Central Coast Sand Quarry

ANNUAL REVIEW








Hanson
HEIDELBERGCEMENT Group

March 2015

Executive Summary

The effective management and monitoring of quarry processes is a fundamental element in ensuring favourable environmental outcomes, compliance with the Project Approval, and progressive integration of the development within the community and surrounding amenity. To ensure that the Central Coast Sands Project (the Project) is appropriately managed Hanson Construction Materials Pty Ltd (Hanson, the Proponent) has composed this Annual Review as per Project Approval Conditions. This document reviews the environmental performance of the project from project approval on 1 August 2014 – 31 March 2015.

Air

The Proponent has commissioned and is progressively implementing an Air Quality Management Plan prepared by SLR. The project has two dust deposition gauges on site and aims to install a DustTrak air sampler during the next reporting period. There were two months where dust deposition exceeded the relevant criteria and these exceedances are explained further in the report.

Noise

The proponent commissioned SLR to prepare a Noise Management Plan for the site. The Project is required to undertake noise modelling before each development stage. As the project is yet to initiate project stage 1, the proponent is not required to undertake noise monitoring to date. Noise monitoring will be undertaken as necessary, and as recommended in the project's Noise Management Plan for the life of the project. The project complied with operating and construction activity conditions/hours of operation. Additionally there were no instances of noise complaints during the reporting period.

Traffic

The Proponent commissioned Intersect Traffic to prepare a Traffic Management Plan for the Project. There were no instances of traffic related complaints or operations outside the approved operational hours. The recommendations presented in the Traffic Management Plan are being progressively implemented and will be assessed throughout the life of the project life.

Water

The Proponent commissioned SLR Global Environmental Solutions to complete a Surface Water Audit and Water Improvement Program and a Water Management Plan. Water bore recordings did not vary significantly around the mean. There were 5 months where pH did not comply with the acceptable range of 6.5 – 8.5 when recorded upon discharge. To combat this, the Proponent is conducting pH monitoring of the make-up dam daily by quarry staff and lime dosing is applied as required. Total Suspended Solids (TSS) and oil and grease levels complied with stipulated limits at all discharge events.

Biodiversity

The project has continued to engage progressive rehabilitation with pleasing results. The project has not actioned the requirement to conduct pre-clearance surveys of the potential habitat of the Red-crowned toadlet as the project is yet to initiate project stage 1.

Overall

The Project is in a transitional phase whereby the Proponent is preparing to implement Stage 1 of the quarry extension project and surrender the existing approvals in accordance with the Project Approval conditions. At the current time, the Project has prepared the required management plans and is progressively implementing initiatives outlined in each to meet the Project Approval conditions. Whilst there are events of exceedances in air and water management, the Proponent actively strives to adequately meet applicable criterion, and aims to maintain or improve the quarry's environmental performance during the next reporting period.

Document Control

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1. Introduction

Hanson Construction Materials Pty Ltd (Hanson) own and operate a sand quarry, namely Central Coast Sands, which is located at Somersby, NSW. Specifically the site is located on the Somersby Plateau, 8.5 kilometres (km) northwest of Gosford, 55 km north of Sydney, NSW.

The Central Coast Sands Project involves an increase of the quarry footprint and extraction boundaries to extend the quarry life from the current 17 years to 35 years, whilst maintaining the approved annual extraction limit of 310 000 tonnes per annum (tpa). Sand extracted from the quarry would be processed on site and then transported by road to local and regional customers in the Gosford and Newcastle regional markets and also transported by road inter-regionally to the Sydney metropolitan markets. Hanson's Central Coast Sands Quarry currently directly employs 10 full time staff.

The Department of Planning and Environment (DP&E), formally the Department of Planning and Infrastructure, granted approval for the project subject to a number of approval conditions (Ref MP 08_0173, 1 August 2014). Under Schedule 5, Condition 4 of the Project Approval, an Annual Review for the project must be prepared to provide an overview of environmental performance of the site from during the reporting period of 1 August 2014 – 31 March 2015.

1.1 Document Purpose

This document will address the environmental performance of the project. In accordance with condition 3, schedule 4 this Annual Review will;

By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must:

a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the:
  - *relevant statutory requirements, limits or performance measures/criteria;*
  - *requirements of any plan or program required under this approval;*
  - *monitoring results of previous years; and*
  - *relevant predictions in the EA;*
c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
d) identify any trends in the monitoring data over the life of the project;
e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and
f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.

As the project is yet to approach 12 months since granting of the Project Approval on 1 August 2014, it is in a transitional phase whereby the Proponent is yet to surrender the existing

development consent and is beginning to implement the environment monitoring and management initiatives as recommended in management plans prepared for the quarry extension project. As a result, this Annual Review has been delayed in its submission.

The next Annual Review will be submitted for the period 1 April 2015 to 31 March 2016.

1.2 Project/Site Description

Hanson proposes to extend the life of its Central Coast Sand Quarry in a project known as Central Coast Sands Project (**Figure 1**). This involves the expansion of the quarry footprint, with no change to the site amenities, sales/production volume, employment numbers, haulage routes or traffic volumes. The processing plant will be re-located in the latter stages of the project. The major components of the project are summarised in **Table 2** and are depicted in **Figure 2.**

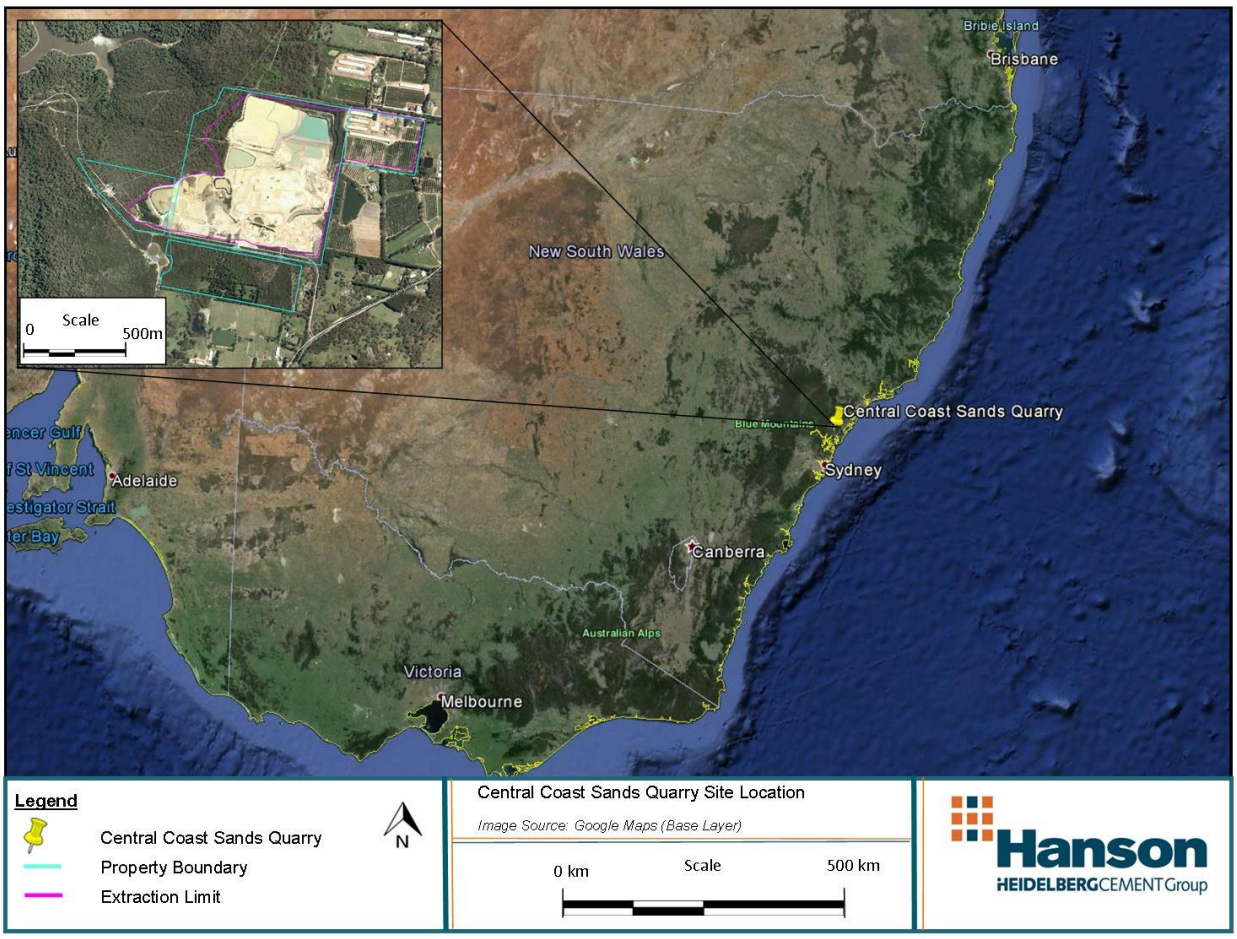


Figure 1: Central Coast Sands Site Location

1.2.1 Project Area

The Project Area is identified in **Table 1** and depicted in **Figure 2.**

Table 1: Existing Quarry and Quarry Extension Area

Existing/Extension	Folio ID	Area

Existing Quarry	Lot 33 DP 755246	Total: 48.6ha Quarry Occupies: 36ha
Existing Quarry	Part Lot 118 DP755246	Quarry Occupies: 6.4ha
Quarry Extension	Lot 33 DP 755246	Quarry Extension: 25m wide vegetated strip.
Quarry Extension	Lot 10 DP1090880	Quarry Extension: 8ha

1.3 Project Summary

The Quarry Extension Project will involve:

- Continuation of fixed plant sand washing and processing on Lot 33 DP755246;
- Continuation of current offices, weighbridge and workshop and ancillary structures on Lot 33 DP 755246;
- Extension of quarry life from 17 to approximately 35 years through an additional 8 ha;
- Maintenance of 10 full time staff;
- Maintenance of existing haulage routes and traffic volumes;
- No change in the terms of the mining lease ML6309 on Lot 118 DP 755246;
- The surrender of existing known approvals that cover existing operations on Lot 33 and Part Lot 118 DP 755246 to enable the issuing of one contemporary approval that covers these existing operations and the area that is proposed to be extended into being Part Lot 10 DP1090880.

The Project will continue:

- fixed plant sand washing and processing on Lot 33 DP755246;
- offices, weighbridge and workshop and ancillary structures on Lot 33 DP755246;
- water management systems on Lot 33 and Part Lot 118 DP755246;
- the current Environmental Protection Licence;
- current haulage routes and traffic volumes;
- sand extraction on Lot 33 limited to a depth 190m AHD; and
- rehabilitation activities on Part Lot 118 DP755246 (covered by ML 6309).

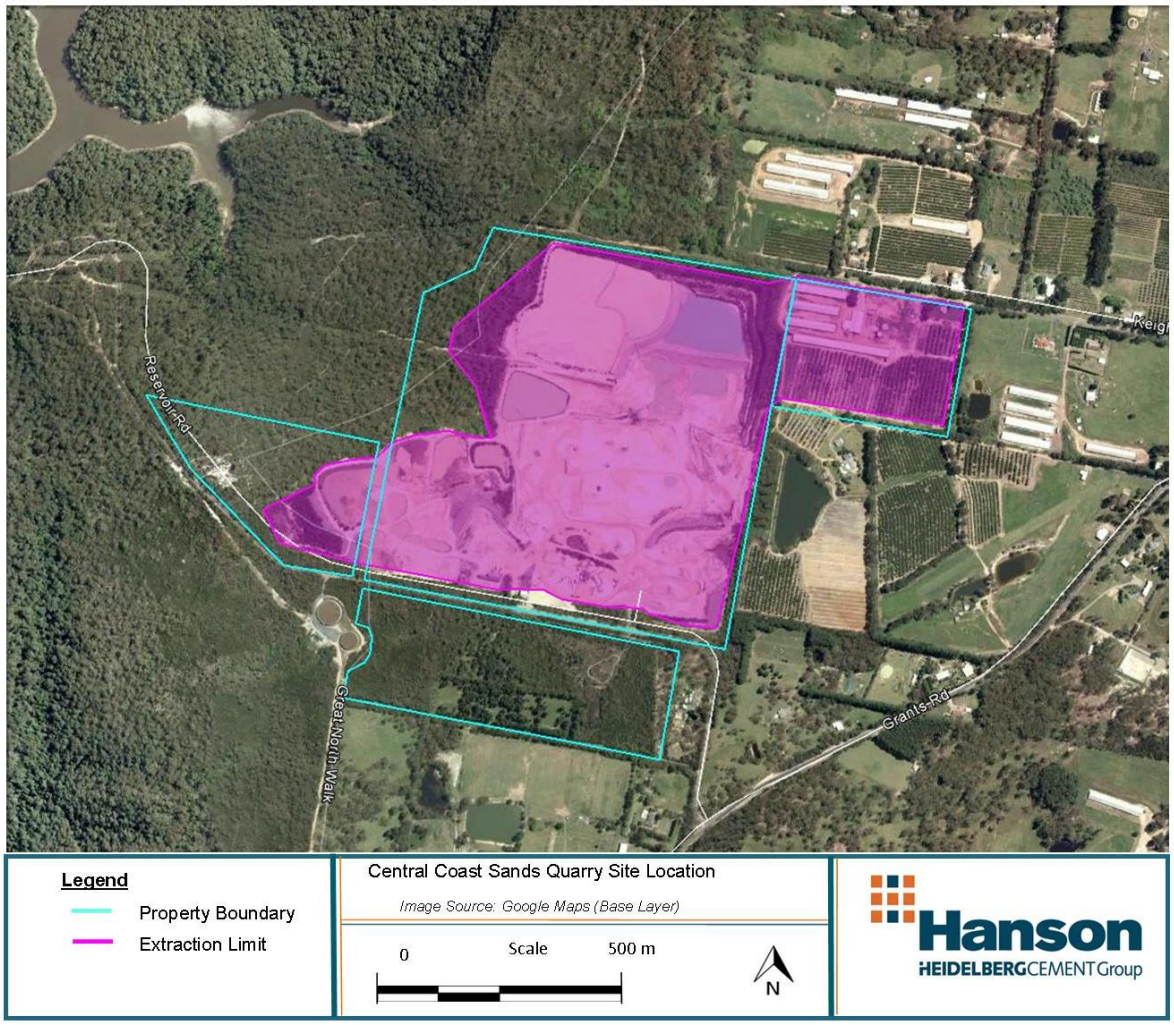


Figure 2: Central Coast Sands Extraction Area

1.4 Consents and Licencing

Environmental monitoring and management for the site must meet the requirements of the Project Approval conditions and Environmental Protection Licence. These are summarised in the following sections.

1.4.1 Project Approval

The project was approved on 1 August 2014 under section 75J of the *Environmental Planning and Assessment Act 1979* (EP&A Act).). The major components of the project are summarized in **Table 1**. The project is described in full in Hanson's Environmental Assessment (EA) Central Coast Sands Project dated February 2013.

Table 2: Major Project Components

Project Component	Description
Total Site Area	50ha
Extraction Area	Refer to **Figure 2**. 8ha extension of part Lot 10 DP1090880
Extraction Method	Loosening of material via bull-dozer blade and loading into trucks. Trucks then transport this material to on-site washing and grading/sorting facilities. Post sorting, the resource will be stockpiled on site and collected by trucks which transport the material to concrete batching plants, construction sites primarily within the Central Coast, Hunter and Greater Sydney area.
Extraction Rate	310,000 tonnes per annum (tpa).
Extraction Staging	**1. <u>Stage 1: Construction and Extraction</u>** **2. <u>Stage 2: Extraction</u>** Extraction will commence in SW portion of the Quarry Extension Area (QEA), capping of tailings dam, establishment of new tailings dam, grassing areas previously covered by the chicken sheds and rehabilitation. **3. <u>Stage 3: Extraction</u>** Extraction will continue into the NW QEA, continued capping of tailings dam, continued use of the new tailings dam. **4. <u>Stage 4: Extraction</u>** Extraction will continue into the NE QEA, new tailings dam established in the area formerly extracted in Stage 3, tailings dam (stage 3) will be capped and rehabilitation commenced. **5. <u>Stage 5 Extraction</u>** Extraction will continue into the SW QEA, continuation of new tailings dam, rehabilitation continued in the NE of the existing quarry, capping of tailing dams completed and continued revegetation in this area. **6. <u>Stage 6 Extraction</u>** Extraction commenced in southern Lot 33, relocation of processing plant, establishment of new tailings dam, and rehabilitation in northern Lot 33 and QEA. **7. <u>Stage 7 Rehabilitation</u>** Progressive rehabilitation over the project area. *NOTE: See EA for full extraction staging details*
Resource	Friable sandstone
Depth of Extraction	Maximum depth of extraction: approximately 60m below the natural ground level (to RL 190m AHD).
Processing and Facilities	- Washing, grading and sorting facilities will remain in place. - The project will not involve the relocation of workshop, office or amenity buildings. - The current weighbridge will not be relocated.
Water Management	The proponent has commissioned a consultant to produce a *Water Management Plan* and *Surface Water Audit and Management Improvement Program* in conjunction with Project Approval (Schedule 3, Conditions 2 & 7). The project will implement these plans as soon as reasonable and feasible.
Main Products	Sand for application in concrete and construction.
Product Transport	Vehicular Access: Along existing public roads including (but not limited to); • Wisemans Ferry Road • Grants Road • Reservoir Road

Project Life	From approximately 17 years to approximately 35 years.
Rehabilitation	• Progressive rehabilitation will occur on site where reasonable and feasible. • Removal of 5m bund wall. • Benching of the quarry wall for stability. • Grading of quarry floor. • Vegetated as grassland suitable for agricultural use. • Plantations on steeper slopes to provide stability and reduce visual impact. • Ongoing weed and feral animal control for five years. • See **Figure 3.**
Employment	10 full time employees and one contractor.
Construction	Relocation of processing plant in Extraction stage 6.
Hours of Operation	Transportation of quarry products from site: - Monday – Friday: 6am – 4 pm - Saturday: 6am – 2 pm Other quarrying operations: - Monday – Friday: 6am – 6pm - Saturday: 6am – 4pm Construction activities: - Monday – Friday: 7am – 4pm - Saturday: 7am – 12pm Maintenance: - 24/7

1.4.2 Environmental Protection Licence (EPL) No. 3751

EPL 3751 applied to all scheduled activities undertaken by Hanson Construction Materials at Lot 33 DP 755246, Reservoir Road Somersby. The licence regulates the following;

- Discharges into air and water and applications to land.
- Limit conditions including; pollution of waters, concentration limits, waste, noise limits, potentially offensive odour.
- Operating Conditions.
- Monitoring and recording conditions (i.e. monitoring records).
- Reporting conditions.

1.4.3 Legislative Framework

The project is externally regulated by Commonwealth, State and local legislation, plans and policies. These are listed below in **Table 3** and further explained in the Project EA.

Table 3: Legislative Framework

Government Tier	Legislation/Policy/Plan
Federal	Environmental Protection & Biodiversity Conservation Act, 1999
State	Environmental Planning & Assessment Act, 1979
	Water Management Act, 2000
	Threatened Species

	Conservation Act, 1995
	Protection of the Environment Operations Act, 1997
	State Environmental Planning Policy (SEPP) (Major Development) 2005
	SEPP (Mining, Petroleum Production & Extractive Industries) 2007
	SEPP No 44 (Koala Habitat Protection)
	SEPP No 33 (Hazardous & Offensive Development)
	SEPP No 55 (Remediation of Land)
Regional/Local	Sydney Regional Environmental Plan 9 –Extractive Industry (No. 2 – 1995)
	Sydney Regional Environmental Plan No 20 - Hawkesbury Nepean River (No 2 – 1997)
	Sydney Regional Environmental Plan No 8 (Central Coast Plateau Areas)
	Central Coast Regional Strategy
	Gosford Vision 2025 – A Strategic Vision for the Future
	Lower Hawkesbury Estuary Management Plan
	Gosford Local Environmental Plan 2014
	Gosford Development Control Plans

1.5 Environmental Management and Performance Criteria

1.5.1 Environmental Management Plans

The following environmental management and monitoring plans have been prepared in accordance with the requirements of the Project Approval (**Table 4**):

Table 4: Project Approval Conditions and Compliance

Project Approval Condition	Completed by	Compliant
Surface Water Audit and Water Management Improvement Program	SLR Global Environmental Solutions	Yes
Water Management Plan	SLR Global Environmental Solutions	Yes
Noise Management Plan	SLR Global Environmental Solutions	Yes
Air Quality Management Plan	SLR Global Environmental Solutions	Yes
Grants Road Condition Assessment	Barker Ryan Stewart	Yes
Traffic Management Plan	Intersect Traffic	Yes
Survey of the Red-crowned	To be actioned	To be actioned

Toadlet		
Landscape and Rehabilitation Management Plan	Actioned	Deadline 31 July 2015
Environmental Management System	Hanson Construction Materials	Yes
Independent Environmental Audit	In progress	Deadline 30 June 2015
Survey to mark out extraction boundary	Cahill and Cameron Surveyors	Work in progress. Electronic format completed. Ground peg-out in progress.

The following key environmental management and performance outcomes for the site are summarised in **Table 4** to create a single environmental management strategy for the Central Coast Sand Quarry Project.

Table 5: Environmental Performance

Aspect	Element	Objective	Performance Outcomes
Water	Site Water Balance	Minimise clean water use	Maximise recycling procedures, silt retention dams, design and utilise appropriate water stores (e.g. quarry voids) and re-distribution of water around site.
		Provide site water details	Site based hydrological assessment to assess water flow and collection points on site. Thereafter identifying the confidence level of water storage maintenance on site.
		Promote and maintain water supply security	Promoting the accessibility of water sources and maintaining water security via site water engineering and water storage.
	Surface Water	Developing baseline data on water flows and quality.	Preparation of a Water Management Plan and on site assessment. Surface water quality sampling in accordance with Environmental Protection Licence (EPL) 3751.
		Description of site water management system	Application of on site clean water diversion system, erosion and sediment controls, dirty water management system and water stores; Minimise water take from adjoining properties where reasonable and feasible;
		Monitoring program.	Quantitative measurements on surface water flows and quality in water bodies potentially affected by the project.
	Groundwater	Maintain no adverse impact on groundwater aquifers.	Gather and utilise baseline data of ground water levels, yield and quality in local sandstone aquifers, privately-owned groundwater bores and in areas of high priority GDEs that could be affected by the project.
		Development of base line data.	Assessment of groundwater levels, yield and quality in local sandstone aquifers, privately-owned groundwater bores and in areas of high priority GDEs that could be affected by the project.
		Maintain no impact on privately owned adjacent properties	Development of a contingency strategy to measure/mitigate/compensate potentially affected landowners Development of a monitoring program. Compliance with EPL monitoring locations and targets.
		Reduce seepage potential from water stores.	Consistent monitoring of water levels in water stores. Controlled release of excess water.
Air	Air quality	Identity trigger values for remedial action.	Development of an *Air Quality Management System* and *Air Quality*

Aspect	Element	Objective	Performance Outcomes
			Monitoring Program
		Compliance with Air Quality Impact Assessment Criteria (Schedule 3, Condition 13 of the Project Approval).	Regular assessment/recording of TSP, PM_{10}, deposited dust and other pollutants.
		Minimise GHG emissions from site.	Implement best practice operations. Turn off non-operational machinery. Minimise the area of surface disturbance and maximise progressive rehabilitation on site.
		Identify any exceedances.	Development of an *Air Quality Management Plan* as per Project Approval (Schedule 3, Condition 15) and regular monitoring in accordance with established trigger levels,
Acoustics	Noise compliance	Compliance with noise targets	Minimise construction, operational and road noise. Regularly assess noise monitoring data. Maintain and use noise suppression equipment. Construction of noise bunds.
		Minimisation of noise impacts during adverse metrological conditions	Modify and/or stop operations on site to ensure compliance.
		Define noise incident and develop protocol for identifying and notifying the Department and relevant stakeholders of noise incidences.	Development of a *Noise Management System* and *Noise Monitoring Program* to provide baseline criteria and identify sensitive receptors. Department will be informed in writing of any noise exceedance incidence at attended or non-attended monitoring sites.
Biodiversity	Vegetation	Minimise vegetative losses	Expansion site selection includes minimal native remnant vegetation. Where vegetation is present pre-clearance surveys will be conducted.
	Flora	Minimise Preserve Red-crowned Toadlet	Targeted surveying for the Red-crowned toadlet.
	GDE	No impact on high priority GDEs	Additional studies on high priority GDEs
			Long term monitoring of GDEs
	Ecology	Minimise project impacts	Establishment of trigger and performance levels.
			Establishment of mitigation/response procedures.
Rehabilitation	Landscape and progressive rehabilitation	Enhance quality of remnant vegetation and fauna habitat.	Landscape and Progressive Rehabilitation plan
		Restoration of endemic vegetation and fauna habitat	Controlling weeds and feral pests; Controlling erosion; Controlling access; and Bushfire management;
		Minimal environmental consequences for threatened species, populations and	Compliance with rehabilitation objectives

Aspect	Element	Objective	Performance Outcomes
		habitats	
Transport	Traffic	Maintain minimal impact on the local amenity through traffic flows	Maintaining consistent traffic flows; Prepare and implement 'Driver Code of Conduct'; and Preparation of a *Traffic Management Plan* for guidance and mitigation of potential project generated traffic impacts.
	Road Maintenance	Preserve the condition of Grants Road	Prepare a road condition assessment and road maintenance contributions study of grants road in conjunction with Grants Road Sand Quarry.

1.5.2 Non-Compliance

1.5.2.1 Non-Compliance

Non-compliance is defined as an instance where environmental performance fails to meet the statutory limit. Governing procedures in the event of non-compliance are outlined in corresponding monitoring plans, however the general procedure is:

1. Non-compliance is reported by personnel to the site manager.
2. Under the Site Manager's direction, the source of the non-compliance is to be investigated and identified.
3. Mitigation works/measures are to be developed and actioned as soon as possible. Notify Regional Environmental Manager who contacts relevant government agencies as required.
4. Investigate possible amendments/alterations to Project systems to avoid future non-compliance.
5. Prepare an incident report for the Site Manager to include in Annual Review for DP&E and Annual Return for the Environmental Protection Authority (EPA). Additional reporting may also be required by government agencies or DP&E.

Where non-compliance is likely to cause significant environmental harm, relevant government agencies are to be notified promptly by the Regional Environmental Manager.

1.6 Personnel Structure and Responsibilities

1.6.1 Company Personnel Structure and Responsibilities

The Hanson structure of environmental personnel and their roles/responsibilities is shown in **Figure 4**. Although personnel have specific accountabilities at different levels of work, all staff members, contractors and visitors are accountable for:

- Complying with relevant legislation including EPL's;
- Complying with this EMS and associated documents as they apply;
- Communicating any information they become aware of in relation to environmental management; and
- Taking appropriate action to mitigate environmental impacts.

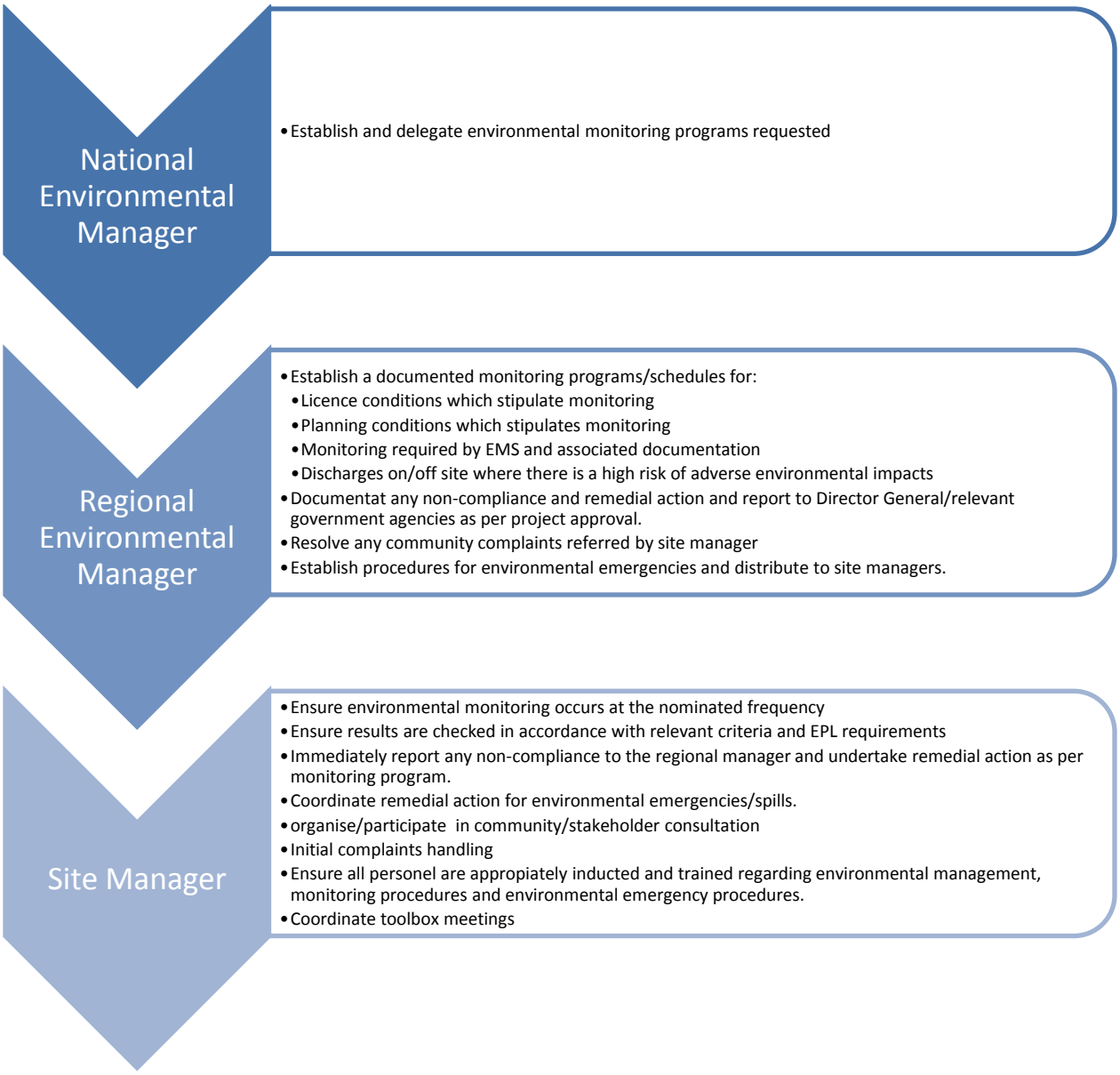


Figure 3: Hanson Management Structure

2.1.1 Central Coast Sands Quarry Structure and Responsibilities

Table 6 summarises the organisational structure at Central Coast Sands Quarry and associated responsibilities.

Table 6: Roles and Responsibilities

Roles	Responsibilities
Operations Manager	Will ensure adequate resources are available to enable implementation

	of the Environmental Management Strategy and all Environmental Management Plans and Monitoring Programs.
Quarry Manager	Accountable for the overall performance of the Project, including the following. • Key performance outcomes of the Project; • Evaluation of Compliance; • Corrective and Preventative Actions; • Incident Reporting; • Dispute Resolution; • Review of the Project; • Consultation Strategies; and • Emergency preparation, response and investigation.
Quarry Supervisor	Ensure the implementation of all applicable strategies and policies, including the following. • Ensure employees are competent through training and awareness programs; • Monitoring; • Corrective Action and Preventative Action in consultation with the Quarry Manager; • Consultation Strategies; and • Complaints management.
All personnel	Ensure compliance with all applicable strategies and policies (i.e. Environmental Management Strategy) including consultation strategies approved by the Environmental Supervisor.

2. Summary of Operations during the Reporting Period

The following provides a summary of the works associated with the project, for the reporting period 1 August 2014 to 31 March 2015 and significant events that have occurred during the compilation of this review. The reporting period concentrated on preparing and implementing management plans to comply with Project Approval 08_0173 conditions. The recommended environmental monitoring initiatives outlined in these management plans is progressively being addressed on site, however as the project is yet to reach one year since project approval, there are several Project Approval conditions that are yet to be actioned. As these conditions are triggered, they will be addressed in the applicable reporting period.

2.1.Compliance

During the reporting period a Noise Management Plan, Air Quality Management Plan, Water Management Plan, and Traffic Management Plan were prepared to satisfy corresponding Project Approval conditions. Additionally the Proponent commissioned an independent contractor to conduct a Surface Water Audit and prepare a Water Management Improvement Program.

Air sampling exceeded the relevant deposited dust criteria on two occasions (i.e. two months). Discharged water exceeded the pH acceptable limits of 6.5 – 8.5 for 5 months. All other environmental issues complied with relevant criteria.

The Proponent has not yet surrendered the existing development consent and will do so by the end of December 2015 in accordance with Section 104A of *the Environmental Protection and Assessment Act, 1979* as per Schedule 2, Condition 9 of the Project Approval.

2.2.Quarrying activities

Extraction has continued in the current extraction area as per the blue Project Area line in **Figure 4** below. Approximately 328,274 tonnes of material was extracted in the reporting period, some of which has been stockpiled for future export. Please note that the quarry is still operating under the existing development consent and therefore not bound by the 310,000 extraction, processing and transportation limit.

2.3. Structural Adequacy

The Proponent has added demountable buildings to the site during the reporting period. There have been no alterations or additions to the existing buildings and structures which require assessment in accordance with the Building Code of Australia.

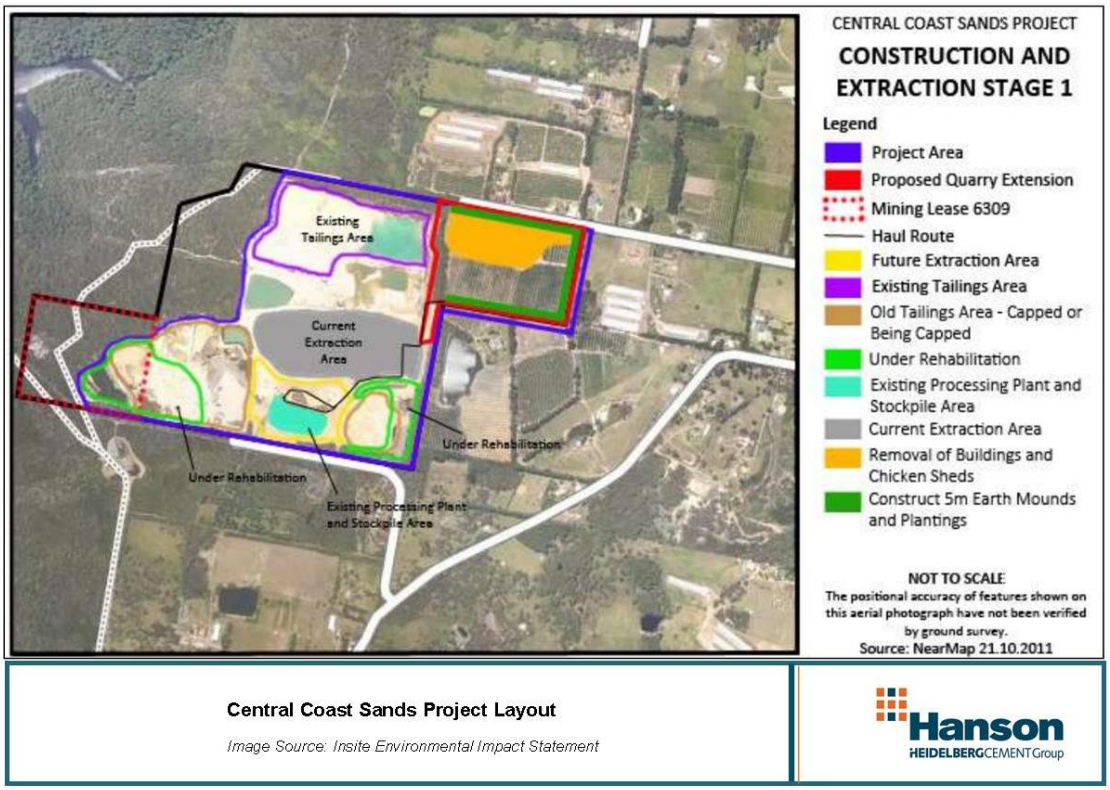


Figure 4: Project Layout

2.4.Rehabilitation

Rehabilitation has focused on rehabilitating the south western section of the quarry with species endemic to the locality. Rehabilitation during the reporting period has included seed plantation, sampling plantation, weed control and maintenance of the existing vegetation. Dead vegetation will be replaced via seeding the locality or plantation of saplings.

Vulnerable vegetation has been protected using plastic guards and shelters to ward against herbivory, heavy winds and rain. Plastic guards are mostly applied to seedlings bordering the road as this is where the highest environmental risk factors exist.

Rehabilitation on site has been a progressive initiative, which has yielded pleasing results with a vegetative hierarchy colonising the area. Structural complexity of the habitat is integral to the output of ecosystem function. Generally, habitats which possess a developed vegetative stratum have a higher ecosystem function and support increased species richness and species diversity values. These are indicators of successful rehabilitation.

Initial assessment of the rehabilitated area at Central Coast Sands Quarry, suggests that should rehabilitation initiatives continue to be undertaken with the current focus, the site will meet sound rehabilitation markers.

Plate 1: Rehabilitation area. Photograph aspect: West

Plate 2: Rehabilitation area. Photograph aspect: South

Plate 3: Rehabilitation area with seedling guarding. Photograph aspect: South

Plate 4: Rehabilitation area. Photograph aspect: South

Figure 5: Central Coast Sand Quarry Rehabilitation Photographs taken 22/05/2015

3 Environmental Management, Monitoring and Performance

Environmental monitoring initiatives were conducted during the reporting period. All are reported categorically in accordance with the corresponding environmental performance indicators. These will be elaborated upon in the latter sections of this report.

3.1 Management Plans and Monitoring Programs

As per the Project Approval, the Proponent has developed Management Plans to provide ongoing guidelines for the life of the Project. During the annual reporting period Central Coast Sand Quarry commissioned the preparation and engaged the subsequent implementation of the following Environmental Management Plans;

- Surface Water Audit and Water Management Improvement Program
- Water Management Plan
- Noise Management Plan
- Air Quality Management Plan
- Grants Road Condition Assessment

- Traffic Management Plan

Environmental monitoring programs are detailed in the Proponents Environmental Management Strategy and monitoring programs for the site. Each monitoring program has been created in consultation with relevant guidelines/approvals to ensure compliance with relevant criteria. A summary of monitoring plans is provided in **Table 7**.

Table 7: Environmental Monitoring

Plan	Monitoring Frequency	Monitoring
Water Management Improvement Program and Water Management Plan	- **Oil and grease**: Daily during discharge from LDP1 and/or LDP2 - **pH:** Daily during discharge from LDP1 and/or LDP2 - **TSS**: Daily during discharge from LDP1 and/or LDP2 - **Turbidity**: Daily during discharge from LDP1 and/or LDP2	- **Oil:** 10 or nil visible mg/L - **pH**: 6.5-8.5 - **TSS**: 50 mg/L - **Turbidity:** 50 mg/L
Air Quality Management and Monitoring Plan	**Annual TSP** **PM_{10}**: Annual **PM_{10}**: 24 hour **Deposited Dust:** Annual Annual Chronic Reference Exposure Level (**PM_4**)	**Annual TSP:** 90 ug/m^3 **Annual PM_{10}:** 30 ug/m^3 **24 Hour PM_{10}**: 50 ug/m^3 **Deposited Dust**: Maximum increase of 2 g/m^2/month. Maximum total 4 g/m^2/month total. **PM_4:** 3ug/m^3
Noise Management	When operational equipment commences work on site. Annually after all components of the project are operating	Noise emission level Quantification of intrusive noise emissions.
Traffic	Hour, day, week, calendar month and year.	Number of laden vehicle movements.

4. Noise Management

4.1.Overview

Noise management over the reporting period has been predominately focused on preparing the Noise Management Plan for the project to meet applicable Project Approval conditions. There

has not been any noise compliance monitoring undertaken during the reporting period as the project has not triggered the monitoring requirements.

It is anticipates that over the next reporting period, operational noise monitoring will need to be conducted prior to stage one commencing.

4.2.Operating and Construction Activity Noise Management

Schedule 3, condition 8 – 12 of the Central Coast Sands Project Approval stipulates environmental performance conditions for the monitoring and management of noise for the Project. Schedule 3, condition 8 outlines the operating hours for the transportation of quarry products from the site, other quarrying operations and construction activities (**Table 6**).

Table 8: Operating Hours

Activity	Day	Time
Transportation of quarry products from the site.	Monday – Friday (except Public Holidays)	6am – 4pm
	Saturdays	6am – 2pm
	Sundays and Public Holidays	No activities
Other Quarrying operations	Monday – Friday	6am – 6pm
	Saturdays	8am – 4pm
	Sundays and Public Holidays	No activities
Construction activities	Monday – Friday	7am – 4pm
	Saturday	7am – 12 pm

Note for Table 8: During DST, the processing plant may operate from 6am to 8pm, Monday to Friday.

4.3. Current Operation Noise Management Measures

Identification of unacceptable noise impacts will be triggered by an operator's observation during quarry operation or a noise complaint from adjacent neighbours. Identification of any significant sources of noise by investigation of operations will be undertaken and if required, activities and processes will be modified. Upon identification of an unacceptable noise impact event, corrective actions are implemented by the Site Manager. The following is an overview of the current practices on site to reduce noise.

4.3.1. Heavy Vehicle Speed

The speed limit within the quarry is 20 km/h which is strictly maintained. The speed limit on Reservoir and Grants Road is 70 km/h. These limits are adhered to by all drivers accessing the site thereby lessening the likelihood of increased noise impacts from fast moving vehicles. The haul road constructed for the new extraction area will create less internal traffic noise because it is designed to run a shorter distance between the processing plant and the extraction area.

Figure 6: Truck Turing from Reservoir Road into the Quarry Entrance

4.3.2. Bund/Embankments

A 5m soil acoustic bund will be constructed around the perimeter of the quarry extension extraction area. This bund will assist in reducing potential noise impacts on nearby dwellings/receptors. This bund will be progressively constructed with overburden over the seven quarry extension project stages.

To date the bund construction has not been built.

4.3.3. Mobile Equipment

All mobile equipment is turned off when not in use.

4.4. Operational Noise Impact Assessment Criteria

Schedule 3, condition 10 of the Project Approval depicts the operation noise limits of the Project. These are replicated in **Table 9** below.

Table 9: Operational Noise Impact Assessment Criteria

Receiver Location	Day	Evening	Morning Shoulder

	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{A1(1min)}$
B	37	35	37	47
C	37		38	
D	38		40	
G	36		38	
R	36		38	
All other privately – owned land	35		35	

Project generated noise will be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy.* Should the Proponent have an agreement with a land owner to exceed the acceptable criteria outlined in **Table 8,** the Department must be notified. The Company has no such arrangements with adjacent land owners.

The location of noise sensitive receptors is depicted as per **Figure 5** below.

4.5. Operating Conditions

Schedule 3, condition 11 of the Project Approval stipulates the operating conditions in relation to noise management for the Project. Detailed assessment of the operating condition compliance during the reporting period is shown in **Table 9** below.

Table 10: Compliance with Schedule 3, Condition 11

Condition	Compliance
a. Implement best management practice to minimise the construction, operational and road noise of the project	Heavy vehicle speed and mobile equipment are mitigated and managed. Additionally noise/acoustic bund (progressive) construction will reduce the dispersion of noise to sensitive receptors.
b. Regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this approval.	Noise monitoring will be conducted when operational equipment commences work on site. Annual quantification of intrusive noise emissions will be undertaken after all components of the project are operating.
c. Maintain the effectiveness if noise suppression equipment on plant and equipment on site:	Where reasonable and feasible noise suppression equipment is applied to the plant and equipment on site
d. Minimise the noise impacts of the project during meteorological conditions under which the noise criteria in this approval do not apply.	Noise criteria in **Table 8** does not apply during periods of rain or hail or when wind speeds are greater than 3 m/s (measured 10m above ground level). During these times operations may reduce or redirect to lessen the impact on sensitive receptors.
e. Ensure that the applicable	Earth bunds have not been constructed yet as

	acoustic bunds are constructed prior to the commencement of quarrying operations within any relevant stage of the project.	there has been no expansion into the expanded extraction area. Acoustic bunds will be constructed prior to the commencement of quarrying operations within any relevant stage of the project.
f.	*Carry out regular noise monitoring to determine whether the project is complying with the relevant conditions of this approval.*	Noise monitoring has not occurred yet as; - Operations equipment has not commenced on site - All components of the project are not operating.

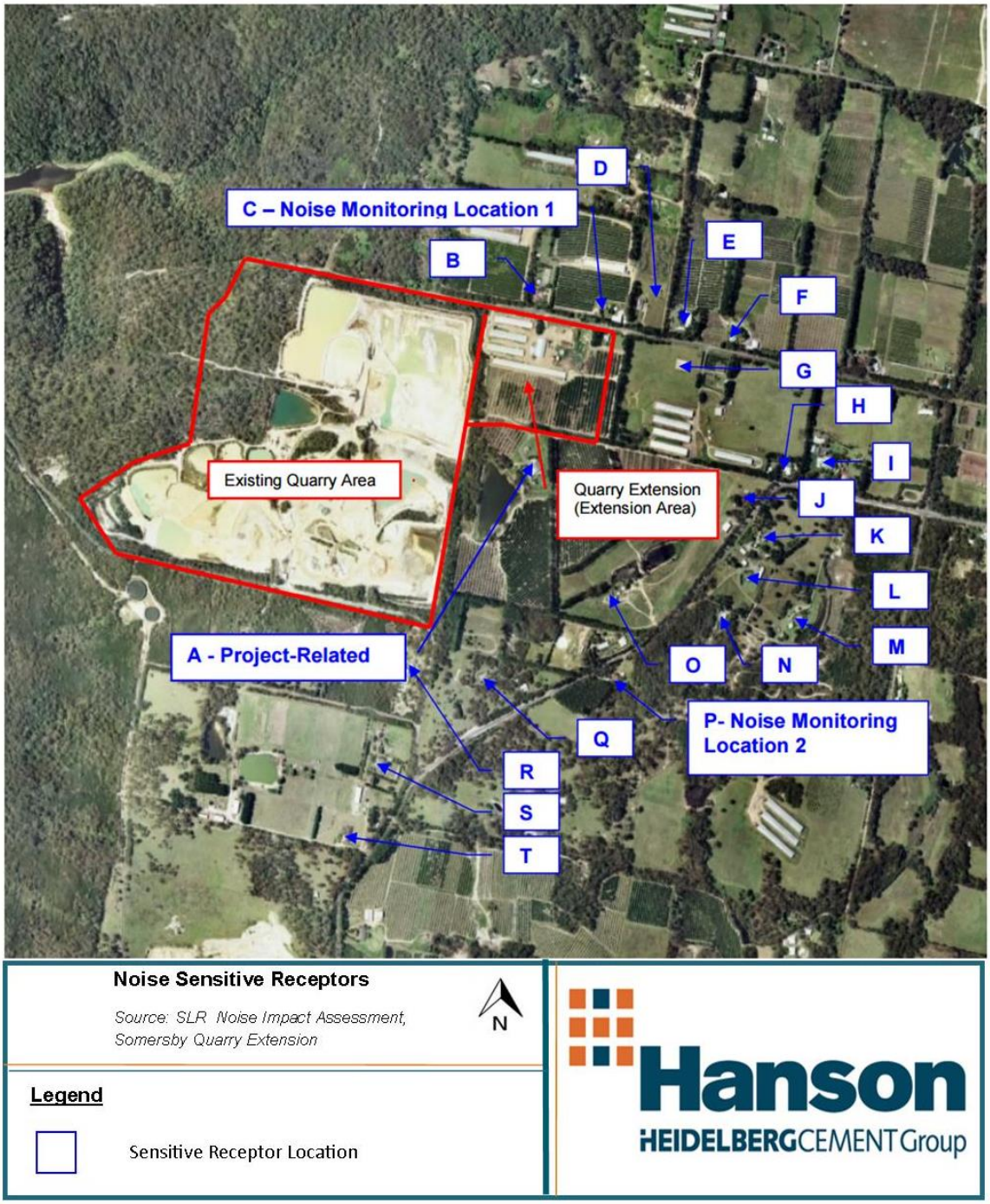


Figure 7: Noise Sensitive Receptors

4.6. Noise Management Plan

The Proponent commissioned SLR consulting to prepare a Noise Management Plan for the Project. This management plan adheres to the requirements outlined in schedule 3, condition 12 of the Project Approval. Specifically the Noise Management Plan addresses the following;

The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:

a. be prepared in consultation with the EPA, and be submitted to the Secretary for approval prior to undertaking quarrying operations in the Quarry Extension Area or by November 2014, whichever is the sooner;
b. describe the measures that would be implemented to ensure:
   - *compliance with the relevant conditions of this approval;*
   - *best management practice is being employed;*
   - *the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply;*
c. describe the proposed noise management system;
d. include a monitoring program that:
   - *uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;*
   - *evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures;*
   - *defines what constitutes a noise incident at the project, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.*

The site's Noise Management Plan complies with the requirements outlined above and has been submitted to the Department of Planning and Environment.

4.7. Noise Monitoring

Noise monitoring will be approached in accordance with environmental noise monitoring as outlined in **Table 9**. As shown in **Table 9**, noise monitoring is required at each development stage. The project has not progressed to stage one during the reporting period and hence the Proponent has not undergone noise monitoring assessments during the reporting period.

Noise monitoring will be conducted as outlined in the site's noise management program and will be reported upon in the corresponding reporting period.

4.8. Noise Management Non-Conformances

There were no noise complaints during the reporting period.

5. Air Quality Management

5.1. Overview

Over the reporting period the Proponent has prepared an Air Quality Management Plan for the project. To adhere to the requirements of this plan, the proponent collects deposited dust monthly data from two dust deposition gauges on site. During the next reporting period, the proponent aims to install a DustTrak monitor on site to collect real time PM_{10} readings.

5.2. Project Approval Requirements

5.2.1. Air Quality Impact Assessment Criteria

Air quality is managed in accordance with the assessment criteria outlined in Schedule 3, condition 13 of the Project Approval. This criterion is prescribed by the NSW EPA in *Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2005)* and applies to residents on privately-owned land. This criterion has been reproduced in **Tables 11-14** below.

Table 11: Long Term Criteria for Particulate Matter

Pollutant	Averaging Period	Criterion
Total suspended particulates (TSP) matter	Annual	90 ug/m^3
Particulate matter <10um (PM10)	Annual	30 ug/m^3

Table 12: Short-term Criteria for Particulate Matter

Pollutant	Averaging Period	Criterion
Particulate matter <10 um (PM_{10})	24 hour	50 ug/m^3

Table 13: Long Term Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum Increase in deposited dust level	Maximum total deposited dust level
Deposited Dust	Annual	2 g/m^2/month	4 g/m^2/month

Table 14: Impact Criteria for Crystalline Silica

Pollutant	Averaging Period	Criterion
Chronic Reference Exposure Level (REL) (PM_4)	Annual	3 ug/m^3

5.3. Air Quality Management Plan

The Proponent commissioned SLR Consulting to prepare an Air Quality Management Plan for the project to the satisfaction of the Secretary. The site Air Quality Management Plan has identified several areas that have the potential to generate dust;

- Vegetation removal and mulching/chipping;
- Topsoil and subsoil removal and stockpiling;
- Use of excavator to extract and load recoverable sand to haulage trucks;
- Haulage of material on internal roads to processing plant;
- Dumping of material into the trammel hopper;
- Processing of material;
- Loading stockpiles with product;
- Loading trucks with product; and
- Haulage of product offsite.

The locations of the closest sensitive receptors are identified in **Table 15**. The location of these receptors relative to the site is shown in **Figure 8**.

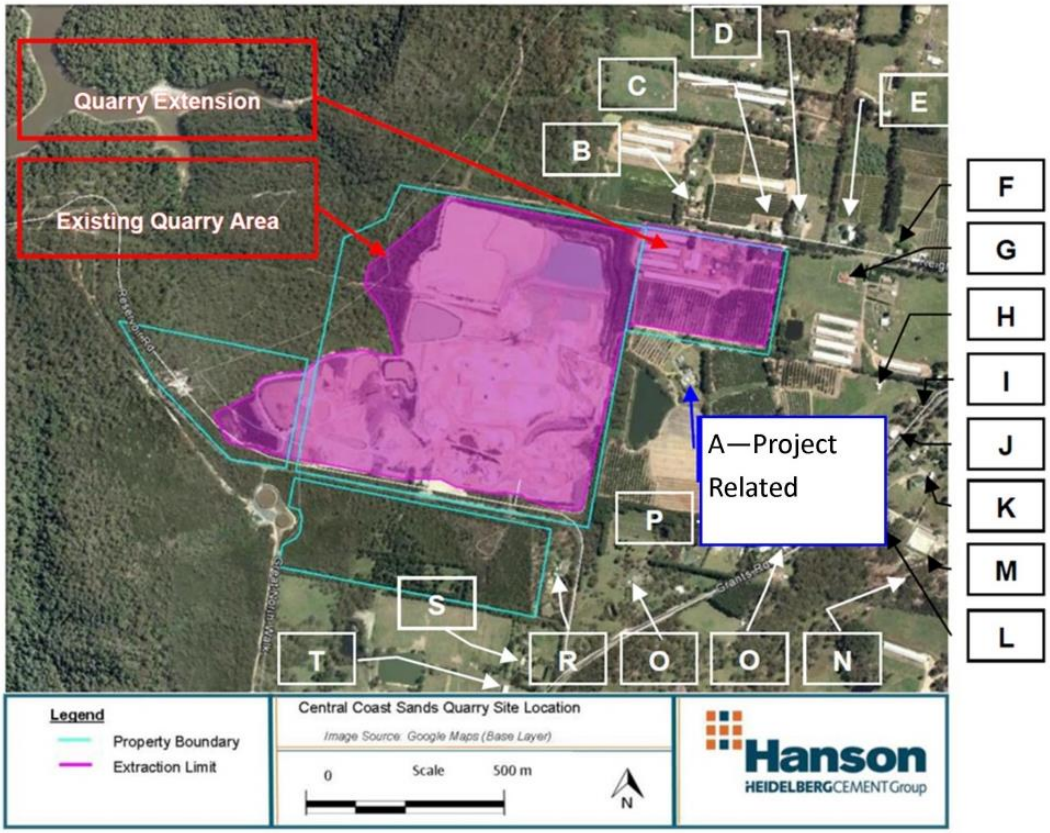


Figure 8: Air Quality Sensitive Receptors

Table 15: Air Quality Sensitive Receptors

Residence Number	Easting MGA (m)	Northing (MGA (m)
B	337,476	6,416,561
C	337,641	6,416,533
D	337,730	6,416,520
E	337,851	6,416,487
F	339,774	6,305,568
G	339,652	6,305,507
H	339,908	6,305,290
I	339,988	6,305,293
J	339, 805	6,305,226
K	339, 860	6,305,137
L	339, 822	6,305,045
M	339, 940	6,304,957
N	339, 766	6,304,967
O	339, 483	6,304,994
P	339, 501	6,304,821
Q	339, 194	6,304,818
R	339, 015	6,304,836
S	339, 993	6,304,621
T	338, 863	6,304,466

5.4. Air Quality Monitoring Program

The Project's Air Quality Monitoring Program measures air quality at representative locations in the vicinity of the quarry. This data will be collected and used to determine the impact of the Project and its operations on the surrounding air environment and compliance with Project Approval Conditions.

The Air Quality Monitoring Program when fully implemented for the quarry extension operations will monitor dust deposition, particulate matter (PM_{10}), crystalline silica and meteorological conditions.

5.4.1. Dust Deposition Monitoring

The Project's Air Quality Monitoring Program outlines the requirement to install two (2) Dust Deposition Gauges (DDGs) to record dust fallout. One of these DDGs is proposed to be located on the south-eastern corner and one at the far north-eastern Project boundary.

The site has two established Dust Deposition gauges located on the south eastern area of the quarry and the eastern boundary of the quarry. It is deemed this these are acceptable to monitor dust exiting the site and contributing to potential exceedances at sensitive receptors. The quarry actively monitors air quality results from these gauges and should exceedances in these DDG's occur unsubstantiated by climatic patterns, the Proponent will investigate relocating the projects DDGs to representative sensitive receptor locations identified in the projects *Air Quality Management Plan*.

5.4.2. Particulate Monitoring

A DustTrak Aerosol Monitor will be installed on site to continuously measure PM_{10} and calculate TSP adjacent to DDG1. Data gathered for the DustTrak monitor will be used to obtain the effectiveness of dust suppression controls.

5.4.3. Meteorological Monitoring

It was recommended in the site's Air Quality Monitoring Program that an on-site Automatic Weather Station (AWS) be installed near the office on accordance with AS 3580.14:2011. Whilst the installation of an AWS will assist in gathering site specific representative data, there are two AWS in proximity to the site (Mangrove Mountain AWS 61375 and Norah Head AWS 61366). Mangrove Mountain is 10km from the site and Norah Head is 28km from the site. The Proponent assessed environmental benefits obtained by installing an AWS on site, and the costs associated with initial purchase output and ongoing maintenance of the equipment. The Proponent made the decision to use the meteorological data from the Mangrove Mountain AWS and supplement with site DDG and DustTrak data where appropriate.

It is believed that the aforementioned outlined approach, satisfies Schedule 3, Condition 16 in such that the proponent has ensured there is a suitable meteorological station operating in the vicinity of CCSQ, and that it complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in NSW* guideline.

5.5 Dust Management Controls

5.5.1 Site Specific Mitigation Measures

The following Best Available Techniques for dust control are implemented on site:

- Visual inspection of trucks prior to existing site onto Reservoir Road.
- Ensuring engine exhausts from all heavy vehicles are not directed onto stockpile or road surfaces.
- Reducing/ceasing operating during times of heavy winds.
- Practising thorough truck washing, especially washing of tyres to reduce/prevent the spread of dust onto regional sealed roadways.

- Covering loads as required, especially of dusty material transported by road in open-topped trucks.
- Ensure that vehicle and equipment maintenance area, and fuel/chemical storage areas are appropriately bunded to capture any spills or leaks and spill kits appropriately located and maintained around the site. The timely clean-up of spills and leaks will ensure off-site air quality impacts (i.e. odour) are not dispersed.
- Variable speed drives provided on electric motors.
- Timer switches on electrical appliances across the site.
- Sensor lights installed to reduce energy use.
- Driver Code of Practice informing all drivers of dust suppression measures (e.g. compliance with site vehicle speed restrictions etc).
- Employing watering at a rate of 2 litres/m^2/application to all internal haul roads.
- Periodic water application to other exposed areas.
- Minimising exposed areas to the maximum extent possible.
- Progressive rehabilitation / stabilisation of available areas of disturbance.
- Installation of appropriately sized, high efficiency motors to be used on pumps and equipment.

5.5.2 Daily Site Inspections

Daily environmental inspections are conducted at Central Coast Sands Quarry. Inspections include but are not limited to:

- Visual inspection of airborne dust.
- Ensure roads leaving the site are free of soil/sand, and prevention of soil/sand tracking onto the road network.
- Inspection of the erosion and sediment controls.
- Inspection of the waste storage areas.
- Inspection of any rehabilitated areas (where relevant).
- Ensure all hazardous goods, including fuel and oil, are adequately stored or bunded.
- Ensure spill kits are appropriately located and stocked.

5.6 Contingency Plan

A dust event will be identified based on the below criteria:

- Visible fugitive emissions on the site; and/or
- Dust complaint from adjacent neighbours; and/or
- Exceedance in compliance criteria.

In the event of a measured exceedance, complaint or visually measured exceedance, the following actions will be undertaken;

- The situation will be investigated to determine possible emission sources including investigation into the prevailing wind conditions experienced at the time of the complaint to identify the possible source of the dust emissions;
- Where the source is identified at the Project Site, additional controls will be implemented or operational activities altered if required until a favourable outcome can be achieved.
- The Environmental Coordinator or the appropriate person for the Project Site should be informed of any corrective action taken or complaint received;
- A record of the incident, actions and sign-off by an authorised person will be recorded in a log book;
- The Environmental Coordinator shall notify the Director-General and any other relevant agencies as soon as practicable, after becoming aware of the incident (taking into account relevant averaging periods for the relevant air quality criteria); and,
- Within 7 days of the incident, Hanson will provide the Director-General and any relevant agencies with a detailed report of the incident.

Where a significant pollution incident occurs which may have an impact on air quality, reference will also be made to the "*Central Coast Sand Quarry Pollution Incident Response Management Plan"* (PIRMP) for procedures relating to reporting and management of pollution incidents.

5.5. Deposited Dust

Deposited Dust

The site has two dust deposition gauges described as "rebab" and "high wall". Central Coast Sands Quarry measures insoluble solids on a monthly sampling basis. There were two exceedances of the maximum increase in deposited dust level over the reporting period. Details of these exceedances is explained in **Table 16** below.

Table 16: Air Quality Exceedances

Gauge	Sampling Period	Insoluble Solids $g/m^2/month$	Explanation
High Wall	15/12/14 – 16/01/15	5.8	Dust gauge fallen over sand.
Rehabilitation	15/10/14 – 14/11/14	7.6	Insects and algae in gauge.

PM_{10}, PM_4, TSP

The site does not currently collect PM_{10}, PM_4 or TSP data at the site. Over the next reporting period, the proponent aims to implement a DustTrak air sampler, to continuously record PM_{10} particulate matter.

6. Traffic Management

Schedule 3, Conditions 17 – 21 of the Project Approval stipulate conditions regarding the monitoring of product transport, operating conditions, Grants Road maintenance, and the requirement to prepare a Traffic Management Plan.

During the reporting period, the Proponent commissioned Intersect Traffic to prepare a Traffic Management Plan for the site to satisfy the requirements of Schedule 3, Condition 21 – *Traffic Management Plan* – of the Project Approval. Intersect Traffic also organised with Grants Road Sand Quarry to conduct a road condition assessment and road maintenance contributions study of Grants Road. The Project's Traffic Management Plan and assessment were finalised during the reporting period and are implemented on site to identify and manage project generated traffic impacts.

6.1. Traffic Management Plan

The Traffic Management Plan for the aims to:

- Encourage compliance and acceptance of the Truck Driver Code of Practice by all heavy vehicle drivers using the quarry;
- Minimise impacts on the community;
- Foster an understanding and awareness within the company of community expectations and legislative requirements;
- Protect and enhance public safety through compliance with relevant road rules; and
- Increase OH&S understanding in relation to fatigue, vehicle operation in public areas and obligation to the general public.

The objectives outlined in the Traffic Management Plan have been used in the reporting period (1 August 2014 – 31 March 2015) to appropriately manage project traffic and minimise its effect on the surrounding amenity and community.

6.2 Traffic Management Controls

6.2.1 General Requirements

Heavy vehicle drivers hauling from Central Coast Sands Quarry must:

1. Have undertaken a Site Induction carried out by an approved member of the quarry staff or suitably qualified person under the direction of the quarry management;
2. Hold a valid driver's licence for the class of vehicle that you operate;
3. Operate the vehicle in a safe manner within and external to the quarry site; and
4. Comply with the direction of authorised site personnel when within the site.

6.2.2 Heavy Vehicle Speed

Vehicular speeding is a serious offence which Hanson takes very seriously internally, and also in conjunction with the policy developed by the RMS. Increased speed means not only an increased risk of crashing but also increased severity if a crash occurs.

Drivers and truck operators are made aware of the "Three Strikes Scheme" introduced by the RMS which applies to all vehicles over 4.5 tonnes. When a heavy vehicle is detected travelling at 15 km/h or more over the posted or relevant heavy vehicle speed limit by a mobile Police unit or fixed speed camera, the RMS will record a strike against that vehicle. If three strikes are recorded within a three year period, the RMS will act to suspend the registration of that vehicle (up to three months).

The speed limit within the quarry site is 20 km/h which is to be strictly maintained.

The Central Sands Quarry Truck Driver Code of Conduct states:

Drivers are to observe the posted speed limits, with speed adjusted appropriately to suit the road environment and prevailing weather conditions, to comply with the Australian Road Rules. The vehicle speed must be appropriate to ensure the safe movements of the vehicle based on the vehicle configuration.

6.2.3 Heavy Vehicles Driver Fatigue

Fatigue is one of the biggest causes of crashes for heavy vehicle drivers. The Heavy Vehicle Driver Fatigue Reform was therefore developed by the National Transport Commission (NTC) and approved by Ministers from all States and Territories in February 2007.

The heavy vehicle driver fatigue law commenced in NSW on 28 September 2008 and applies to trucks and truck combinations over 12 tonne GVM (however there are Ministerial Exemption Notices that can apply).

Under the law, industry has the choice of operating under three fatigue management schemes:

i) Standard Hours of Operation
ii) Basic Fatigue Management (BFM)
iii) Advanced Fatigue Management (AFM)

The Central Sands Quarry Truck Driver Code of Conduct states:

All heavy vehicle drivers operating out of the Central Coast Sands Quarry are to be aware of their adopted fatigue management scheme and operate within its requirements.

6.2.4 Heavy Vehicle Compression Braking

Compression braking by heavy vehicles is a source of irritation to the community generating many complaints especially at night when many residents are especially sensitive to noise.

In some instances compression braking is required for safety reasons however when passing through or adjacent to residential areas or isolated farmsteads a reduction in the speed of the vehicle is recommended to reduce the instances and severity of compression braking.

Due to the relative proximity to homes in Grants Road drivers are requested to limit the noise created in this area as much as possible.

The Central Sands Quarry Truck Driver Code of Conduct states:

All heavy vehicle drivers operating out of the Central Coast Sands quarry are to ensure brakes are applied so as not to create excessive noise that could disturb local residents where possible. Compression braking along Grants Road is only to be used if required for safety reasons.

6.2.5 Heavy Vehicle Noise

The operating hours for transportation of material off-site are outlined in **Table 16** below;

Table 17: Duplication of Table 5 - Standard Operating Hours

Activity	Day	Time
Transportation off-site	Monday – Friday (except Public Holidays)	6am – 4pm
	Saturdays	6am – 2pm
	Sundays and Public Holidays	No activities

The following activities may be carried out on site outside these hours of operation;

1. Delivery or dispatch of materials as requested by Police or other authorities; and
2. Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

At commencement of the working day it is not unusual for drivers to arrive early and wait for opening. If this occurs drivers are to wait with engines off.

The Central Sands Quarry Truck Driver Code of Conduct states:

To reduce the impact of vehicle noise at commencement of the working day heavy vehicles waiting for the quarry to open are to wait with engines off when possible.

6.2.6 Load Covering

Loose material on the road surface has the potential to cause road crashes and vehicle damage.

The Central Sands Quarry Truck Driver Code of Conduct states:

All trucks arriving at or departing from the Central Coast Sands Quarry whether loaded with material or not are required to have an effective cover over their load for the duration of the trip. The load cover may be removed upon arrival at the delivery site.

All care is to be taken to ensure that all loose debris from the vehicle body and wheels is removed prior to leaving the site.

Drivers must ensure that following tipping that the tailgate is locked before leaving the site.

Quarry management is to monitor loose material on the side of the haulage route from quarry operations and take appropriate action (removal or suppression) regularly.

6.2.7 Vehicle Departure and Arrival

Heavy Vehicles travelling in close proximity on single lane public roads can be of concern to light vehicle drivers as well as increasing noise through or adjacent to residential areas. To alleviate public concern and increase road safety, heavy vehicles leaving the Quarry should be separated by a minimum five minute interval.

It is difficult to schedule arrivals to the Quarry (except at the commencement of work for the day) due to the different directions of approach from external jobs and the varying job completion times, however, when a driver becomes aware, through visual contact or two-way contact between trucks, that they will arrive at approximately the same time then they are to ensure that there is a suitable gap between vehicles.

The Central Sands Quarry Truck Driver Code of Conduct states:

To alleviate public concern and increase road safety heavy vehicles leaving the Central Coast Sands Quarry should be separated by a minimum five minute interval.

6.2.8 Breakdowns and Incidents

In the case of a breakdown the vehicle must be towed to the nearest breakdown point as soon as possible. All breakdowns must be reported to the RMS Transport Management Centre (TMC) on 131700 and the vehicle protected in accordance with the Heavy Vehicle Drivers handbook.

To ensure that traffic impacts are minimised in the event of an incident, rapid response from the haulage company is required. In order to ensure rapid response to incidents drivers must contact the RMS TMC on 131700, their shift manager and Wagga Wagga Quarry Manager as soon as the stranded vehicle and load is safely secured.

If there is a product spill while loading/unloading or en route the driver must:

i) Immediately warn persons in the area who may be at risk;
ii) Inform their shift supervisor/owner. If this occurs on Grants Road or Reservoir Road or the vehicle is owned or contracted by Hanson Construction Materials Pty Limited the Wagga Wagga Quarry Manager must be immediately informed so that emergency services can be contacted and a clean-up initiated;
iii) All spills must be adequately cleaned up and waste disposed of in an acceptable and environmental manner;
iv) Put out warning triangles where it is safe to do so; and
v) Contact the NSW Police Service.

Figure 9: Reservoir Road Intersection

6.3 Traffic Incident Register

Table 18: Traffic Incident Register

Date	Incident Details
There have been no recorded traffic incidents during the reporting period.	

6.4 Code of Conduct Register

Quarry management has ensured the Truck Diver Code of Conduct register is signed by drivers regularly driving on site. This is kept on site and presented upon request.

6.5 Traffic Management Non-Conformances

There were no non-conformances in the reporting period.

7. Water Management

The Proponent commissioned SLR Global Environmental Solutions to complete a Surface Water Audit and Water Improvement Program (Schedule 3, condition 2) and a Water Management Plan (Schedule 3, Condition 7). This was undertaken and completed during the reporting period.

There has been concern regarding the project's water take and applicable water sharing licences during the reporting period. The water audit was undertaken to confirm whether the current surface water management practices comply with current surface water management documentation for the site and relevant licence conditions, as well as assessing the effectiveness of the current and proposed surface water management practices onsite. The Water Audit concluded that the surface water is currently managed appropriately in accordance with best practice and predominately meets the EPL performance requirements. Management initiatives will concentrate on pH improvement to reduce exceedances in pH discharges from the make-up dam over the next reporting period.

Over the next reporting period, the Proponent aims to secure the necessary Water Access Licences for the site and to improve management of water treatment to reduce pH exceedances where reasonable and feasible.

7.1 Compliance

7.1.1 Surface Water Audit and Water Management Improvement Program

A summary of improvement measures proposed for implementation on site are outlined in **Table 19** below.

Table 19: Water Management Improvement Measures

Water Management Improvement Measures	Schedule for Implementation
1. **Develop an appropriate method for correlation and achieve a suitable correlation between TSS and turbidity.**	No agreed date – subject to ongoing dialogue and suitable statistical relationship being achieved.
2. **Install an appropriate flow meter (e.g. electromagnetic or equivalent) to monitor the volume of water pumped between the sump and the make-up dam.**	Within 3 months of adoption of this water management improvement program.
3. **Prior to completion of the rehabilitation of the former tailings dam area, which now contains the retention dam system, wheel wash water and surface water runoff from operational areas should be diverted elsewhere.**	Prior to completion of Extraction Stage 5
4. **pH monitoring of the make-up dam will be undertaken on a daily basis.**	The proponent has actioned this June 2015.

As the Project has not commenced work for stage 1, the Proponent has not implemented measures one or two. The Proponent intends to install an appropriate flow meter to monitor volume of water pumped between the sump and the make-up dam, and increase the frequency of pH monitoring of the make-up dam. Additionally, the proponent aims to investigate point one,

especially, by initiating the dialogue to establish a suitable statistical relationship between TSS and turbidity.

7.1.2 Water Management Program

The Proponent has commissioned SLR Global Environmental Solutions to prepare a Water Management Program to satisfy Schedule 3, condition 7 of the Project Approval. The Water Management Plan provides a Site Water Balance, Surface Water Management Plan, Groundwater Management Plan and Surface and Ground Water Contingency Strategy. These will guide the management of surface and groundwater resources throughout the operational life of the quarry and ensure that the project adheres with the legislative requirements and guidelines relevant and applicable.

7.1.3 Current surface water discharge monitoring program

The site currently undertakes the following water monitoring initiatives in accordance with **Table 20** below. These initiatives have been undertaken during the reporting period.

Table 20: Current Surface Water Discharge Monitoring Program

Parameter	Frequency and Location	Monitoring Method
pH	Daily during discharges from LDP1 and/or LDP2	In-situ test and lab analysis of sample
Oil and Grease	Daily during discharges from LDP1 and/or LDP2	Visual inspection and lab analysis of sample
Total Suspended Solids (TSS)	Daily during discharges from LDP1 and/or LDP2	Lab analysis of sample
Turbidity	Daily during discharges from LDP1 and/or LDP2	In-situ test
Flows	Flows rates are estimated during discharge based upon the depth above pipe invert and hydraulic equations for the overflow pipe.	In-situ measurements

7.1.4 Contingency Strategy

During the reporting period, the Proponent has formalised an agreement with adjacent landholders with respect to potential impacts to supply water on adjacent properties. This agreement outlines a strategy in which Hanson should follow should water supply yield issues occur in adjacent landholder properties. This includes both mitigation and compensation measures.

7.1.5 Environmental Protection Licence

The Project is bound by the conditions stipulated in the sites Environmental Protection Licence (EPL) 3751. There are two licenced discharge points LDP1 and LDP2. The EPL requires monitoring to be undertaken in accordance with **Table 21** below;

Table 21: EPL Requirements

Pollutant	Units of Measure	100 percentile concentration limit	Frequency of monitoring
Oil and grease	mg/L	10 or mil visible	Daily during any discharges using a calibrated meter and weekly

			during any discharge by obtaining a sample for laboratory analysis
pH	pH units	6.5 – 8.5	Daily during any discharges by visual inspection weekly during any discharge by obtaining a sample for laboratory analysis
TSS	mg/L	50	Weekly during any discharge
Turbidity		Equivalent to 50 mg/L as per current approved TSS vs Turbidity correlation	Daily during any discharge

7.1.6 Reporting

The site surface Water Management Plan requests that the following monitoring data is summarised;

1. Climatic Data
2. Surface Water Discharge and Flow Monitoring Data
3. Groundwater Level Monitoring Data
4. Process Water Flow Monitoring

Climate Data

Climate data is presented from Mangrove Mountain All Weather Station. Latitude -33.29, Longitude: 151.21, Height, 305.0m. **Figure 8** below illustrates the daily minimum and maximum recorded temperatures over the reporting period. The highest recorded maximum temperature during the reporting period was 42.1 °C on Sunday 23 November 2014. The lowest recorded daily minimum temperature during the reporting period was 1.1°C which occurred on Sunday the 3rd March 2014 and Monday the 11th March 2014.

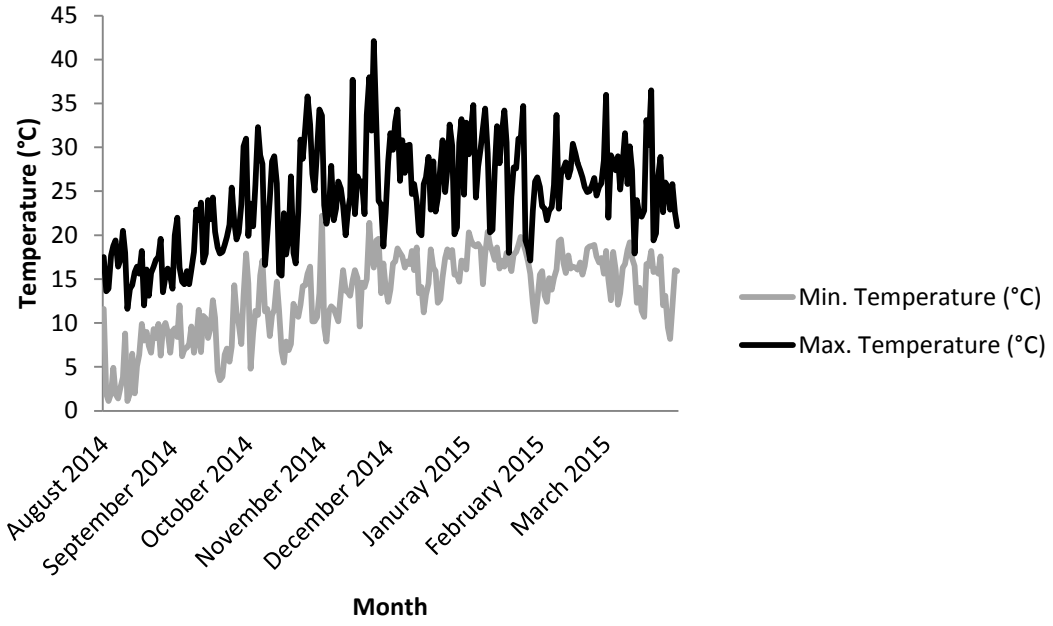
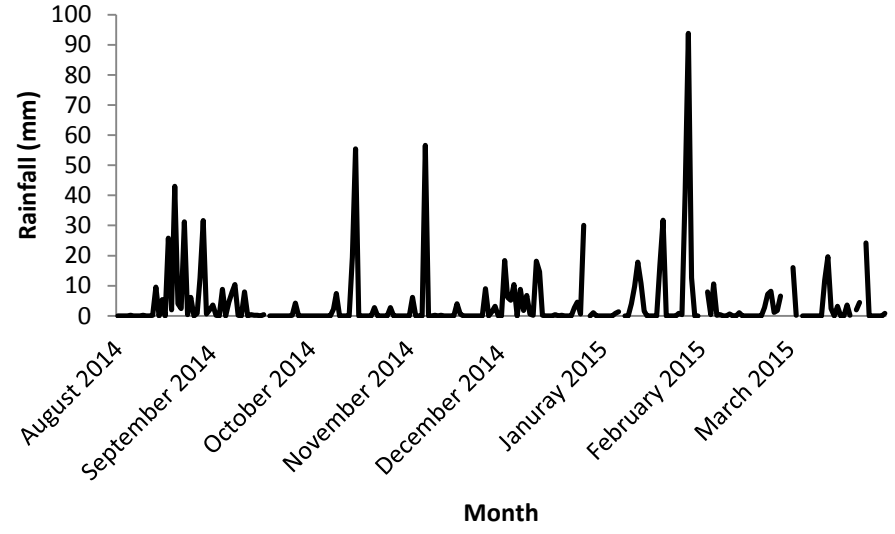


Figure 10: Minimum and Maximum Daily Temperature Readings

Figure 9 below illustrates the daily rainfall over the reporting period.



The highest recorded daily rain event occurred on Wednesday 28th January 2015 with 93.8mm of rain falling. January 2015 recorded the highest total monthly rainfall over the reporting period with 243.4 mm falling over the month.

Surface Water Discharge and Flow Monitoring Data

The water balance indicates that the annual discharge volumes (equivalent to the surplus onsite) will be;

- 800.4 ML/yr for the existing development;
- 919.7 ML/yr for the proposed development (includes extension area)

Monitoring discharge volumes is not an EPL requirement, and at the present Central Coast Sands estimates discharge flow rates based on head level, pipe diameter, pipe slope and appropriate pipe flow equations. The Proponent aims to install a flow monitor on the Pump Dam overflow pipe (LDP1) to more effectively estimate flow volumes and rates. The Proponent estimates that the Central Coast Sands Quarry will transition into this system during the next reporting period.

Ground Level Monitoring Data

Continuous groundwater level monitoring is currently undertaken at monitoring bores P3 BH03) and P4 (BH04) located within the proposed quarry extension site. Groundwater quality data is not deemed necessary and therefore groundwater quality testing was not conducted over the reporting period.

Figure 8 below illustrates the groundwater level (MBGL) for boreholes P3 and P4.

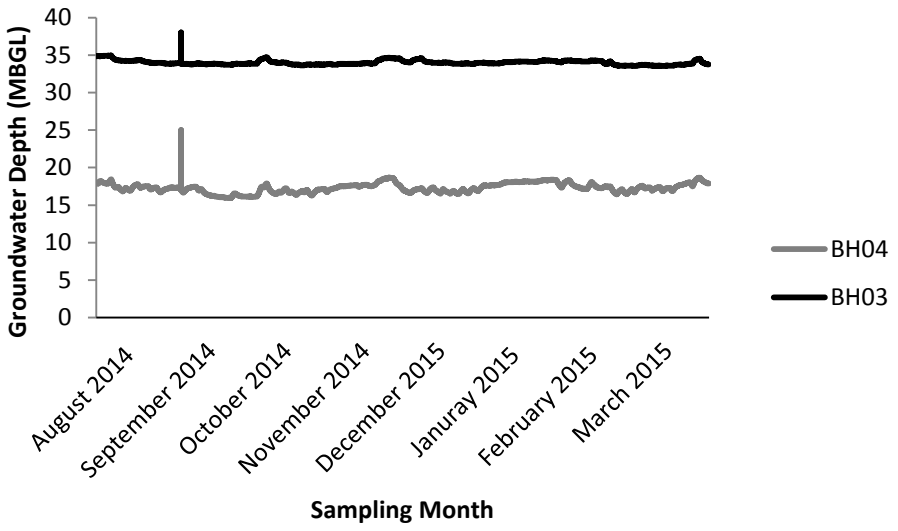


Figure 11: Groundwater Monitoring Bore Data

Data is collected hourly at both boreholes. The spike on the 14th September 2014 was measured during the removal of the logger to collect, record, and analyse the data. This measurement was removed from analysis as it is not a true measurement of water depth. Standard error was applied to the data to obtain whether the variation about the mean was statistically significant. The average water depth below ground level for the reporting period for BH04 = 17.29 ± 0.6, SE 0.008. The average water depth below ground level for the reporting

period for BH03 = 34.0 ± 0.29, SE0.004. The variation around the mean is statistically acceptable, representing a stable groundwater table. No further analysis is required.

Water Quality Monitoring
The Proponent samples water quality during discharge events. There are two licenced discharge points of stormwater overflow discharge to waters. The site only discharges water from one licenced discharge point and discharged water every month besides January and February over the reporting period.

Table 22: Water Quality Exceedances

Month	Pollutant and exceedance amount.	Details
August	pH: 9.18	1 discharge event which exceeded the acceptable pH criteria range of 6.5 – 8.5.
September	pH: - 8.74 - 8.52 - 6.46 - 6.35 - 6.42	11 discharge events during September. 5 events exceeded the pH criterion. Most exceedances were small, with the largest 0.24 units over the acceptable maximum pH of 8.5.
October	pH: 5.41	2 discharge events in October the first event was below the acceptable pH level of 6.5 – 8.5.
December	pH: 8.54	6 discharge events during December, of these one exceeded the acceptable criterion by 0.04 units.
March	pH: - 6.39 - 6.24	7 discharge events in which 2 samples fell below the acceptable pH range.

There were no exceedances in Total Suspended Solids or in oil and grease levels.

pH is also measured at the make-up dam daily from 22 April 2015 – 18 June 2015. There were four days where pH exceeded the acceptable criterion 6.5 – 8.5. The quarry measures pH to ensure compliance prior to discharging water from the EPL discharge point. It is important to note that these exceedances do not relate to water being discharged from the site, but that daily pH monitoring is conducted to obtain information on water quality and guide chemical pH treatments which are applied prior to discharge.

7.1.7 Incidents

Environmental incident notification details, protocols and reporting requirements are provided in the Site Pollution Incident Response Management Plan.

7.1.8 Complaints

Complaints are recorded and appropriate actions will be promptly formulated to respond to the complaint where required.

7.2 Non-Conformances

Over the reporting period there were 5 months where water quality did not meet the stipulated targets for all samples tested. Specifically pH values fell outside of the acceptable criterion of 6.5 – 8.6 as outlined in the sites EPL.

7.3 Works Proposed for the Next Reporting Period

Over the next reporting period, 1 April 2015 – 31 March 2016, the Proponent will aim to install a water flow meter to monitor discharge volumes and flow rate. Additionally, the Proponent will increase the frequency of pH monitoring in the make-up dam.

8. Flora and Fauna Management

8.1 Overview over the reporting period

The final hand over of the land title ownership of the extension area will occur during the next reporting period. It is the Proponents understanding that the current land owner of the quarry extension area has removed the chicken sheds from the extension area. This is illustrated by the red line in **Figure 4.**

The Proponent has not removed any vegetation in the quarry extension area during the reporting period.

The project has not encroached onto the Red-crowned toadlet potential habitat during the reporting period.

8.2 Project Approval Conditions

In accordance with Schedule 3, condition 22, the Proponent will undertake pre-clearance surveys prior to the clearance of any vegetation. The Proponent has not cleared any vegetation from the Quarry Extension Area during the reporting period and hence has not triggered the requirements under condition 22.

Schedule 3, Condition 23-25, the Proponent is required commission a suitably qualified expert, approved by the Secretary, to undertake targeted surveying for the Red-crowned Toadlet, submit a report to the Secretary and implement mitigation measures to minimise impacts on any identified populations of the Toadlet. This has not been triggered as expansion has not encroached onto the expansion area.

Schedule 3, Condition 28 of the Project Approval states that the proponent shall undertake additional studies on the high priority GDEs located within 1 km of the extraction operations. As the proponent has not initiated stage one by entering into the extraction area, this has not been actioned. It is proposed to action GDE monitoring and management once extraction begins in quarry extension area.

9. Activities Proposed for the Next Reporting Period

Surrender of Consent

The proponent will surrender the existing consent by the end of December 2015

Project Progression

The project is anticipated to transition into Stage 1.

Environmental Monitoring

Should the project transition to Stage 1, the Proponent will conduct attended noise monitoring. Should it be actioned, the proponent will conduct pre-clearance surveys of the Red-crowned Toadlet. It is additionally proposed to implement a DustTrak monitor on site to measure $PM_{10.}$ It is proposed to continue pH monitoring daily and further investigate installing a water flow meter to accurately quantify water usage.

10. Conclusion

Over the reporting period, the Proponent has endeavoured to implement best environmental practice for the ongoing management of Central Coast Sands Quarry. Noteworthy components of the project over the reporting period include preparation of a Noise Management Plan, Air Quality Management Plan, Water Management Plan, and Traffic Management Plan. Additionally the Proponent commissioned an independent contractor to conduct a Surface Water Audit and prepare a Water Management Improvement Program.

The Company will aim to continue sound environmental management initiatives to ensure the long term integration of the quarry within the local amenity.