reference to "three (3) years" and replacing same with the words "thirty (30) years".

D. By deleting condition 12 thereof.

In all other respects the conditions as contained in the Respondent's letter of the 21st July, 1987 are confirmed.

BY THE COURT

REGISTRAR OF THE COURT
(G.J. CRABTREE).

L.S.

NOOSA

If telephoning or calling please ask for:
Neil Blamey (07) 5449 5379
TPC 1899
Your Ref: BMC:TH:60991
Email: pol@noosa.qld.gov.au

2 December 2003

JEFFERY CUDDIHY & JOYCE
SOLICITORS
PO BOX 614
GYMPIE QLD 4570

Dear Sir,

Re: Application for an Extension of Term of Approval Period for Extractive Industry situated at 150 Sheppersons Lane, Kin Kin described as (Portion 259, Murrays Road) Lot 259 on MCH 187

I refer to your request to extend the Term of Approval Period for the above development approval. On 27 November 2003 Council decided to:

A. Approve the request to extend the term for 15 years until 12 May 2033, subject to the following conditions:-

1. The applicant shall prepare an updated Management Plan that relates to the operational phase of the development. This plan is to be prepared by appropriately qualified persons to the reasonable satisfaction of Council within six months from the issue of this extension to the term of the approval period.

2. The updated Management Plan to be submitted is to include:

- Environmental Management Plan (EMP).
- Ecological Restoration Plan.
- Landscape Master Plan.
- Traffic Management Plan (truck access) with predictions/procedures for the next 30 years.
- Sediment and Erosion Control Plan.
- Water Quality Management Plan.

3. The Landscape Master Plan shall detail:

- areas of natural vegetation to be retained (including a 20m buffer to Murray's Road);

NOOSA COUNCIL ABN 77 008 214 121
9 Pelican Street Tewantin PO Box 141 Tewantin Q 4565
Phone: 07 5449 5200 Fax: 07 5447 1062
Email: mailbox@noosa.qld.gov.au

- staged progressive rehabilitation of the site as quarrying operations cease on each face of the quarry;
- site preparation;
- weed removal and control;
- species 'palettes' and schedules;
- planting out procedures for rehabilitation purposes and horticultural requirements;
- mulching procedures;
- fertilising procedures;
- irrigation and watering procedures;
- enhancement of environmental linkages and corridors;
- on-going maintenance;
- perimeter fencing design and location.

The Landscape Master Plan shall be consistent with Planning Scheme Policy No. 1 – Landscaping Guidelines, and will primarily utilise native species that have been recorded on the site. Landscaped areas shall be integrated floristically and structurally with the surrounding native vegetation.

4. The Environmental Management Plan shall incorporate the requirement for annual environmental compliance monitoring and annual audit reports to be submitted to Council for the operation of the development. The format and content of these reports shall demonstrate compliance with the Management Plan and Consent Order and include a written discussion of the results and recommend any necessary actions.

5. An Environmental Management Plan (EMP) shall be prepared and implemented to ensure that the impact of the development on the environment is minimised and that the environmental values of the site are protected and enhanced. The Environmental Management Plan is to address the implementation of the requirements of the ecological restoration plan, sediment and erosion control plan, water quality management plan, landscape master plan; and address all other environmental considerations deemed relevant to the approved use and local environment, in order to minimize environmental harm and provide for progressive self-sustainable landscape/ecosystem re-habilitation. The EMP should be prepared to a standard necessary to meet Council requirements and recognized industry standards. The EMP is to:

- Comply with AS00014.
- Demonstrate a high level of environmental care and responsibility and be consistent with best practice for developments of this type in similar environments.

- Detail the applicant's environmental policy and the proposed environmental management system for the site.

6. The Environmental Management Plan shall specify to the reasonable satisfaction of Council: the performance targets, including those derived from the conditions and other requirements arising from legislation;

   - how the performance targets are to be achieved;
   - when the performance targets will be satisfied;
   - how performance will be monitored;
   - corrective actions and contingency measures to be undertaken;
   - reporting arrangements ;
   - auditing arrangements.

7. An Ecological Restoration Plan and Specifications shall be prepared by a specialist restoration ecologist, to the reasonable satisfaction of the Council. It shall identify all the areas that require ecological restoration and specify actions and works necessary to result in robust, self-sustaining viable plant communities and habitat.

8. The applicant/owner of the site shall comply with the updated Management Plan incorporating the Environmental Management Plan.

9. Detailed staged Sediment and Erosion Control Plans shall be prepared for the site, to the reasonable satisfaction of Council, and in accordance with the Institution of Engineers Australia 'Engineering Guidelines for Queensland Soil and Sediment Control' (June 1996) and in particular using Checklist No. 3 from that document. The Sediment and Erosion Control Plans shall cover all development on site, ecological restoration and remediation works.

B. Advise the applicant that the use is to comply with the scale and intensity allowed in the current approval and any increase in scale and intensity of operations on the site will be the subject of a further application for Material Change of Use.

Should you wish to obtain more information about Council's decision, the reports and staff recommendations and Council Minutes regarding this application are available for viewing or purchase at the Level 2 counter of Council offices. It would assist Council staff if you could bring this letter with you.

Yours faithfully,

Shane Adamson
MANAGER - LAND USE

NOOSA

If telephoning or calling please ask for:

Neil Blamey (07) 5449 5379

Your Ref: TPC1899

Email: pol@noosa.qld.gov.au

18 May 2005

Richard Davis
Groundwork
Environmental Management Services P/L
9 McInroy Street
Taringa Qld 4068

Dear Sir,

Re: Quarry Management Plan - Kin Kin Quarry - Lot 259 on MCH 187

I refer to your letter of 24 March 2005 regarding the submission of the amended Quarry Management Plan in accordance with the requirements of Council's approval letter of 10 February 2005.

The amended Quarry Management Plan has now been assessed and is considered satisfactory, subject to the following requirement:

1. A copy of an Annual Environmental Compliance Monitoring Report is to be sent to the Manager Land Use - Noosa Council each year.

If you require any further information in relation to this matter please do not hesitate to contact Neil Blamey on the above phone number

Yours faithfully

Neil Blamey
SENIOR ENVIRONMENTAL PLANNING OFFICER

NOOSA COUNCIL ABN 90 968 284 120
9 Pelican Street Tewantin PO Box 141 Tewantin Q 4565
Phone: 07 5449 5200 Fax: 07 5447 1062
Email: mailbox@noosa.qld.gov.au

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Notice of Decision – Development Approval

This notice is issued by the Environmental Protection Agency pursuant to Section 3.5.15 of the Integrated Planning Act 1997 to advise of a decision or action.

Alberton Investments Pty Ltd
C/- Groundwork EMS Pty Ltd
9 McInroy Street
TARINGA QLD 4068

Our reference: 281157/MCY1554

Dear Sir/Madam

Re: Application for Development Approval

The Environmental Protection Agency, acting as assessment manager, wishes to advise that your application for development approval, received on 28-NOV-2005, has been assessed, and on 06-FEB-2006 it was approved with conditions.

1. Property/Location:

Street address - 150 Sheppersons LANE KIN KIN QLD 4571

Lot/Plan - Lot 259 Plan MCH 187

2. Details of the decision

Aspect of Development
- Development Approval for a MCU involving an ERA
- ERA 11(a) Crude oil storing or petroleum product storing - crude oil or petroleum product in tanks or containers having a combined total storage capacity of 10 000 L or more but less than 500 000 L.
- ERA 20(c) Extracting rock or other material - extracting rock (other than rock mined in block or slab form for building purposes), sand (other than foundry sand), clay (other than clay used for its ceramic properties, kaolin or bentonite), gravel, loam or other material (other than gravel, loam or other material under a mining tenement or an authority, lease, licence or permit mentioned in item 21C or 21D) from a pit or quarry using plant or equipment having a design capacity of 100 000 t or more a year.
- ERA 22(c) Screening etc. materials - screening, washing, crushing, grinding, milling, sizing or separating material extracted from the earth (other than under a mining tenement or authority lease,

licence or permit mentioned in item 21C or 21D) or by dredging using plant or equipment having a design capacity of more than 100 000 t, a year.
- ERA 28 Motor vehicle workshop - operating a workshop or mobile workshop in the course of which motor vehicle mechanical or panel repairs are carried out in the course of a commercial or municipal enterprise (other than on a farm or under a mining tenement) or on a commercial basis.

Decision
- Granted in full with conditions

EPA Ref Number
- IPDE00324405A11

3. **Effectiveness and currency periods**
This development approval takes effect -

- From the time the decision notice is given, if there is no submitter and the applicant does not appeal the decision to the court; or
- When the submitter's appeal period ends, if there is a submitter and the applicant does not appeal the decision to the court; or

- Subject to the decision of the court, when the appeal is finally decided, if an appeal is made to the court.

[refer to sections 3.5.19 and 3.5.20 of the Integrated Planning Act 1997 for further details]

This approval will lapse unless substantially started within 4 years of the starting day this approval take effect.

4. **The approved plans**

Nil

5. **Other necessary development permits**
This approval pursuant to the Integrated Planning Act 1997 does not remove the need to obtain any further approval for this development, required by this or other State and/or Commonwealth legislation. Applicants are advised to check with all relevant statutory authorities for such approvals as may be required. Applicants should also comply with all relevant legislation.

6. **Codes for self-assessable development**
Any self-assessable development for an environmentally relevant activity conducted in conjunction with this approval, must comply with the relevant code of environmental compliance.

7. **IDAS referral agencies**
   The IDAS referral agencies and their response to each approval type required for this application are:

Concurrence Agencies: Nil

Advice Agencies: Nil

8. **Submissions**
   This application did not trigger Public Notification.

9. **Appeal rights**
   An attached extract from the *Integrated Planning Act 1997* details your appeal rights regarding this decision. You should seek independent advice to confirm all your available avenues.

If you require more information, please contact Andrew Howard, the Project Manager, on the telephone number listed below.

Yours sincerely

Dr Glen Brown
Delegate
Environmental Protection Agency

06-FEB-2006

Enquiries:

SouthReg Env Ops (Sun Coast District)
PO Box 168
COTTON TREE QLD 4558
Phone: (07) 5459 6136
Fax: (07) 5443 8344

Attachment – Appeal Rights (extract from the *Integrated Planning Act 1997*)

Attachment - Development Permit

APPEAL RIGHTS - Extract from the *Integrated Planning Act 1997*

Division 8—Appeals to court relating to development applications

4.1.27 Appeals by applicants

(1) An applicant for a development application may appeal to the court against any of the following -
  (a) the refusal, or the refusal in part, of a development application;
  (b) a matter stated in a development approval, including any condition applying to the development, and the identification of a code under section 3.1.6;
  (c) the decision to give a preliminary approval when a development permit was applied for;
  (d) the length of a currency period;
  (e) a deemed refusal.

(2) An appeal under subsection (1)(a) to (d) must be started within 20 business days (the **"applicant's appeal period"**) after the day the decision notice or negotiated decision notice is given to the applicant.

(3) An appeal under subsection (1)(e) may be started at any time after the last day a decision on the matter should have been made.

4.1.28 Appeals by submitters

(1) A submitter for a development application may appeal to the court only against -
  (a) the part of the approval relating to the assessment manager's decision under section 3.5.14 or 3.5.14A; or
  (b) for an application processed under section 6.1.28(2) – the part of the approval about the aspects of the development that would have required public notification under the repealed Act.

(2) To the extent an appeal may be made under subsection (1), the appeal may be against 1 or more of the following-
  (a) the giving of a development approval;
  (b) any provision of the approval including-
    (i) a condition of, or lack of condition for, the approval; or
    (ii) the length of a currency period for the approval.

(3) However, a submitter may not appeal if the submitter-
  (a) withdraws the submission before the application is decided; or
  (b) has given the assessment manager a notice under section 3.5.19(1)(b)(ii).

(4) The appeal must be started within 20 business days (the **"submitter's appeal period"**) after the decision notice or negotiated decision notice is given to the submitter.

4.1.29 Appeals by advice agency submitters

(1) Subsection (1A) applies if an advice agency, in its response for an application, told the assessment manager to treat the response as a properly made submission.

(1A)The advice agency may, within the limits of its jurisdiction, appeal to the court about any part of the approval relating to the assessment manager's decision under section 3.5.14 or 3.5.14A.

(3) The appeal must be started within 20 business days after the day the decision notice or negotiated notice is given to the advice agency as a submitter.

(4) However, if the advice agency has given the assessment manager a notice under section 3.5.19(1)(b)(ii), the advice agency may not appeal the decision.

4.1.30 Appeals for matters arising after approval given (co-respondents)

(1) For a development approval given for a development application, a person to whom any of the following notices have been given may appeal to the court against the decision in the notice -
  (a) a notice giving a decision on a request for an extension of the currency period for an approval;
  (b) a notice giving a decision on a request to make a minor change to an approval.

(2) The appeal must be started within 20 business days after the day the notice of the decision is given to the person.

(3) Subsection (1)(a) does not apply if the approval resulted from a development application (superseded planning scheme) that was assessed as if it were an application made under a superseded planning scheme.

Division 9 - Appeals to court about other matters

4.1.31 Appeals for matters arising after approval given (no co-respondents)

(1) A person to whom any of the following notices have been given may appeal to the court against the decision in the notice -
   (a) a notice giving a decision on a request to change or cancel a condition of a development approval;
   (b) a notice under section 3.5.33A(9)(b) or 6.1.44 giving a decision to change or cancel a condition of a development approval.

(2) The appeal must be started within 20 business days after the day the notice of the decision is given to the person.

4.1.32 Appeals against enforcement notices

(1) A person who is given an enforcement notice may appeal to the court against the giving of the notice.
(2) The appeal must be started within 20 business days after the day notice is given to the person.

4.1.33 Stay of operation of enforcement notice

(1) The lodging of a notice of appeal about an enforcement notice stays the operation of the enforcement notice until -
   (a) the court, on the application of the entity issuing the notice, decides otherwise; or
   (b) the appeal is withdrawn; or
   (c) the appeal is dismissed.
(2) However, subsection (1) does not apply if the enforcement notice is about -
   (a) a work, if the enforcement notice states the entity believes the work is a danger to persons or a risk to public health; or
   (b) carrying out development that is the demolition of a work.

4.1.34 Appeals against decisions on compensation claims

(1) A person who is dissatisfied with a decision under section 5.4.8 or 5.5.3 for the payment of compensation may appeal to the court against -
   (a) the decision; or
   (b) a deemed refusal of the claim.
(2) An appeal under subsection (1)(a) must be started with 20 business days after the day notice of the decision is given to the person.
(3) An appeal under subsection (1)(b) may be started at any time after the last day a decision on the matter should have been made.

4.1.35 Appeals against decisions on requests to acquire designated land under hardship

(1) A person who is dissatisfied with a designator's decision to refuse a request made by the person under section 2.6.19, may appeal to the court against -
   (a) the decision; or
   (b) a deemed refusal of the request.
(2) An appeal under subsection (1)(a) must be started within 20 business days after the day notice of the decision is given to the person.
(3) An appeal under subsection (1)(b) may be started at any time after the last day a decision on the matter should have been made.

4.1.37 Appeals from tribunals

(1) A party to a proceeding decided by a tribunal may appeal to the court against the tribunal's decision, but only on the ground -
   (a) of error or mistake in law on the part of the tribunal; or
   (b) that the tribunal had no jurisdiction to make the decision or exceeded its jurisdiction in making the decision.
(2) An appeal against a tribunal's decision must be started within 20 business days after the day notice of the tribunal's decision is given to the party.

4.1.38 Court may remit matter to tribunal

If an appeal includes a matter within the jurisdiction of a tribunal and the court is satisfied the matter should be dealt with by a tribunal, the court must remit the matter to the tribunal for decision.

Division 10 - Making an appeal to court

4.1.39 How appeals to the court are started

(1) An appeal is started by lodging written notice of appeal with the registrar of the court.
(2) The notice of appeal must state the grounds of the appeal.
(3) The person starting the appeal must also comply with the rules of the court applying to the appeal.
(4) However, the court may hear and decide an appeal even if the person has not complied with subsection (3).

4.1.41 Notice of appeal to other parties (div 8)

(1) An appellant under division 8 must give written notice of the appeal to-
  (a) if the appellant is an applicant-
    (i) the chief executive; and
    (ii) the assessment manager; and
    (iii) any concurrence agency; and
    (iv) any principal submitter whose submission has not been withdrawn; and
    (v) any advice agency treated as a submitter whose submission has not been withdrawn; or
  (b) if the appellant is a submitter or an advice agency whose response to the development application is treated as a submission for an appeal-
    (i) the chief executive; and
    (ii) the assessment manager; and
    (iii) any referral agency; and
    (iv) the applicant; or
  (c) if the appellant is a person to whom a notice mentioned in section 4.1.30 has been given-
    (i) the chief executive; and
    (ii) the deciding entity; and
    (iii) any entity that was a concurrence agency or building referral agency for the development application to which the notice relates.
(2) The notice must be given within-
  (a) if paragraph (b) does not apply-10 business days after the appeal is started; or
  (b) if the appellant is a submitter or advice agency whose response to the development application is treated as a submission for an appeal-2 business days after the appeal is started.
(3) The notice must state-
  (a) the grounds of the appeal; and
  (b) if the person given the notice is not the respondent or a co-respondent under section 4.1.43 -
  (c) that the person may, within 10 business days after the day the notice is given, elect to become a co-respondent to the appeal by filing in the court a notice of election in the approved form.

4.1.42 Notice of appeal to other parties (div 9)

(1) An appellant under division 9 must, within 10 business days after the day the appeal is started give written notice of the appeal to -
  (a) if the appellant is a person to whom a notice mentioned in section 4.1.31[73] has been given - the entity that gave the notice; or
  (b) if the appellant is a person to whom an enforcement notice is given - the entity that gave the notice and if the entity is not the local government, the local government; or
  (c) if the appellant is a person dissatisfied with a decision about compensation - the local government that decided the claim; or
  (d) if the appellant is a person dissatisfied with a decision about acquiring designated land - the designator; or
  (e) if the appellant is a person who is disqualified as a private certifier - the entity disqualifying the person and if the entity disqualifying the person is not the accrediting body, the accrediting body; or
  (f) if the appellant is a party to a proceeding decided by a tribunal - the other party to the proceeding.
(2) The notice must state the grounds of the appeal.

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Development Permit

Section 3.3.15

Integrated Planning Act 1997

EPA Permit[1] number:	IPDE00324405A11
Assessment Manager reference:	MCY1554
Date application received by EPA:	28-NOV-2005
Permit[1] Type:	Recommencement of an ERA
Date of Decision:	06-FEB-2006
Decision:	Granted in full with conditions
Relevant Laws and Policies:	Environmental Protection Act 1994 and any subordinate legislation
Jurisdiction:	Item 1 in Table 2 of Schedule 2 of the Integrated Planning Regulation 1998

The Development Permit applies to and binds any person carrying out the activity under the approval.

Applicant: Alberton Investments Pty Ltd
C/o Groundwork EMS Pty Ltd
9 McInroy Street
TARINGA QLD 4068

Development Description

Property/Location

Lot/Plan:
Lot 259 MCH 187

Street address:
150 Sheppersons Lane, Kin Kin, Qld 4571

Aspect of Development:
ERA 20(c) Extracting rock or other material
ERA 22(c) Screening etc. materials
ERA 11(a) Crude oil or petroleum product storing
ERA 28 Motor vehicle workshop

Reasons for inclusion of development conditions

In accordance with section 3.3.18(7) of the Integrated Planning Act 1997 and section 27B of the Acts Interpretation Act 1954, the reasons for the inclusion of development conditions are:

1) The Environmental Protection Agency is a concurrence agency under the Integrated Planning Regulation 1998 for the purposes of the Environmental Protection Act 1994.
2) Any development conditions placed on this permit1 for an environmentally relevant activity are in

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

accordance with section 73B of the Environmental Protection Act 1994[1]

Additional comments or advice about the application

No additional comments.

Additional information for applicants

No additional information.

Contaminated Land

It is a requirement of the *Environmental Protection Act 1994* that if an owner or occupier of land becomes aware a Notifiable Activity (as defined by Schedule 2 of the *Environmental Protection Act 1994*) is being carried out on the land or that the land has been affected by a hazardous contaminant, they must, within 30 days after becoming so aware, give notice to the Environmental Protection Agency.

Environmentally Relevant Activities

The aforementioned description of any environmentally relevant activity (ERA) for which this permit is issued is simply a restatement of the ERA as prescribed in the legislation at the time of issuing this permit. Where there is any conflict between the abovementioned description of the ERA for which this permit is issued and the conditions specified herein as to the scale, intensity or manner of carrying out of the ERA, then such conditions prevail to the extent of the inconsistency.

This permit authorises the ERA. It does not authorise environmental harm unless a condition within this permit explicitly authorises that harm. Where there is no such condition, or the permit is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

In addition to this permit, the person to carry out the ERA must be a registered operator under the Environmental Protection Act 1994. For the person to become a registered operator, they must apply for a registration certificate under section 73F of the Environmental Protection Act 1994.

Dr Glen Brown – District Manager
Delegate
Environmental Protection Agency

06-FEB-2006

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Approval Conditions

Activities:

ERA 20(c) Extracting rock or other material – extracting rock (other than rock mined in block or slab form for building purposes), sand (other than foundry sand), clay (other than clay used for its ceramic properties, kaolin or bentonite), gravel, loam or other material (other than gravel, loam or other material under a mining tenement or petroleum authority) from a pit or quarry using plant or equipment having a design capacity of 100 000 t or more a year.

ERA 22(c) Screening etc. materials – screening, washing, crushing, grinding, milling, sizing or separating material extracted from the earth (other than under a mining tenement or petroleum authority) or by dredging using plant or equipment having a design capacity of 100 000 t or more a year.

ERA 11(a) Crude oil or petroleum product storing – storing crude oil or a petroleum product in tanks or containers having a combined total storage capacity of 10 000L or more but less than 500 000L.

ERA 28 Motor vehicle workshop – operating a workshop or mobile workshop in the course of which motor vehicle mechanical or panel repairs are carried in the course of a commercial or municipal enterprise (other than on a farm or under a mining tenement) or on a commercial basis.

Agency Interest: General

General 1: Prevent and/or minimise likelihood of environmental harm.

In carrying out an ERA to which this approval relates, all reasonable and practicable measures must be taken to prevent and/or to minimise the likelihood of environmental harm being caused.

General 2: Maintenance of Measures, Plant and Equipment.

The operator of an ERA to which this approval relates must:

(a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this approval; and

(b) maintain such measures, plant and equipment in a proper and efficient condition; and

(c) operate such measures, plant and equipment in a proper and efficient manner.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

General 3: Site Based Management Plan.

From commencement of an ERA to which this approval relates, a site based management plan (SBMP) must be implemented. The SBMP must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The SBMP must also provide for the review and 'continual improvement' in the overall environmental performance of all ERAs that are carried out.

The SBMP must address the following matters:

(a) Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals.

(b) Identification of environmental issues and potential impacts.

(c) Control measures for routine operations to minimise likelihood of environmental harm.

(d) Contingency plans and emergency procedures for non-routine situations.

(e) Organisational structure and responsibility.

(f) Effective communication.

(g) Monitoring of contaminant releases.

(h) Conducting environmental impact assessments.

(i) Staff training.

(j) Record keeping.

(k) Periodic review of environmental performance and continual improvement.

General 4: Records

Record, compile and keep all monitoring results required by this approval and present this information to the administering authority when requested.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Agency Interest: Air

Air 1: When requested by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

a) for a complaint alleging dust nuisance. Dust deposition; and

b) for a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere over a 24hr averaging time.

Air 2: Nuisance

The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

Air 3: Dust Nuisance

The release of dust and/or particulate matter resulting from the ERA must not cause an environmental nuisance at any nuisance sensitive or commercial place.

Air 4: Dust and particulate matter must not exceed the following levels when measured at any nuisance sensitive or commercial place:

a) Dust deposition of 120 milligrams per square metre per day, when monitored in accordance with Australian Standard AS 3580.10.1 of 2003

(or more recent editions); OR

b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, when monitored in accordance with:

- Australian Standard AS 3580.9.6 of 2003 (or more recent editions) 'Ambient air - Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet -Gravimetric method'; or -
- any alternative method of monitoring PM10 which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Air 5: When requested by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

a) for a complaint alleging dust nuisance, dust deposition; and

b) for a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere over a 24hr averaging time.

Agency Interest: Land

Land 1: Land Rehabilitation

The site (including all disturbed areas such as slopes, borrow pits, stockpile and screening areas) must be rehabilitated in a manner such that:

(a) suitable native species of vegetation are planted and established;

(b) potential for erosion of the site is minimised;

(c) the quality of stormwater, other water and seepage released from the site is such that releases of contaminants such as suspended solids, turbidity, total dissolved salts, pH, total iron, total aluminium and total manganese are not likely to cause environmental harm;

(d) the likelihood of environmental nuisance being caused by release of dust is minimised;

(e) the water quality of any residual water body meets relevant criteria for subsequent uses and does not have potential to cause environmental harm;

(f) the final landform is stable and not subject to slumping.

Land 2: Rehabilitation of the disturbed areas must take place progressively as works are staged and new areas of extraction are commenced.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Agency Interest: Noise

Noise 1: Noise Nuisance

Noise from the ERA must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

Noise 2: All noise from activities must not exceed the levels specified in Table 1 - Noise limits at any nuisance sensitive or commercial place.

Noise 3: Noise Monitoring

When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within 14 days to the administering authority. Monitoring must include:

- background noise;
- LA 10, adj, 10 mins;
- LA 1, adj, 10 mins;
- the level and frequency of occurrence of impulsive or tonal noise;
- atmospheric conditions including wind speed and direction;
- effects due to extraneous factors such as traffic noise; and
- location, date and time of recording.

Noise 4: The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

Noise 5: Vibration Nuisance

Vibration emitted from the ERA must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

Noise 6: Vibration emitted from activities must not exceed the levels specified in Table 2 – Vibration nuisance at a nuisance sensitive place.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Noise 7: Vibration Monitoring

When requested by the administering authority, vibration monitoring and recording must be undertaken to investigate any complaint of vibration nuisance, and the results notified within 14 days to the administering authority. Monitoring must include:

a) peak particle velocity (mm/s);

b) location of the blast/s within the site (including which bench level);

c) atmospheric conditions including temperature, relative humidity and wind speed and direction;

d) the level and frequency of occurrence of impulsive or tonal noise;

e) atmospheric conditions including wind speed and direction;

f) effects due to extraneous factors; and

g) location, date and time of recording.

Agency Interest: Social

Social 1: The registered operator of the activity must record the following details for all complaints received and provide this information to the administering authority on request:

a) Time, date, name and contact details of the complainant;

b) reasons for the complaint;

c) any investigations undertaken;

d) conclusions formed; and

e) any actions taken.

Agency Interest: Water

Water 1: Erosion Protection Measures and Sediment Controls

Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment. The size of any sedimentation dam must be sufficient to contain the runoff from disturbed areas from a 24 hour storm with an average recurrence interval of 1 in 5 years.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Water 2: There must be no release of stormwater runoff that has been in contact with any contaminants at the site to any waters, roadside gutter or stormwater drain.

Table 1 - Noise limits

Noise level dB(A) measured as	Monday to Saturday			Sundays and public holidays		
	6am - 6pm	6pm - 10pm	10pm - 6am	9am - 6pm	6pm - 10pm	10pm - 9am
	Noise measured at a 'nuisance sensitive place'					
$L_{A10, adj, 10 mins}$	55	50	40	55	50	40
$L_{A1, adj, 10 mins}$	60	55	45	60	55	45
	Noise measured at a 'Commercial place'					
$L_{A10, adj, 10 mins}$	65	60	50	65	60	50
$L_{A1, adj, 10 mins}$	70	65	55	70	65	55

Table 2 - Vibration limits at a nuisance sensitive place

	Monday to Friday 7am - 6pm Saturday 9am - 1pm	Sundays and public holidays
Houses and low rise residential buildings and commercial and industrial buildings or structures of reinforced concrete or steel construction.	Airblast overpressure is no more than 115dB(Lin) peak for 4 out of any 5 consecutive blasts. Ground vibration is (i) for vibrations of more than 35 Hz – no more than 25mm a second ground vibration, peak particle velocity; and (ii) for vibrations of no more than 35 Hz – no more than 10mm a second ground vibration, peak particle velocity	No blasting to occur

End Tables Attachment

Attachment – Definitions

Words and phrases used throughout this permit[1] are defined below. Where a definition for a term used in this permit[1] is sought and the term is not defined within this permit[1] the definitions provided in the relevant legislation shall be used.

"administering authority" means the Environmental Protection Agency or its successor.

"annual return" means the return required by the annual notice (under section 316 of the *Environment Protection Act 1994*) for the section 73F registration certificate that applies to the development approval.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

"approval" means 'notice of development application decision' or 'notice of concurrence agency response' under the *Integrated Planning Act 1997.*

"authorised place" means the place authorised under this development approval for the carrying out of the specified environmentally relevant activities.

"commercial place" means a place used as an office or for business or commercial purposes.

"dwelling" means any of the following structures or vehicles that is principally used as a residence –

- a house, unit, motel, nursing home or other building or part of a building;
- a caravan, mobile home or other vehicle or structure on land;
- a water craft in a marina.

"intrusive noise" means noise that, because of its frequency, duration, level, tonal characteristics, impulsiveness or vibration –

- is clearly audible to, or can be felt by, an individual; and
- annoys the individual.
- In determining whether a noise annoys an individual and is unreasonably intrusive, regard must be given to Australian Standard 1055.2 – 1997 Acoustics – Description and Measurement of Environmental Noise Part 2 – Application to Specific Situations.

"$L_{A\ 10,\ adj,\ 10\ mins}$" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10 minute measurement period, using Fast response.

"$L_{A\ 1,\ adj,\ 10\ mins}$" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10 minute measurement period, using Fast response.

"$L_{A,\ max\ adj,\ T}$" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

"mg/L" means milligrams per litre.

"noxious" means harmful or injurious to health or physical well being.

"nuisance sensitive place" includes –

- a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- a motel, hotel or hostel; or
- a kindergarten, school, university or other educational institution; or
- a medical centre or hospital; or
- a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or
- a public thoroughfare, park or gardens; or

and includes a place within the curtilage of such a place reasonably used by persons at that place.

"offensive" means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.

"protected area" means –

- a protected area under the *Nature Conservation Act 1992*; or
- a marine park under the *Marine Parks Act 1992*; or
- a World Heritage Area.

"regulated waste" means non-domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 1998* (whether or not it has been treated or immobilised), and includes -

- for an element - any chemical compound containing the element; and
- anything that has contained the waste.

"site" means the place to which this development approval relates or the premises to which this development approval relates.

"watercourse" means a river, creek or stream in which water flows permanently or intermittently-

- in a natural channel, whether artificially improved or not; or

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

- in an artificial channel that has changed the course of the watercourse.

"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part-thereof.

"50th percentile" means not more than three (3) of the measured values of the quality characteristic are to exceed the stated release limit for any six (6) consecutive samples for a release/monitoring point at any time during the environmental activity(ies) works.

"80th percentile" means not more than one (1) of the measured values of the quality characteristic is to exceed the stated release limit for any five (5) consecutive samples for a sampling point at any time during the environmental activity(ies) works

END OF CONDITIONS

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Attachment 4

Road Transport Protocol

Neilsen's Road Transport Protocol

1.1 Travelling Prior to Work

Travelling prior to work covers the use of private vehicles to access haulage trucks that may be parked overnight on a quarry site and the movement of haulage trucks before and after product haulage duties.

NQG expects that drivers, using private vehicles to access parked haulage vehicles, will comply with the rules of the road. Empty haulage vehicles in transit to base from the company's quarries are considered to be associated with NQG and must abide by the TMP in general and the Driver Code of Conduct (DCC see below).

When travelling prior to work vehicles are not bound by any designated route unless specifically instructed otherwise.

1.2 Compliance with Designated Haulage Routes

Haulage routes will be agreed between haulage contractors and NQG, and shall be in accordance with any Development Consent provisions or governmental requirements. Drivers will be instructed that no deviation from haulage routes will be tolerated unless exceptional circumstances have arisen and directions by the Police, Department Main Roads, Qld Transport, Local Council or other statutory body to deviate from the designated route have been given.

1.3 Trucking Schedule

1.3.1. Routine Hauling

The number of trucks employed in product haulage, and, therefore, the number of truck movements per hour will vary during the day as will the interval between dispatches.

Available haulage hours as detailed in the Development Consent will be utilised to achieve a low frequency regular transport program. Truck drivers should communicate with each other (on UHF) when approaching quarry sites to avoid causing queues at quarry entry points – as far as possible trucks should be no closer than 300 metres to the truck ahead.

1.3.2. Staggering of Departures

Systems will be in place at each NQG quarry sites to ensure, as far as is reasonably practicable, that truck dispatches are staggered by a period of 5 minutes.

1.3.3 Notification of Extraordinary Departures

Any departures from or arrivals at the quarry sites that, for unforeseen circumstances, must be scheduled at times which may coincide with the Quarry entry point must be notified in advance by telephone to radio using UHF. In addition, any emergency situation, unusual site activity or other event likely to impact upon the safe passage of local traffic in the vicinity of the Quarry entry point will require similar notification.

1.4. Contingency Plan

To cater for the unlikely possibility that there is a significant disruption to the normal haulage route, NQG has formulated a contingency plan. The contingency plan has two levels.

Level 1 is a disruption which is expected to be of up to 24 hours. The contingency plan for this level is to cease product haulage until the designated route has returned to serviceability. During the cessation of haulage the quarry would consult with the Department Main Roads, Queensland Transport or Local government authority with a view to increasing daily haulage volumes once the designated route has returned to serviceability until the "lost tonnage" has been recovered.

Level 2 is an extension of Level 1 where the disruption exceeds 24 hours. The contingency plan for this level is to liaise with the Department Main Roads, Queensland Transport or local government authority with a view to using an alternative haulage route at a reduced haulage rate so that some level of production can be maintained. The quarry concerned would implement agreed traffic management measures prior to commencing haulage via the alternative route.

Once the designated route has returned to serviceability, the quarry would again consult with the Department Main Roads, Queensland Transport or local government authority with a view to increasing daily haulage volumes for a period along the normal haulage route until the "lost tonnage" has been recovered.

1.5 Communications

Haulage vehicles are to be fitted with a UHF communication system that allows the drivers to communicate with the relevant quarry, each other and the contractor's base station. UHF Channel (TBA) is the designated medium for communication between the quarries,

1.6 Drug and Alcohol Policy

As part of the contractual arrangement with the haulage contractor, there will be a requirement for the haulage contractor to have a drug and alcohol policy which clearly documents the testing procedures and disciplinary actions. NQG requires that all haulage vehicle drivers have a zero blood alcohol level when entering and leaving the company's quarry site. The haulage contractor must agree that its drivers may be subjected to random breath testing or other testing for the presence of performance affecting drugs.

1.7 Fatigue Management

As part of the contractual arrangement with the haulage contractor, there will be a requirement for the haulage contractor to have a Fatigue Management Strategy that clearly documents the hours that a driver can continuously operate the haulage vehicle, the duration of breaks and a contingency for unanticipated fatigue.

1.8 Interaction With Other Heavy Vehicles

NQG will instruct the operators of other heavy vehicles that service any of its quarries to contact the haulage contractor with a view to coordinating their arrival and departure times so that excessive numbers of truck movements do not occur over a short period.

1.9 Truck Loading

All haulage vehicle axle loadings must comply with DEPARTMENT MAIN ROADS, QUEENSLAND TRANSPORT requirements – no overloading will be tolerated. Similarly, loads must be covered according to DEPARTMENT MAIN ROADS, QUEENSLAND TRANSPORT requirements to prevent spillage and dust generation during transit.

1.10 Movements of Empty Trucks

Movement of empty haulage vehicles through built up areas is to be reduced to a practical minimum.

1.11 School Bus – Haulage Vehicle Interaction

Drivers of all vehicles entering or leaving NQG quarry sites must give way to all traffic as required by the general rules of the road. However, drivers must exercise extreme caution when arriving at, or departing, NQG quarry sites at times when school buses are operating along the haulage route NQG's Production Manager for each quarry site will provide school bus schedules to drivers.

1.12 Addressing Complaints

Complaints relating to haulage vehicles can be made in the following way:

(i) In normal business hours, by phoning the Transport Manager (0437 334 289 Shane Orders)
(ii) If outside normal business hours or the nominated person is not available:

(a) Phone the Group Quarry Manager (0437 616 256)
(b) Send an email to the Complaints Desk at info@neilsens.com.au , or
(c) Writing a letter to the quarry;
Group Quarry Manager
Neilsens Quality Gravels Pty Ltd
PO Box 5319
Brendale Qld 4500

Persons making the complaint must:

(i) Be prepared to give their name and a contact phone number
(ii) Indicate the place and time of the event which necessitated them making a complaint and if possible the registration number of the unit involved
(iii) Give sufficient detail of the event to allow
enquiries to be made. The company, on receiving a complaint relating to product haulage from any of NQG's quarry sites, will ensure that:
(a) the complainant will be contacted no later than the next business day following the complaint being received;
(b) details of the complaint will be recorded on a standard form labelled "Record for Complaints";
(c) each complaint will be immediately investigated;
(d) complainants will be advised as soon as possible of the result of the investigation; and
(e) in any case a verbal response will be provided within 3 business days from contacting the complainant.

A full record of all complaints and actions taken will be maintained by the company. A summary of complaints will be provided in the Monthly Management Meetings for discussion by Senior Management of the company.

1.14 Implementation of Traffic Management Plan

The Traffic Management Plan will be implemented in the following way:
(i) The Traffic Management Plan will be incorporated into the contract, verbal or written, with the haulage company;
(ii) The haulage contractor will be required to keep a legible copy of the plan in each haulage vehicle;
(iii) Explanation of the plan will occur as part of Driver Training and questions on the plan are included in the Drivers Knowledge Test each of which will be carried out by the haulage contractor's authorised officer(s);
(iv) Truck drivers must demonstrate to the company that they have completed the knowledge test carried out by the contractor before access to a quarry site is granted by the company;
(v) Both the company and the haulage contractor will nominate a representative who will be jointly responsible for day to day liaison and monitoring of the effectiveness of the Traffic Management Plan and documenting any deviations from the plan or problems with the plan; and
(vi) Operators of heavy vehicles that service the quarry will be directed to the Traffic Management Plan by the Production Manager on arrival at the quarry site.

1.15 Contact List

Organisation - Contact - Phone Number
Neilsens Quality Gravels Pty Ltd

Group Quarry Manager – 0437 616256
Transport Manager - 0437 334 289

Haulage Contractor (s) -

SECTION 2

DRIVER CODE OF CONDUCT (DCC)
DRIVER TRAINING AND AUTHORISATION

The Driver Code of Conduct (DCC) relates to all persons engaged in the driving of haulage vehicles that are associated with the transport of products from quarries and sites operated by Neilsens Quality Gravels Pty (NQG) Neilsens Concrete Pty Ltd, Neilsens Transport Pty Ltd (The Neilsen Group)

All drivers are responsible for both their own safety and the health and safety of others that may be affected by their acts or omissions. A breach of this code is a disciplinary matter.

1. Safety

Drivers are to be especially safety conscious and must expect inappropriate manoeuvres, and speeding by light vehicles, cars and motorcycles. Drivers are to remain alert and exercise courtesy to other road users at all times.

Drivers of haulage vehicles must strictly obey the general rules of the road in relation to travelling speed, adherence to traffic signs, adherence to road markings narrow bridges etc. Safety breaches, substantiated complaints from the public and traffic infringement notices issued to haulage truck drivers will all be considered a breach of the Road Transport Protocol and may result in disciplinary action.

Drivers should be familiar with and abide by the Drug and Alcohol Policy and Fatigue Management Plan instigated by the haulage contractor.

2. Audit and Review

This DCC will be periodically audited for compliance, and reviewed for adequacy by interested parties. In these reviews, the drivers of haulage vehicles will be asked to participate.

3. Travelling Speeds

Drivers must abide by the speed restrictions as set down by QLD. Road Traffic Rules and as indicated by road signs. In addition to these mandatory signs, the travelling speed shown on advisory signs are to be observed. Speed limits on NQG access roads and within quarry sites must be obeyed.

4. Inclement Weather

During inclement weather, including but not limited to poor visibility, rain, and high winds, travelling speeds should be reduced to reflect prevailing road conditions and driving conditions.

In respect of the NQG Quarry site, haulage operations will cease during periods of poor visibility including foggy conditions, periods of heavy rain dust storms etc. when the fluorescent markers, located 250 metres east and west of the entrance to the site and at the entrance, are no longer visible from the intersection of the quarry access road. During fogs drivers should communicate with the quarry by UHF well before approaching the quarry entry for advice on the weather conditions. Operations will commence when sight distances are restored. Drivers will report poor or deteriorating visibility to the nominated representative of NQG by UHF radio.

5. Braking

By driving within the speed limits and anticipating changes of speed limits, drivers of haulage vehicles will endeavour to minimise the excessive noise generated by harsh engine breaking, particularly early in the morning or late evening. Use of compression braking should be avoided when in built up areas or near residences.

6. Overtaking

Except in extreme cases, haulage trucks must not overtake each other and generally speaking, overtaking is not encouraged. Drivers should take particular note of this when slow moving vehicles are using road shoulders as unofficial passing lanes. Where recognized overtaking lanes are available, haulage trucks and in particular loaded ones, should keep to the left hand lane to allow overtaking by other road users.

7. Road Shoulders and Passing Opportunity Lanes

In general, haulage trucks should remain on the main section of the road pavement except where there is a need to use the 'passing opportunity' lanes that have been installed at quarry entrances.

.

Drivers are to avoid straying onto road shoulders in general and when travelling.

8. Staggered Departures

The haulage contractor is to put in place arrangements that facilitate the staggering of departures from quarry sites. The minimum gap at the point of departure is 5 minutes. Where there are less than 12 departures per hour, the haulage contractor is to use his best endeavours to spread those departures over the hour. If, however, bunching occurs due to congestion on the haulage route, then drivers are to restore the minimum 5 minute stagger on departures.

9. Vehicle Separation

Whilst staggered departures from the quarry sites should result in a separation of several kilometres between haulage vehicles, vehicles will encounter other heavy vehicles and other haulage vehicles en route. Where this happens the minimum separation distance between heavy vehicles, which includes haulage vehicles, is to be approximately 60 metres. Drivers, however, should be prepared to maintain separation distances greater than this minimum to cater for the types of behaviour exhibited by other road users. When approaching quarry sites drivers should maintain a minimum separation distance of 300m to avoid causing queuing at quarry entry points. To assist in maintaining these separation distances drivers should communicate with other drivers on UHF Channel (TBA). There will be no travelling in convoy on the open road, drivers should endeavour to maintain a suitable separation distance from other vehicles, particularly other haulage trucks and heavy vehicles. In the event of unavoidable queuing, drivers will be required to note all details on their Daily Report Sheet, this information can then be used to assist in identifying trouble spots.

10. Truck Maintenance

Haulage vehicles must be appropriately and fully maintained in proper and roadworthy condition. The Haulage Contractor must provide each driver with a pre-start check list for each haulage vehicle, and must ensure that the check list is completed and required maintenance noted thereon, and that required maintenance so noted is actioned at the earliest possible opportunity thereafter.

11. Driver Training and Authorisation

Drivers are not permitted to haul product from the NQG operations or drive an empty haulage vehicle to these operations with the intention of hauling product unless the driver has the required training, has successfully completed a knowledge test on the road transport protocol and has been authorised by the approved representative of the haulage contractor. The authorisation must be presented to the relevant quarry Production Manager on arrival at each quarry.

DRIVER TRAINING AND AUTHORISATION

All persons who will be associated with NQG operations as the driver of a product haulage vehicle will on their first visit to each site:

(i) Undertake a quarry site Induction Session prior to commencing duties that will detail amongst other things the quarry site safety requirements and provide relevant site information. The induction will be conducted by a representative of the quarry;

(ii) Be equipped with the necessary Personal Protection Equipment (PPE) including but not limited to long trousers, safety boots, high visibility shirt (long sleeve), safety glasses, hard hat and gloves.

(iii) Carry Construction Blue / White cards (if required / appropriate)

(iii) Be authorised by NQG.

The knowledge test to be conducted by the haulage contractor is as follows:

KNOWLEDGE TEST - ROAD TRANSPORT PROTOCOL

Name: Date:

Please circle the correct answers:

Question 1: What is the Qld Transport. minimum distance between heavy vehicles?

a) 100 metres
b) 200 metres
c) 60 metres

Question 2: What is the shortest interval between departure times?

a) 2 minutes
b) 5 minutes
c) 10 minutes

Question 3: Drivers are responsible for their own safety and the safety of, and welfare of, all persons affected by their acts.

a) True
b) False

Question 4: What does the first part of the Drivers Code of Conduct deal with?

a) Arrival times
b) Safety
c) Meal breaks

Question 5: What would you expect if you fail to abide by the Code of Conduct?

a) A day off to celebrate with full pay
b) Disciplinary Action
c) Alternate work in the truck depot

Question 6: What document has been created that deals with complaints?

a) The NQG Pty Ltd Transport Rules
b) The Handbook of Local Council By-Laws
c) The Traffic Management Plan

Question 7: What UHF Channel (TBA) should be used to communicate with quarry?

a) Channel
b) Channel

Question 8: If you wanted to finish work early on a Friday you would be allowed to start at 5:00 am?

a) True
b) False

Question 9: What does the Fatigue Management Plan do?

a) Tells drivers how many hours they can drive for without a break
b) Tells them how many hours sleep they need

Question 10: There is to be a copy of the Traffic Management Plan kept in the truck whenever you are associated with product haulage for NQG?

a) True
b) False

Question 11: I can (under) pass vehicles that are turning right if the road has been widened to allow for site passage?

c) True
d) False

NQG– PRODUCT HAULAGE VEHICLE DRIVER AUTHORISATION

Name of Driver

.....

Take notice that I, ..., confirm that the above training has been given and that the nominated driver is competent to undertake all tasks associated with product haulage for Neilsens Quality Gravels Pty Ltd.

Signed .....

For and on behalf of .....

(The Haulage Contractor)

Date.....

I hereby declare that I have received the above training, am aware of contents of the Road Traffic Protocol and agree to abide by the requirements of the Driver Code of Conduct.

Driver ..... Date .....

Driver's Licence No. .....

Attachment 5

Erosion and Sediment Control Management Plan
O2 Environmental

O2 environmental

Kin Kin Quarry

Erosion and Sediment Control Management Plan

CLIENT:

Neilsen's Quality Gravels Pty Ltd

STATUS:

Draft

REPORT NUMBER:

SC10-0003 / SC-R00758

ISSUE DATE:

March 2010

Important Note

This report has been prepared for the sole use of the **Neilsen's Quality Gravels Pty Ltd** (herein, 'the client'), for a specific site (herein 'the site', the specific purpose specified in Section 1 of this report (herein 'the purpose'). This report is strictly limited for use by the client, to the purpose and site and may not be used for any other purposes.

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Version Register

Issue	Author	Reviewer	Change Notes	Authorised for Release	
				Signature	Date
Draft SC-R00758	Terry Clark	Steve Dudgeon		Steve Dudgeon	12 March 2010

Transmission Register

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Name	Email Address
Robert Snowden	rob@neilsens.com.au

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Annexures

1. Introduction

O2 Environmental was commissioned by Neilsen's Quality Gravels Pty Ltd (Neilsens) to prepare this Erosion and Sediment Control Management Plan for the Kin Kin Quarry. The quarry is located at 150 Sheppersons Lane, Kin Kin, Queensland with real property description Lot 259 on Crown Plan MCH187 and comprises an area of approximately 60 hectares. A site locality plan is provided in **Appendix A**.

It is understood that a review of erosion and water management practices at Kin Kin Quarry has been triggered by recent complaints to the Department of Environment and Resource Management (DERM) by surrounding residents regarding observed discharge of sediment laden stormwater from the subject site. Further, the complaints raise concerns that the discharged water may impact upon the water quality within Wahpunga Creek which is used for downstream domestic water supply and stock watering.

The primary objective of this report is to prepare an Erosion and Sediment Control Management Plan (refer **Appendix B, C** and **D**) to comply with relevant conditions outlined in Development Approval (ref. IPDE00324405A11, dated February 2006). The report will also provide guidance to site personnel on the implementation of industry best practice principles to manage erosion and sediment control issues specific to the subject site.

It should be noted that the nature of operations at this site will result in progressive site development over many years. Therefore a development horizon of 5 years has been adopted for this interim plan. The extent of site development within this timeframe is based on projected resource demand as advised by the client. In developing this ESC plan several assumptions have been made due to lack of current detailed survey and landform information. A conceptual plan indicating the likely final development layout was provided, with this plan used as the basis for the interim design. A copy of the supplied concept plan is provided in **Appendix E**.

1.1. Background

A Quarry Management Plan has been prepared by Groundwork Environmental Management Services Pty Ltd (Groundwork) in 2005, to support an application for an Environmental Authority. The Quarry Management Plan consisted of two sections, namely a Quarry Development Plan and an Environmental Management Plan. The former details plans for developing the resource on site, with the latter providing plans, procedures and performance targets to ensure the quarry is operated in an environmentally responsible manner.

1.2. Site Description

The lower and central portions of the site are partially vegetated with grasses and other ground cover, with isolated areas of mixed tall open forest present on the upper ridges. Topography across the site ranges between 60 to 250m Australian Height Datum (AHD). Elevated areas comprise a moderately inclined plateau, with lower areas moderately inclined (approx 1 in 5 slopes). In between is a north west facing steeply inclined slope (approx 1 in 2.3 slope), which has been incised by two drainage lines (Groundworks, 2005).

2. Compliance

2.1. Development Permit

A Development Approval (DA) was issued by the Environmental Protection Agency (EPA) in February 2006 (ref. IPDE00324405A11) for activities relating to quarrying, specifically Environmentally Relevant Activities (ERA) 20c, 22c, 11a and 28. The DA contains the following conditions specific to stormwater management:

- Water 1 – Erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment. The size of any sedimentation dam must be sufficient to contain the runoff from disturbed areas from a 24 hour storm with an average recurrence interval of 1 in 5 years.
- Water 2 – There must be no release of stormwater runoff that has been in contact with any contaminants at the site to any waters, roadside gutter or stormwater drain.

Condition 'Water 1' requires the sizing of sediment basins to enable capture of runoff generated from a 24 hour, 5 year ARI event. Design of sediment basins as per condition 1 will be undertaken as part of this report, however it should be noted that the specified design event is not what we considered best practice. Recommended design sizing of sediment basins in accordance with best practice principles will also be provided for comparison purposes (refer **Appendix C**).

Under the Environmental Protection Act (1994) sediment is a prescribed contaminant. Therefore condition 'Water 2' of the DA is considered impractical as any stormwater which has come in contact with contaminants (ie sediment) cannot be released. For the purpose of this report it is considered that controlled discharge of stormwater from the sediment basin is permitted following treatment to industry standard water quality criteria levels.

2.2. Quarry Management Plan

The existing Quarry Management Plan (prepared by Groundwork in 2005) states design of sediment basins is to be designed for a 6 hour, 10 year ARI storm event. Indicative sediment basin sizing will also be undertaken for the specified design criteria outlined within the Quarry Management Plan.

In addition to the DA the Quarry Management Plan does not provide specific discharge water quality criteria. Water quality criteria adopted for offsite discharge of waters is presented in the Sediment Basin Management Plan (refer **Appendix D**).

Based on the current Quarry Management Plan, the Quarry Manager (or consultant) will undertake monitoring of waters exiting the site on a periodic basis and following major rainfall events. Testing is to include turbidity, suspended solids (SS), pH, electrical conductivity (EC), oxides of nitrogen (nitrate and nitrite) and total nitrogen. The monitoring of nutrient levels and EC in waters to be discharged from the site is not considered relevant give site based activities. In accordance with adopted guidelines, the Sediment Basin Management Plan details water quality objectives and target limits for SS, pH and turbidity for discharge of water from the sediment basin.

2.3. Best Practice

Land disturbance associated with resource mining can be divided into two distinct stages; Construction (temporary disturbance) and Rehabilitation stage (final). Erosion and sediment control planning generally covers the construction stage of land disturbance. It can involve treatments and controls for short or longer term construction/mining activities. Longer term treatment measures and land stabilisation is part of the quarry rehabilitation stage.

In Queensland, the most widely adopted guideline for Erosion and Sediment Control is *'Best Practice Erosion and Sediment Control (IECA 2008)'*, however, the document was developed for 'construction and building sites'. Although the erosion and sediment control management principles and technical content are applicable to all types of construction such as resource mining, some of the techniques may not be practicable for quarry sites.

The most recent industry specific ESC publication for quarries, which predominantly forms the basis of this plan, was developed by the NSW Department of Environment and Climate Change (DECC). The guideline is titled *'Managing Urban Stormwater, Soils and Construction, Volume 2E, Mines and Quarries (DECC 2008)'*. The publication essentially guides the user in the application of the principles and practices of erosion and sediment control described in *Volume 1 of Managing Urban Stormwater: Soils and Construction (Landcom 2004)* to mines and quarries.

The guideline (DECC 2008) sets out a management goal for erosion and sediment control from a quarry is to ensure no pollution of surface water or groundwater. Current best-practice erosion and sediment control techniques are, however, unlikely to achieve this goal, due to the limited effectiveness of most of the techniques. An appropriate management objective is therefore to minimise the water-quality impacts from erosion and sedimentation through implementing best practice management techniques. Given the limited effectiveness of techniques for capturing eroded sediment, a strong emphasis should be placed on pollution prevention through erosion control, rather than relying on treatment techniques to capture these sediments.

As with construction sites, the magnitude of erosion problems (and therefore the effort required to control erosion) at mine and quarry sites is proportional to the:

- Area of soil exposed to the erosive elements, and
- Duration of that exposure.

Mines and quarries are characterised by land disturbance operations continuing for years (if not decades) rather than months. Because of this longer period of operation, the management focus should be on site design and the scheduling of rehabilitation to minimise erosion occurring, rather than the sole reliance on temporary works to control erosion and sedimentation.

This long period of disturbance, and long operation of many erosion and sediment controls, requires a stronger emphasis on some management principles particularly:

- Erosion control, as a pollution prevention strategy;
- Runoff separation by diverting 'clean' stormwater runoff around the site or away from operational areas; and
- Management and maintenance of long-term controls.

3. Assessment of Relevant Environmental and Soil Factors

3.1. Rainfall Intensity

The rainfall intensity data used in the following calculations was obtained from the Bureau of Meteorology (BOM) intensity frequency duration (IFD) design rainfall system. Data obtained is relevant to the subject locality and is derived from the Australian Rainfall and Runoff, Volume 1 (1998). A copy of IFD data is presented below in **Table 1.**

Table 1 – Rainfall Intensity for Kin Kin Quarry

Duration	1 Year	2 years	5 years	10 years	20 years	50 years	100 years
5Mins	121	154	193	216	247	288	319
6Mins	113	145	181	203	232	271	301
10Mins	92.6	119	149	167	191	223	248
20Mins	68	87	109	123	141	165	183
30Mins	55.5	71	89.6	101	115	135	150
1Hr	37.7	48.4	61.5	69.3	79.8	93.8	105
2Hrs	24.6	31.8	40.9	46.4	53.7	63.6	71.2
3Hrs	19	24.6	31.9	36.4	42.3	50.3	56.6
6Hrs	12.1	15.8	20.9	24	28.2	33.8	38.2
12Hrs	7.83	10.3	13.8	16	18.9	22.9	26
24Hrs	5.17	6.83	9.29	10.9	12.9	15.7	18
48Hrs	3.39	4.51	6.21	7.3	8.72	10.7	12.3
72Hrs	2.57	3.41	4.75	5.61	6.74	8.31	9.56

Design rainfall volumes for the various event criteria outlined within the DA, Quarry Management Plan and DECC Guidelines are provided in **Table 2.**

Table 2 – Design Rainfall Events

Design Criteria/Source	Design Rainfall event (mm)
Development Approval – 24 hour duration, 5 year ARI event	223*
Quarry Management Plan – 6 hour duration, 10 year ARI event	144*
DECC Guideline – 5 day, 95%ile (sensitive receiving environment, greater than 3 years disturbance)	115.5^

NOTES:

* based on BOM IFD data for subject locality

^ Table 6.2 of the Maroon Book, Maroochy Manual for Erosion & Sediment Control (2007)

3.2. Soil

3.2.1. Soil Texture Group

Based on site observations the predominant soil group assumed at the site is Group D (clay). Group D soils are described as soils with low porosity, usually consisting of fine-textured clays, soils with poor structure, surface sealing (dispersive/sodic), or expansive clays (IECA, 2008).

3.2.2. Soil Erodibility

Soil erodibility is the susceptibility of a soil to erosion. It is independent of such factors as topography, land use, rainfall intensity and plant cover, but may be changed by land management practices. A minimum organic content of 3% is required for good soil structure (i.e. low erodibility) and nutrient supply in the surface horizon, while 5% is considered desirable. Structural problems become significant if the organic matter fall below 1.5% (IECA, 2008).

For the purpose of this assessment a soil erodibility classification of moderate has been assumed based on site observations. Moderate soil erodibility can generally be defined as having topsoils that contain moderate amounts of organic matter (1.5 to 3%) and consist of moderate sand and silt and well structured clay loams and clays that slake in water to particles less than 2mm (Emerson Aggregate classes of 3 to 6). Subsoils typically range from stable, non-dispersible loams and clay loams to dispersible clays with particles that slake to finer than 2mm.

3.3. Runoff Coefficient

The volumetric runoff coefficient is defined as the ratio of the volume of stormwater runoff to the volume of rainfall that produced the runoff.

3.4. Time of Concentration

The time of concentration for a drainage catchment is defined as the time required for stormwater runoff to flow from the most remote part of the catchment to the location where the discharge is to be determined (IECA, 2008). The time of concentration determines the shortest storm duration that will enable runoff from all parts of the catchment to contribute to the discharge at the point of interest at the time of maximum discharge.

Calculation of the total travel time of stormwater runoff through the catchment involves the sum of travel times of flow through various sectors represented by uniform flow conditions. Relevant flow conditions included initial sheet flow (top of catchment) and channel flow (following concentration of initial sheet flow).

4. Design Standards and Technique Selection

The application of best practice erosion and sediment control is based upon the appropriate integration of three groups of control measures:

- Drainage control measures;
- Erosion control measures (including revegetation measures); and
- Sediment control measures.

Wherever reasonable and practical, control measures from all three groups must be integrated in a total treatment system. Fact sheets for relevant sediment control measures are provided in **Appendix F**.

4.1. Drainage Control

The IECA guidelines (2008) recommend the following design standard for drainage works:

- Less than 12 months 1 in 2 year ARI;
- Between 12 -24 months 1 in 5 year ARI; and
- Greater than 24 months 1 in 10 year ARI.

The design capacity excludes minimum 150mm freeboard.

DECC (2008) recommends that if the duration of disturbance is to be longer than 24 months then apply a 1 in 20 year ARI design standard.

4.1.1. Spacing of Lateral Drains Down Long Continuous Slopes

Long unstable slopes must be divided into manageable drainage areas to prevent the formation of rill erosion. Catch drains or flow diversion banks should be placed at regular intervals down the slope to collect and divert surface runoff to a stable outlet.

Table 3 provides the recommended maximum drain, bank and bench spacing down long exposed, non vegetated or recently seeded slopes.

Table 3 – Recommended "Maximum" Drain or Bench Spacing on Non-Vegetated Slopes

Batter Slope			Horizontal Spacing (m)	Vertical Spacing (m)
Percentage	Degrees	(H):(V)		
1%	0.57	100:1	90	0.9
2%	1.15	50:1	60	1.2
4%	2.29	25:1	40	1.6
6%	3.43	16.7:1	32	1.9
8%	4.57	12.5:1	28	2.2

Batter Slope			Horizontal Spacing (m)	Vertical Spacing (m)
Percentage	Degrees	(H):(V)		
10%	5.71	10:1	25	2.5
12%	6.84	8.33:1	22	2.6
15%	8.53	6.67:1	19	2.9
20%	11.3	5:1	16	3.2
25%	14.0	4:1	14	3.5
30%	16.7	3.33:1	12	3.5
35%	19.3	2.86:1	10	3.5
40%	21.8	2.5:1	9	3.5
50%	26.6	2:1	6	3.0

Table 4 provides the recommended maximum spacing of benching down well grassed, low to moderately erodible soil slopes.

Table 4 – Recommended "Maximum" Drain or Bench Spacing on Vegetated Slopes

Batter Slope			Horizontal Spacing (m)	Vertical Spacing (m)
Percentage	Degrees	(H):(V)		
<10%	5.71	10:1	Site specific	Site specific
12%	6.84	8.33:1	100	12
15%	8.53	6.67:1	80	12
20%	11.3	5:1	55	11
25%	14.0	4:1	40	10
30%	16.7	3.33:1	30	9
>36%	>19.8	2.78:1	Site specific	Site specific

4.1.2. Low Gradient Drainage Techniques

The recommended usage of various low gradient drainage control techniques is provided in **Table 5**. Techniques are taken from the IECA (2008) guidelines. Only applicable and feasible techniques that have availability of materials are presented.

Table 5 – Low Gradient Drainage Techniques

Technique	Typical Use
Catch Drain	• The collection and diversion of sheet flow across a slope or around soil disturbances. • Best use in non-dispersive soils, otherwise the drain must be lined with non-dispersive soils (minimum 100m thick) prior to placement of channel liner.
Diversion Channels	• Diversion of large concentrated flows. • Permanent flow diversion channels.
Flow Diversion Banks (earth, sandbags, etc)	• Diversion of minor flows when in-situ subsoils are dispersive or otherwise highly erodible. • Flow diversion at the base of fill slopes. • Cross drainage on unsealed roads.

4.1.3. Drainage Down Slope

The recommended usage of drainage controls on steep slopes is provided in **Table 6.**

Table 6 – Steep-Gradient Flow Diversion Techniques

Technique	Typical Use
Rock Lined Chute	• Discharge of concentrated flows down steep slopes. • Control flow into sediment basins. • Temporary drainage down the face of newly formed road embankments.
Level Spreader	• Conversion of minor concentrated lows back to sheet flows. • Discharge of flows down grassed slopes.
Slope Drain	• Discharge of minor flows down steep slopes.

4.1.4. Outlet Structures for Temporary Drainage Systems

The recommended usage of outlet structures for chute and slope drains is provided in **Table 7**.

Table 7 – Outlet Structures

Technique	Typical Use
Level Spreader	• Used at the end of flow diversion banks and catch drains to discharge minor concentrated flows down stable, grassed slopes. • Discharge into bushland or grass filter zones.
Outlet Structure	• Used at the end of chutes and slope drains to dissipate flow energy and control scour. • Used as a permanent energy dissipater on pipe and culvert outlets.

4.1.5. Velocity Control Structure

Wherever reasonable and practicable, drainage channels, whether temporary or permanent, should be designed and constructed at a gradient that limits the maximum flow velocity to a value not exceeding the maximum allowable flow velocity for the given surface material.

Excessive flow velocities can cause channel erosion, usually along the invert (bottom) of the drain. Such erosion is most prominent in newly formed or recently seeded drains.

The flow velocity can be reduced by either:

- Reducing the depth of flow (i.e. increasing the width of the channel);
- Reducing the bed slope;
- Reducing the peak discharge (i.e. reducing the effective catchment area or diverting water away from the channel); or
- Increasing the channel roughness.

4.1.6. Selection of Channel and Chute Linings

In steep channels it is usually more economical to line the channel or chute with turf, rock or Erosion Control Mats instead of trying to reduce flow velocities down the slope. **Table 8** provides guidance on the selection of appropriate *Chute* and channel linings. Given the nature of operations at the site the suggested practice is to use rock for chutes and grass for less steep channels. These options and typical use guidance is listed below.

Table 8 – Chute and Channel Linings

Technique	Typical Use
Grass Lining	• Permanent protection of low to medium velocity *Chutes* and channels.
Hard Armouring	• Large variety of hard armouring systems including, corrugated sheet metal, grass pavers, reinforced concrete, and shotcrete.
Rock Mattress	• Suitable for temporary and permanent high velocity *Chutes* and spillways.
Rock Lining	• High velocity drainage channels. • Drainage chutes. • *Sediment Basin* spillways.

4.2. Erosion Control Measures

Best practice erosion control requires appropriate measures to be employed as soon as reasonable and practicable to limit soil erosion and, in particular, to protect any and all exposed areas of soil from raindrop impact erosion. Erosion control measures are not always practicable and therefore sediment control measures are understood to be specified as a necessity for all catchments.

Best practice land clearing, erosion control and site rehabilitation depends on the likelihood and intensity of expected wind or rainfall. If construction occurs during the dry season when rainfall is unlikely, then the required erosion protection can be significantly less than if construction occurs during the wet season.

Unlike the sediment control standard, which is related to the anticipated soil loss, the timing and degree of land stabilisation measures depends on the expected erosion risk and sensitivity of receiving waters to turbidity levels within site runoff.

In the absence of a locally adopted risk assessment procedure, the erosion control standard should be based on either the monthly rainfall erosivity or the average monthly rainfall depth as appropriate. Alternatively, the erosion control standard can be based on estimated rate of soil loss. **Table 9** provides erosion risk ratings based on monthly erosivity.

Table 9 – Erosion Risk Rating for Gympie Based on Monthly Rainfall Depth

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Risk Rating	H	H	H	M	M	M	L	VL	M	M	M	H

4.2.1. Soil Stabilisation and Protection

Table 10 provides recommended soil stabilisation techniques that may be applied where such measures are practicable:

Table 10 – Summary of Erosion Control Techniques

Technique	Typical Use
Bonded Fibre Matrix	• Grass establishment and protection of newly seeded area.
Compost Blanket	• Used during the revegetation of steep slopes either incorporating grasses or other plants. • Particularly useful when the slope is too steep for the placement of topsoil, or when sufficient topsoil is absent from the slope.
Erosion Control Blanket	• Temporary erosion control on exposed soils not subjected to concentrated flow. • Temporary erosion control on exposed soils not subjected to concentrated flow. • Temporary control of raindrop impact erosion on earth embankments before and during the revegetation phase.
Gravelling	• Protection of non-vegetated soils from raindrop impact erosion. • Stabilisation of hardstand areas including site office area, process areas, temporary car parks and access roads.
Heavy Mulching	• Stabilisation of soil surfaces that are expected to remain non-vegetated for medium to long periods. • Suppression of weed growth on non-grasses areas. • Stabilisation of existing and proposed garden beds.
Light Mulching	• Control of raindrop impact erosion on flat and mild slopes. May be placed on steeper slopes with appropriate anchoring. • Control water loss and assist seed germination on newly seeded soil.
Revegetation	• Temporary and permanent stabilisation of soil. • Stabilisation of long-term stockpiles. • Includes Turfing and temporary seeding.
Rock Mulching	• Stabilisation of long-term, non-vegetated banks and minor drainage channels. • Stabilisation of those areas of a garden bed subject to concentrated overland flow.
Soil Binders	• Dust Control. • Stabilisation of unsealed roads.

Reproduced from table 4.4.12 of IECA 2008

While vegetation is one of the best long-term options, it can also serve as a short-term option of turf is used. On mild slopes (1 in 10 to 1 in 4) loose organic mulch may not be appropriate if heavy rains are expected, or if stormwater runoff is allowed to concentrate down the slope. The application of various erosion control measures to flat, mild and steep slopes subject to "sheet" flow is summarised in **Table 11**.

Table 11 – Application of Erosion Control Measure to Soil Slopes

Flat Land (flatter than 1 in 10)	Mild Slopes (1 in 10 – 1 in 4)	Steep Slopes (steeper than 1 in 4)
Erosion Control Blankets Gravelling Mulching Revegetation Rock Mulching Soil Binder Turfing	Bonded Fibre Matrix Compost Blankets Erosion Control Blankets, Mats and Mesh Mulching well anchored Revegetation Rock Mulching Turfing	Bonded Fibre Matrix Compost Blankets Erosion Control Blankets, Mats and Mesh Revegetation Rock Armouring Turfing

Reproduced from Table 4.4.13 IECA 2008

4.3. Sediment Control Measures

4.3.1. Sediment Control Measures in Areas of Sheet Flow

Table 12 outlines the typical use of various sheet flow sediment control techniques

Table 12 – Sheet Flow Sediment Control Techniques

Technique	Typical Use
Buffer Zones	• Type 3 sediment trap. • Most suited to sandy soils. • Generally only suitable for rural and rural-residential building/construction sites. • Can provide some degree of turbidity control while the *Buffer Zone* remains unsaturated.
Compost Berm	• Type 2 sediment trap. • Suitable for all soil types.
Fibre Roll	• Supplementary sediment trap. • Most suited to sandy soils. • Suitable for minor flows only.
Filter Fence	• Type 3 sediment trap. • Very small catchment areas (e.g. stockpiles). • Better capture of the finer (sand/silt) sediments compared to woven *Sediment Fence*.

Technique	Typical Use
Mulch Berm	• Type 2 sediment trap. • Suitable for all soil types.
Sediment Fence - woven fabric	• Type 3 sediment trap. • Suitable for all soil types. • Long duration construction sites likely to experience several storm events.
Sediment Fence - non-woven composite fabric	• Type 3 sediment trap. • Suitable for all soil types. • Preferred type of *Sediment Fence* when placed adjacent critical habitats such as waterways. • Short duration construction sites or sites likely to experience only a few storm events.

4.3.2. Sediment Control Structures in Areas of Concentrated Flow

Table 13 outlines the typical use of sediment control techniques used in concentrated flow.

Table 13 – Concentrated Flow Sediment Control Techniques

Technique	Typical use
Rock Filter Dam: Filter cloth used as the primary filter medium	• Type 2 sediment trap. • Locations where there is sufficient room to construct a relatively large rock embankment. • The incorporation of filter cloth is the preferred construction technique if the removal of fine grained sediment is critical; however, de-silting and replacement of the fabric can be difficult and can lead to ongoing poor performance.
Rock Filter Dam: Aggregate used as the primary filter medium	• Type 2 sediment trap. • Best used on sandy soils. • Locations where there is sufficient room to construct a relatively large rock embankment. • Aggregate filters are normally used on long-term sediment trap, and sediment traps that are likely to be regularly de-silted.
Sediment Basin - Type F & Type D	• Type 1 sediment trap. • Best suited to fine-grained or dispersive soils. • The trapping of coarse and find sediments. • Turbidity control. • Used when a major (Type 1) sediment trap is required when working in areas containing fine-grained, dispersive or poor settling soils.

4.3.3. Sediment Basin

The DECC (2008) Guideline make the following recommends for the minimum design criteria for temporary erosion and sediment control measures when duration of disturbance is greater than 3years.

Type D/F sediment basins:

- non sensitive receiving environment - **90th percentile five day duration event** and
- sensitive receiving environment - **95th percentile five day duration event**
- For a five-day management period. Adjustment factors to the five-day volumes for alternate management periods are 85% for two-days, 125% for 10 days and 170% for 20 days.

Management of the basin requires draining or pumping out within the adopted management period following rainfall (commonly within a five-day period). The indicative average annual sediment basin overflow frequency for the 95th percentile is 1-2 spills/year.

Design of the sediment basin will be based on the desired design requirements outlined in **Table 14**.

Table 14 – Type D/F Sediment Basin Design Requirements

Parameter	Design Requirement
Length to width ratio	3 (L) : 1 (W)
Sediment storage volume	50% of settling volume
Basin batter slopes	2 (H) : 1 (V)
Freeboard from maximum pond water level to top of fill embankment	300 mm
Minimum spillway chute freeboard	300 mm

5. Staging of Works

It is understood that the life of the quarry is anticipated to be in excess of 30 years, however this is largely dependent on market demand. Discussions with the client have indicated a projected production rate of 100,000 tonnes in the first year of operation, steadily increasing to 300,000 tonne in the fifth year. Given the somewhat uncertain rate of development an initial planning horizon of 5 years has been adopted.

Clearing and overburden removal will be conducted in a staged manner with exposure of new areas limited to that necessary for 12 months production of quarry rock (Groundworks, 2005). Similarly, rehabilitation of available terminal faces/benches will be conducted in a progressive matter.

Prior to developing new extraction benches beyond the designed 5 year horizon review of stormwater management and ESC requirements will be required.

5.1. Initial Development Controls

Installation of ESC measures as per the plan provided in **Appendix B** should be conducted as a priority. Detailed design has been undertaken for a 5 year horizon, with works expected to progress to the development of the 90m RL bench within this time.

Immediate works to be undertaken include:

- Installation of diversion drains upslope of working areas to limit the volume of runoff requiring treatment;
- Protection of steep gradient drainage lines;
- Stabilisation of exposed batters, hardstand areas and access roads; and
- Upgrade of sediment basin, including installation of emergency spillway and implementation of sediment basin management plan.

Sizing of the sediment basin to capture runoff generated under the various design scenarios outlined within the DA, Quarry Management Plan and deemed best practice for the approximate area of current site disturbance and a development horizon of 5 years is summarised below in **Table 15** .

Table 15 – Current and Interim Sediment Basin Sizing

Design Criteria	Development Stage	Catchment Area (ha)	Design Rainfall Event (mm)	Settling Zone Volume (m^3)	Sediment Storage Volume (m^3)	Total Volume (m3)	Depth (m)	Basin length width ratio (L/W)	Batter Slope	Length (m)	Width (m)
Development Approval – 24hr, 5yr ARI	Current	9 (approx)	223	16,660	8,530	24,990	1.5	3	2	233	78
	Interim (5 yr horizon)	18.46		34,170	17,085	51,255				330	110
Quarry Management Plan – 6hr, 10yr ARI	Current	9 (approx)	144	10,755	5,380	16,135	1.5	3	2	189	63
	Interim (5 yr horizon)	18.46		22,065	11,030	33,095				266	89
Best Practice (DECC, 2009) – 5day, 95%ile	Current	9 (approx)	115.5	8,630	4,315	12,945	1.5	3	2	170	57
	Interim (5 yr horizon)	18.46		17,700	8,850	26,550				240	80

NOTES:
Construction of a sediment basin at a depth greater then 1m will require certification by a geotechnical engineer.
Consideration of compliance with WPHS may also be required with respect to limiting direct access and safety.

A reduction of between 30 - 35% in required footprint of the sediment basin can be achieved by increasing the depth to 5m, with batter slopes of 2(H):1(V). It is recommended that a geotechnical engineer be consulted to assess the stability of subsoils present at the sediment basin location prior to undertaking any excavations past 1m. Consideration must also be given to the proposed method of sediment removal (ie excavator, front end loader, other conventional mechanical equipment) from the basin and any access requirements they may require.

5.2. Final Development Controls

Quarry development beyond the designed 5 year horizon will result in a greater disturbed catchment area. A review of the ESC Plan must be conducted prior to works extending past the designed catchment. Future works are anticipated to involve the following:

- Installation of diversion drains above the working face to limit the volume of runoff requiring treatment;
- Continued protection of steep gradient drainage lines;
- Stabilisation of newly formed access roads and exposed batters. Monitoring of existing hardstand areas and access roads; and
- Increase capacity of the sediment basin.

Comparative sediment basin sizing to cater for the planned quarry development up to a working bench of 225m RL under the various design scenarios outlined within the DA, Quarry Management Plan and deemed best practice is summarised below in **Table 16**.

Table 16 – Sediment Basin Sizing for Final Quarry Development

Design Criteria	Catchment Area (ha)	Design Rainfall Event (mm)	Settling Zone Volume (m^3)	Sediment Storage Volume (m^3)	Total Volume (m3)	Depth (m)	Basin length width ratio (L/W)	Batter Slope	Length (m)	Width (m)
Development Approval – 24hr, 5yr ARI	28	223	51,825	25,915	77,740	1.5	3	2	403	135
Quarry Management Plan – 6hr, 10yr ARI	28	144	33,465	16,735	50,200	1.5	3	2	326	109
Best Practice (DECC, 2009) – 5day, 95%ile	28	115.5	26,840	13,420	40,260	1.5	3	2	293	98

6. Reference List

Healthy Waterways (2006) *WSUD Technical Design Guidelines for South East Queensland – Version 1 June 2006.*

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Annexure A Site Map

Appendix A Site Map

File: SC10-0003 / SC-R00758

Annexure B Erosion and Sediment Control Plan