant build up in concentration in the quarries Reservoir affect water quality when released?*

See response to 76.

As the surfactant will be used in very dilute quantities and is biodegradable it is most unlikely that a significant build up will occur. The surfactant is environmentally responsible, that is, it is phosphate free and contains no hydrocarbon solvents or corrosive alkalis.

96. *No discussion of impacts on Lake Lydell.*

See response to 89 above. As no impact of the Cox's River is expected, no impact of Lake Lydell is expected.

97. *Area is made up of highly erodible soils, impacts on Cox's River.*

See response to 89 above.

98. *Concerned about water quality – control measures for the truck wash bay, maintenance area are not evaluated eg. processing of grease, oil and effluent.*

See responses to 75 and 93 above.

## 6.0 VISUAL IMPACT

### 6.1 Planning NSW

99. *The relationship, during the life of the quarry, to the nearby dwellings and the surrounding countryside is unclear. Provide a contour map showing the location of*

*the highway, nearby roads and all the dwellings and their elevation in relation to the quarry walls for each stage.*

The expected visual impacts of the quarry were described in section 5.10 of the EIS based on a survey conducted in August 2000. The quarry site was viewed from many surrounding locations using tethered balloons to identify the site. Four locations were determined to be representative viewing sites (see EIS Fig 5.17). The analysis in the EIS was based on photographs of the present landscape, simulated photographs after quarrying and line of sight sections from four points around the quarry site. Although the profile of the landscape would be altered and the quarry would be visible from some of the locations considered as well as other locations around the quarry site, visibility of the quarry would be restricted by the retention of peripheral vegetation.

## 6.2 NPWS

100. *Concerned about and visual impacts to Mt Walker Nature Reserve. Requiring assessment of potential impact on visual quality from the proposed Nature Reserve.*

Two cross sections (Figures 2 and 3) from adjacent high ridges in the proposed Mt Walker Nature Reserve to the quarry site are attached. The quarry would be visible from the two points referenced within the Reserve. However the extent of public access to these two peaks is not known. Peripheral vegetation will reduce the visual impact of the quarry when viewed from the proposed Mt Walker Nature Reserve.

## 6.3 Community

101. *Changes to the ridgeline do not look subtle - the proposed new slope will be difficult to disguise and will be near the main entrance of the town.*

See response to 99 above.

102. *Loss of visual amenity for some houses around the quarry.*

See response to 99 above

## 7.0 DUST (AIR QUALITY)

### 7.1 Planning NSW

103. *Identify fugitive sources of dust and address mitigation for eddy effects inside the quarry, given the wind directions.*

The following advice was received from Holmes Air Sciences on 7 June 2002.

"Fugitive sources of dust from the quarry will be the wind erosion from the quarry floor and the stockpiles. These have been identified and accounted for in the modelling without any assumptions of retention of these emissions within the quarry pit. Therefore the modelling is conservative. There will, on occasions, be eddies within the quarry as the wind blows across the top of the quarry pit and there is a potential for dust emissions from the quarry floor and stockpiles within the quarry under these circumstances. From wind tunnel studies, emissions under these circumstances from

within the pit have a tendency to be emitted from the upwind sub-area of the pit opening (ISC3 users manual, US EPA, 1995).

“As discussed, the way in which the modelling has treated these fugitive emissions is essentially conservative. Mitigation measures for this type of fugitive emission involves ultimate revegetation of exposed surfaces and water sprays.”

104. *Indicate how dust would be reduced on the weekend or when the quarry is not working. Identify dust sources which may be activated and address these through mitigation measures.*

Dust sources and mitigation commitments are identified in the EIS sections 4.2 and 5.7 and Appendix 8 of the EIS. Dust monitoring and management will be an integral part of the day-to-day operation of the quarry. Dust monitoring and inspections will be conducted on weekends initially to determine whether dust control measures will be required on weekends and, if so, under what weather conditions.

105. *Address the impact of dust on tank water which residents in the area rely on (they do not have access to the Wallerawang water supply) and any dust mitigation measures.*

Holmes Air Sciences concluded that, “The results of dispersion modelling indicate that the nearest residences in the area are sufficiently removed from mining activities so as not to be adversely affected, either in terms of health or amenity. Increases in both dust concentrations and deposition levels for the three Scenarios are predicted to be low at all residences.” (EIS Appendix 8, page 12)

## 7.2 Community

106. *What assurance do we have that regular dust monitoring be undertaken.*

It is expected that monitoring of dust emissions and periodic independent auditing will be requirements of the Environment Protection Licence and the Development Consent.

107. *Impacts of dust, especially in combination with heavy fogs. Have dust emissions studies been conducted at this time of year or only on calm fine days, as calm days are a rarity and not normal for the area.*

The air quality assessment conducted by Holmes Air Sciences (Appendix 8 of the EIS) took into account atmospheric data for the region, dust dispersion, production levels and crusher type (fixed or mobile).

108. *The issue of wind direction and frequency has not been adequately addressed – fair to use dust monitors for Wallerawang Power Station to attempt to indicate prevailing winds but not if the monitors from the west through north to east aren't considered in the research. Also questions the validity of using Mt Piper Power Station wind roses as a true representation of the wind patterns in Wallerawang. From experience winds most commonly come from the east through south-to northwest.*

See responses to 103, 104 and 105 above.

109. *The EIS does not take into account the many residents in the lakeside Estate and adjoining streets who will be affected from dust.*

See responses to 103, 104 and 105 above)

110. *Will dust will be wet down during the night?*

Under normal circumstances, no. Wetting of potentially dusty surfaces at the end of the day should eliminate dust at night when surface evaporation would normally be low.

111. *Impacts of dust on water supply, as residents use tank water. Especially how will silicon dust in their water supply affect their health.*

See response to 105 above.

## 8.0 REHABILITATION AND TOPSOIL MANAGEMENT

### 8.1 Planning NSW

112. *Identify how the top soil horizon of overburden containing seed would be kept separate from the unproductive lower horizon where both horizons have formed and how topsoil would be preserved. Also the EIS shows a general storage area for reject material and topsoil without the differentiation shown.*

The topsoil over the quarry site, which will be removed and stored on site for future rehabilitation, is thin and the volumes requiring storage, estimated to be 8,700 to 9,700m<sup>3</sup> will be relatively small (EIS sections 4.5 and 5.2). The soil survey (Appendix 6 of the EIS) recommended that the "A" horizon soil would be suitable for rehabilitation of the site.

Approval will be sought to sell overburden that is marketable and not required for construction works (some "B" horizon soils would be suitable as a lining for the water management dam at the site of the former Hoskins Quarry). Any excess overburden will be stored on site.

Topsoil and overburden will be stored separately within the area designated for storage of this material. Exactly where the materials will be stored within the area designated will be a part of the final design of the quarry.

113. *Details of rehabilitation and what this would entail need to be specified.*

Section 4.5 of the EIS describes rehabilitation strategies planned for the site, including vegetation and topsoil management, surface shaping and revegetation. The materials available for rehabilitation are also described in this section. A program of the rehabilitation is shown in Figure 4.4 of the EIS. A more detailed progressive rehabilitation plan will be developed following approval and developed further and implemented during the life of the quarry.

114. *Site rehabilitation would appear to include providing slopes against the interior walls of the quarry to provide an opportunity for revegetation areas close to some of the lower sections of quarry wall. One other feature of the quarry would be the relatively flat floor remaining after quarrying (dip 4° to the north). During rain, the quarry*

*would act as a minor catchment. This would lead to ponding on the north end of the quarry floor for minor downpours or, if the north wall has been breached during quarrying, it may lead to flow down the roadway for more severe downpours. In the case of the latter it is unclear what measures would be provided to ensure that erosion controls limit the impact of this flow of water out from the quarry.*

It is not intended to breach the northern wall as this is part of the acoustic controls. The quarry floor will be revegetated during the final rehabilitation stage and therefore erosion is likely to be minimal. Details of rehabilitation will be developed in the rehabilitation plan for the site prepared during life of the quarry.

115. *Identify what measures would be used to ensure all revegetation is successful, as it is unclear how revegetated areas around the access and haul roads etc would be maintained to avoid plant loss from dust and surfactants. Also, the incorporation of fertiliser is proposed. This requires careful consideration in areas of native vegetation.*

See EIS sections 4.5 and 5.2 and Appendix 6 of the EIS.

The proponent is committed to the monitoring and control of dust. The use of a surfactant is necessary to ensure adequate wetting and control of the silica dust. The surfactant used will be biodegradable with a short active life within the environment (see response 76). Vegetation will be monitored for dust accumulation and deterioration and remedial action taken where necessary. Any water used to spray vegetation will not contain active surfactant. Rehabilitation will be undertaken by a qualified contractor.

## 8.2 Community

116. *Concerned about practicalities of rehabilitation – not clearly spelt out.*

See response to 113 above.

117. *Vegetation management – challenges that there are no trees suitable for harvesting. Stockpiling will create feral animal habitat and fuel for fire, chipping of no use in 10 or 20 years.*

Timber removed that is suitable for firewood will be sold to a firewood contractor. Material suitable for chipping will be chipped and used on site for rehabilitation or sold. Any material that cannot be used in this fashion will be burnt or disposed of in consultation with the Greater Lithgow Council. As the stripping of vegetation and rehabilitation will be conducted progressively, with rehabilitation being conducted in years 1 and 3 (see EIS Figure 4.4), the volume of material that will be stored on site should be minimal.

118. *Selling the topsoil and overburden is unsuitable as there will not be enough for rehabilitation. Removal of these products is also against council regulations.*

See response to 113 above. All topsoil will be retained for rehabilitation. The sale of overburden will depend on the nature of the material, whether there is a demand for the material, its suitability for later rehabilitation and regulatory requirements.

## 9.0 INDIGENOUS HERITAGE

### 9.1 Planning NSW

119. *Identify where the intake and exit pipes for the "Main Water Management Dam" are in relation to the dam and where other catch dams and drains are situated in relation to any sites of heritage significance.*

The inlet and outlet structures for the Main Water Management Dam are shown on Figure 1. The structures will not be located within the archaeological site.

120. *As the quarry is situated in a region of known aboriginal archaeological sites and a scatter was found on the edge of the former quarry, it would be reasonable to suppose that such scatters may be associated with this similar outcrop. Identify where indigenous sites exist in relation to the quarry disturbance area.*

The archaeological survey of the quarry site and surrounds identified one archaeological site, identified as WQ1. The survey and the site were described and commitments to protect the site given in section 5.4 of the EIS and in Appendix 7 of the EIS. Maps at Figures 3 and 4 of Appendix 7 identify the location of WQ1 in relation to areas of quarry operation.

121. *Identify the impact of redevelopment of the former Hoskins quarry for use as a Water Management Dam, including how it would be redeveloped and what type of access would be required to redevelop this site and for maintenance purposes and how the adjacent indigenous heritage site would be preserved.*

The proponent has accepted and will implement the recommendations contained in Appendix 7 of the EIS. The intent of these recommendations was to minimise the possible impacts on the one archaeological site identified in the archaeological survey. In particular, a commitment was made in the EIS to fence the site, known as WQ1. The access track to the Main Water Management Dam, would be located outside of the archaeological site. Refer to Response 79.

### 9.2 NSW State Forest

122. *Implications of native title.*

Unaware of any claims.

## 10.0 RESOURCE

### 10.1 Planning NSW

123. *Further information is required on how estimates of resources for the quarrying stages were determined.*

It is understood that a geological report by Redhill Geosciences dated July 1999 on the results of further drilling on the site has been provided to the Planning NSW. This report and correspondence from Pacrim Environmental to Planning NSW dated 12 March 2002 should clarify apparent inconsistencies in the calculation of the quartzite reserves.

## 10.2 Lithgow Council

124. *Two nearby quarries are operating under capacity, provide justification why this quarry is viable.*

The high grade quartzite available at the Sitegoal lease has applications in both the metallurgical and aggregate markets. In the metallurgical field, the NSW Government has established a site for a minerals processing park adjacent to Wallerawang Power Station. A proposed silicon production plant there would be a potential market for Sitegoal quartzite. There are also other opportunities within the ceramics industry in New South Wales.

Quartzite is a suitable resource for concrete, pavement material, fill for roadbase, bedding for pipes, and railway line ballast. Potential markets within these applications exist within the many major infrastructure projects proposed for the Sydney region. These include the cross city tunnel, the western Sydney orbital, the Parramatta to Chatswood rail, Lane Cove tunnel and office construction in Sydney. There would also be an increased demand for aggregate if proposals such as the upgrading of the Bells Line of Road and the Melbourne to Darwin rail link go ahead. There is little doubt that there will be significant future demand for quartzite in the Sydney region as well as in local markets.

A report, *Supply and Demand for Coarse Aggregate in the Sydney Planning Region* by the Geological Survey of NSW (2001) predicted a shortfall between consumption and production of 21 million tonnes between 2000 and 2010. This shortfall is expected to be made up by increasing both local production and imports from outside the region. Anticipated demand is expected to increase beyond then and that the bulk of the demand will have to be supplied from outside the region. The capacities of the Langley heights quarry near Oberon, the Hartley Quarry near Lithgow and the Metromix Marrangaroo operation were taken into account in the assessment of supply.

Present local suppliers appear confident about the future demand for aggregate. Metromix has lodged a development application to expand its Marrangaroo Quarry. Adelaide Brighton has recently taken over the Hartley Quarry which produces rhyolite (rhyolite has different metallurgical properties to quartzite). Sitegoal believes that there are significant opportunities in the quartzite market and has the resources to pursue them.

## 10.3 Community

125. *Why take these risks for 3.5 Mt when Hartley quarry has approval for 20 million tonnes of the same product?*

See response to 124 above.

126. *The development has no merit – Lithgow and surrounds already has four quarries – 3 are operating below capacity and there are no viable markets.*

See response to 124 above.



## 11.0 GEOLOGY

### 11.1 Planning NSW

127. *Provide information about the jointing/faulting pattern associated with the lense, particularly at the northern end of the quartzite body and how this might affect the quarrying operation.*

See geological report by Redhill Geosciences dated July 1999 (see response to 123 above).

## 12.0 ENERGY USE

### 12.1 Planning NSW

128. *It is unclear what the energy use (including diesel fuel) would be on site and where this and other fuels would be stored. Identify sites and safety measures for storage of fuel and explosives.*

Cost estimates for quarrying operations were based on the "all up" costs of hiring the main plant and operators from subcontractors, which is the likely mode of operation. Estimates of energy use were, therefore, not necessary for preliminary costing. Sub-contractors would be required to make arrangements for the provision and storage of fuel, subject to the requirements placed on site operations.

The EIS in section 4.4 stated that, "Fuel and oil will be stored in tanks and drums within a bunded area of the maintenance area. Details of these arrangements will be part of the final design for the quarry. Hydrocarbon separators will prevent fuel contamination of surface water. Fuel storage will comply with all relevant standards and regulations."

The location of explosives stores and safety procedures will be determined by an accredited explosives contractor in accordance with AS 2187.1 – 1998 and other relevant standards and regulations (see response to 21 above).

129. *There is an indication that equipment such as pumps, conveyors, electric motors, lighting units and mobile equipment will be selected to ensure maximum energy efficiency. This is usually the responsibility of the contractor. How would minimum energy use be encouraged?*

As the quarry would be a new operation, current generation equipment would be used throughout. Quarrying operations will require energy inputs in the form of electricity and diesel fuel. The costs of energy within the overall operating costs of the quarry will provide a significant incentive to minimise energy use. Energy management will be an important component in operating procedures for the quarry which will be developed in the course of final design of the operation and commissioning.

### 13.0 CLEANER PRODUCTION

#### 13.1 Planning NSW

130. *A number of possible initiatives have been provided in the EIS. It should be clearly stated which would be made as commitments so that appropriate planning measures can be implemented early.*

Initiatives in cleaner production in a quarrying operation relate to suppressing dust, minimising fuel and oil spills and the use of acceptable biodegradable surfactants in minimum quantities to achieve dust control. Commitments made in regard to these matters within relevant parts of the EIS, supplemented by additional information in this supplement, will provide the basis for detailed planning and early implementation.

### 14.0 GENERAL

#### 14.1 Planning NSW

131. *Supply information, if possible, outlining weather conditions including fog, frequency and duration of fog.*

Historical information from the Bureau of Meteorology on fogs and frosts at Lithgow are shown in the table below.

<b>Station 63224 Lithgow (Birdwood Street) June 1965 – March 2002</b>				
	Number of days with fog		Number of days with frost	
	Average	Maximum	Average	Maximum
January	0.8	11	0	0
February	0.8	12	0	0
March	1.1	12	0.1	1
April	1.2	10	1.9	12
May	1.6	10	6.8	19
June	2.3	7	10	22
July	1.6	11	14	28
August	1.4	9	11.6	23
September	0.5	6	7.4	21
October	0.7	6	2.5	13
November	0.5	9	0.6	5
December	0.4	6	0.2	3
<b>Annual</b>	<b>13.9</b>	<b>64</b>	<b>55.9</b>	<b>120</b>

Source: Holmes Air Sciences, 7 June 2002

#### 14.2 NSW State forest

132. *Impacts on recreational use of forests.*

The area of Lidsdale State Forest that would be affected is small. Impacts on the recreational use of the forest would, therefore, be unlikely.

133. *Bush fire management.*

See EIS section 4.6

### 14.3 Lithgow Council

134. *Provide justification for the proposal for the quarry assuming the other proposed developments go ahead and also if they do not.*

See response to 124 above.

Once operating, the quarry would be a significant employer within in the region and a contributor to the local economy. At a production level of 200,000 tonnes per annum, product extraction would employ 14 and at 500,000 tonnes per annum 22 plant operators. Equipment hire costs would be between \$3 million and \$5 million per annum. In house staff would number 4. Blasting would be conducted by expert contractors.

Transportation of the product would, at a production level of 500,000 tonnes per annum, employ an estimated 27 driver/contractors. Additional employment would be created within providers of fuel, tyres and maintenance services. It is envisaged that local contractors would be used as they would have established businesses in the community. The contribution from transport operations has been estimated as up to \$7 million per annum.

### 14.4 NPWS

135. *Concerned about visitor safety at Mt Walker Nature Reserve.*

The boundary of the proposed Mt Walker Nature Reserve, which is yet to be determined, would be no further south than the Cox's River. The Cox's River is more than 150m from the nearest blasting site and would be beyond the range of fly-rock or other physical effects of the quarry's operations. The proponent has an obligation to avoid damage to the electricity line, which is between the quarry site and the Cox's River. A warning signal will be issued before each blast. There should, therefore, be no risk to visitors using the Mt Walker Nature Reserve.

### 14.5 Community

136. *Impact on property value - who is going to compensate?*

A property market report prepared by G G Munzer Property Valuation Services concluded that:

"Having regard to the past and present market conditions and the public's awareness of both the Proposed Quarry, the logging of Lidsdale State Forest and the Government Approved Silicon Plant, and their likely impact on the change in the local aesthetic amenity there appears to be no adverse affect on the loss in property values for the surrounding rural residential development.

The re is market evidence to the contrary with rural residential properties increasing in value in the order of 9.85% to 21.1% per annum since 1997. This evidence has been further adopted by the Valuer General for (Base Date 01/01/00) in assessing LND Values for the properties surveyed in this report."

137. *Impact on further urban development, increasing pattern of urbanisation has been overlooked*

The EIS took into account land zoning in the current (1994) Local Environment Plan.

138. *Maps on which the proposal is being displayed are too old and don't show the expansion of the Wallerawang township – at least 20 yrs out of date. Could not find residence on map even though subdivision has been there for 15 years.*

The assessment was based on available maps and the interpretation of aerial photographs flown for the State Mapping Authority in 1999. The EIS took into account land zoning in the current (1994) Local Environment Plan.

139. *Concerned that environmental management control will be implemented after operation instead of being dealt with up front.*

Commitments by the proponent to the principal elements of environmental management have been made in the EIS and further reinforced in this supplementary report. Detailed arrangements on environmental management cannot be concluded until the final design stage of the development of the quarry. Contingencies will be incorporated into environmental management arrangements, such as in the noise management plan, to deal with unexpected impacts. The operation of the quarry must comply with all standards, goals and statutory and other requirements of relevant authorities. Environmental management arrangements will be subject to approval by the relevant authorities.

140. *EIS states that trucks leave in the early hours of the morning – what time of morning will this be happening? Are we to believe that contractors will leave heavily loaded vehicles on site overnight?*

See response to 4 above.

141. *Inconclusive reporting regarding the operation – the current housing developments haven't been included within the proposal.*

The EIS took into account land zoning in the current (1994) Local Environment Plan.

142. *Two house locations have recently been approved closer than the distance of several of the northern residences considered to have a potential problem.*

The EIS took into account land zoning in the current (1994) Local Environment Plan.

143. *Project justification is dependant on Wallerawang Industrial Park development.*

See response to 124 above.

144. *Work on Saturdays. EIS has left this open.*

The quarry would operate on Saturdays only if production demand could not be met within normal operating hours from Monday to Friday

*145. Cumulative Impacts.*

The direct impacts of the proposed quarry would be contained within the site and are considered to be small to insignificant on a local or regional scale. Off site impacts would be limited to noise, air quality and water quality matters. In each instance the impacts have been assessed as being mostly within EPA goals. In the few instances where EPA goals might be exceeded (noise under adverse weather conditions), management responses have been proposed to contain the impacts. Potential impacts on transport infrastructure are associated mainly with access to the site. The risks will be managed by properly designed and approved (by the RTA) access roads and signage. The contribution that the proposed quarry would make to the present overall environmental impacts of local and regional economic activity should, therefore be small to insignificant and, as the quarry is finite in its scale and essentially self-contained, should not increase significantly over time.

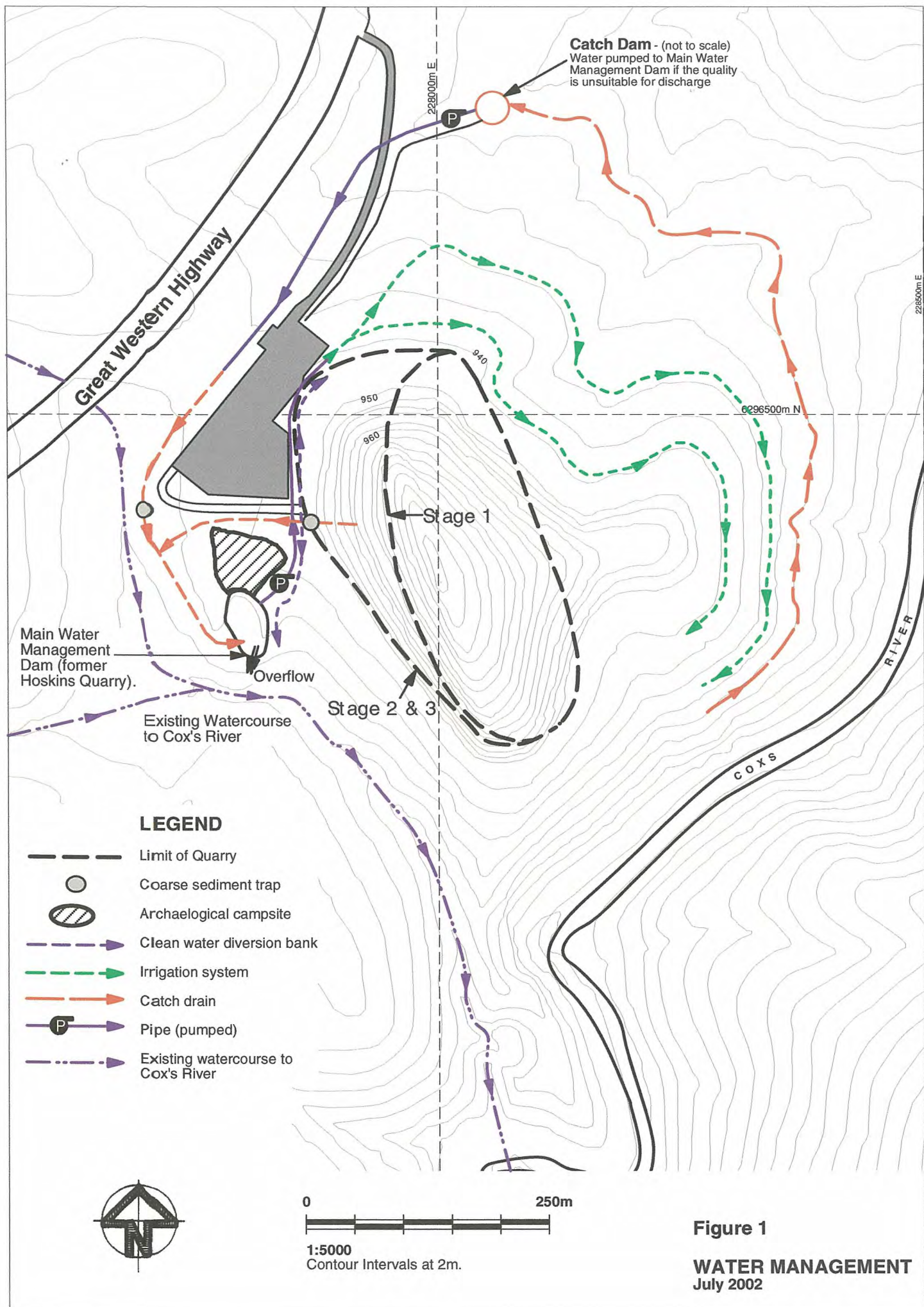
*146. Health impacts.*

See response to 105 above and EIS Section 5.7.4.

*147. Will the quarry create odour impacts?*

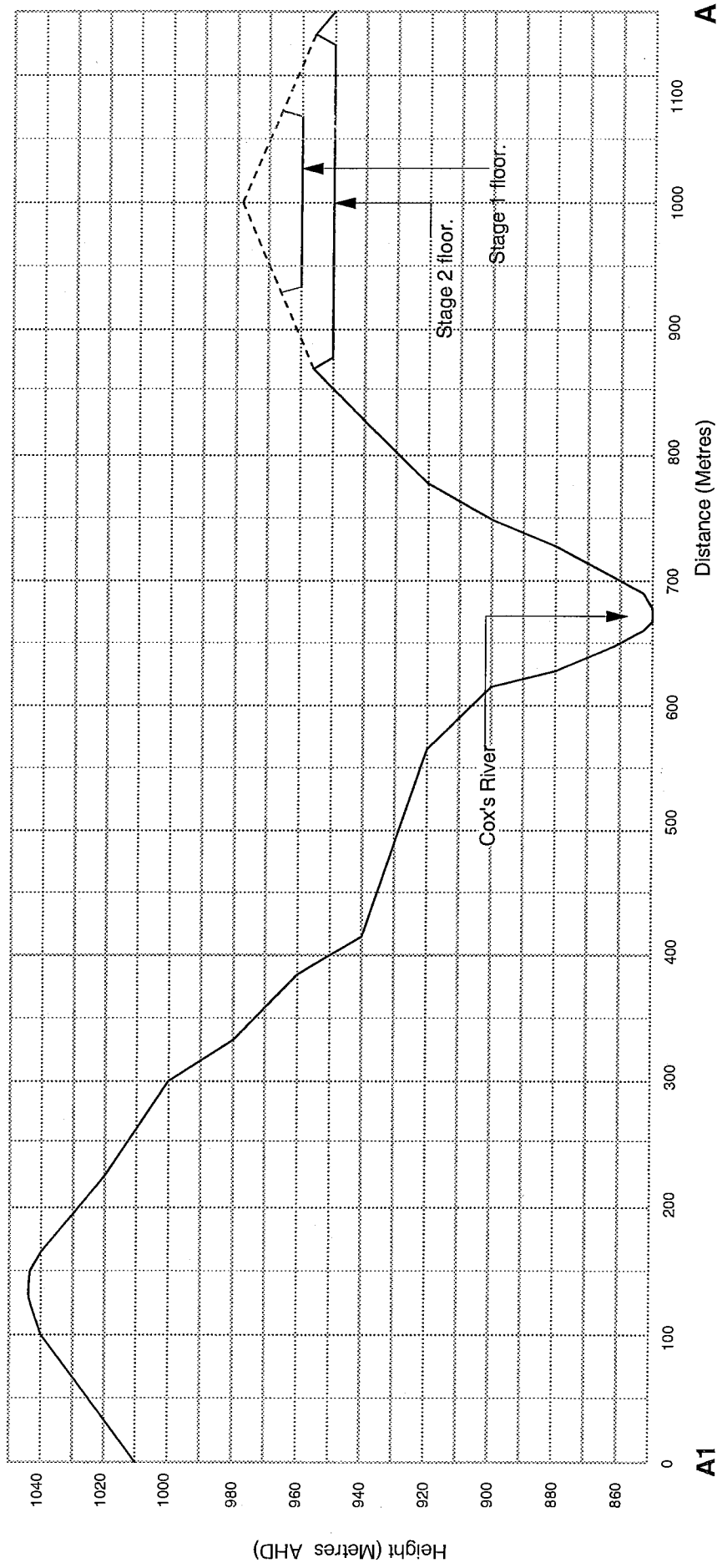
The only likely odour will be from diesel exhausts. This will dissipate and noticeable effects are considered to be unlikely away from the quarry site.







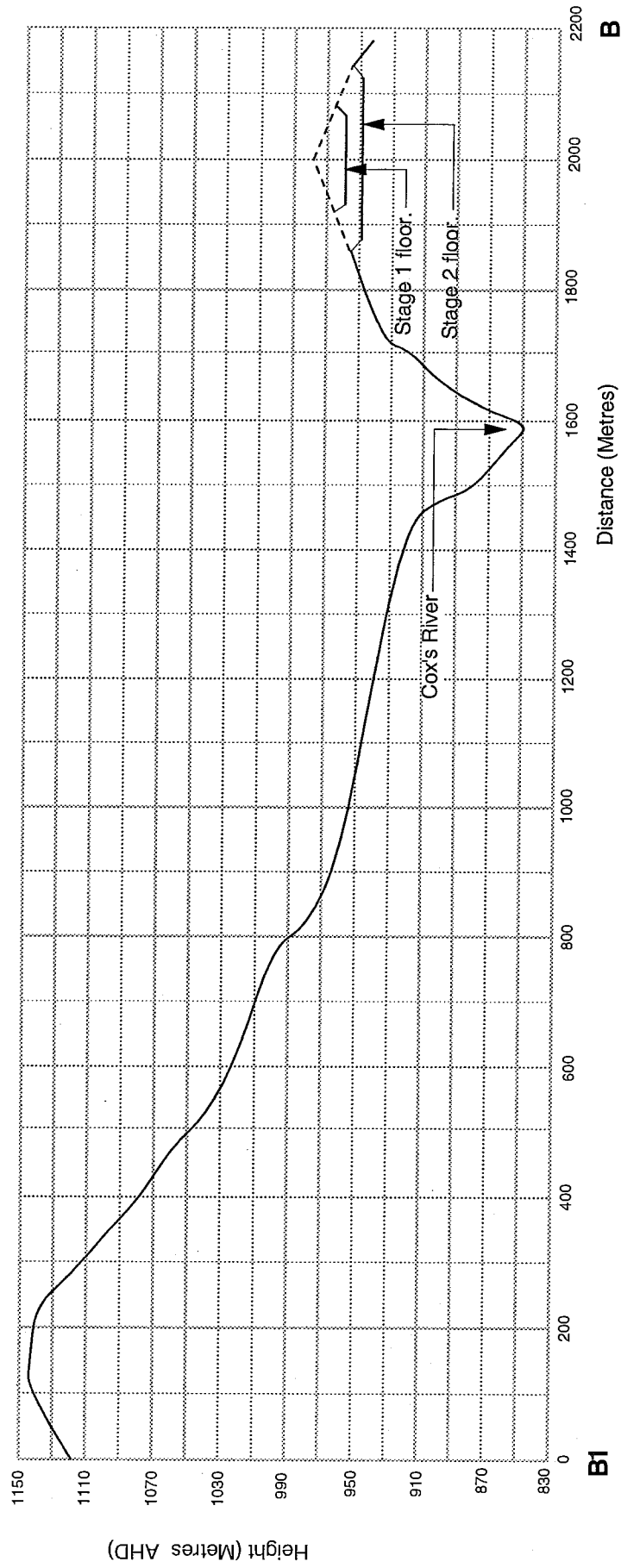




Scale  
 Vertical 1:2000 (2.5x exaggeration)  
 Horizontal 1 : 5000

**Figure 2**  
**Line of Sight Section A from Mt Walker Reserve.**  
 July 2002





**Figure 3**  
**Line of Sight Section B from Mt Walker Reserve.**  
 July 2002

Scale  
 Vertical 1: 4000 (2.5x exaggeration)  
 Horizontal 1: 10000



