Sutton Forest Sand Quarry Report No. 864/07

# Appendix 4

# Assessment of Environmental Risk

(Total No. of pages including blank pages = 14)

#### SUTTON FOREST QUARRIES PTY LTD

#### **ENVIRONMENTAL IMPACT STATEMENT**

Appendix 4

Sutton Forest Sand Quarry

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Sutton Forest Sand Quarry Report No. 864/07

#### A4.1 ANALYSIS OF RISK

As part of a preliminary environmental risk assessment, and in accordance with Australian and International Standards HB 203:2012, HB 89:2012 and AS/ISO 310100:2009, environmental parameters that could be affected by the Proposal were identified. Risk sources, potentially affected receptors or environments, potential consequences and specific potential impacts were then identified. A review of the proposed operations, the local environment and other factors was undertaken to identify the likely consequence and likelihood of each potential environmental impact.

The determination of consequence was based on the definitions contained in **Table A4.1**. It is noted that the assigned consequence rating represents the highest level applicable, i.e. if a potential impact is assigned a level of <u>4 - Major</u> based on cost of remediation and <u>2 - Minor</u> based on area of impact, the consequence level assigned would be <u>4 - Major</u>. The likelihood or probability of each impact occurring was then rated according to the definitions contained in **Table A4.1**.

Table A4.1

Qualitative Consequence Rating

|       |                   |                         |   |   | Consequence   | Types  |  |   |
|-------|-------------------|-------------------------|---|---|---|--|--|---|
| Level | Severity<br>Level | Financial               | Health and<br>Safety  | Natural<br>Environment  | Social/ Cultural<br>Heritage  | Government<br>Regulation   | Public /<br>Community<br>Relations   | Legal   |
| 1     | Negligible        | <\$10,000               | No injury or review required  | Minor impact<br>on biological<br>or physical<br>environment       | Minor social<br>issues, repairable<br>damage  | Minor incident (Non-<br>reportable) (passes<br>the 'no material<br>harm' assessment)   | Minor adverse<br>local public or<br>media attention<br>or complaints                       |   |
| 2     | Minor             | \$20,000 -<br>\$100,000 | First aid<br>treatment<br>required but<br>no lost time<br>or restricted<br>duties | Short-term<br>impact not<br>affecting<br>ecosystem<br>functions   | Minor medium-<br>term social<br>impacts on local<br>population.<br>Mostly repairable                        | Reportable incident<br>(administrative or<br>with minimal<br>material harm)<br>(minimal threat of<br>action by regulator)      | Attention from<br>media and/or<br>heightened<br>concern by local<br>community              | Isolated<br>complaint /<br>incident<br>with a<br>threat of<br>legal action                  |
| 3     | Moderate          | \$100,000<br>- \$1M     | Medical<br>treatment<br>leading to<br>lost time or<br>restricted<br>duties        | Short term<br>impairment of<br>ecosystem<br>affecting<br>function | On-going social<br>issues, damage<br>to items of<br>cultural<br>significance                                | Reportable incident<br>(notable material<br>harm or repeat of<br>previous incident)<br>(real threat of action<br>by regulator) | Adverse media /<br>public / NGO<br>attention   | Significant<br>level of<br>complaints incidents<br>with a high<br>threat of<br>legal action |
| 4     | Major             | \$1M-\$5M               | Hospitalisatio<br>n required<br>leading to<br>permanent<br>injury                 | Medium term impairment of an ecosystem                            | Significant social<br>issues, significant<br>damage to<br>structures / items<br>of cultural<br>significance | Reportable incident<br>(major material<br>harm) (action by<br>regulator almost<br>certain)                                     | Major public<br>embarrassment /<br>adverse media<br>coverage                               | Serious<br>breach of<br>regulation<br>leading to<br>litigation                              |
| 5     | Severe            | >\$5.0M                 | Fatality  | Long-term<br>impairment of<br>ecosystem                           | On-going serious<br>social issues,<br>major permanent<br>impact to cultural<br>and heritage<br>sites        | Reportable incident<br>(extensive material<br>harm) (severe<br>action by regulator<br>almost certain)                          | Serious public or<br>media outcry<br>(national<br>coverage) /major<br>reputation<br>impact | Significant<br>prosecution<br>and fines,<br>litigation<br>including<br>class action         |

The risk associated with each environmental impact was assessed **without** the inclusion of any specific operational controls or systems, mitigation measures or other safeguards in place (other than standard environmental management practices). Based on the assessment of consequence and likelihood, an overall risk ranking of Negligible, Minor, Moderate, Major or Severe was assigned to each potential impact based on the matrix of **Table A4.2**.

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Table A4.2

Qualitative Likelihood Rating

| Level          | Descriptor              | Description  |  |  |  |  |  |
|----------------|-------------------------|--|--|--|--|--|--|
| Α              | Certain                 | Is an ongoing occurrence or will occur under all conditions        |  |  |  |  |  |
| В              | Almost Certain          | s expected to occur in most circumstances                          |  |  |  |  |  |
| C Likely       |                         | Vill probably occur in most circumstances                          |  |  |  |  |  |
| D Possible     |                         | Will probably occur under favourable circumstances                 |  |  |  |  |  |
| Е              | Unlikely                | May occur, but only under favourable circumstances                 |  |  |  |  |  |
| F              | Rare                    | Not expected to occur, unless subject to exceptional circumstances |  |  |  |  |  |
| G Very Rare    |                         | Theoretically possible but not expected to occur                   |  |  |  |  |  |
| Source: Rating | modified after HB 89:20 | 112 – Figure B7  |  |  |  |  |  |

The four levels of risk that have been identified for this Proposal based upon **Table A4.3** are defined as follows.

- Low (L): can be managed by routine procedures and unlikely to require specific application of resources.
- Medium (M): can be managed to minimise the potential for environmental harm by the implementation of specific monitoring programs and response procedures.
   Responsibility for the implementation of monitoring and management activities must be specified.
- High (H): requires the development of specific management or action plans identifying specific monitoring, trigger levels for contingency management and specification as to the roles and responsibilities of personnel to implement contingency management. Senior executive management attention is required to ensure appropriate resources are available to manage this risk.
- Very High (VH): presents a risk which may not be able to be satisfactorily
  managed by the development and implementation of management plans. Board
  attention needed to identify alternative methods of operation to reduce the risk to a
  level where it can be satisfactorily managed.

Table A4.3 Risk Ranking

|                           | Consequences        |            |               |            |             |  |  |  |  |  |  |  |
|---------------------------|---------------------|------------|---------------|------------|-------------|--|--|--|--|--|--|--|
| Likelihood                | 1<br>Negligible     | 2<br>Minor | 3<br>Moderate | 4<br>Major | 5<br>Severe |  |  |  |  |  |  |  |
| A Certain                 | M                   | Н          | Н             | VH         | VH          |  |  |  |  |  |  |  |
| B Almost Certain          | M                   | M          | Н             | VH         | VH          |  |  |  |  |  |  |  |
| C Likely                  | M                   | M          | Н             | Н          | VH          |  |  |  |  |  |  |  |
| D Possible                | L                   | M          | M             | Н          | Н           |  |  |  |  |  |  |  |
| E Unlikely                | L                   | L          | M             | M          | Н           |  |  |  |  |  |  |  |
| F Rare                    | L                   | L          | L             | M          | M           |  |  |  |  |  |  |  |
| G Very Rare               | L                   | L          | L             | L          | M           |  |  |  |  |  |  |  |
| Source: Modified after HB | 89:2012 - Figure B8 |            | •             |            |             |  |  |  |  |  |  |  |

#### **ENVIRONMENTAL IMPACT STATEMENT**

**SUTTON FOREST QUARRIES PTY LTD** 

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Following the identification of environmental risk sources for those parameters which could be affected by the Proposal (e.g. water resources, ecology, heritage, etc.), the likely receptor(s), potential environmental outcome and the likelihood and consequence of specific impacts of these outcomes (if not mitigated) have been reviewed. The Applicant has assumed the implementation of standard control measures and the risk for each assessed based on the classifications and definitions provided in **Tables A4.1**, **A4.2** and **A4.3**).

The results of the risk analysis have been reviewed and confirmed by the Applicant and are presented in **Table A4.4**.

Table A4.4 Analysis of Environmental Risk for the Sutton Forest Sand Quarry

|                                    | B   |  |  | Standard Co    | ontrol Measu     | res  | Page 1 of 9 Proposed              |
|------------------------------------|---|--|--|----------------|------------------|------|-----------------------------------|
| Risk Source(s)                     | Receptor /<br>Surrounding<br>Environment              | -  | Potential Impact   | Consequence    | Likelihood       | Risk | Control Measures EIS Section Ref. |
|                                    |   | ENVIRONMENT  | TAL ISSUE – TRAFFIC  |                |                  |      |                                   |
| Ongoing traffic                    | Road users of the                                     | Ongoing truck traffic and  | Inconvenience to commuters.  | Minor (2)      | Possible (D)     | M    |                                   |
| levels on the public road network. | Hume Highway.   | possible congestion.   | Increased risk of accidents occurring.   | Moderate (3)   | Unlikely (E)     | М    |                                   |
|                                    |   | Deterioration of road surface.   | Accelerated road pavement deterioration.   | Minor (2)      | Rare (F)         | L    | 5.1.6                             |
|                                    | Residences in the vicinity of the Quarry Interchange. | Ongoing truck traffic and<br>vehicle noise/emissions.                                  | Reduced amenity of local area<br>(noting presence of nearby traffic<br>on the Hume Highway). | Moderate (3)   | Possible (D)     | M    | 0.1.0                             |
|                                    | Native fauna.   | Death or injury to native<br>animals on the road network.                              | Loss of species in local area.   | Negligible (1) | Possible (D)     | L    |                                   |
|                                    |   | ENVIRONMENTAL  | ISSUE – GROUNDWATER  |                |                  |      |                                   |
| Reductions in groundwater flow.    | Local groundwater users.                              | Reduction in the volume of<br>water contained within local<br>aquifers / availability. | Reduced yields of groundwater bores.   | Minor (2)      | Unlikely (E)     | L    |                                   |
|                                    | Local streams,<br>creeks and rivers.                  | Reduction in base flows /<br>spring flows.   | Reduced discharge to receiving systems.  | Minor (2)      | Likely (C)       | М    |                                   |
|                                    |   |  | Degradation of riparian or<br>aquatic vegetation/ecosystems.                                 | Moderate (3)   | Rare (F)         | L    | 5.2.7                             |
|                                    |   |  | Reduced availability of water to downstream users.   | Minor (2)      | Unlikely (E)     | L    |                                   |
|                                    | Groundwater<br>dependent<br>ecosystems.               | Reduced availability of groundwater.   | Degradation of groundwater dependent ecosystems.   | Moderate (3)   | Very Rare<br>(G) | L    |                                   |





# Table A4.4 (Cont'd) Analysis of Environmental Risk for the Sutton Forest Sand Quarry

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|   |   | Receptor /   |   |  | Standard Co  | ontrol Measu     | res  | Proposed<br>Control |
|---|---|--|---|--|--------------|------------------|------|---------------------|
| F | isk Source(s)                               | Surrounding<br>Environment   | Potential Consequence                                   | Potential Impact   | Consequence  | Likelihood       | Risk | Measures EIS        |
|   |   |  | ENVIRONMENTAL ISSU                                      | JE – GROUNDWATER (Cont'd)  |              |                  |      |                     |
| • | Groundwater contaminated with hydrocarbons. | <ul> <li>Local users of<br/>groundwater for<br/>resident/business<br/>purposes.</li> </ul> | Reduced groundwater quality.                            | Reduced availability to local users.   | Minor (2)    | Very Rare<br>(G) | L    |                     |
|   |   | Groundwater<br>dependent<br>ecosystems.  | Reduced groundwater quality.                            | Degradation of groundwater dependent ecosystems.                                 | Moderate (3) | Very Rare<br>(G) | L    | 5.2.7               |
|   |   | Local streams,<br>creeks, rivers and   | Local surface water bodies<br>become contaminated.      | Reduced availability of water to downstream users.                               | Minor (2)    | Very Rare<br>(G) | L    |                     |
|   |   | aquatic habitat.   | Degradation of habitat quality.                         | Degradation of riparian or<br>aquatic vegetation / ecosystems.                   | Moderate (3) | Very Rare<br>(G) | L    |                     |
|   |   |  | ENVIRONMENTAL I   | SSUE – SURFACE WATER   |              |                  |      |                     |
| • | Reduction in environmental                  | Long Swamp Creek.  | Reduced natural surface water flows.                    | Reduced flows to Long Swamp<br>Creek.  | Minor (2)    | Likely (C)       | M    |                     |
|   | flows through on-<br>site capture of        | <ul> <li>Downstream water users.</li> </ul>  | Reduced natural surface water flows.                    | Reduced availability of water to downstream users.                               | Minor (2)    | Unlikely (E)     | L    | 5.3.3               |
|   | water.                                      | Local flora,<br>terrestrial and  | Reduced volume of water<br>available to local flora and | Stress and possible reduction in viability of native vegetation.                 | Moderate (3) | Rare (F)         | L    | 5.5.5               |
|   |   | aquatic fauna.   | fauna.  | Degradation of riparian or aquatic vegetation/ecosystems.                        | Moderate (3) | Unlikely (E)     | M    |                     |
| • | Discharge of dirty or contaminated water.   | Local creeks and tributaries.  | Decreased water quality.                                | Temporary sedimentation or<br>hydrocarbon pollution of<br>downstream waters.     | Moderate (3) | Possible (D)     | M    | 5.3.3               |
|   |   |  |   | Ongoing sedimentation or major<br>hydrocarbon pollution of<br>downstream waters. | Major (4)    | Rare (F)         | M    | 5.5.5               |

High

Medium

|  | Pacantar /  |  |  | Standard Co  | ontrol Measu     | res  | Proposed Control           |
|--|---|--|--|--------------|------------------|------|----------------------------|
| Risk Source(s)   | Receptor / Surrounding Environment                                  | ·  | Potential Impact   | Consequence  | Likelihood       | Risk | Measures El<br>Section Ref |
|  |   | ENVIRONMENTAL ISSU   | E – SURFACE WATER (Cont'd)   |              |                  |      |                            |
| Discharge of dirty<br>or contaminated                      | <ul> <li>Site soils and vegetation.</li> </ul>                      | Contamination of soil resources.                             | Reduced potential for future land uses.  | Minor (2)    | Unlikely (E)     | L    |                            |
| water. (Cont'd)  | <ul> <li>Local and regional<br/>catchment<br/>ecosystem.</li> </ul> | Introduction of a toxic compound to the environment.         | Health-related impacts (people)<br>due to consumption of<br>contaminated water.              | Moderate (3) | Very Rare<br>(G) | L    |                            |
|  |   |  | Pollution of local waterways<br>resulting in detrimental effects to<br>flora and fauna.      | Moderate (3) | Unlikely (E)     | M    |                            |
|  | Livestock.  | Contamination of soil and water resources.                   | Health-related impacts (stock)<br>due to consumption of<br>contaminated water.               | Moderate (3) | Rare (F)         | L    |                            |
| <ul> <li>Erosive actions of water.</li> </ul>              | Site soils.   | Loss of topsoil.   | Soil erosion and loss of<br>agriculturally productive<br>capacity.                           | Minor (2)    | Possible (D)     | M    |                            |
|  |   |  | Decreased availability of soil for rehabilitation.   | Moderate (3) | Possible (D)     | M    |                            |
|  |   | ENVIRONMENTAL ISS  | UE – NOISE AND VIBRATION   |              |                  |      |                            |
| <ul> <li>Noise from fixed<br/>and mobile plant.</li> </ul> | <ul> <li>Local residents,<br/>business and land</li> </ul>          | Increased noise levels.                                      | Noise levels cause annoyance and/or distractions.  | Moderate (3) | Possible (D)     | M    |                            |
|  | owners.   | Impacts on the health and well-<br>being of local residents. | Noise levels cause adverse<br>effects on physical or mental<br>health.                       | Major (4)    | Unlikely (E)     | M    |                            |
|  |   | Complaints to Applicant by community.                        | Community and regulatory scrutiny.   | Moderate (3) | Possible (D)     | M    | 5.4.5.2                    |
|  | Native fauna.   | Detrimental effects on local fauna.                          | Relocation of and/or reduction of<br>local native fauna species due to<br>noise disturbance. | Moderate (3) | Unlikely (E)     | M    |                            |
|  |   |  | Possible loss of species in the local area.  | Moderate (3) | Possible (D)     | M    |                            |



Low

Medium

High

Critical



# Table A4.4 (Cont'd) Analysis of Environmental Risk for the Sutton Forest Sand Quarry

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Proposed

|   | Receptor /  |  |  | Standard Control Measures |              | res      | Control      |
|---|---|--|--|---------------------------|--------------|----------|--------------|
| D11 0()   | Surrounding   | D. C. C. C. C.   | B. 4. 4. 4. 11 4   |                           |              | <b>D</b> | Measures EIS |
| Risk Source(s)  | Environment   | Potential Consequence  | Potential Impact NOISE AND VIBRATION (Cont'd)  | Consequence               | Likelihood   | Risk     | Section Ref. |
| <b>N.</b> ( C )   | 1 1 1 1 1 1 1   |  | · · · · · · · · · · · · · · · · · · ·  | N4: (O)                   | D (E)        |          |              |
| <ul> <li>Noise from fixed<br/>and mobile plant.<br/>(Cont'd)</li> </ul>   | Local livestock.  | Impact on livestock health and/or productivity.  | Reduced agricultural productivity.   | Minor (2)                 | Rare (F)     | L        |              |
| <ul> <li>Noise from trucks<br/>transporting quarry</li> </ul>             | transporting quarry business and land                         | Increased noise levels.  | Noise levels cause annoyance and/or distractions.  | Moderate (3)              | Possible (D) | M        |              |
| products off site. own  | owners.   | Impacts on the health and well-<br>being of local residents.                             | Noise levels cause adverse<br>effects on physical or mental<br>health.                         | Major (4)                 | Unlikely (E) | M        |              |
|   |   | Complaints to Applicant by community.  | Community and regulatory scrutiny.   | Moderate (3)              | Unlikely (E) | M        |              |
| <ul> <li>Vibration from<br/>extraction<br/>operations on site.</li> </ul> | Local residents,<br>business and land<br>owners.              | Nuisance/amenity impacts on<br>surrounding landowners /<br>residents.                    | Reduced local amenity.   | Minor (2)                 | Unlikely (E) | L        |              |
|   |   | Structural damage to buildings and structures.   | Structural damage to buildings and structures.   | Moderate (3)              | Rare (F)     | L        | 5.4.5.3      |
|   |   | Complaints to Applicant by community.  | Community and regulatory scrutiny.   | Minor (2)                 | Unlikely (E) | L        |              |
|   |   | ENVIRONMENTAL ISSU   | E – TERRESTRIAL ECOLOGY  |                           |              |          |              |
| <ul> <li>Clearing of vegetation.</li> </ul>                               | Regional biota.   | Reduction in remnant native vegetation.  | Reduction in local biodiversity.   | Minor (2)                 | Likely (C)   | M        |              |
|   |   | Loss of local and regionally<br>important threatened species<br>(flora and fauna).       | Local or regional reduction in<br>distribution of threatened<br>species, populations and EECs. | Minor (2)                 | Likely (C)   | M        |              |
|   |   | Reduced local and regional biodiversity.   | Loss of biodiversity and alteration to existing habitat.                                       | Minor (2)                 | Likely (C))  | M        | 2.14, 5.5.5  |
| Detrimental indirect<br>effects of Proposal<br>impacts, e.g. noise,       | Locally occurring<br>species, populations<br>and communities. | Dispersal of locally occurring<br>species and populations away<br>from the Site.         | Reduced biodiversity value of<br>the Site and local setting.                                   | Moderate (3)              | Possible (D) | М        |              |
| dust, lighting.   |   | Reduced potential for use of<br>the Site by threatened species,<br>populations and EECs. | Reduced local distribution of<br>threatened species, populations<br>and EECs.                  | Moderate (3)              | Possible (D) | M        |              |

High

Medium

| Recentor /  |  |  | Standard Co                              | ontrol Measu   | res   | Proposed Control   |  |
|---|--|--|--|--|---|--|--|
| Surrounding<br>Environment                                    | -  | Potential Impact   | Consequence                              | Likelihood   | Risk  | Measures EIS   |  |
| 1   | ENVIRONMENTAL IS   | SUE – AQUATIC ECOLOGY  |  |  |   |  |  |
| <ul> <li>Local creeks and tributaries.</li> </ul>             | Decreased water quality.   | Detrimental effects to flora and fauna.  | Moderate (3)                             | Possible (D)   | M   |  |  |
| tibutanes.  |  | Sedimentation or major<br>hydrocarbon pollution event<br>impacting on aquatic ecosystem<br>for medium to long term.  | Major (4)                                | Rare (F)   | M   |  |  |
| Groundwater<br>dependent<br>ecosystems.                       | Reduced groundwater quality.   | Degradation of groundwater dependent ecosystems.   | Moderate (3)                             | Very Rare<br>(G)   | L   | 5.6.5  |  |
| Locally occurring<br>species, populations<br>and communities. | Reduced potential habitat for<br>threatened species,<br>populations and EECs.                                    | Reduced local distribution of<br>threatened species, populations<br>and EECs.  | Moderate (3)                             | Possible (D)   | L   |  |  |
|   |  | Degradation of riparian or<br>aquatic vegetation / ecosystems  | Moderate (3)                             | Possible (D)   | L   |  |  |
|   | Local creeks and tributaries.      Groundwater dependent ecosystems.      Locally occurring species, populations | Surrounding Environment  Potential Consequence  ENVIRONMENTAL IS  Local creeks and tributaries.  Decreased water quality.  Reduced groundwater quality.  Reduced groundwater quality.  Locally occurring species, populations  Reduced potential habitat for threatened species, | Potential Consequence   Potential Impact | Surrounding   Environment   Potential Consequence   Potential Impact   Consequence | Surrounding   Environment   Potential Consequence   Potential Impact   Consequence   Likelihood | Surrounding Environment   Potential Consequence   Potential Impact   Consequence   Likelihood   Risk |  |





# Table A4.4 (Cont'd) Analysis of Environmental Risk for the Sutton Forest Sand Quarry

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|   |  | Receptor /                                       |   |  | Standard Co  | ontrol Measu     | res  | Proposed Control             |  |
|---|--|--|---|--|--------------|------------------|------|------------------------------|--|
| F | Risk Source(s)   | Surrounding<br>Environment                       | Potential Consequence   | Potential Impact   | Consequence  | Likelihood       | Risk | Measures EIS<br>Section Ref. |  |
|   |  |  | ENVIRONMENTAL ISSUE – A   | BORIGINAL CULTURAL HERITAGE  | _            |                  |      |                              |  |
| • | destruction of   | Local archaeological setting.                    | <ul> <li>Damage or destruction of<br/>Aboriginal artefacts or site.</li> </ul>                              | Destruction of identified site.  | Moderate (3) | Very Rare<br>(G) | L    |                              |  |
|   | known Aboriginal<br>sites and/or<br>artefacts.                                       |  |   | Cumulative reduction of the in situ archaeological record.                     | Moderate (3) | Very Rare<br>(G) | L    |                              |  |
| • | Removal or destruction of currently  | Local archaeological setting.                    | Damage or destruction of<br>Aboriginal artefacts or site.   | Destruction of site not yet<br>identified on archaeological<br>record.         | Moderate (3) | Rare (F)         | L    | 5.7.5                        |  |
|   | unidentified Aboriginal sites and/or artefacts.                                      |  |   | Cumulative reduction of the in situ archaeological record.                     | Moderate (3) | Rare (F)         | L    |                              |  |
|   |  |  | ENVIRONMENTAL IS  | SUE – HISTORIC HERITAGE  |              |                  |      |                              |  |
| • | Removal or destruction of sites of heritage significance due to proposed activities. | Local archaeological setting.                    | Loss or damage to heritage sites.   | Loss or destruction of items of<br>heritage significance.                      | Moderate (3) | Very Rare<br>(G) | L    | None<br>applicable           |  |
|   |  |  | ENVIRONMENTAL ISSUE - AII   | R QUALITY AND GREENHOUSE GA  | S            |                  |      |                              |  |
| • | Dust from extraction and processing  | Residences and other local buildings.            | Increased deposited dust and<br>associated nuisance for local<br>residents and business.                    | Nuisance/amenity impacts from<br>dust deposited on window sills,<br>cars, etc. | Minor (2)    | Possible (D)     | M    |                              |  |
|   | operations,<br>stockpiles and<br>exposed surfaces.                                   | Local residents,<br>business and land<br>owners. | <ul> <li>Increased particulate matter (in<br/>particular PM<sub>10</sub>) in the<br/>atmosphere.</li> </ul> | Adverse health impacts (if PM <sub>10</sub> levels are excessive).             | Moderate (3) | Unlikely (E)     | M    | 5.9.6                        |  |
| • | Dust from vehicle movements within the Quarry  |  | Complaints to Applicant by community.   | Community and regulatory scrutiny.   | Minor (2)    | Possible (D)     | М    |                              |  |
|   | Operations Area or<br>the Quarry Access<br>Road.                                     | Surface water<br>bodies.                         | Reduction in local water quality.   | Exceedance surface water quality.  | Minor (2)    | Unlikely (E)     | L    |                              |  |

High

Medium

|  | Receptor /                                  |  |  | Standard Control Measu |              |      | Proposed Control             |
|--|---|--|--|------------------------|--------------|------|------------------------------|
| Risk Source(s)   | Surrounding<br>Environment                  | Potential Consequence  | Potential Impact   | Consequence            | Likelihood   | Risk | Measures EIS<br>Section Ref. |
|  | E   | NVIRONMENTAL ISSUE – AIR QU  | ALITY AND GREENHOUSE GAS (C  | ont'd)                 |              |      |                              |
|  | Surrounding native vegetation.              | Reduction in vegetation or mortality.  | <ul> <li>Reduced condition of local<br/>vegetation or value as fauna<br/>habitat.</li> </ul> | Moderate (3)           | Rare (F)     | L    |                              |
| <ul> <li>Particulate and<br/>greenhouse<br/>emissions from<br/>vehicles and fixed<br/>and mobile plant.</li> </ul>   | Local and regional<br>air shed.             | Increased in greenhouse gas<br>emissions to atmosphere.  | Contribution to greenhouse effect.   | Negligible (1)         | Certain (A)  | M    |                              |
| <ul> <li>Dust from extraction<br/>and processing<br/>operations,<br/>stockpiles and<br/>exposed surfaces.</li> </ul> | Residents in adjoining landholdings         | Increase in concentrations of<br>respirable silica in the<br>atmosphere.                       | Adverse health impacts such as a respirable disease.   | Major (4)              | Rare (E)     | L    |                              |
|  |   | ENVIRONMEN   | ITAL ISSUE – SOILS   |                        |              |      |                              |
| <ul> <li>Loss of soil<br/>resources as a<br/>result of land<br/>preparation<br/>activities.</li> </ul>               | Site soil resources.                        | Reduced soil resource to<br>undertake appropriate<br>rehabilitation program.                   | Rehabilitation outcomes not meeting objectives.  | Moderate (3)           | Possible (D) | M    |                              |
| <ul> <li>Degradation of soil<br/>resources as a<br/>result of<br/>stockpiling.</li> </ul>                            | Site soil resources.                        | Compromised soil quality leads<br>to poor vegetation regrowth on<br>site.                      | Reduced productivity on final landform.  | Moderate (3)           | Possible (D) | M    | 5.10.9                       |
| <ul> <li>Erosion as a result of vegetation</li> </ul>  | Site soil resources.                        | Loss of soil resources.  | Rehabilitation outcomes not meeting objectives.  | Moderate (3)           | Possible (D) | M    |                              |
| clearing, from<br>stockpiles or<br>following soil<br>replacement during<br>rehabilitation.                           | On and off site<br>surface water<br>bodies. | Sedimentation of on-site and<br>local surface water bodies<br>resulting in poor water quality. | Increased erosion on the final landform.   | Minor (2)              | Possible (D) | M    |                              |



Low

Medium

High

Critical



#### Table A4.4 (Cont'd) Analysis of Environmental Risk for the Sutton Forest Sand Quarry

|--|

|   | Receptor /                            |   |  | Standard Co  | ontrol Measu | res  | Proposed<br>Control          |
|---|---------------------------------------|---|--|--------------|--------------|------|------------------------------|
| Risk Source(s)  | Surrounding<br>Environment            | Potential Consequence   | Potential Impact   | Consequence  | Likelihood   | Risk | Measures EIS<br>Section Ref. |
|   |                                       | ENVIRONMENT   | AL ISSUE – VISIBILITY  |              |              |      |                              |
| Changes in the<br>visual character of                                       | Surrounding residents.                | Visibility of the quarry from local residences.   | Decreased visual amenity of local setting.                                     | Moderate (3) | Possible (D) | M    | 5.11.4                       |
| the locality.   | Motorists (Hume<br>Highway).          | Visibility of the quarry from local roads.  | Decreased visual amenity.  | Minor (2)    | Unlikely (E) | L    | 5.11.4                       |
|   |                                       | ENVIRONMENTAL I   | SSUE - REHABILITATION  |              |              |      |                              |
| <ul> <li>Rehabilitated soils<br/>and vegetation of<br/>the Site.</li> </ul> | Future land use.                      | Soils and vegetation quality<br>and suitability for future use is<br>compromised or restricted. | Rehabilitation outcomes do not meet objectives.                                | Moderate (3) | Possible (D) | M    |                              |
|   | Surrounding residences.               | Poor rehabilitation.  | Reduced amenity of the final landform.   | Moderate (3) | Possible (D) | M    |                              |
| <ul> <li>Final landform and<br/>topography of the<br/>Site.</li> </ul>      | Surrounding residences.               | Altered landforms.  | Reduced amenity of the final<br>landform resultant from altered<br>topography. | Minor (2)    | Likely (C)   | M    | 2.13                         |
|   | Future land use.                      | Landform unsuitable for<br>proposed final land use.   | Final landform and land use incompatible with surrounding landscape.           | Moderate (3) | Possible (D) | M    |                              |
|   |                                       | ENVIRONMENT   | AL ISSUE – BUSH FIRE   |              |              |      |                              |
| Initiation of bush<br>fire due to on Site                                   | Local residents,<br>business and land | Health and safety impacts to<br>Proposal personnel.   | Loss of life, assets and property<br>on site and in surrounding area.          | Major (4)    | Rare (F)     | M    |                              |
| activities.   | owners.                               | Reduction of operating<br>performance for site and<br>surrounding businesses.                   | Property damage and impacts on production.                                     | Major (4)    | Rare (F)     | M    | 5.13.3                       |
|   | Native flora and fauna.               | Destruction and damage of native flora and fauna.   | Reduced biodiversity value of the Site.  | Moderate (3) | Rare (F)     | L    |                              |

High

Medium

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| Risk Source(s)   | Receptor /<br>Surrounding<br>Environment | Potential Consequence   |  | Standard Control Measures |              |      | Proposed<br>Control |
|--|--|---|--|---------------------------|--------------|------|---------------------|
|  |  |   | Potential Impact   | Consequence               | Likelihood   | Risk | Measures EIS        |
| ENVIRONMENTAL ISSUE – SOCIO-ECONOMIC                               |  |   |  |                           |              |      |                     |
| Increase in local employment.                                      | Local community<br>and residents.        | Increased employment levels.  | Increase in economic well-being within the LGA.  | Positive Impact           |              |      |                     |
|  |  |   | Change in local community<br>structure as a result of income<br>disparity.   | Minor (2)                 | Unlikely (E) | L    |                     |
|  |  |   | Inability of existing services and infrastructure to meet needs of community.  | Moderate (3)              | Unlikely (E) | M    |                     |
| Proximity of quarry<br>to local and<br>neighbouring<br>properties. | Local community<br>and residents.        | Perceived / loss of amenity at<br>local and neighbouring<br>properties. | Change of social activities in<br>local communities and impact on<br>feelings of well-being derived<br>from associated location. | Moderate (3)              | Possible (D) | M    | 5.14.5              |
|  | Local tourist related business.          | Perceived loss of amenity at<br>local service centre and<br>winery.     | Impacts to business viability.   | Moderate (3)              | Unlikely (E) | M    |                     |
| Detrimental<br>impacts to land<br>values.                          | Local business and landowners.           | Perceived / loss of land values<br>arising from quarry's operation.     | Reduction in land values.  | Moderate (3)              | Unlikely (E) | M    |                     |
| Detrimental<br>impacts to<br>agricultural<br>resources.            | Local business and landowners.           | Loss of agricultural resources<br>(land and water)                      | Loss of income   | Moderate (3)              | Unlikely (E) | M    |                     |



Medium

High

Critical