

Environmental Management Strategy

Ardglen Quarry Extension
Major Project 06/0264

Ardglen



Prepared For
Buttai Gravel Pty Limited
(Daracon Quarries)

September 2010



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Delivering customised solutions, on time.

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SEPTEMBER 2010

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Environmental Planning, Assessment and Management

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Document Control Register		
Component	Version No.	Date
Environmental Management Strategy _409110_REO_001_v3	01	30/09/10
Appendix A – Project Approval MP 06_0264	01	02/12/08
Section 2.5 – Table 2.1 –Key Personnel Section 2.6 – Table 2.2 – EMS and Plans Revision Schedule	01	30/09/10
Appendix B – Site Plan	01	30/09/10
Appendix D – Complaints Management and Reporting Protocol Form EMS_01 – Complaints Record	01	30/09/10
Appendix J – Form EMS_02 – Environment Due Diligence Checklist	01	30/09/10
Form EMS_03 – Environment Inspection Report	01	30/09/10
Form EMS_04 – Construction Waste Management	01	30/09/10
Form EMS_05 – EMS Monthly Report	01	30/09/10
Appendix K – Form EMS_06 – Incident Report Form	01	30/09/10

Introduction

1.1 Background

A Project Approval was granted on 2 December 2008 for 'Ardglen Quarry Extension' (Project Application 06_0264). Schedule 3 of the Project Approval provides details of the Specific Environmental Conditions for the project, while Schedule 5 details the Environmental Management, Monitoring, Auditing and Reporting Conditions, including the requirement to prepare an Environmental Management Strategy (EMS) for the project. A copy of the Project Approval is provided in **Appendix A**.

This document contains details of two (2) management plans aimed at mitigating any potential environmental impacts associated with the quarry extension on the site, as specified in the conditions of consent agreed by the Minister for Planning.

The management plans detailed in this document are:

- Site Water Management Plan (Schedule 3 Conditions 20 – 23); and
- Landscape Management Plan (Schedule 3 Condition 27 – 30).

In addition, the document contains several monitoring programs, including:

- Noise Monitoring Program (Schedule 3 Condition 6);
- Blast Monitoring Program (Schedule 3 Condition 14);
- Air Quality Monitoring Program (Schedule 3 Condition 17); and
- Water Monitoring Program (Schedule 3 Condition 23).

These plans are to be implemented prior to, during, and following the quarry operations in the extension area.

The site subject to the quarry extension is shown in **Appendix B**.

The purpose of this EMS is to:

- Appropriately manage the environmental risks and hazards of the project;
- To comply with all the relevant statutory requirements; and
- Ensure the implementation of mitigation measures identified and approved in the Environmental Assessment (EA) (ERM, 2006) and detailed in the Statement of Commitments for the project.

1.2 Aims and Objectives of the EMS

This EMS has been developed to ensure that all project personnel, contractors and sub-contractors involved in the project comply with the environmental conditions of approval for the project as detailed in the Project Approval and the environmental risks are managed appropriately.

This EMS shall be subject to a review by the Quarry Manager every 12 months and if required, will be amended by the Quarry Manager, (only if approved by the Director-General) to reflect changes in contractual or project requirements, or to correct any disparity identified during project auditing. The revision schedule is provided in **Section 2.6**.

Approved amendments will be published and formally issued by the Quarry Manager to controlled copy holders. Recipients of amendments are responsible for incorporation of amendments into their copy of the plan.

The aims of the EMS are:

- To avoid adverse long-term environmental effects;
- To minimise any short-term adverse impacts on the environment and the community;
- To promote ecologically sustainable approaches to the proposed works;
- To conserve biodiversity; and
- To help promote the protection of the environmental, social and economic assets of the area subject to the project works.

1.3 Scope of the EMS

The EMS is the source document for all environmental protection issues related to the project. The EMS is a link between the EA, and the actual construction and operation of the project. It helps to ensure that safeguards are implemented and environmental impacts are minimised during preparation, construction and rehabilitation stages of the project.

This EMS lists the activities to minimise adverse environmental impacts (identified in the Statement of Commitments that formed part of the Project Approval) and assigns responsibility and a timeframe for their implementation. The structure of the EMS allows the Quarry Manager to document the implementation and monitoring of these environmental requirements.

The project operator will be responsible for implementing and monitoring the environmental requirements, any corrective actions and verification activities.

The EMS is a working document and should be updated as necessary by the Quarry Manager as detailed in **Section 1.2**.

1.4 Description of the Project

The proposed development will involve the extension of the existing quarry into adjoining properties to the west (Lots 187 and 218 DP 751028) to enable 500,000 t of material per annum to continue to be extracted for a period of up to 30 years, though the Project Approval also covers the existing operational areas of the site. The proponent has acquired approximately 36 ha of land adjoining the existing quarry within which it is proposed to extract from an area of 25 ha. The remainder of the site will be fenced off and revegetated with endemic species to form a box-gum woodland. Operating hours will remain unchanged, being 10.5 hours per day (with 11 hours for truck dispatch), six days per week.

A map showing the project site boundaries and the boundaries of the extraction area within the project site is provided in **Appendix B**.

1.5 Consultation and Authority Review of this EMS

A draft version of this EMS was provided to the following Government Authorities for review and comment prior to finalisation:

- Department of Planning.

Discussions were also held with officers of the following Government Authorities in relation to the relevant components of the EMS:

- Noise — DECCW;
- Blast Monitoring — DECCW;
- Air Quality — DECCW;
- Soil and Water — DECCW & NOW; and
- Rehabilitation and Landscape — DECCW, NOW and DII.

Responses of the Government Authorities to the draft version of the EMS (or accompanying reports) are provided in **Appendix C**.

Key Project Information

2.1 Statutory Requirements

Details of the statutory requirements that apply to the project are included in the 'Acts Policies and Regulations' sub-section for each management plan outlined in **Section 3** of this EMS.

This Environmental Management Strategy is prepared in accordance with the terms of the Project Approval and information provided Environmental Management Systems Guidelines (NSW Government, 2009).

All activities undertaken must comply with the relevant provisions of all legislation relating to the project, as well as safeguards and mitigation measures identified within the EA and Statement of Commitments.

2.2 Strategic Context of Environmental Management

The project has been developed by the proponent in response to an identified demand for high quality aggregates for rail and civil construction for a variety of construction projects in the region. The management of the environmental impacts of the project is critical to the overall success of the project, given the proximity of residences to the site and the potential to rehabilitate and conserve vegetation and habitats within the site. In particular the rehabilitation/revegetation will contribute positively to the region, while allowing for the sustainable use of the resource, adding to the economic growth in the region.

2.3 Monitoring Environmental Performance

Details of the monitoring requirements that apply to the project are included in the summary information for each management plan outlined in **Section 3**. Contingencies are detailed for each management plan in the event that the monitoring results indicate impact assessment criteria are being exceeded.

2.4 General Procedures

2.4.1 Community and Agency Consultation

Consultation with members of the community will be undertaken through establishment of a Community Consultative Committee (CCC) in accordance with Schedule 5, Condition 8 of the Project Approval.

Consultation with relevant Government Agencies regarding the construction, operation and environmental performance of the project will be undertaken as follows:

- Draft EMS forwarded for comment as detailed in **Section 1.5**;
- Notification of ‘incidents’ as detailed in Schedule 5, Condition 3 of the Project Approval;
- Annual Reporting as detailed in Schedule 5, Condition 4 of the Project Approval; and
- Independent Auditing of project as detailed in Schedule 5, Condition 5 of the Project Approval.

Information regarding this EMS monitoring results and other reporting documentation will be made publicly available as detailed in Schedule 5 Conditions 9 and 10 of the Project Approval.

2.4.2 Complaints Procedures

Details of the procedures for receiving, handling, responding to and recording complaints are provided in **Appendix D**. Details regarding procedures for dispute resolution are also provided in **Appendix D**.

2.4.3 Response to Non-compliance

Responses to non-compliances (*ie.* where monitoring results indicate parameter values in excess of criteria detailed in the Project Approval) are detailed in the ‘contingency’ section for each management plan outlined in **Section 3**.

2.4.4 Response to Environmental Emergencies

Incident management procedures have been developed for environmental emergencies. These procedures are detailed in **Section 5**.

2.5 Key Personnel Responsibilities

Details on the role, responsibility, authority and accountability of key project personnel are detailed in **Table 2.1**.

Table 2.1 - Key Project Personnel

Role	Responsibility	Authority	Accountability
Quarry Manager	Overall management of the project in accordance with the terms of the Project Approval.	Commence and cease operations, adjust extraction rates and plan	Reports to proponent and Government Authorities in accordance with the terms of the Project Approval.
	Oversight of all environmental monitoring on site, reporting and first point of contact for community/Authority liaison	Implement contingencies if necessary, liaise with all stakeholders	Reports to Senior Manager
	Construction and operations	Extraction of resource and bulk earthworks	Reports to Senior Manager

2.6 EMS Revision Schedule

Table 2.2 details the revision schedule for this EMS. A record of the schedule should be completed following each periodic review of the documentation. If the project life extends beyond the four years allowed for in **Table 2.2**, an amended copy should be made and completed as necessary.

Table 2.2 - EMS and Plans Revision Schedule

Document and Plans	Document Details	Revision Complete (QM to sign and date every 12 months)			
		Rev. 01	Rev. 02	Rev. 03	Rev. 04
Environmental Management Strategy	409110_REO_001_v2 Sept 2010				
Noise Monitoring Program	Appendix E				
Blast Monitoring Program	Appendix F				
Air Quality Monitoring Program	Appendix G				
Site Water Management Plan	Appendix H				
Landscape Management Plan	Appendix I				

Site Environmental Management

3.1 Noise Monitoring Program

The purpose of the Noise Monitoring Program (NMP) is to provide a monitoring and response strategy such that adverse impacts to the environment caused by noise from the quarry extraction operations are minimised. A copy of the *Noise Monitoring Program (including a Noise Monitoring Protocol)* is provided in **Appendix E**. A summary of the NMP is provided in this section of the report.

The NMP also provides a means by which the quarry operator can demonstrate it is taking reasonable and practical measures to minimise unreasonable noise from its activities on the site. It also provides details of the monitoring protocol for evaluation of compliance with the noise limits stipulated in the Project Approval.

3.1.1 Acts, Policies and Regulations

Noise in the environment is controlled through the *Protection of Environment Operations Act 1997*. Noise Impact Assessment Criteria were detailed in Schedule 3, Conditions 2 – 6 of the Project Approval.

3.1.2 Role, Responsibility, Authority, Accountability and Reporting

The quarry operator is responsible for ensuring that extraction operations are undertaken in accordance with the NMP. The Quarry Manager will be responsible for adhering to the controls outlined in this document.

Protocols for recording, reporting and acting on noise complaints are outlined in **Section 3.1.5** and detailed in **Appendix E**. Reporting on the noise performance of the project would be provided by the proponent in the Annual Environmental Management Report.

3.1.3 Environmental Management Procedures

Section 3 of the NMP (**Appendix E**) provides details of the procedures proposed to mitigate the impact of noise on the environment. In summary these are:

- Restricting quarrying operations to between 6:30 am and 5:30 pm Mondays to Saturdays;
- Restricting truck speeds within the quarry site (25 km/hr) and on local roads between the quarry and New England highway (50 km/hr);
- Using adequately sound conditioned machinery and equipment (eg. residential-standard exhausts on plant and equipment used near residences);

- All equipment used on site will be regularly serviced to ensure the sound power levels remain at or below the levels used in the modelling in the NA (and shown in Table 4) to assess generated noise levels and compliance with the criteria; and
- Rail loading will be limited to the day period between 7am and 10pm, as far as practicable, and no more than two trains each year may be loaded outside of these hours.

Additional mitigation is proposed in the NMP in accordance with the Statement of Commitments. This is related, in particular, to crushing and loading operations.

3.1.4 Monitoring, Inspection and Test Procedures

Attended monitoring would be conducted at four residences around the site (refer Figure 2.1 in **Appendix E**). Monitoring will be conducted in accordance with the DECCW 'Industrial Noise Policy' (INP) guidelines and the Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'.

Unattended monitoring would also be conducted at two of the four attended monitoring sites.

3.1.5 Response to Noise Complaints

Protocols for receiving, recording and acting on noise complaints are provided below. The Quarry Manager shall respond to all landholder complaints regarding noise. The proponent will maintain a register of noise complaints for the duration of the project.

If a noise complaint is received, the following actions will be implemented:

1. The complaint will be registered and reported in accordance with the protocols outlined in **Appendix D**. A copy of the incident form is provided in **Appendix E**;
2. Liaise with the complainant regarding the details and nature of the noise complaint (*ie.* when, where, how long);
3. On receipt of a noise complaint, the proponent will assess the source of the noise and where justified or possible, will modify the operation to reduce noise levels. Details of the procedures to be followed are provided in Section 4 of **Appendix E**;
4. If resolution regarding noise levels or implementation of mitigation cannot be reached between the Quarry Manager and the complainant within 3 months of receipt of the request from the landowner, either party shall refer the matter to the Director-General for resolution.

3.1.6 Contingencies

In accordance with Schedule 3 Condition 5 of the Project Approval, the results of investigation and implementation of noise mitigation measures (in particular in relation to off-site road and rail noise and maximum noise levels which may result in sleep disturbance) will be reported in the Annual Environmental Management Report (AEMR).

In addition, measures detailed in Schedule 3 Condition 4 of the Project Approval will be implemented should the criteria specified be exceeded. Additional details on actions to be taken when noise complaints are received are provided in Section 4 of the NMP (**Appendix E**).

3.1.7 Non-standard Environmental Controls

There are no unforeseen non-standard environmental controls required for the Noise Management Plan.

3.1.8 Revision Procedure

This Noise Monitoring Program shall be reviewed and if necessary, revised, every 12 months or as directed by the Quarry Manager (**Table 2.2**).

3.2 Blast Monitoring Program

The purpose of the Blast Monitoring Program (BMP) is to provide a monitoring and response strategy such that potential adverse impacts to residences in Ardglen caused by the blasting operations are minimised.

The BMP also provides a means by which the proponent can demonstrate it is taking reasonable and practical measures to minimise disturbance to residents and structures from the blasting activities.

3.2.1 Acts Policies and Regulations

Criteria for assessment of impacts from blasting operations are provided ANZECC (1990), while guidelines have been prepared by DECCW for assessing vibration from blasting (DECC, 2006). Blast Impact Assessment Criteria were detailed in Schedule 3, Conditions 7 – 8 of the Project Approval.

3.2.2 Role, Responsibility, Authority, Accountability and Reporting

The Quarry Manager is responsible for ensuring that blasting activities are carried out in accordance with the recommendations reported in the EA prepared for the project (ERM, 2006).

In summary, the Quarry Manager will be responsible for ensuring that controls outlined in this document are followed as well as:

- Ensuring that the procedures outlined in the EA are followed;
- Being responsible for implementation of Blast Monitoring Program (**Appendix F**); and
- Handling all complaints related to blasting.

Further details are provided in Section 7 of the BMP (**Appendix F**).

3.2.3 Environmental Management Procedures

The Quarry Manager shall ensure that:

- All blasting is undertaken in accordance with the relevant guidelines and standards applicable to the management of blasting, including AS 2187.2-2006: Explosives – Storage and Use – Use of Explosives;
- Blasting frequency complies with details in Schedule 3 Condition 9 of the Project Approval; and
- Notification of blasting is undertaken in accordance with Schedule 3 Condition 12 of the Project Approval.

Details of blasting procedures and the blast monitoring protocol are provided in Appendix A of the BMP (**Appendix F**).

3.2.4 Monitoring, Inspection and Test Procedures

Details regarding monitoring of blasting activities are provided in Section 6 of the BMP (**Appendix F**). In summary, the Blast Monitoring Program will involve the following:

- Measurement of overpressure and ground vibration. Monitoring will be undertaken at two receiver locations;
- While no flyrock is predicted to be emitted beyond the zone of exclusion, all blasts will be closely observed; and
- Reviewed by the Drill and Blast Superintendent of all blasts that exceed the ground vibration or air overpressure criteria at the blast monitoring locations to identify causal factors and any potential improvements that can be made to improve blasting performance.

Any blast that exceeds the DECCW limits for ground vibration or air overpressure will be reported to DoP and DECCW.

3.2.5 Response to Complaints

Protocols for receiving, recording and acting on complaints related to blasting activities are provided below. The Quarry Manager shall respond to all landholder complaints regarding blasting. The proponent will maintain a register of complaints for the duration of the project.

If a complaint is received, the following actions will be implemented:

1. The complaint will be registered and reported in accordance with the protocols outlined in **Appendix D**;
2. Liaise with the complainant regarding the details and nature of the complaint (ie. when, where);
3. On receipt of a complaint, the proponent will assess the details of the blasting activity in question and where justified or possible, modify the future blast operations to reduce vibration/overpressure levels;
4. In the event that a landowner alleges damage to property as a result of the blasting, and if requested by the Director-General, the proponent shall commission an independent property assessment to determine the extent of any damage that may have been caused to property as a result of blasting activities, in accordance with the provisions of Schedule 3 Condition 13 of the Project Approval.
5. If resolution regarding the property assessment cannot be reached between the proponent and the complainant, the matter shall be dealt with as detailed in Schedule 3 Condition 13 of the Project Approval.

3.2.6 Non-standard Environmental Controls

There are no unforeseen non-standard environmental controls required for the Blast Management Plan.

3.2.7 Revision Procedure

This Blast Management Plan shall be reviewed and if necessary, revised, every 12 months or as directed by the Quarry Manager (**Table 2.2**).

3.3 Air Quality Management Plan

The purpose of the Air Quality Management Plan (AQMP) is to provide details of the monitoring and compliance evaluation with air quality criteria detailed in the Project Approval.

The Plan also provides a means by which the proponent can demonstrate that it is taking reasonable and practical measures to minimise the impact of these pollutants to the surrounding environment.

3.3.1 Acts Policies and Regulations

Air quality in the environment is controlled through the *Protection of Environment Operations Act 1997*. Schedule 3 Condition 15 of the Project Approval specifies Impact Assessment Criteria that are consistent with the relevant New South Wales Department of Environment, Climate Change and Water (DECCW) air quality assessment criteria for assessing impacts from dust generating activities (NSW DEC, 2005).

Other conditions relating to operations and monitoring are specified in Schedule 3 Conditions 16 – 18 while conditions relating to Greenhouse Gas emissions are provided in Schedule 3 Condition 46.

3.3.2 Role, Responsibility, Authority, Accountability and Reporting

The Quarry Manager will:

- Be responsible for management and reporting of air quality aspects of environmental control;
- Ensure that proposed dust control measures are effectively implemented and have the intended outcome, that is, no off-site nuisance or health effects due to air pollution are experienced; and
- Be responsible for non-compliance and ensure corrective action is taken to mitigate any impacts.

Details on the reporting type, frequency and distribution are provided in Table 14 of the AQMP (**Appendix G**).

Air quality monitoring results will be reported internally monthly.

Results of air quality monitoring will be provided in the Annual Environmental Management Report, to be provided every 12 months to the DoP in accordance with the requirements of Schedule 5 Condition 4 of the Project Approval.

Further detailed information is provided in **Appendix G**.

3.3.3 Environmental Management Procedures

A protocol for dust management is provided in Table 10 of the AQMP (**Appendix G**). In summary, control measures are proposed for the following potential pollution sources:

- Wind generated dust from exposed areas and stockpiles;
- Wheel generated dust from road trucks, haul trucks and mobile equipment;
- Loading product to haul and road trucks;

- Fixed materials handling activities (eg. crushing and screening; dumping of product to the primary crushing facility; and loading product to rail carriages); and
- Other quarrying activities (eg. dumping of material to stockpiles by front end loaders and conveyors; drilling and blasting of rock; and stripping of overburden).

Details on the control measures proposed to control dust emissions are provided in Table 10 of **Appendix G**.

3.3.4 Monitoring, Inspection and Test Procedures

The key objective of the air quality monitoring is to provide a means to assess compliance against regulatory air quality criteria.

The following monitoring is proposed:

- Two high volume air samplers (HVAS) measuring PM10 concentrations and one HVAS measuring TSP at the closest affected residential receptors to the east/north of the site (R2 – PM10 and TSP and R6 – PM10 only). It is proposed to remove the HVAS measuring TSP after 12 months monitoring;
- Three dust deposition gauges measuring nuisance dust fallout at the closest affected residential receptors to the east/north of the site (R2, R5 and R6);
- Continuous meteorological monitoring at station near weighbridge; and
- Greenhouse gas emissions monitored through records of purchase of electricity/fuel.

Details on the siting and operational methods of this monitoring are provided in Section 6 of the AQMP (**Appendix G**).

Compliance of the project based on results of monitoring will be assessed for:

- The maximum total dust deposition level of 4 g/m²/month;
- 24-hour average PM10 concentrations (50 µg/m³)
- Annual Average PM10 goal (30 µg/m³); and
- Annual average Total Suspended Particulate (TSP) goal (90 µg/m³).

Further details on monitoring and compliance analyses are provided in Section 6 of the AQMP (**Appendix G**).

A daily visual inspection will ensure that dust control measures are implemented as required and excessive dust is not being generated by site activities. Any non-conformances shall be reported immediately to the Quarry Manager.

3.3.5 Contingencies

Where the compliance evaluation indicates non compliance with the Impact Assessment Criteria, the following actions will be undertaken:

- Ensure that the immediate safety of potentially affected parties is not continuing to be affected by the incident;
- Review the indicators of the non-compliance against activities at the Quarry and weather conditions, to confirm that the Quarry contributed to the non-compliance;
- Review operating procedures for opportunities to reduce the risk of the non-compliance recurring;
- Depending on the source of the non-compliance, it may be appropriate to increase the rate of pollution control measures;
- Investigate the appropriateness of upgrading plant and equipment; and
- Consider discontinuing the contributing activity until it may be done acceptably.

Further details are provided in Section 7.5 of the AQMP (**Appendix G**).

3.3.6 Non-standard Environmental Controls

There are no unforeseen non-standard environmental controls required for the Air Quality Management Plan.

3.3.7 Revision Procedure

The AQMP shall be reviewed and if necessary, revised, every 12 months or as directed by the Quarry Manager (**Table 2.2**).

3.4 Site Water Management Plan

3.4.1 Acts Policies and Regulations

Management of water is the responsibility of DECCW and NSW Office of Water (NOW). The Site Water Management Plan (SWMP) is comprised of the following:

- Site Water Balance;
- Erosion and Sediment Control Plan; and
- Surface Water Monitoring Program.

A copy of the full SWMP is provided in **Appendix H**.

The Erosion and Sediment Control Plan has been prepared to be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction Volume 1, 4th Edition*, (Landcom, 2004).

3.4.2 Role, Responsibility, Authority, Accountability and Reporting

The Quarry Manager will be responsible for undertaking inspections of the sediment and erosion control structures (sediment basins and clean water diversion works) at least weekly and after rainfall events.

Details of the monitoring program are provided in Table 5.2 of **Appendix H**. Surface water monitoring will be undertaken in the sediment basin prior to any discharge events and in two sample locations in the adjacent Doughboy Creek following discharge. Monitoring results will be reported in the AEMR.

Where non-compliance with the Impact Assessment Criteria are identified, the reasons will be explored, potentially contingency measures developed and a report prepared and submitted to the DoP.

3.4.3 Environmental Management Procedures

Details on procedures for installing and maintaining erosion and sediment control structures on site are provided in Section 4 of the SWMP (**Appendix H**).

The following erosion and sediment control infrastructure on site is proposed:

- Due to the fine particulate matter suspended in the in-pit sump, a separate sediment basin must be used to treat any water before discharge into Doughboy Hollow Creek. The total volume of the sediment basin, including the sediment settling zone, sediment storage zone and the 5-day, 95th percentile rainfall volume directly on the sediment basin, is 20.2 ML. The concept design for the basin is a turkey's nest arrangement with a top area of approximately 5000 m² and an average depth of approximately 4.1 m;
- As the footprint of the quarry is extended in a westerly direction, the existing clean water diversion bunds and drains will need to be replaced in order to divert flows around the site. The clean water diversion bunds and drains in the final scenario will be designed to carry the 100 year ARI peak flow. The temporary clean water diversion bunds and drains may be designed to convey the peak flow of a different average recurrence interval (ARI), depending on their design life and the risk of inflow and flooding of the quarry catchment.

Further details on these proposed measures are provided in Section 4 of the SWMP (**Appendix H**).

3.4.4 Monitoring, Inspection and Test Procedures

The following protocols are proposed:

- Surface water monitoring will be undertaken in the sediment basin prior to any discharge into Doughboy Creek;
- Surface water monitoring at two locations (upstream and downstream) following discharge into Doughboy Creek;
- Weekly inspections of surface water controls (diversion bunds and drains, sediment basin); and
- Annual reporting.

Further details on the proposed monitoring protocols are provided in **Appendix H**.

3.4.5 Contingencies

Should monitoring indicate that surface waters are being adversely impacted (*ie.* in cases of incidents causing or threatening material harm to the environment), Ardglen must notify DoP and DECCW and provide written details of the incident within 7 days of the date on which the incident occurred.

3.4.6 Non-standard Environmental Controls

There are no unforeseen non-standard environmental controls required for the Site Water Management Plan.

3.4.7 Revision Procedure

This Site Water Management Plan shall be reviewed and if necessary, revised, every 12 months or as directed by the Quarry Manager (**Table 2.2**).

3.5 Landscape Management Plan

The purpose of the Landscape Management Plan (LMP) is to ensure that the mitigation measures reported in the Environmental Assessment in respect of vegetation, habitat and biodiversity management are planned, implemented and managed appropriately. Specific conditions were provided in the Project Approval that relate to the Rehabilitation and Biodiversity Offset Management Plan, Doughboy Hollow Creek Rehabilitation Strategy and Quarry Closure Plan.

The LMP addresses the information requirements stipulated in the conditions outlined above and assigns responsibility and a timeframe for their implementation.

The project proponent or operator will be responsible for ensuring implementation of the LMP. Details of the LMP are provided in **Appendix H**. A précis of the LMP is provided in this section of the EMS.

3.5.1 Acts Policies and Regulations

The DoP also has regulatory oversight of biodiversity management through the conditions of approval that require the implementation of the Biodiversity Offset strategy and the associated management plans. Regulatory control and oversight of biodiversity management is also the responsibility of DECCW, while regulatory control and oversight of rehabilitation management of the riparian areas are the responsibility of the NSW Office of Water (NOW) and Department of Industry and Investment (DII).

The LMP has been prepared in accordance with the following conditions as detailed in the Project Approval:

- The revised Biodiversity Offset Strategy has been prepared in consultation with DECCW in accordance with Schedule 3 Condition 25; and
- The Doughboy Hollow Creek Rehabilitation Strategy has been prepared in consultation with DII (formerly DPI) and NOW (formerly DWE) in accordance with the requirements of Schedule 3 Condition 28.

3.5.2 Role, Responsibility, Authority, Accountability and Reporting

The Quarry Manager will:

- Be responsible for management and reporting of progress on the rehabilitation, revegetation and long term management of the site;
- Ensure that proposed strategies are effectively implemented and meet the performance objectives as detailed in the LMP; and
- Be responsible for non-compliance and ensure corrective action is taken to mitigate any impacts.

Further detailed information is provided in **Appendix I**.

3.5.3 Environmental Management Procedures

Details on the various components of the Landscape Management Plan of the site are provided in **Appendix I**.

In summary, the main components of the rehabilitation/revegetation plan are as follows:

1. Doughboy Hollow Creek Rehabilitation Strategy
 - Remove the weir from Doughboy Hollow Creek;
 - Rehabilitate the creek; and
 - Rehabilitate and/or re-establish riparian vegetation.
2. Biodiversity Offset Strategy
 - Quarry rehabilitation;
 - Rehabilitation of offset sites; and
 - Vegetation/habitat clearing protocols.
3. Quarry Closure Plan
 - Objectives;
 - Criteria;
 - Options for future use; and
 - Management of ongoing impacts.

Details are provided in **Appendix I** for each of these components in relation to the works, performance criteria and monitoring.

3.5.4 Monitoring, Inspection and Test Procedures

Monitoring details are provided in the LMP (**Appendix I**) for each of the components of the rehabilitation/revegetation plan.

3.5.5 Contingencies

General procedures for minimising the risk of failure of the rehabilitation/revegetation have been developed and are provided in the LMP (**Appendix I**).

3.5.6 Non-standard Environmental Controls

There are no unforeseen non-standard environmental controls required for the Landscape Management Plan.

3.5.7 Revision Procedure

This Landscape Management Plan shall be reviewed and if necessary, revised, every 12 months or as directed by the Quarry Manager (**Table 2.2**).

3.6 Other Site Procedures

3.6.1 Oil, Diesel and Chemicals

Site activities should be undertaken in a manner to control the emissions of smoke, chemicals, dust and fumes into the atmosphere. Specifically:

- Site chemicals will be kept to a practical minimum and would be generally used for weed management purposes. Chemical data, handling and safety sheets, where used, will be kept by the Quarry Manager at all times;
- Emergency spill kit, where appropriate, should be maintained at site at all times to handle any spillage accidents and any spills should be reported to the proponent's Quarry Manager and immediate clean up procedures initiated;
- Good housekeeping is required around the site to avoid waste left lying around; and
- Equipment and plant that is no longer required at any site location should be removed from that location as soon as practicable.

3.6.2 Adherence to EMS

All site personnel shall be made aware of the penalties for not strictly adhering to this EMS and the environmental protection requirements detailed within. Penalties may include:

- Removal of persons from the site, in accordance with any internal disciplinary procedures, if they are found to be in breach of the Environmental Protection Requirements detailed in this EMS.

Where serious non-conformance is reported or detected during an Environmental Audit, work shall be stopped until rectification of the breach has been successfully achieved and the Quarry Manager's approval given.

Controls

4.1 Environmental Control Records

All environmental inspections, audits and non-conformances should be recorded on appropriate proformas. Examples which may be used are listed in **Appendix J**.

Copies of each record shall be completed by the person inspecting, and reviewed by the Quarry Manager before being documented.

4.2 Project Management Review and Reporting

The Quarry Manager or their delegate shall conduct regular reviews of project environmental performance and when necessary initiate corrective actions.

The review shall, as a minimum, consider:

- Non-compliance arising from internal audits;
- Environmental issues arising from situations identified as non-conformances to Contract requirements;
- Queries/complaints/audits;
- Subcontractor's (if involved) performance; and
- Community relations; and legislative compliance.

The review findings and recommendations shall be recorded and implemented (if required) by the Quarry Manager. The findings would be reported in the Annual Environmental Management Report prepared for the project.

4.3 Emergency Preparedness and Response Strategy

The Quarry Manager in conjunction with any contractors/subcontractors will identify the potential for and response to environmental incidents and emergency situations in accordance with the procedure for emergencies. This procedure will be designed to prevent and mitigate the environmental impacts related to such events.

The emergency response action is based on the concepts of “Control”, “Contain” and “Clean-up” and has its primary focus on:

- Preservation of human health and safety;
- Protection of plant and property;

- Protection of the environment; and
- Prevention of recurrence.

Table 4.1 lists the key personnel and emergency services responsible in the event of an environmental emergency.

Table 4.1 - Emergency Contacts

Emergency	Contact (Address & Phone)
Ambulance	Murrurundi Ambulance Station Emergency: 000 or 112 (mobile)
Police Service	Murrurundi Police Station Murulla Street and Liverpool Terrace MURRURUNDI NSW 2338 Phone: 02 6546 6144 Fax: 02 6546 6751 Not open 24 hours Emergency: 000
Fire Brigade	Murrurundi Fire Station 44 Mayne St MURRURUNDI NSW 2338 Tel: 02 6546 6019 Emergency: 000
EPA	131 555

4.4 Environmental Auditing and Monitoring

The Quarry Manager will initiate scheduled audits of the project activities against the requirements detailed in Schedule 5, Condition 5 of the Project Approval. Additional audits may be programmed should monitoring detect any non-compliances or significant areas of concern.

Non-compliances identified during audits will be subject to the provisions of corrective action. Audit findings will be reported to the Department of Planning in the Annual Environmental Management Report as stipulated in Schedule 5 Condition 5 of the Project Approval.

Corrective action requests will be approved by the Quarry Manager and will be implemented in a timely manner. Follow up actions will be undertaken to verify implementation of approved corrective actions and its effectiveness in preventing recurrence. All corrective action requests whether in process or completed, will be reviewed during Project Management Reviews.

The ongoing audit and monitoring during progress of the project include:

- Works may be subject to an environmental audit(s) and/or inspections at any time in their duration;
- Site inspections should be undertaken by Quarry Manager at least once in two months;

- The Quarry Manager should undertake site inspections (eg. erosion and sediment controls) weekly;
- The Quarry Manager should check compliance with the EMS at least monthly. Records of all inspections should be maintained on site at all times; and
- Revision of EMS and plans every 12 months.

Relevant forms are included in **Appendix J** and shall be completed as required.

An Environmental Monitoring Program is provided in **Appendix L**. This document consolidates the various monitoring requirements in Schedule 3 of the Project Approval into a single document in accordance with the requirements of Schedule 5 Condition 2 of the Project Approval.

Incident Management

5.1 Procedures

The safety of all personnel on the site is the first priority in the event of an incident that may cause pollution or environmental damage. Further impacts must then be prevented by stabilising the situation (eg. containing a chemical or fuel spill).

The EPA and DoP must be advised within 24 hours by the Quarry Manager of any spills or accidents on-site which are likely to cause a significant risk of harm to the environment.

Specifically, Section 147 of the *Protection of the Environment Operations Act, 1997*, states that harm to the environment is material if:

- It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
- It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000.

In the event of an environmental incident on-site, an environmental incident report form (Form F306.01) (**Appendix K**) shall be completed.

References

ANZECC (1990) *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*. Australian and New Zealand Conservation Council, Canberra.

DECC (2006). *Assessing Vibration: a technical guideline*. Department of Environment and Conservation NSW.

ERM (2006). *Ardglen Quarry Extension Environmental Assessment for Daracon Quarries*. Unpublished Report prepared for Buttai Gravel Pty Ltd (Daracon Quarries). 93p + Annexures.

NSW Government (2009). *Environmental Management Systems Guidelines (2nd Ed.)* 36p