Central Coast Sand Quarry

ANNUAL REVIEW

Hanson
HEIDELBERGCEMENT Group

March 2016

Executive Summary

Annual Review

Central Coast Sands Quarry

1. 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 1 April 2015 – 31 March 2016.

Air Quality Management

The Proponent manages air quality in accordance with the Project's Air Quality Management Plan, EPL requirements, and Project Approval Conditions. The Project has aimed to install a DustTrak monitor during this reporting period, as reported on in the previous Annual Return, however was unable to achieve this target as the Company's focus shifted to the installation of a fixed weather station on site.

The Project has also installed a fixed weather station on site as per the Air Quality Management Plan during the reporting period. This weather station provides real time readings for temperature, humidity, barometer, wind speed, wind direction, rain, heat index, wind chill and dew point.

The Proponent has two DDGs on site. Over the sampling period, there was one exceedance, at 12.8 g/m^2/mth. This exceedance was also above the maximum increase in deposited dust level. This exceedance was due to excavator use on the neighbouring properties which caused the DDG to fall over. This result is not a reflection of true air quality at CCS and hence is not considered a true exceedance.

The Proponent continues to operate in accordance with best practice air quality management and is progressively implementing the management initiatives outlined in the Project's Air Quality Management Plan.

Noise

The proponent manages noise emissions in accordance with the project's Noise Management Plan which has been prepared by SLR and the Project Approval Conditions. There have been little changes to the noise management plan initiatives since the previous reporting period. The project has not yet initiated extraction in the expansion area, and therefore the Proponent has not undertaken a noise monitoring assessment. This will be undertaken when the project triggers this requirement. It is unclear at this stage whether this will be in the next reporting period or subsequent reporting periods. The Project continues to operate in conjunction with the Central Coast Sands Quarry Noise Management Plan and best practice noise management.

There were no instances of noise related non-compliance.

Traffic

The Proponent is operating in accordance with the Traffic Management Plan as prepared by Intersect Traffic. The recommendations presented in the Traffic Management Plan are being progressively implemented and will be continuously assessed throughout the life of the project. The Project continues to operate as per the Project's Traffic Management Plan and the Company's strict transportation best operational practices.

There were no instances of traffic/transport related non-compliance.

Water

Groundwater and surface water is managed in accordance with the Project Water Management Plan (WMP), EPL requirements and the Project Approval Conditions.

The site has two groundwater loggers which sample water depth and temperature on a continuous hourly basis.

Surface water is sampled upon discharge. The parameters sampled are temperature, pH, total suspended solids, and oil and grease. There were 5 months that exceeded the pH criterion outlined in the WMP and EPL. The majority of these are minor exceedances, however to reduce pH exceedances, the Company has installed an automatic system of dosing water from the Make-up Dam.

The Proponent is still progressing with the acquisition of Water Access Licences but is yet to formally secure the licences.

Landscape and 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. However, this is expected to occur during the next reporting period.

A Landscape Management Plan was prepared in consultation with the OEH during the reporting period and has been progressively implemented on site.

The Proponent installed flagging tape to delineate remnant vegetation.

The site engaged a licenced surveyor to mark out the approved extraction limit.

Overall

Administrative Compliance

Whilst the Project has surrendered existing consents and has been operating under the Development Consent (MP 08_0173), Central Coast Sands Quarry is still in a transitional phase whereby management plans are in force and the Proponent is progressively implementing management practices outlined in respective documents. There are some instances where the Proponent is yet to implement all management initiatives outlined in the management plans for

varied reasons. However, overall the project exhibits sound environmental management and adequate environmental performance.

Additionally, there are several management initiatives or studies that are yet to be triggered.

Environmental Performance

Whilst there are events of exceedances in air and water management, these are considered to be low risk. 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. This will be achieved through sound environmental monitoring and on-site practices.

Document Control

Document Title	Environmental Management Annual Review – Central Coast Quarry		
Document Number			
Document Owner	Hanson Construction Materials Pty Ltd		
Revision	**Issue Date**	**Originator**	**Reviewed**
Draft	10.03.2016	P. Cox	A. Driver
Final	31.03.2015	P. Cox	A. Driver

Contents

Executive Summary

Air Quality Management 2
Noise 2
Traffic 3
Water 3
Landscape and Biodiversity 3
Overall 3
Administrative Compliance 3
Environmental Performance 4
List of Figures 9
List of Tables 9

Introduction

2.1 Document Purpose 12
2.2 Project/Site Description 13
2.3 Project Area 13
2.4 Project Summary 14
2.5 Consents and Licencing 15
2.6 Project Approval 15
2.7 Environmental Protection Licence (EPL) No. 3751 17
2.8 Legislative Framework 17
2.9 Environmental Management and Performance Criteria 18
2.9.1 Environmental Management Plans 18
2.10 Non-Compliance 23
2.10.1 Non-Compliance 23
2.11 Personnel Structure and Responsibilities 23
2.11.1 Company Personnel Structure and Responsibilities 23
2.11.2 Central Coast Sands Quarry Structure and Responsibilities 24

Development During the Reporting Period

3.1 During the reporting period (2015 – 2016) 27
3.2 Proposed for the next reporting period 29

Environmental Monitoring, Management and Performance

4.1 Noise Management 33
4.1.2 Relevant statutory requirements, limits or performance measures/criteria 33
4.1.3 Requirements of any plan or program required under this approval 35
4.1.3.1 Noise Management Plan 35
4.1.4 Monitoring results of the previous year 37
4.1.5 Relevant Predictions in the EA 37
4.1.5.1 Existing quarry operations plus the proposed quarry operations 37
4.1.5.2 Road Traffic 37
4.1.6 Non Conformance and Corrective Actions 37
4.1.7 Measures implemented over the current calendar year 37
4.2 Air Quality 39
4.2.2 Statutory Requirements 39
4.2.2.1 Project Approval Conditions 39
4.2.2.2 Air Quality Management Plan 40
4.2.3 Air Quality Monitoring Program 40
4.2.4 Monitoring results of previous years 41
4.2.5 Relevant Predictions in the EA 41
4.2.6 Non-Compliance 42
4.2.7 Measures implemented over the next reporting period 43
4.3 Traffic Management 45
4.3.1 Overview 45
4.3.2 Statutory Requirements 45
4.3.2.1 Project Approval Conditions 45
4.3.2.2 Traffic Management Plan 46
General Requirements 46
4.3.3 Monitoring Results of Previous Years 47
4.3.4 Relevant Prediction from the EA 48
4.3.6 Non- Compliance 48
4.3.6.1 Traffic Incident Register 48
4.3.6.2 Code of Conduct Register 49
4.3.6.3 Traffic Management Complaints 49
4.3.7 Measures implemented over the next reporting period 49
4.4 Water Management 50

4.4.1 Statutory Requirements....50
4.4.1.1 Environmental Protection Licence....50
4.4.1.2 Project Approval....50
4.4.1.3 Surface Water Audit and Water Management Improvement Program....51
4.4.1.4 Water Management Program....51
4.4.1.5 Current surface water discharge monitoring program....51
4.4.1.6 Reporting....52
4.4.2 Comparison with previous years reporting periods....56
4.4.3 Relevant predictions in the EA....56
4.4.4 Non-Conformances....57
4.4.5 Works Proposed for the Next Reporting Period....58
4.5 Landscape and Biodiversity....59
4.5.1 Overview over the reporting period....59
4.5.2 Statutory Requirements....61
Project Approval....61
Landscape and Rehabilitation Management Plan....61
Rehabilitation....65
4.5.3 Monitoring results of previous years....65
4.5.4 Predictions within the EA....66
4.5.5 Compliance....66
4.5.6 Measures proposed for the next reporting period....66
4.6 Performance....66
Conclusion

List of Figures

Figure 1: Central Coast Sands Site Location....13
Figure 2: Central Coast Sands Extraction Area....15
Figure 3: Hanson Management Structure....24
Figure 4: CCSQ Project Layout....27
Figure 5: Noise Sensitive Receptor Locations....36
Figure 6: Air Quality Sensitive Receptors....40
Figure 7: Reservoir Road Intersection....47
Figure 8: Minimum and Maximum Daily Temperature Readings....52
Figure 9: Rainfall Mangrove Mountain AWS....53
Figure 10: Groundwater Monitoring Bore Data....54
Figure 11: Flagging tape identifying the perimeter of remnant vegetation....59
Figure 12: Surveyed Extraction Limit....60
Figure 13: Environmental Management Signs....60
Figure 14: Photo Point....62
Figure 15: Photo Point A (photograph taken 7/4/2016)....63
Figure 16: Photo Point B (photograph taken 7/4/2016)....63
Figure 17: Photo Point C (i) (photograph taken 7/4/2016)....64
Figure 18: Photo Point C (ii) (photograph taken 7/4/2016)....64
Figure 19: Photo Point D (photograph taken 7/4/2016)....65

List of Tables

Table 1: Existing Quarry and Quarry Extension Area....13
Table 2: Major Project Components....15
Table 3: Legislative Framework....17
Table 4: Project Approval Conditions and Compliance....18
Table 5: Environmental Performance....20
Table 6: Roles and Responsibilities....24
Table 7: Environmental Monitoring....32
Table 8: Operational Noise Impact Assessment Criteria....33
Table 9: Operating Hours....34
Table 10: Compliance with Schedule 3, Condition 11....34
Table 11: Noise Management Plan (NMP) Requirements....35
Table 12: Noise Related Complaints....37
Table 13: Long Term Criteria for Particulate Matter....39
Table 14: Short-term Criteria for Particulate Matter....39
Table 15: Long Term Criteria for Deposited Dust....39
Table 16: Impact Criteria for Crystalline Silica....39
Table 17: AQMP requirements and status....41
Table 18: Air Quality Monitoring Results (2014 – 2016)....41
Table 19: Air Quality Exceedances....43
Table 20: Transportation Operating Hours....45

Table 21: Compliance with transportation monitoring 45
Table 22: Traffic Incident Register (2014 - 2016) 47
Table 23: Traffic Incident Register.....48
Table 24: EPL Requirements 50
Table 25: Project Approval Compliance 50
Table 26: Water Management Improvement Measures.....51
Table 27: Current Surface Water Discharge Monitoring Program.....52
Table 28: EPL Requirements 54
Table 29: Water Quality Exceedances 55
Table 30: Groundwater Depth Comparison.....56
Table 31: pH Comparison 56
Table 32: Project Approval.....61
Table 33: Landscape and Rehabilitation Management Plan Management Measures and Status 61

Introduction and Background Information

Annual Review

Central Coast Sands Quarry

2. 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 April 2015 – 31 March 2016.

2.1 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:

1 *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;*
2 *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;*
3 *identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;*
4 *identify any trends in the monitoring data over the life of the project;*
5 *identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and*
6 *describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.*

2.2 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.**

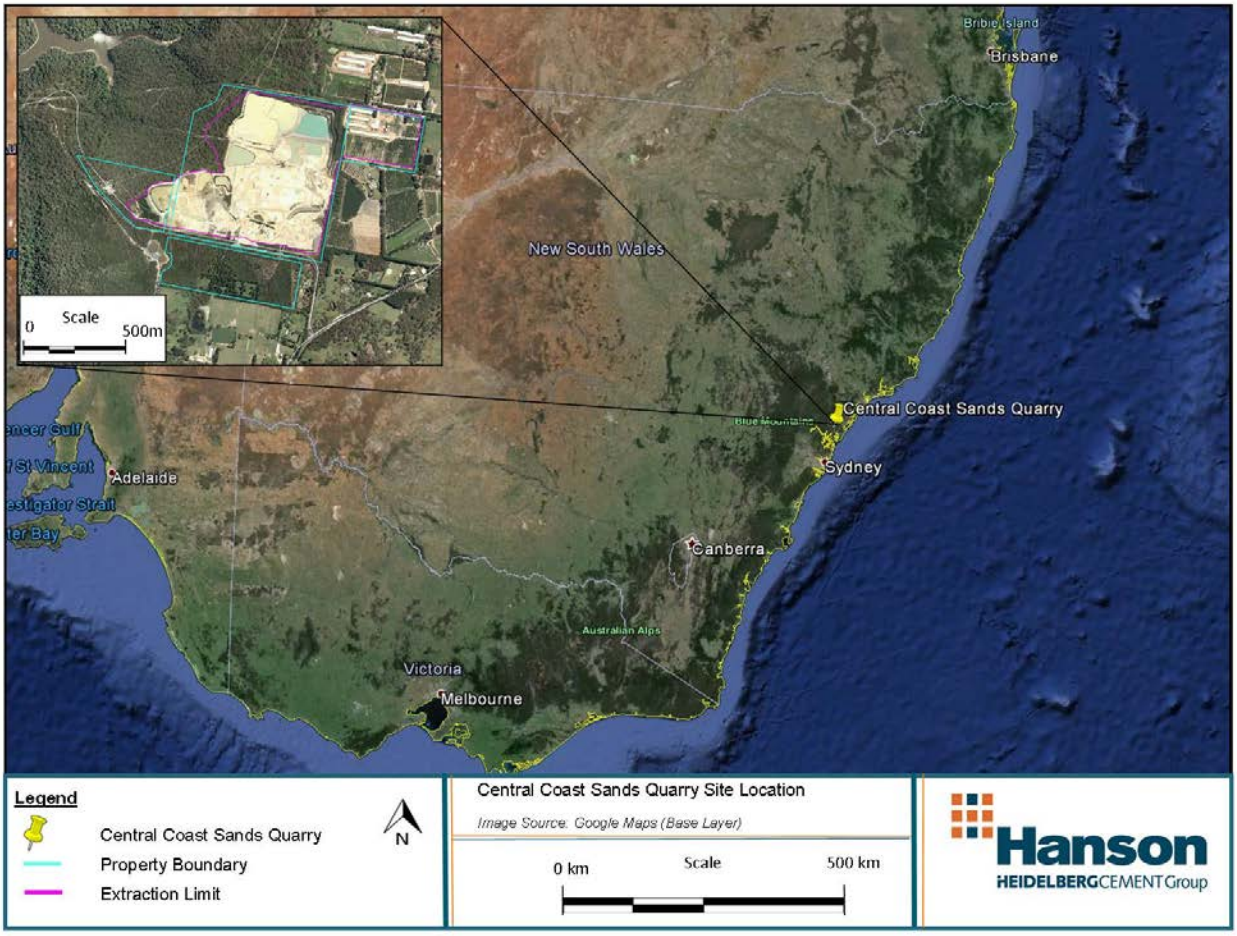

Figure 1: Central Coast Sands Site Location

2.3 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

2.4 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).

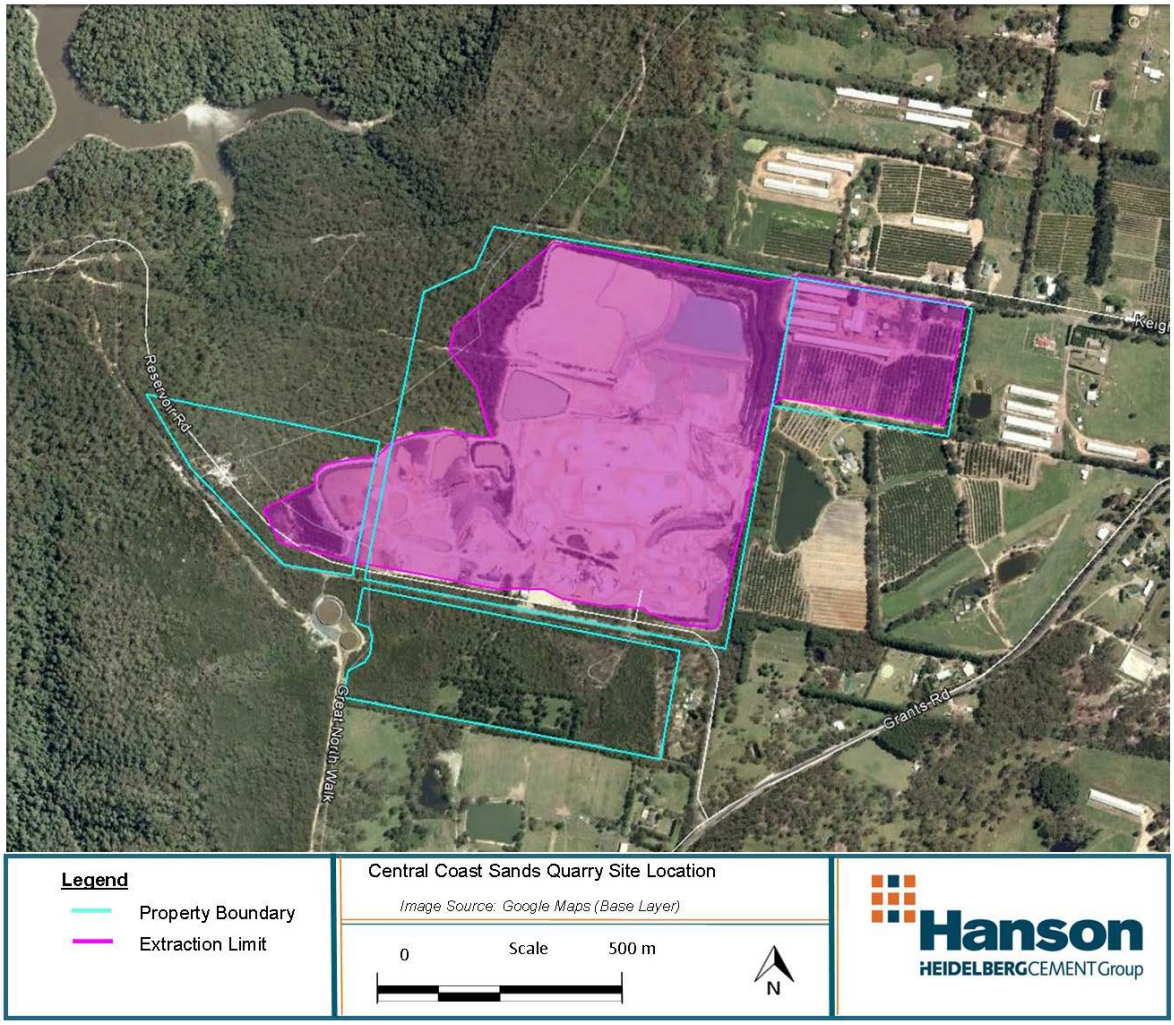

Figure 2: Central Coast Sands Extraction Area

2.5 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.

2.6 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 2**. 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

2.7 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.

2.8 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

2.9 Environmental Management and Performance Criteria

2.9.1 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 Toadlet	To be triggered	To be triggered
Landscape and Rehabilitation Management Plan	Completed	Yes
Environmental Management	Hanson Construction	Yes

System	Materials	
Independent Environmental Audit	Trevor Brown and Associates	Yes
Survey to mark out extraction boundary	Cahill and Cameron Surveyors	Yes

The following key environmental management and performance outcomes for the site are summarised in **Table 5** 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.

2.10 Non-Compliance

2.10.1 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.

2.11 Personnel Structure and Responsibilities

2.11.1 Company Personnel Structure and Responsibilities

The Hanson structure of environmental personnel and their roles/responsibilities is shown in **Figure 3**. 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.

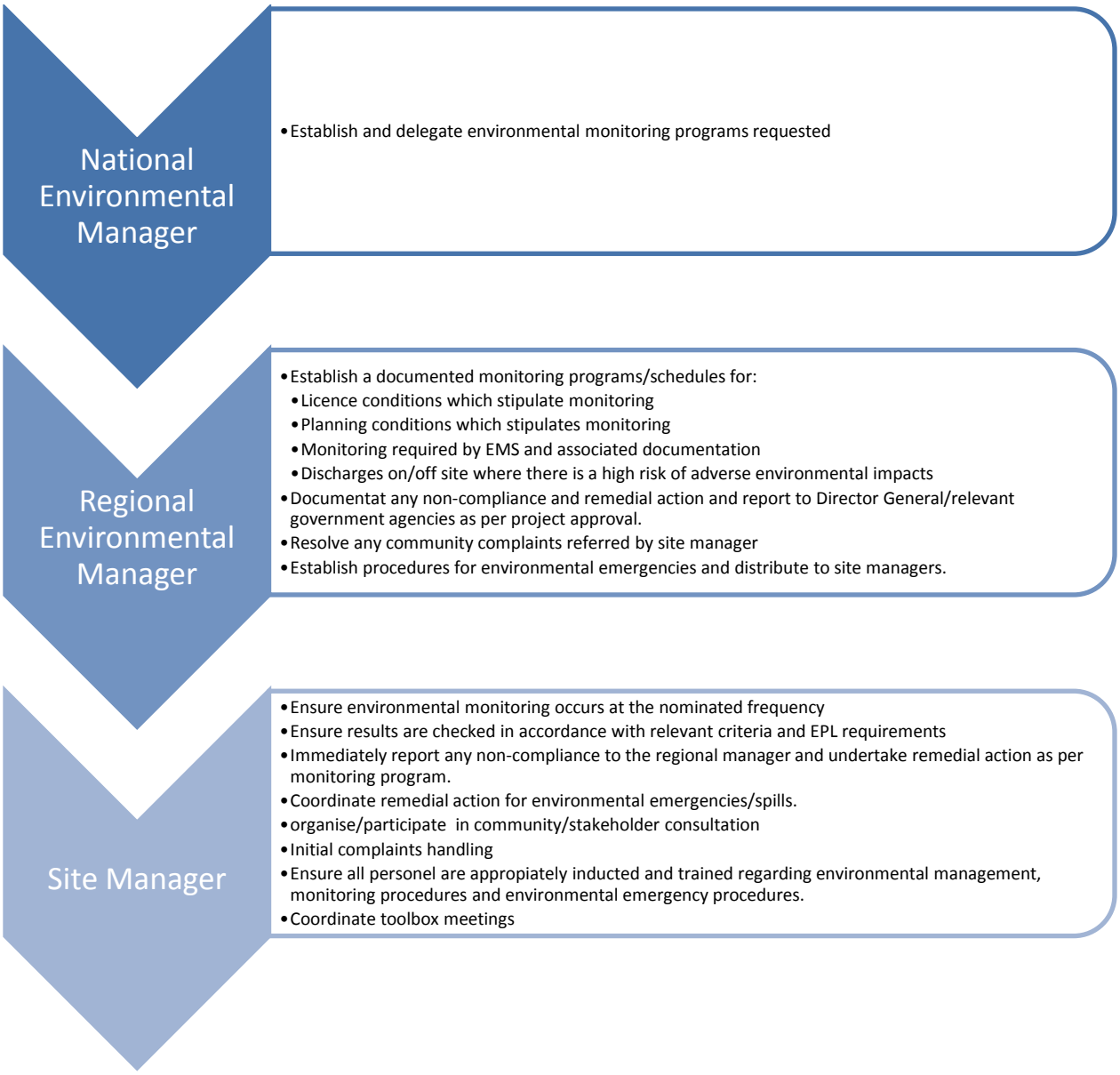

Figure 3: Hanson Management Structure

2.11.2 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.

Development during the Reporting Period

Annual Review

Central Coast Sands Quarry

3. Development

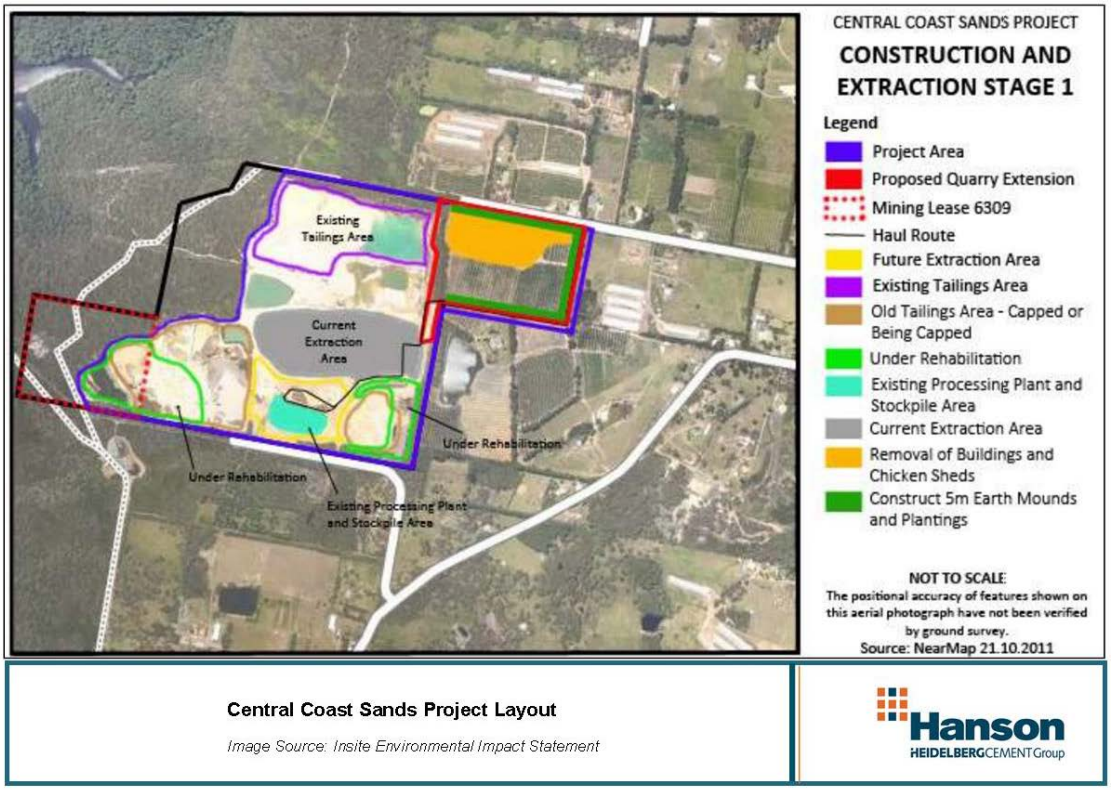

Figure 4: CCSQ Project Layout

3.1 During the reporting period (2015 – 2016)

3.1.1 Extraction

Central Coast Sands Quarry has continued the extraction within the approved extraction boundary. Approximately 213, 000 tonnes of material was sold during 1st April 2015 – 29th February 2016. Extraction of friable sandstone during the reporting period by methods of using mobile machinery to "rip" and "tear" deposited sandstone in the extraction area. No blasting is required or used at the Quarry.

3.1.2 Processing

Material is then transported by mobile machines to the sand processing plant where the material is processed and moved into stockpiles where it is stored on site for both internal and external sales by road registered trucks. The processed sand resource is primarily used for the manufacture of concrete for the construction industry. A small proportion of sand is used for other purposes, including landscaping and filling etc.

3.1.3 Demolition

The removal of buildings from the approved extraction area has commenced in the reporting period and is expected to be finalised during the next reporting period. Hanson has contracted an external company to handle the removal of asbestos in the demolition area.

3.1.4 Compliance

There has been no extraction in the approved extended extraction area. The Department of Planning and Environment conducted a compliance audit of CCSQ during the reporting period.

3.1.5 Water Management Systems

The tailings dams no longer in use have either been capped or begun the capping process. The existing tailings dam in the northern section of the quarry has been used throughout the reporting period and will continue to be utilised for the collection of tailings and control of recycled water from the processing plant.

3.1.6 Rehabilitation

During the reporting period the Proponent prepared a Landscape and Rehabilitation management plan to assist the project in setting and meeting sound rehabilitation objectives. The Management Plan included the recommendation to delineate vegetated areas, planting of endemic species, easement clearance, identification of remnant vegetation, and the establishment of a monitoring plan. The Proponent has begun to implement these recommendations on site.

Historically the site engaged a horticulturalist to plant endemic saplings in the;

- South western area of the site; and
- South eastern area of the site.

There are no areas of the quarry that have become terminal during the reporting period and therefore rehabilitation has not occurred in any additional sections of the quarry. Rehabilitation efforts have focused on weed management and maintenance of the existing rehabilitation areas.

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. These have not been altered during the reporting period.

Rehabilitation on site has been a progressive initiative, which has yielded pleasing results with a vegetative hierarchy colonising the area in some more established rehabilitation areas, and saplings taking successfully in other more newly established rehabilitation areas.

The site has commissioned Hunter Land Management (HLM) to conduct further rehabilitation works during the next reporting period. It is expected that this will involve continued weed removal, replacement plantings for damaged saplings and planting of new saplings. The results of these efforts will be reported on in the next reporting period.

Findings and Recommendations

Site assessment on the 7th March 2016 suggests that at the current time, the proponent is meeting the site's rehabilitation objectives, however it is recommended that a landscape consultant/horticulturalist conduct site visits to replace vegetation guards and replant saplings that have died as a result of climatic conditions, herbivory, or other sources. This has been commissioned in this reporting period, but the results will be presented in the next reporting period.

The site will report rehabilitation progress under the Landscape and Rehabilitation Management Plan requirements presented in Section 4 of this report.

3.2 Proposed for the next reporting period

3.2.1 Extraction

The extraction is expected to involve two components in the coming reporting period;

1. Continued extraction in the current pit: Central Coast Sands Quarry will continue to extract friable sandstone over the coming reporting period. Mobile machinery will be used to win friable sandstone and to transport it to the processing plant and thence to the stockpile yard for storage and sales.
2. Initiation of extraction in the expansion area: It is expected that that proponent will begin extraction in the expansion area in the coming reporting period. To enable the project will strip the top soil off the expansion area and stockpile this material for application in the perimeter bund. Following this, the proponent will extract friable sandstone within the expansion area.

3.2.2 Demolition

It is predicted that the demolition works in the expansion area will conclude in conjunction with relevant asbestos removal guidelines. Demolition works have been undertaken by the previous land holder. Hanson has engaged an asbestos consultant to conduct an asbestos inspection. This has been initiated during the current reporting period and will be concluded during the 2016 – 2017 reporting period.

3.2.3 Haul Road

It is expected that the haul road design will be finalised during the next reporting period with works commencing during the same period or the subsequent reporting period.

3.2.4 Bund Construction

Top soil removed from the extraction area will be used to construct a 5m high bund around the northern, eastern and western perimeters of the expansion area. It is expected that the bund design will commence during the next reporting period

3.2.5 GDE Assessment

The project will commission a suitably qualified expert to conduct an assessment of GDEs in the project area in accordance with Schedule 3, Condition 28 of the Project Approval.

3.2.6 Rehabilitation

It is proposed that a horticulturalist or suitable rehabilitation person remove weeds, replace saplings that have died due to herbivory or climatic conditions, remove tube protectors no longer required, and assess the remaining quality of vegetation.

Additional plantings are proposed around south western water treatment dams and on the south western area earmarked for rehabilitation. This area has been conditioned with mulch to ensure an adequate soil base is present for plantings.

3.2.7 Threatened Fauna Assessment

Under Schedule 3, Condition 22, the Proponent is required to;

> *"Prior to undertaking quarrying operations in the Quarry Extension Area, the Proponent shall commission suitably qualified expert/s, approved by the Secretary, to undertake targeted surveying for the Redcrowned Toadlet".*

The proponent will ensure this condition is met prior to undertaking quarrying operations in the extraction area. It is anticipated that this survey will be conducted in the next reporting period and the results reported to the Department within the same reporting period.

Results

Annual Review

Central Coast Sands Quarry

4. Environmental Management, Monitoring and Performance

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 Annual Groundwater Inflow Estimate	- **Oil:** 10 or nil visible mg/L - **pH**: 6.5-8.5 - **TSS**: 50 mg/L - **Turbidity:** 50 mg/L Provide design input to any required modifications to the process water monitoring programme as extraction stages progress.
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.
Rehabilitation	Yearly Visual encounter Pre-clearance as triggered	Photographs at established photo points. Feral pests Pre-clearance surveys for threatened species.

	Generally monthly as required	Bushfire – easements and boundaries
	Weekly	Dams – ensure sufficient remaining storage capacity.

4.1 Noise Management

4.1.1 Overview

There has been no compliance noise monitoring undertaken during the reporting period as the requirements of the Noise Monitoring Plan have not been triggered. The Project's has internally monitored noise emissions through an operator's observation during quarry operation or a noise complaint by adjacent neighbours. However there were no operational noise complaints during the reporting period and hence the Proponent has not adjusted operational practices. This is expected as the project has not commenced stage one and therefore noise emissions are expected to be similar to those modelled in the Noise Impact Assessment conducted for the EA.

The Annual Review in the last reporting period expected that operator attended noise monitoring may need to be conducted during the current reporting period, however, the proponent has still not triggered the requirement in the current Noise Management Plan to conduct operator attended noise monitoring surveys after all components of the project are operating. This will be reported upon in subsequent annual reviews as triggered.

4.1.2 Relevant statutory requirements, limits or performance measures/criteria

Schedule 3, condition 10 of the Project Approval states the operation noise limits of the Project. These are replicated in **Table 8** below.

Table 8: 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 9,** the Department must be notified. The Company has no such arrangements with adjacent land owners.

The noise measurement procedures employed throughout the monitoring program will be in accordance with the requirements of AS 1055 1997 “Acoustics - Description and Measurement of Environmental Noise” and the NSW EPA’s Industrial Noise Policy, 2000 (INP).

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 9**).

Table 9: 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.

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 10** below.

Table 10: Compliance with Schedule 3, Condition 11

Condition	Compliance
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. The construction of the bund is expected to occur during this 2016 – 2017 reporting period.
Regularly assess noise monitoring data and relocate,	Annual quantification of intrusive noise emissions will be

modify and/or stop operations on site to ensure compliance with the noise criteria in this approval.	undertaken after all components of the project are operating. Current noise exceedances are triggered from an operator's observation or complaint from adjoining neighbour. This has not occurred during this reporting period.
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. A complaint directed towards particular equipment will trigger investigation into suppression equipment.
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 9** 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.
Ensure that the applicable acoustic bunds are constructed prior to the commencement of quarrying operations within any relevant stage of the project.	Earth bunds have not been constructed during this reporting period. The construction of the bund is expected to occur during this 2016 – 2017 reporting period.
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. Current noise exceedances are triggered from an operator's observation or complaint from adjoining neighbour. This has not occurred during this reporting period.

4.1.3 Requirements of any plan or program required under this approval

4.1.3.1 Noise Management Plan

Exceedance Trigger: Identification of unacceptable noise impacts will be triggered by an operator's observation during quarry operation or a noise complaint from adjacent neighbours.

Follow up actions: 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.

Table 11: Noise Management Plan (NMP) Requirements

Monitoring Timing	Activity Monitored
Undertaken when operational equipment commences work on site	Noise emission level
Undertaken annually after all components of the project are operating	Quantification of intrusive noise emissions
Undertaken when a non-compliance is identified in item 2 above	Actions to be determined at the time of non-compliance and would be specific to the individual situation.

	May require unattended continuous noise logging.

The requirements from the NMP have not been triggered during this reporting period.

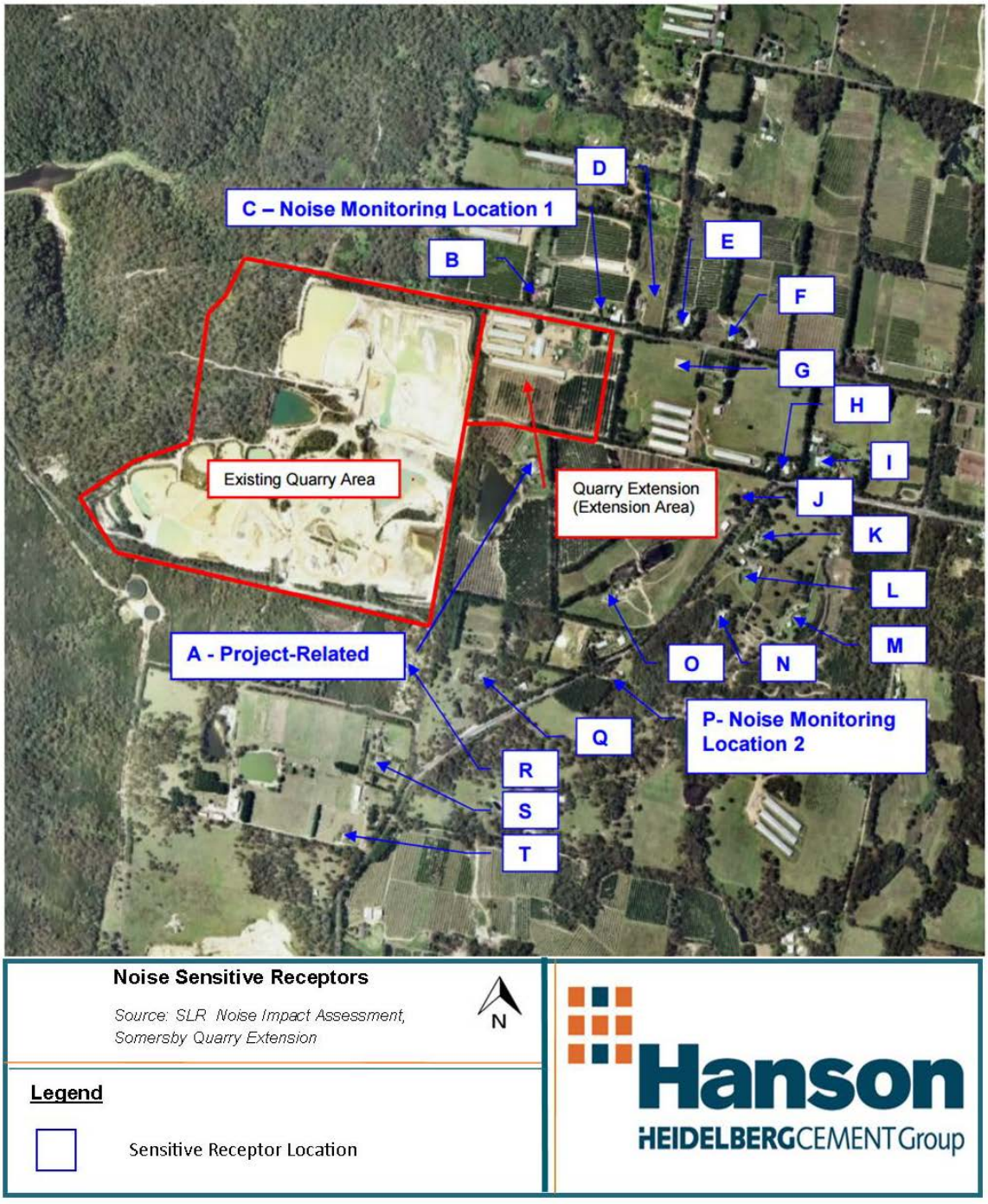

Figure 5: Noise Sensitive Receptor Locations

4.1.4 Monitoring results of the previous year

There has been no increase in complaints (internal and external) from previous years (**Table 13**).

Table 12: Noise Related Complaints

Previous Reporting Year	Internal complaints	External Complaints
2014 – 2015	Nil	Nil
2015 – 2016 (current)	Nil	Nil

4.1.5 Relevant Predictions in the EA

The Noise Impact Assessment was prepared by SLR for the Environmental Assessment. Detailed results are presented within the Noise Impact Assessment found on the Company's website.

4.1.5.1 Existing quarry operations plus the proposed quarry operations

Existing quarry operations plus the proposed quarry operations will comply with the OEH project specific goals under calm weather conditions at most nearest affected residential locations. Operating and Construction Activity Noise Management. When mitigations measures are in place at the current ground level, all nearest affected residential locations will comply with the project specific noise goals.

Comparison with 2015 – 2016 reporting period

This is consistent with the result from 2015-2016 noise reporting in that there have been no instances of non-compliance.

4.1.5.2 Road Traffic

The Project has not increased the traffic volumes for the EA and therefore the existing traffic noise measurement results will not increase due to the proposed extension area.

Comparison with 2015 – 2016 reporting period

This is consistent with the result from 2015-2016 noise reporting in that there have been no instances of non-compliance in relation to road traffic noise.

4.1.6 Non Conformance and Corrective Actions

There were no instances of non-conformance and therefore no corrective actions required.

4.1.7 Measures implemented over the current calendar year

Central Coast Sands Quarry will continue to operate in accordance with best practice in an effort to maintain noise compliance. There are three components of the CCSQ operation that will be targeted for noise compliance during the 2016 – 2017 reporting period.

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.

2. Bund construction: 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.
3. Mobile equipment: All mobile equipment is turned off when not in use.

4.2 Air Quality

4.2.1 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. The Proponent had aimed to install a DustTrak monitor during this reporting period. This was not achieved, as the environmental focus was shifted to the installation of a site weather station.

The Proponent is currently investigating other particulate monitoring devices on site with the aim of installing a device onsite in the coming reporting periods. The Company will aim to trail a particulate sampler at other of the Hanson owned and operated sites to assess the best fit sampler for Central Coast Sands Quarry.

4.2.2 Statutory Requirements

4.2.2.1 Project Approval Conditions

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 14 - 17** below.

Table 13: 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 14: Short-term Criteria for Particulate Matter

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

Table 15: 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 16: Impact Criteria for Crystalline Silica

Pollutant	Averaging Period	Criterion

Chronic Reference Exposure Level (REL) (PM_4)	Annual	3	ug/m^3

4.2.2.2 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 location of these receptors relative to the site is shown in **Figure 6**.

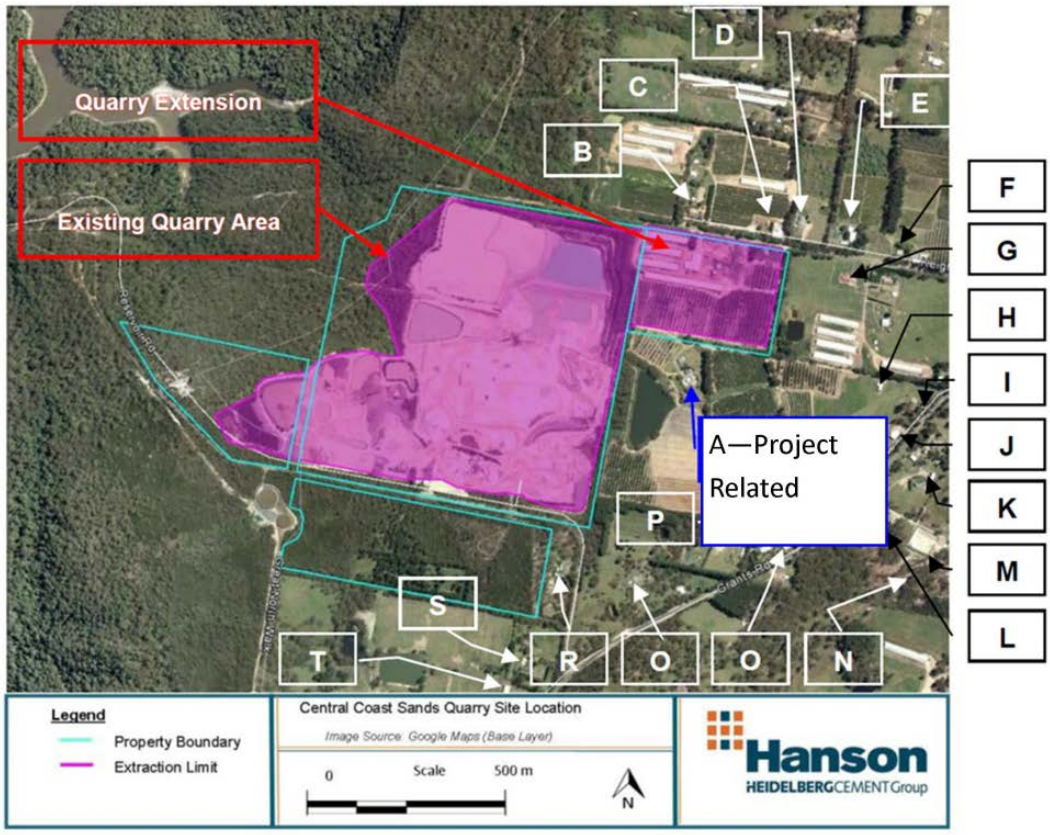

Figure 6: Air Quality Sensitive Receptors

4.2.3 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.

The Air Quality Monitoring Program consists of the following;

Table 17: AQMP requirements and status

AQMP Component	Status
Two (2) dust deposition gauges	Ongoing sampling
One (1) PM10 DustTrak	To be installed on site
One (1) PM10 HVAS (measuring RCS for one month)	One month sampling to be initiated.
One (1) on-site AWS	Installed on site.

The Air Quality Management Plan also includes a contingency strategy which identifies a dust event as;

- Dust complaint from adjacent neighbours; and/or
- Exceedance in compliance criteria.

Should the aforementioned criteria be triggered the contingency plan must be consulted and followed.

4.2.4 Monitoring results of previous years

Table 18: Air Quality Monitoring Results (2014 – 2016)

Sampling Year	Number of exceedances	Details Insoluble Solids g/m^2/month	Explanation
2014 - 2015	2	5.8	Dust gauge fallen over sand.
		7.6	Insects and algae in gauge.
2015 - 2016	1	12.4	Full. Sand at base. Gauge had been knocked over by an excavator.

4.2.5 Relevant Predictions in the EA

Deposited Dust

Deposited dust concentrations (background plus increment) associated with the Project are predicted to be less than 4g/m2/month at all nearest non project related residences.

Comparison with 2015 – 2016 reporting period: Overall DDG compliance has remained high. The only exceedance in applicable criterion is likely due to the DDG falling over.

The criterion for a dust event was not triggered.

TSP

Annual average TSP concentrations predicted to be well below the criterion of 90 µg/m3 at all identified sensitive receptor locations.

Comparison with 2015 – 2016 reporting period: Overall DDG compliance has remained high. The only exceedance in applicable criterion is likely due to the DDG falling over.

The criterion for a dust event was not triggered.

PM10 24 Hour Average

As shown in the table, the maximum predicted cumulative ground level 24 hour average PM10 concentrations due to emissions from Somersby Quarry are not predicted to exceed the criterion of 50 µg/m3

Comparison with 2015 – 2016 reporting period: The project aims to install a DustTrak monitor to monitor PM_{10} annual average and PM_{10} 24 average in the coming reporting periods. Until this time no conclusions can be made regarding compliance with EA predictions.

The criterion for a dust event was not triggered.

PM10 Annual Average

Total annual average PM10 concentrations (background plus increment) associated with the Project are predicted to be less than 30µg/m3 at all nearest non project related residences.

Comparison with 2015 – 2016 reporting period: The project aims to install a DustTrak monitor to monitor PM_{10} annual average and PM_{10} 24 average in the coming reporting periods. Until this time no conclusions can be made regarding compliance with EA predictions.

The criterion for a dust event was not triggered.

Respirable Crystalline Silica (RCS)

Total annual silica concentrations (background plus increment) associated with the Project are predicted to be less than the project goal of 3µg/m3 at all nearest non project related residences.

Comparison with 2015 – 2016 reporting period: The Project is yet to action a one month HVAS modelling effort. Until time that this has been conducted conclusions can be made regarding compliance with EA predictions.

The criterion for a dust event was not triggered.

4.2.6 Non-Compliance

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 was one exceedance of the maximum increase in deposited dust level over the reporting period at 12.8 g/m^2/mth. This exceedance was also above the maximum increase in deposited dust level. This

exceedance was due to excavator use on the neighbouring properties which caused the DDG to fall over. This result is not a reflection of true air quality at CCS and hence is not considered a true exceedance.

Table 19: Air Quality Exceedances

Gauge	Sampling Period	Insoluble Solids g/m^2/month	Explanation
High Wall	16/04/2015 – 18/05/2015	12.8	Full. Sand at base. The DDG had fallen to the ground. Readings are not reflective to air quality on site.

There are no significant operational changes required to be implemented as it is thought that the recorded exceedance is due to the fact the DDG fell to the ground and thus collected sand in the base. The site will continue regular visual inspection of DDGs to ensure the gauges have not been compromised.

Should this type of incident be regularly repeated the site will investigate mitigation measures further.

4.2.7 Measures implemented over the next reporting period

The site will endeavour to maintain acceptable air quality management. This will include the continuation of the following site specific mitigation measures.

General

- Visual Inspection of;
  - trucks prior to existing site onto Reservoir Road
  - of airborne dust.
  - the erosion and sediment controls.
- Operations
  - Reducing/ceasing operating during times of heavy winds
  - Employing a wheel wash to reduce off-site sedimentation dispersion
  - Employing watering at a rate of 2 litres/m^2/application to all internal haul roads
  - Periodic water application to other exposed areas.
- Truck Maintenance/operation
  - Ensuring engine exhausts from all heavy vehicles are not directed onto stockpile or road surfaces.
  - Covering loads as required, especially of dusty material transported by road in open-topped trucks.
  - Driver Code of Practice informing all drivers of dust suppression measures (e.g. compliance with site vehicle speed restrictions etc).
- Chemical bunding
  - 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.

- Ensure spill kits are appropriately located and stocked.

Bund Construction

A 5m soil bund will be constructed around the perimeter of the quarry extension extraction area. This bund will assist in reducing dust dispersion on nearby dwellings/receptors.

4.3 Traffic Management

4.3.1 Overview

The Project has remained compliant with the Traffic Management Plan and the relevant Project Approval conditions.

The Project has completed the Grants Road maintenance condition assessment and maintenance contributions study on 9th July 2015.

4.3.2 Statutory Requirements

4.3.2.1 Project Approval Conditions

Under Schedule 3, Condition 8 of the Project Approval, the project is required to comply with the operating hours associated with the transportation of quarry products from the site reproduced in **Table 20** below.

Table 20: Transportation Operating Hours

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

Under Schedule 3, condition 12, the Proponent is required to monitor product transportation from the site.

Table 21: Compliance with transportation monitoring

Condition Component	Details of compliance
keep accurate records of: **(i) the amount of quarry products transported from the site (per calendar month and year); and** **(ii) (ii) the number of laden vehicle movements from the site (per hour, day, week, calendar month and year);**	These details are recorded in Hanson's SAP system.
Publish these records on its website biannually.	Hanson will publish results 1 January 2016 – 30 June 2016 once the project has

commenced in the extraction area.

4.3.2.2 Traffic Management Plan

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

Comply with the direction of authorised site personnel when within the site

Heavy Vehicle Speed: 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.

Heavy Vehicles Driver Fatigue: 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.

Heavy Vehicle Compression Braking: 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.

Heavy Vehicle Noise: 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.

Load Covering: 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.

Vehicle Departure and Arrival: 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.

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.

Figure 7: Reservoir Road Intersection

4.3.3 Monitoring Results of Previous Years

Table 22: Traffic Incident Register (2014 - 2016)

Year	Traffic Incident Register (count)
2014-2015	1
2015 – 2016	2

4.3.4 Relevant Prediction from the EA

Intersection Capacity: Reservoir Road / Grant's Road intersection and the Grant's Road / Wisemans Ferry Road intersections operate under uninterrupted flow conditions with little or no delays being experienced by drivers.

Traffic Generation: As it is not proposed to increase production from the quarry as a result of this Major Project Application, there will be no additional traffic generated by the proposal. Traffic volumes generated from the Project Area will remain at their current levels.

Traffic Efficiency: assessment of existing traffic volumes as well as road and intersection capacity it can be seen that the local road network around the Project Area is currently operating at the highest levels of efficiency and expected to continue throughout the development as the project will not increase the existing traffic volumes.

Road Safety: It is therefore considered that the road pavement and road width standards of the existing haulage routes to the arterial road network are considered satisfactory.

Construction Traffic: This level of construction traffic is minor and as a short term impact would not adversely impact on the local road network.

There have no complaints related to intersection capacity, traffic generation, traffic efficiency, and construction traffic over the reporting period either by internal Hanson employees or persons from the community. From this perspective it is deemed that that quarry has remained compliant with the Traffic Impact Assessment and EA.

4.3.5 Comparison with 2015 – 2016 reporting period

There were two traffic related incidents in the reporting period **(Appendix 2**).

There was one traffic related complaint in the previous reporting period related to use of exhaust brakes. Investigation showed that this was not a Hanson truck.

4.3.6 Non- Compliance

4.3.6.1 Traffic Incident Register

Table 23: Traffic Incident Register

Date	Incident Details
08/12/2015	1. Sub-contracting truck pulled out at speed from Reservoir Rd into Grants road in front of a car driven by a local resident. It was noted that the give way sign at the end of Reservoir Rd has been knocked down which would have warned the truck driver of the protocol at the intersection. Incident reported to Quarry Manager and Transport Manager. Local council was notified

	that the give way sign at the T-intersection of Reservoir and Grants road had been damaged.
	2. A car driven by a local resident notified quarry personal that a Hanson truck “ran the resident off the road”. Quarry personal reviewed the dashboard camera in the truck. It was shown that the truck did not veer from the correct side of the road and the complainant was informed.

4.3.6.2 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.

4.3.6.3 Traffic Management Complaints

There were two complaints in the reporting period.

Overall the site is deemed compliant in respect to traffic management.

4.3.7 Measures implemented over the next reporting period

The site will endeavour to maintain acceptable traffic and transport management. This will include the continuation of the following site specific mitigation measures.

1. Complaints register
2. Compliance with the driver code of conduct

4.4 Water Management

The Proponent has managed water on site generally in conjunction with the Project Approval conditions and the site's Water Management Plan. The project has atomised the application of chemical treatment to manage the site's water quality. In particular an automatic system has been installed on the site to dose the water to ensure pH is within the EPL compliance limits. Preliminary results suggest that the system is reducing the level of pH exceedances. This will be reported on further in the following reporting period.

Hanson is seeking water access licences for the 'take' of water resultant of the expansion. No water licences have been secured to date.

Hanson will commission the preparation of a groundwater inflow estimate to be calculated by a suitably qualified hydrologist during the nest reporting period. No calculations have been made during the current reporting period.

4.4.1 Statutory Requirements

4.4.1.1 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 24** below;

Table 24: 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

4.4.1.2 Project Approval

Table 25: Project Approval Compliance

Schedule Condition	Description	Compliant
Schedule 3, Condition 1	Water Supply	Noted
Schedule 3, Condition 2/3/4	Surface Water Audit and Water Management Improvement Program	Compliant
Schedule 3, Condition 5	Compensatory Water Supply	Noted

Schedule 3, Condition 6	Pollution of Waters	Noted
Schedule 3, Condition 7	Water Management Plan	Compliant

4.4.1.3 Surface Water Audit and Water Management Improvement Program

A summary of improvement measures proposed for implementation on site are outlined in **Table 26** below.

Table 26: Water Management Improvement Measures

Water Management Improvement Measures		Schedule for Implementation	Status
5.	**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.	Not yet actioned
6.	**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.	Not yet actioned. To investigate in the coming reporting period.
7.	**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	Not yet triggered.
8.	**pH monitoring of the make-up dam will be undertaken on a daily basis.**	Implemented	The quarry has a suitably calibrated to measure pH to ensure compliance prior to discharging water from the EPL discharge point.

4.4.1.4 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.

4.4.1.5 Current surface water discharge monitoring program

The site currently undertakes the following water monitoring initiatives in accordance with **Table 27** below. These initiatives have been undertaken during the reporting period.

Table 27: 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

4.4.1.6 Reporting

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

- Climatic Data
- Surface Water Discharge and Flow Monitoring Data
- Groundwater Level Monitoring Data
- 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 39.1 °C on 25th February 2016. The lowest recorded daily minimum temperature during the reporting period was 0.4°C which occurred on 28th July 2015.

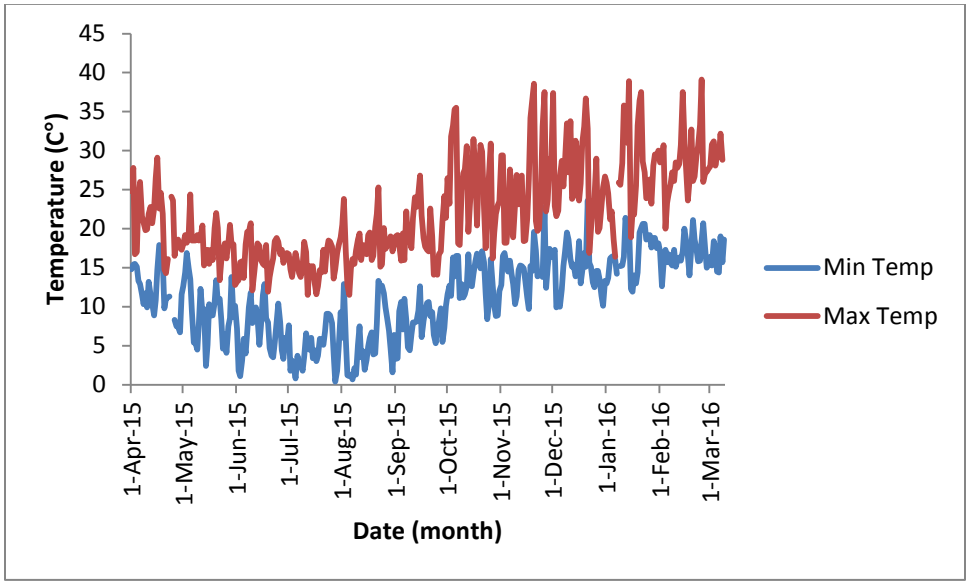

Figure 8: Minimum and Maximum Daily Temperature Readings

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

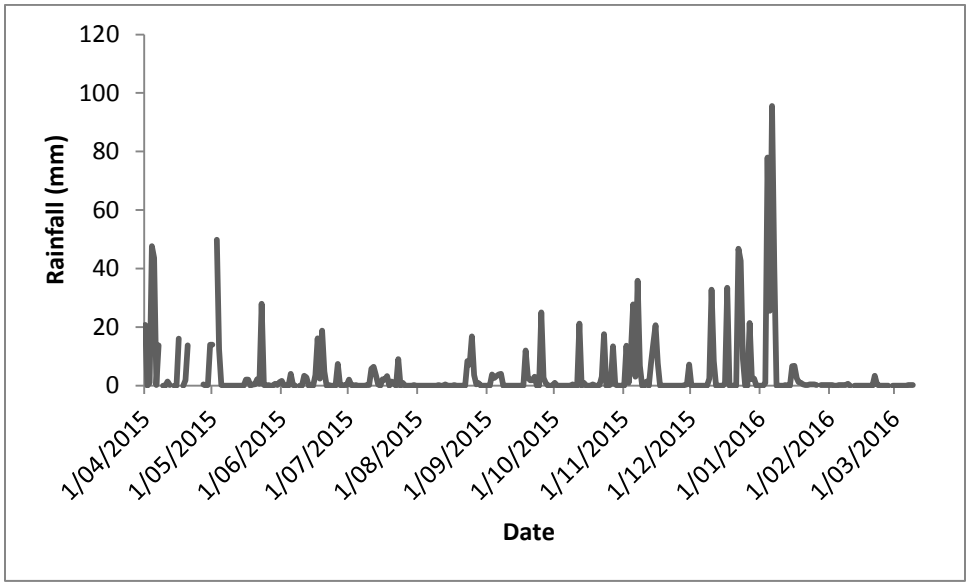

Figure 9: Rainfall Mangrove Mountain AWS

The highest recorded daily rain event occurred on 6th January 2016 with 95.6 mm of rain falling. January 2015 recorded the highest total monthly rainfall over the reporting period with 262.2 mm falling over the month.

Surface Water Discharge and Flow Monitoring Data

The water balance presented in the Water Management Plan 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 10 below illustrates the groundwater level (MBGL) for boreholes P3 and P4.

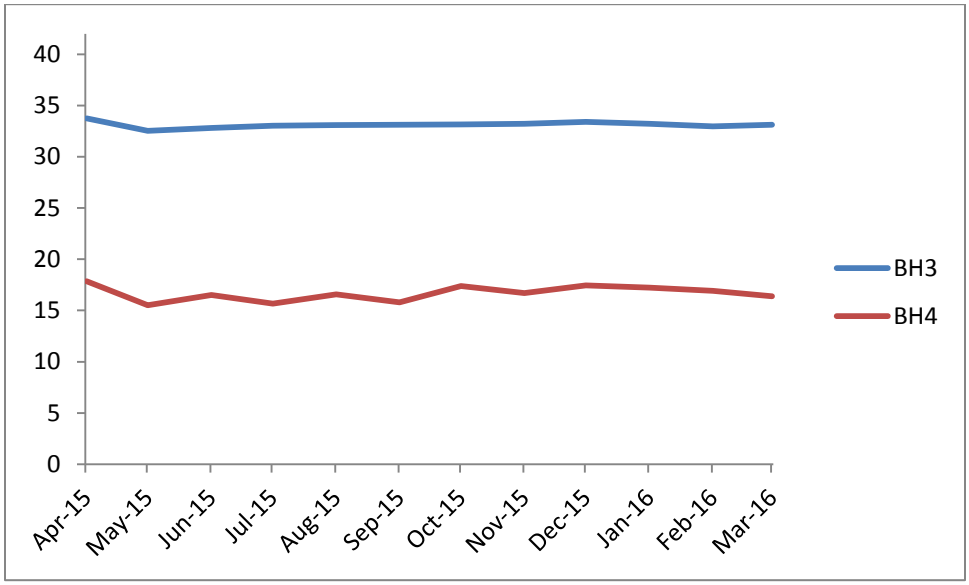

Figure 10: Groundwater Monitoring Bore Data

Data is collected hourly at both boreholes. 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 BH03 = 33.1 ± 0.2, SE 0.003. The average water depth for BH04 = 16.5 ± 0.7, SE 0.008 MBGL.

Water Quality Monitoring
The Proponent samples water as per the sites EPL requirements (**Table 28**).

Table 28: EPL Requirements

Pollutant	Unit of Measure	100 percentile concentration limit
Oil and greese	Milligrams per litre	10 or nil visible
pH	pH	6.5 – 8.5
Total suspended solids	Milligrams per litre	50

> *"Testing pH daily during any discharges using a suitably calibrated meter and weekly during any discharge by obtaining a representative sample and forwarding it to a Nata Accredited Laboratory for analysis."*

The Proponent samples water quality during discharge events. In the event that multiple samples were lab analysed during a discharge event that tested outside the compliant range, an average of these samples was calculated and recorded.

Whilst the site has two discharge points, discharge only occurs from discharge point 2.

Table 29: Water Quality Exceedances

Month	Pollutant and exceedance amount.	Details
May 2015	pH: - 9.1 - 6.3 - 9 - 6.3	There were 4 weeks which water discharge exceeded the acceptable pH criteria range of 6.5 – 8.5.
June 2015	pH: - 6.2 (5 days average taken) - 5.8 (2 days average taken) - 6.3 - 6.3	There were 4 weeks in June that water discharge exceeded the acceptable criterion.
July 2015	pH: 5.6	There as 1 week which water discharge exceeded the acceptable pH criteria range of 6.5 – 8.5.
October 2015	pH: - 5.5 - 9.25	There were 2 weeks which water discharge exceeded the acceptable pH criteria range of 6.5 – 8.5.
February 2016	pH: - 9.35	There as 1 week which water discharge exceeded the acceptable pH criteria range of 6.5 – 8.5. This has been queried and a response submitted to the EPA for review.

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

The quarry has a suitably calibrated device to measure pH to ensure compliance prior to discharging water from the EPL discharge point. Daily pH monitoring is conducted to obtain information on water quality and guide chemical pH treatments which are applied prior to discharge.

The quarry has installed an automatic pH system to apply appropriate and even amount of coagulant to ensure pH is compliant upon discharge. This system was installed on 12 January 2016. There has only been one exceedance since this date, which is currently being discussed with the EPA.

It is noteworthy that the Proponent has two pH probe meters which have been installed to measure pH on site before discharge. The site only discharges when the pH is in the approved EPL range of 6.5 -8.5. There has been historic and accidental use of oil/grease bottles to

measure pH rather than the now used plastic pH bottles. Oil/grease sampling bottles can have chemical residue in them which could explain the discrepancies between the sample taken on site using the pH probe, and the sample sent to the lab for analysis. The appropriate pH sample bottles are now being used.

The Proponent records pH taken from the pH reader on site during discharge. Exceedances from the internal pH probe are significantly less. It is thought that both the atomisation of the pH dosing system and using the correct pH collection containers will reduce pH exceedances.

4.4.2 Comparison with previous years reporting periods

Note the previous reporting period included 8 months (1 August 2014 – 31 March 2015).

Groundwater depth comparison

Table 30: Groundwater Depth Comparison

Year	BH 3 Mean	BH 4 Mean
2014 – 2015	34.0	17.29
2015 – 2016 (current reporting period).	33.1	16.5
Difference in mean	-0.9	-0.8

pH comparison

Table 31: pH Comparison

Year	pH exceedance events
2014 – 2015	7
2015 – 2016 (current reporting period).	12

4.4.3 Relevant predictions in the EA

Surface Water Quality

The site's annual return information indicate the water quality of discharge is generally satisfactory and compliant with license conditions. However, suspended solids have exceeded levels during periods of extended or prolonged rainfall.

No water quantity treatment is required as EPA discharge points are appropriately armoured to withstand the predicted increase in flows.

Comparison with 2015 – 2016 reporting period: The site has had no TSS exceedances, however has experienced pH exceedances in the past two reporting periods. The recent installation of an automatic water treatment system is intended to reduce pH exceedances. Preliminary findings suggest this has been overall successful, however the continued results will be present in the next reporting period.

Water Balance

Water balance assessment indicate that the site currently, and will continue to have, a surplus of water after all site demands/uses are satisfied.

Comparison with 2015 – 2016 reporting period: No water balance assessment has been conducted, so visual and operational site advice is applied. The site's dams have remained well stocked throughout the reporting period, therefore water balance is deemed consistent with the EA.

Local Groundwater

The revised hydrogeological assessment identified 35 licensed groundwater bores within the numerical groundwater modelling domain, of which two are located within the extension site itself. The groundwater modelling predicted drawdown levels on these 35 bores during and following proposed quarry operations. Thirteen bores within about 500 m of the project would be subject to groundwater drawdown in excess of 2 m, which is the limit for 'minimal impact' established by the AIP.

Comparison with 2015 – 2016 reporting period: The two bores on Hanson's expansion site (BH03 & BH04) have not experienced drawdown in the magnitude of >2m.

4.4.4 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.

To combat these exceedances an atomised chemical water treatment system has been installed January 2016.

Complaints: There were no water related complaints during the reporting period.

4.4.5 Works Proposed for the Next Reporting Period

Over the next reporting period, 1 April 2016 – 31 March 2017, the Proponent will aim to install a water flow meter to monitor discharge volumes and flow rate.

The Proponent will also aim to improve pH exceedances. It is anticipated that the frequency of pH exceedances will reduce resultant from the installation of atomised water treatment system.

It is also proposed that the Proponent undertake an Annual Groundwater Inflow Estimate. It is recommended that a suitably qualified consultant undertake the Annual Groundwater Inflow Estimate and provide design input to any required modifications to the process water monitoring programme as extraction stages progress

4.5 Landscape and Biodiversity

4.5.1 Overview over the reporting period

The previous landholder of the expansion area has initiated the removal of chicken sheds during the expansion area in conjunction with an asbestos consultant. This is ongoing and will be finialised during the next reporting period.

The Proponent has prepared a *Landscape and Rehabilitation Management Plan* during the reporting period. The requirements of this plan will be reported on in this section of the report.

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.

Flagging tape was established on site around the perimeters of remnant vegetation. Environmental Management Signs were erected at selected locations on the perimeter of remnant vegetation.

The site's extraction limit was surveyed.

Figure 11: Flagging tape identifying the perimeter of remnant vegetation

Figure 12: Surveyed Extraction Limit

Figure 13: Environmental Management Signs

4.5.2 Statutory Requirements

Project Approval

Table 32: Project Approval

Schedule Condition	Description	Compliant
Schedule 3, Condition 22	Pre-Clearance Surveys	To be triggered
Schedule 3, Condition 23	Targeted surveying for the Redcrowned Toadlet	To be triggered
Schedule 3, Condition 24	Redcrowned Toadlet report	To be triggered
Schedule 3, Condition 25	Minimise potential impacts on Redcrowned Toadlet.	To be triggered
Schedule 3, Condition 26	Biodiversity Performance Measures	Noted
Schedule 3, Condition 28	Groundwater Dependent Ecosystem Monitoring and Management Program	To be actioned.
Schedule 3, Condition 29	Rehabilitation Objectives	Noted
Schedule 3, Condition 30	Progressive Rehabilitation	Ongoing
Schedule 3, Condition 31	Landscape and Rehabilitation Management Plan	Completed. Compliance with plan ongoing.
Schedule 3, Condition 32	Rehabilitation Bond	To be triggered. Rehabilitation plan approved 9/10/2015.
Schedule 3, Condition 17	Identification of approved extraction limits	Complete

Landscape and Rehabilitation Management Plan

Table 33: Landscape and Rehabilitation Management Plan Management Measures and Status

Landscape and Rehabilitation Management Measures		Details	Status during 2015 – 2016 reporting period
4	Weeds	HLM prepare an annual weed report which includes weed photo points.	Ongoing. Report included in Appendix 1.
5	Rehabilitation	Photo points established.	Complete for the reporting period and ongoing for subsequent reporting periods.
6	Feral animals	Trigger level to notify NPWS that there is an escalated pest problem at CCSQ is 3 X opportunistic sighting of any feral pests for two consecutive months.	Trigger level hasn't been reached.
7	Threatened species	Pre-clearance surveys Targeted survey of the Redcrowned Toadlet.	Not triggered
8	Bushfire	Contractors monitor the easements as required and boundaries are inspected	Ongoing

		by Hanson management monthly.	
9	Bund	Bund construction will be monitored by quarry management weekly during construction	To be triggered
10	Erosion	Dams are inspected weekly to ensure sufficient remaining storage capacity is adequate for storm water and sediment deposition	Ongoing

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. The proponent will endeavour to complete this study in the next reporting period.

Photo points

Figure 14: Photo Point

Photo Point A

Figure 15: Photo Point A (photograph taken 7/4/2016)

Photo point B

Figure 16: Photo Point B (photograph taken 7/4/2016)

Photo Point C (i)

Figure 17: Photo Point C (i) (photograph taken 7/4/2016)

Photo Point C (ii)

Figure 18: Photo Point C (ii) (photograph taken 7/4/2016)

Photo Point D

Figure 19: Photo Point D (photograph taken 7/4/2016)

Rehabilitation

There are no areas of the quarry that have become terminal during the reporting period and therefore rehabilitation has not occurred in any additional sections of the quarry. Rehabilitation efforts have focused on weed management and maintenance of the existing rehabilitation areas. The below table is included to satisfy the requirements of the Project's Landscape and Rehabilitation Management Plan.

Site Area	Applicable Project Stage	Area rehabilitated (provide dates)	Type of rehabilitation/Species	Comments
South western Corner	Not yet to trigger stage 1.	0.4 ha	Preparation of the rehabilitation area through the application of mulch.	The area has been prepared for planting of saplings and self seeding in following reporting period.

4.5.3 Monitoring results of previous years

This is the first reporting period that the Project is operating under the Monitoring conditions contained within the Landscape and Rehabilitation Management Plan. There are no results from previous reporting periods.

4.5.4 Predictions within the EA

Three threatened fauna species were observed in areas proposed for clearing: the Little Bent Wing Bat, Eastern Bent Wing Bat and the Large-footed Myotis and potential presence of the Red-crowned Toadlet.

Comparison with 2015 – 2016 reporting period: there has been no requirement to conduct targeted surveys and pre-clearance surveys and hence no conclusions can be drawn regarding consistency with EA predictions.

4.5.5 Compliance

There are no non-compliances.

4.5.6 Measures proposed for the next reporting period

Measures include

- Actioning the Groundwater Dependent Ecosystem Monitoring and Management Program;
- Undertaking targeted surveying for the Redcrowned Toadlet;
- Continuation on the landscape and rehabilitation plan monitoring actions.

4.6 Performance

4.6.1 Trends

There can be no conclusions drawn regarding trends of the results presented in this report. There are no notable trends in any of the environmental reporting aspects of the project. As the project continues to collate data, any trends will be identified and presented in subsequent reports.

4.6.2 Predicted and Actual Impacts

At this early stage in the project life, there are no identified discrepancies between predicted and actual impacts. Should such discrepancies arise, the Proponent will report on the relevant matters in subsequent Annual Review Reports.

5 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 demolition works in the expansion area, preparation and implementation of a Landscape and Rehabilitation Management Plan, installation of a site weather station and the installation of an automatic chemical water dosing system to better manage pH discharge exceedances.

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