

Environmental Management Strategy

Bass Point Quarry

July 2021

Revision 7.1



Version Control

Revision No.	Revision Date	Description	Reviewer(s)	Date lodged DPIE	Date and to DPIE response
1	15.07.2014	First Draft	Pip Cox Andrew Driver	15.07.2021	Requested changes 23.02.2016
2	10.10.2016	Implemented changes requested by DPIE	Pip Cox Andrew Driver	10.10.2016	Requested changes 21.02.2017
3	27.03.2017	Review – some amendments	Pip Cox Andrew Driver	27.03.2017	Requested changes 22.05.2017
4	06.04.2018	Review – some amendments	Belinda Pignone Andrew Driver	06.04.2018	Approved 09.04.2018
5	November 2018	Review – some amendments	Belinda Pignone Andrew Driver	N/A	N/A
6	19.09.2019	Review – amendments due to Project Approval Modification (MOD 2) and EPL variation	Chelsea Flood Belinda Pignone	19.09.2019	Requested changes 24.09.2019
7	10.06.2021	Review due to lodgement of IEAR. Incorporation of DPIE comments on revision 4. Minor formatting and grammatical changes.	Chelsea Flood Belinda Pignone	10.06.2021	Requested changes 16.07.2021
7.1	29.07.2021	Implemented changes requested by DPIE.	Chelsea Flood Belinda Pignone	29.07.2021	

Contents

Contents.....	II
Tables.....	III
Figures	III
1. Introduction	1
1.1. Overview	1
1.2. Project/Site Description	1
1.3. Scope.....	7
1.4. Objectives and outcomes	8
1.5. Agency consultation	12
2. Legal and other requirements	14
2.1. Introduction	14
2.2. Project Approval (MP08_0143)	14
2.3. Statement of Commitments	14
2.4. Environment Protection Licence (EPL 2193)	14
2.5. Water Access Licence (WAL43442)	14
2.6. Legislative requirements	15
3. Environmental management framework.....	16
3.1. Strategic framework	16
3.2. Environmental management plans	16
4. Implementation and operation	20
4.1. Organisational structure and responsibilities	20
4.2. Competence training and awareness	20
4.3. Communication and consultation	24
4.3.1. Internal communication	24
4.3.2. External communication	24
4.3.3. Community Consultative Committee (CCC)	24
4.4. Complaints handling and response	28
4.4.1. How complaints can be made	28
4.4.2. Complaint investigation and response.....	28
4.4.3. Dispute resolution	29
4.4.4. Complaints register	29
4.5. Incident management.....	29
4.5.1. Incident identification.....	29
4.5.2. Non-compliance incident.....	30
4.5.3. Pollution incident.....	31
4.6. Emergency preparedness and response	31
5. Monitoring and corrective action	33
5.1. Environmental monitoring programs	33
5.2. Environmental audits.....	41
5.2.1. Independent Environmental Audit	41
5.3. Environmental reporting	41
5.3.1. Regular reporting	41
5.3.2. Annual review	42
6. Review and revision.....	43
Appendices.....	44
Appendix A – Agency consultation	45

Tables

Table 1: Major components of the Project.....	2
Table 2: EMS requirements under <i>Schedule 5, Condition 1</i> of the Project Approval.	7
Table 3: Environmental management objectives and key performance outcomes for the Bass Point Quarry.	8
Table 4: Agency consultation completed to date.	13
Table 5: Summary of key legislation relevant to environmental management of the Bass Point Quarry. Note that this list is not exhaustive.	15
Table 6: Environmental management plans required under MP 08_0143.	16
Table 7: Summary of environmental responsibilities for different positions in the site organisational structure.	22
Table 8: Summary of communication associated with the Bass Point Quarry.	26
Table 9: Summary of environmental monitoring activities required under MP 08_0143 and EPL 2193.	34

Figures

Figure 1: Project location (Source: Insite, 2011).	4
Figure 2: Approved quarry layout.	5
Figure 3: Conceptual final landform and rehabilitation revegetation.	6
Figure 4: Environmental management documentation relating to regulatory approvals.	19
Figure 5: Organisational structure of environmental responsibilities. See Table 7 for details of environmental responsibilities.	21
Figure 6: Groundwater monitoring borehole locations.	39
Figure 7: Monitoring locations as per EPL 2193.	40

1. Introduction

1.1. Overview

Hanson Construction Materials Pty Ltd (Hanson) own and operate the Bass Point Quarry located within the City of Shellharbour Local Government Area, 100 km south of Sydney, NSW (**Figure 1**). The project involves the extraction of up to four million tonnes per annum of construction aggregates over a project life of 30 years. Aggregates extracted from the site are processed at the site and then transported by road to local customers in the City of Shellharbour Local Government Area, as well as transported regionally and inter-regionally, predominantly to Wollongong and Sydney.

On January 28, 2014 the Department of Planning, Industry and Environment (DPIE) granted Project Approval (MP 08_0143) for the Bass Point Quarry Project under Section 75J of the *Environmental Planning and Assessment Act 1979* (now repealed), subject to a number of conditions. Under *Schedule 5, Condition 1* of the Project Approval, an Environmental Management Strategy (EMS) for the project must be prepared to provide an overview of environmental management at the site.

1.2. Project/Site Description

The Quarry site is wholly located on Lot 22 DP 1010797 within the City of Shellharbour Local Government Area. The Bass Point Quarry Project involves the lateral extension and deepening of the existing Bass Point Quarry as well as the relocation of the existing processing and stockpiling areas and other components of the site. The approved Quarry layout, displayed in **Figure 2**, covers approximately 157 ha that comprises the following component areas:

- Two extraction areas: The East Pit covering approximately 42.3 ha, and the West Pit covering approximately 40.3 ha.
- An area of approximately 14.5 ha between the extraction areas that will be retained as the location of the relocated processing and stockpiling area.
- An area of approximately 1.9 ha for the relocated amenities, office and workshop area.
- An area of approximately 2.2 ha for the relocated concrete batching plant.
- A dual weighbridge.
- An extended conveyor from the relocated processing plant to join the existing jetty for ship loading of Quarry products.
- An enlarged amenity bund to the north and west of the Quarry site.

The major components of the project are summarised in **Table 2** and are depicted in **Figure 2** and **Figure 3**. The Project is described in full in Hanson's Bass Point Quarry Environmental Assessment (EA), prepared by Insight, June 2011.

Table 1: Major components of the Project.

Aspect	Description
Total Site Area	157 ha
Extraction Areas	West pit extraction deepening to -40 m and east pit extension and extraction to the same depth. Refer to Figure 2 .
Extraction Method	Drilling for the laying of charges and periodic “free-face” blasting, followed by gradual extraction of relieved materials by loader and truck. Benches will be formed with access ramps for vehicles.
Extraction Rate	Maximum 4 mtpa.
Extraction Staging	Two-staged extraction (three (3) compartments).
Resource	In excess of 74 million tonnes.
Depth of Extraction	-40 m AHD
Processing and facilities	Relocation and installation of the processing plant centrally on the site. The processing plant operates using primary, secondary and tertiary feed crushers and screens, with connecting conveyor belts. Relocation of the workshop, office, amenities building, and weighbridge.
Water Management	A Water Management Plan (WMP) has been prepared and progressively implemented under the <i>Water Management Act 2000</i> and the <i>Water Act 1912</i> . The WMP details contingency measures and monitoring activities to address potential impacts with implementation to occur once works begin. The WMP includes contingency measures addressing the following: • Groundwater: Water levels and electrical conductivity, measured at various site bores at quarterly intervals to allow the detection of seawater intrusion and drawdown. • Surface water: Standpipe installed in Killalea Lagoon to allow daily monitoring of surface water levels and electrical conductivity. • Site water balance: Recharging of Killalea Lagoon with suitably treated water to maintain the pre-development water balance and water quality of the lagoon.
Main Products	Concrete aggregates, asphalt aggregates, road base, sundry aggregates.
Product Transport	All products will be transported via shipping or designated road transportation routes.
Project Life	Until 2044.
Rehabilitation	The Project will exercise progressive rehabilitation. The processing plant and stockpile area will be planted with endemic native plants and grasses, and quarry pits backfilled with rainwater runoff and ground water. Progressive planting of endemic vegetation will occur in native vegetation lots, on screen bunds, and terminal benches whilst ensuring minimal environmental consequences for local populations of threatened species (including <i>Pimelia spicata</i>), Endangered Ecological Communities (including Littoral Thicket [Littoral Rainforest EEC], and Headland Grassland [Themeda Grassland EEC]), and the <i>Melaleuca armillaris</i> Tall Shrubland community. The outcome (i.e. final landform) is projected to be two large water filled pits, which are aquatically connected, complete with native revegetated

	surrounds and existing native vegetation on the peripheral of the site. Refer to Figure 3 .
Employment	The site currently directly employs approximately 115 people.
Construction	Erection of new processing plant, including the relocation and decommissioning of existing; • Stockpiles; • Office, workshop and amenities; • Concrete batching plant • Parking area • Weighbridge • Reconfiguration of the bund wall.
Hours of Operation	Drilling: Monday – Sunday (24 hours a day) Blasting: Monday – Friday (8am – 5 pm), Saturday – Sunday & Public Holidays (N/A) Processing: Monday – Sunday (24 hours a day) Transportation: Monday – Sunday (24 hours a day) Construction hours: Monday to Friday (7am – 6pm), Saturday (8am – 1pm), Sundays and Public Holidays (N/A).

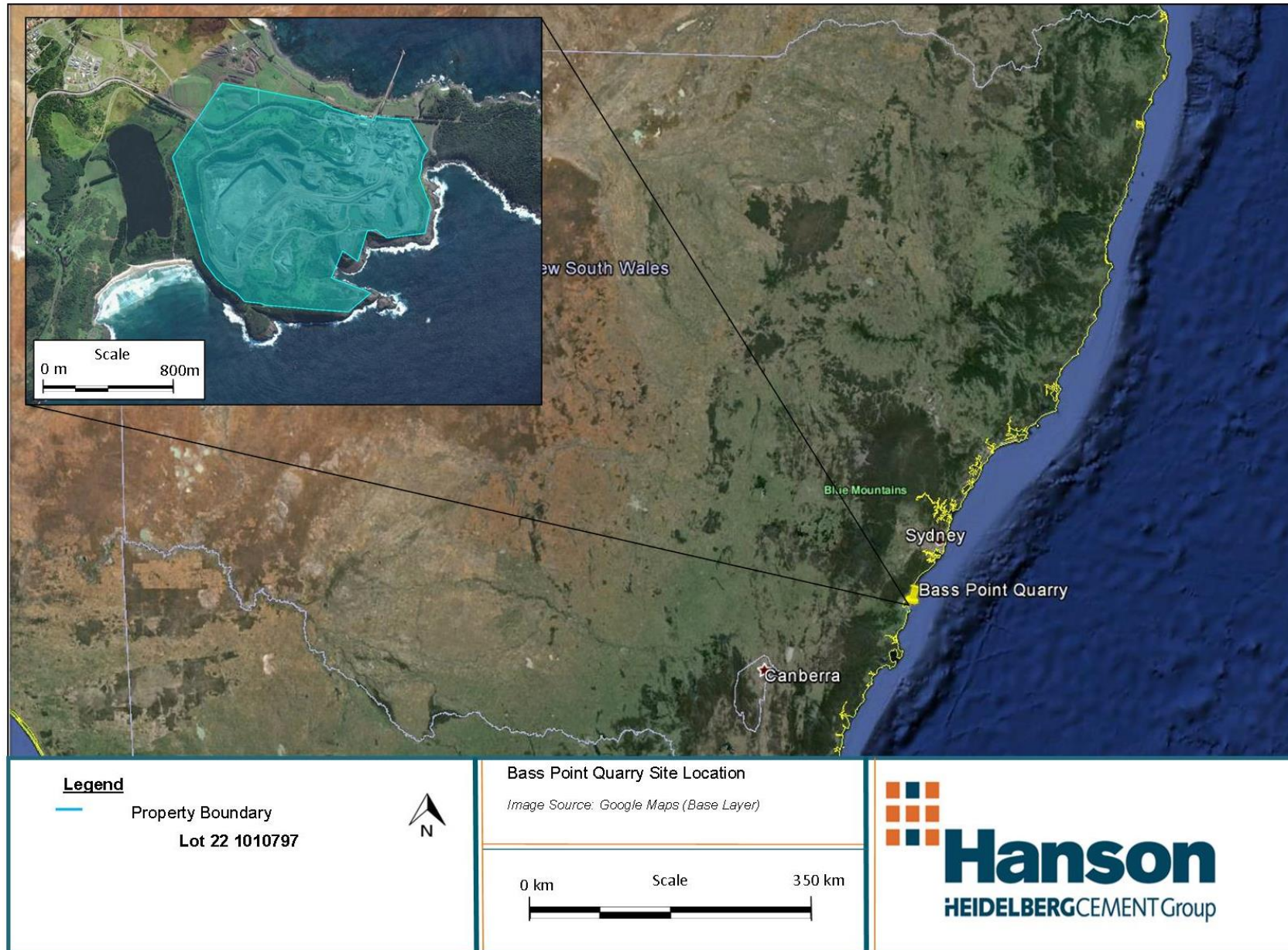


Figure 1: Project location (Source: Insite, 2011).

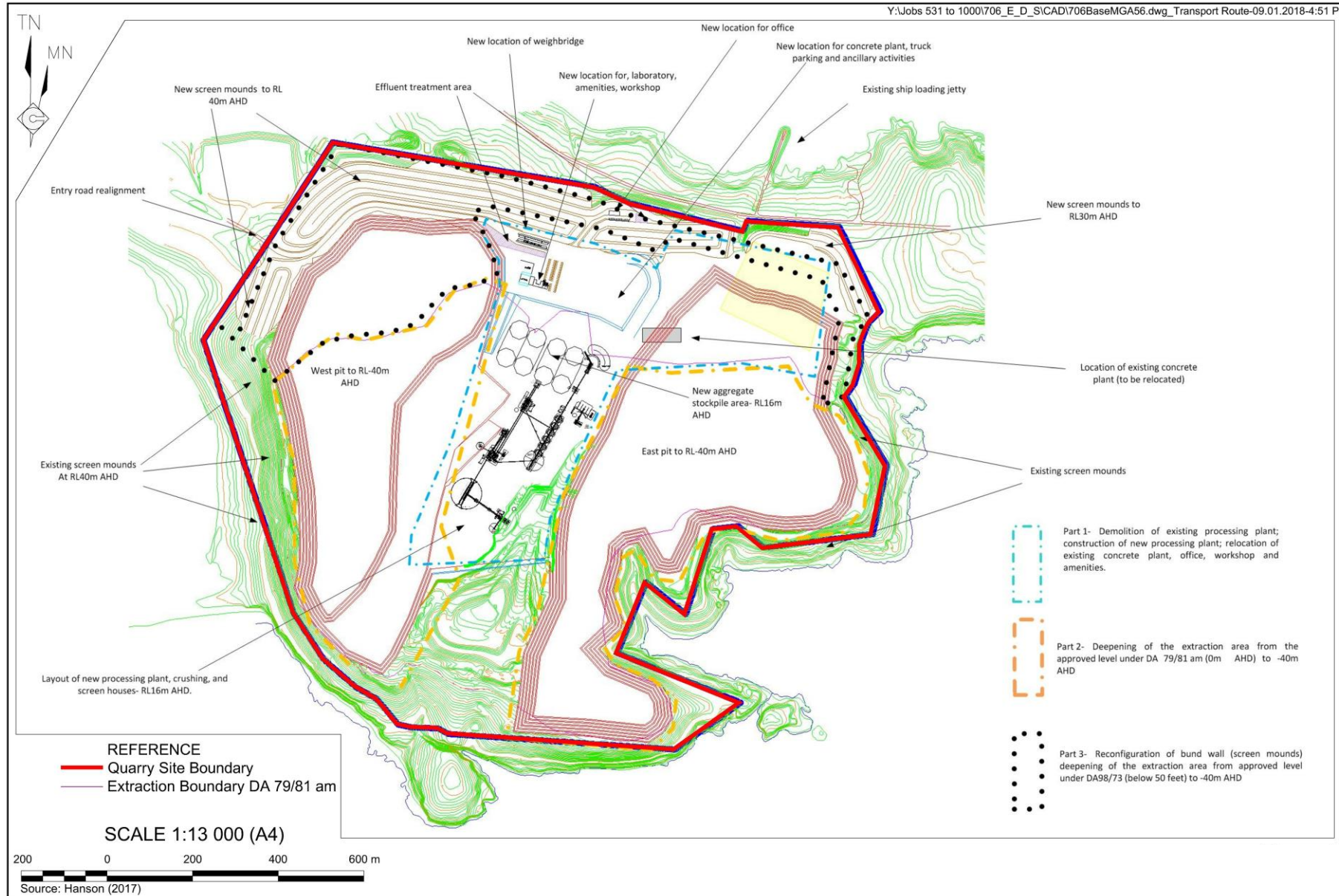


Figure 2: Approved quarry layout.

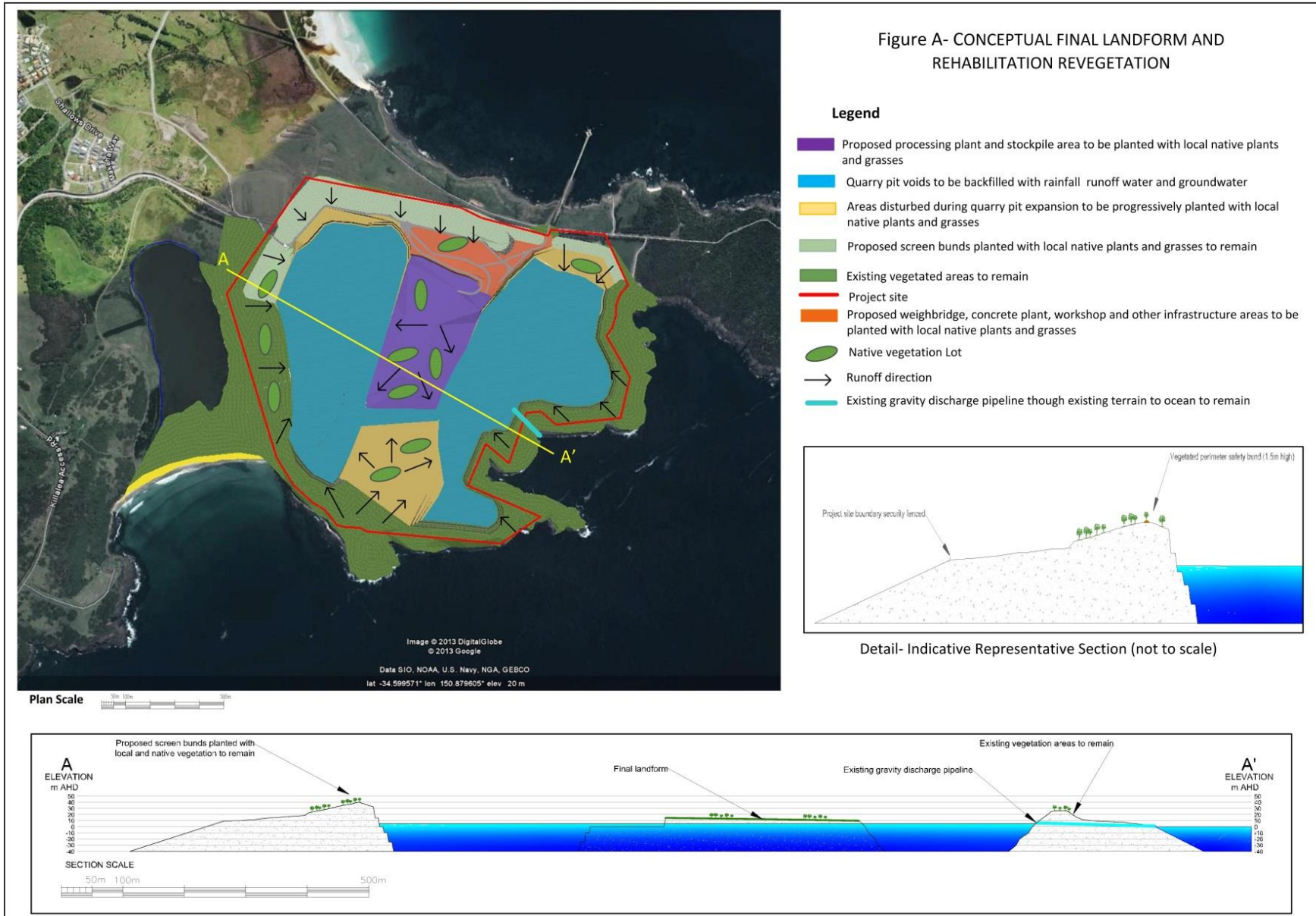


Figure 3: Conceptual final landform and rehabilitation revegetation.

1.3. Scope

This EMS has been prepared by Hanson to meet the requirements of *Schedule 5, Condition 1* of the Project Approval. **Table 2** identifies the requirements of *Schedule 5, Condition 1* of the Project Approval and where these requirements are addressed in this EMS.

Table 2: EMS requirements under *Schedule 5, Condition 1* of the Project Approval.

Conditions of Consent	Document Reference
ENVIRONMENTAL MANAGEMENT	
Environmental Management Strategy	
a) The Proponent must prepare an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must:	
(a) be submitted to the Secretary for approval by 31 July 2014;	Section 1.5.
(b) provide the strategic framework for environmental management of the project;	Section 3.1.
(c) identify the statutory approvals that apply to the project;	Section 2.
(d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;	Section 4.1. Section 4.2.
(e) describe the procedures that would be implemented to:	
• keep the local community and relevant agencies informed about the operation and environmental performance of the project;	Section 4.3.
• receive, handle, respond to, and record complaints;	Section 4.4.
• resolve any disputes that may arise during the course of the project;	Section 4.4.3
• respond to any non-compliance; and	Section 4.5.2.
• respond to emergencies; and	Section 4.6.
(f) include:	
• copies of any strategies, plans and programs approved under the conditions of this approval; and	Section 3.2
• a clear plan depicting all the monitoring required to be carried out under the conditions of this approval.	Section 5
The Proponent must implement the approved strategy as approved from time to time by the Secretary.	Noted

1.4. Objectives and outcomes

Environmental management objectives and performance outcomes for the Bass Point Quarry are presented below in **Table 3**. Objective and key performance outcomes are also embedded within the relevant Environmental Management Plans (see **Section 3.2**).

Table 3: Environmental management objectives and key performance outcomes for the Bass Point Quarry.

Objectives	Key performance outcomes
Air Quality	
a) To ensure compliance with all relevant Project Approval and Environment Protection Licence criteria, and to meet reasonable community expectations.	i. Compliance is achieved with all relevant criteria in the Project Approval MP08_0143, Environment Protection Licence 2193, and Air Quality Management Plan. ii. Reasonable community expectations are met.
b) To implement appropriate air quality management and mitigation measures during all stages of the project.	iii. All identified air quality management and mitigation measures are implemented to the extent required in the Project Approval MP08_0143 and Air Quality Management Plan.
c) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the project.	iv. The air quality monitoring program (in the Air Quality Management Plan) is sufficiently robust to detect any adverse air quality impacts associated with the Quarry, to allow appropriate adaptive management measures to be implemented. v. All required air quality monitoring is undertaken in accordance with the procedures and at the intervals stipulated in the Air Quality Management Plan.
d) To implement an appropriate complaint handling and response protocol.	vi. All complaints are handled and responded to in a respectful and timely manner (within 24 hours, where practicable).
e) To implement an appropriate incident reporting program.	vii. All reportable incidents are immediately reported to the applicable regulatory authorities.
Blast and vibration	
f) To ensure compliance with all relevant Project Approval and Environment Protection Licence criteria, and to meet reasonable community expectations.	viii. Compliance is achieved with all relevant criteria nominated in the Project Approval MP08_0143 and Environment Protection Licence EPL 2193. ix. Reasonable community expectations are met.

Objectives	Key performance outcomes
g) To implement appropriate blast management and mitigation measures during all stages of the project.	x. All identified blast management and mitigation measures are implemented to the extent required.
h) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project.	xi. All identified monitoring is undertaken in accordance with the relevant procedures and at the stipulated intervals.
i) To implement an appropriate complaint handling and response protocol.	xii. All complaints are handled and responded to in a respectful and timely manner (within 24 hours, where practicable).
j) To implement continual improvement for investigating, implementing and reporting on reasonable and feasible measures to manage blasts.	xiii. A suitable and comprehensive continual improvement program has been implemented.
Cultural Heritage Management	
k) To appropriately manage the discovery of any human remains or previously unidentified heritage objects on site.	xiv. Compliance with the site's Cultural Heritage Management Plan, which outlines procedures to be implemented upon the discovery of any human remains or previously unidentified heritage objects on site. xv. No unexpected harm to human remains or heritage objects on site (if applicable).
l) To ensure ongoing consultation with Aboriginal Stakeholders in the conservation and management of any Aboriginal cultural heritage values on site.	xvi. Hanson will consult with relevant Aboriginal Stakeholders (e.g. the Illawarra Local Aboriginal Land Council) if any Aboriginal cultural heritage values are discovered on site.
m) To protect identified heritage sites adjacent to the project.	xvii. Compliance with extraction and disturbance limits. xviii. No project-associated harm to heritage sites adjacent to the project.
Noise	
n) To ensure compliance with all relevant Project Approval and Environment Protection Licence criteria, and to meet reasonable community expectations.	xix. Compliance is achieved with all relevant criteria in the Project Approval MP08_0143 and Environment Protection Licence EPL 2193. xx. Reasonable community expectations are met.
o) To implement appropriate noise management and mitigation measures during all stages of the Project.	xxi. All identified noise management and mitigation measures are implemented to the extent required in the Project Approval MP08_1043 and Noise Management Plan.

Objectives	Key performance outcomes
p) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project.	xxii. The noise monitoring program is sufficiently robust to detect any adverse noise impacts associated with the Quarry, to allow appropriate adaptive management measures to be implemented. xxiii. All required monitoring is undertaken in accordance with the procedures and at the intervals stipulated in the Noise and Blast Management Plan.
q) To implement an appropriate complaint handling and response protocol.	xxiv. All complaints are handled and responded to in a respectful and timely manner (within 24 hours, where practicable).
r) To implement an appropriate incident reporting program.	xxv. All reportable incidents are immediately reported to the applicable regulatory authorities.
Rehabilitation, biodiversity and landscape management	
s) To ensure compliance with all relevant project approval conditions and statements of commitment, and to meet reasonable community expectations.	xxvi. Compliance is achieved with all relevant criteria in the Project Approval MP08_0143 and Statement of Commitments. xxvii. Reasonable community expectations are met.
t) To implement appropriate progressive rehabilitation and landscape management and mitigation measures during all stages of the Quarry.	xxviii. All identified rehabilitation and landscape management and mitigation measures are implemented in a timely manner.
u) To appropriately manage site preparation works to ensure that suitable rehabilitation material remain for rehabilitation operations during all stages of the Quarry.	xxix. Sufficient, viable rehabilitation materials are available for rehabilitation operations throughout all stages of the Quarry.
v) To ensure that the visual amenity of residences and public vantage points is not unacceptably impacted by Quarry- related activities.	xxx. Visual amenity management measures are effective and implemented in a timely manner. xxxi. Visual screen bund effectively screens quarry activities.
w) To establish a final landform that is consistent with that identified in the Environmental Assessment.	xxxii. Final landform is safe, stable, and non-polluting.
x) To establish an appropriate final soil profile and vegetation community on the final landform.	xxxiii. Final soil cover facilitates establishment of vegetation suitable for rehabilitation works.
y) To establish an appropriate beneficial final land use consistent with surrounding land uses.	xxiv. Final landform is suitable for an appropriate beneficial land use that is consistent with surrounding land uses at the time of Quarry closure.

Objectives	Key performance outcomes
z) To appropriately manage those sections of the Site that would not be used for Quarry-related activities.	xxv. Identified areas are managed in a manner that ensures appropriate beneficial use of that land.
aa) To implement appropriate weed, pest and bushfire management measures.	xxvi. Weeds, pests and bushfire risks are appropriately managed in compliance with legal requirements and in consultation with neighbouring landholders.
bb) To implement an appropriate complaint handling and response protocol.	xxvii. All complaints are handled and responded to in a respectful and timely manner (within 24 hours, where practicable).
cc) To implement appropriate corrective and preventative actions, when required.	xxviii. All corrective and preventative actions are implemented in a timely manner.
dd) To implement an appropriate incident reporting program.	xxix. All reportable incidents are immediately reported to the applicable regulatory authorities.
Traffic management	
ee) To adopt, implement and enforce a Driver Code of Conduct for road transport heavy vehicles.	xi. Compliance with and acceptance of the Driver Code of Conduct by all road transport heavy vehicle drivers using the quarry.
ff) To minimise potential conflicts between project-related traffic and other road users and pedestrians along Bass Point Quarry Road and the approved Transport Route (Appendix 4 of Project Approval MP08_0143).	xli. Compliance is achieved with all relevant criteria in the Project Approval MP08_0143 and the Traffic Management Plan.
gg) To effectively manage dust generated by project-related traffic on Bass Point Quarry Road and the approved Transport Route (Appendix 4 of Project Approval MP08_0143).	xlii. Effective management of dust generated by project-related traffic, which minimises dust impacts to the greatest extent practicable. xliii. No community complaints received about project-related dust on Bass Point Quarry Road or the approved Transport route (Appendix 4 of the consent).
hh) To ensure an adequate standard of maintenance of Bass Point Quarry Road, the approved Transport Route (Appendix 4 of Project Approval MP08_0143), and their intersections.	xliv. Road pavement and condition of Bass Point Quarry Road suitably maintained, with minimal potholes and associated noise generated. xlv. Hanson pay S94 contributions for public road maintenance as a result of this development. It is Shellharbour City Council's responsibility to ensure these public roads are maintained in the future.
Water, erosion and sediment control	

Objectives	Key performance outcomes
ii) To ensure compliance with all relevant Project approval and Environmental Protection Licence criteria, and to meet reasonable community expectations.	xlv. Compliance with all relevant criteria in the Project Approval MP08_0143 and Environmental Protection Licence EPL 2193. xlvii. Reasonable community expectations are met.
jj) To ensure sufficient water is available during all phases of the life of the quarry for environmental and operation purposes.	xlvi. Sufficient water is available for all Quarry-related purposes, including for environmental and operational purposes.
kk) To ensure that appropriate sediment and erosion control measures are implemented and maintained.	xlix. All water management structures constructed and maintained in accordance with the site's Water Management Plan and WALs secured where required.
ll) To ensure that water within the Site is used in an efficient and environmentally responsible manner.	i. Water resources are managed in a manner that maximises environmental flows and minimised the potential for adverse impacts to water resources.
mm) To ensure that an appropriate surface water and groundwater monitoring program is implemented throughout the life of the Quarry.	li. Water monitoring programs (in the Water Management Plans) are sufficiently robust to detect any adverse water quality or quantity impacts associated with the Quarry, to allow appropriate adaptive management measures to be implemented. lii. All required monitoring is undertaken in accordance with the procedures and at the intervals stipulated in the Water Management Plans.
nn) To ensure that appropriate contingency and emergency management plans are in place and regularly reviewed.	liii. Comprehensive contingency and emergency management plans are prepared and regularly reviewed and revised.
oo) To implement an appropriate incident reporting program.	liv. All reportable incidents are immediately reported to the applicable regulatory authorities.
pp) To ensure that all relevant water-related information is made available in a timely and accessible manner.	lv. All water-related information is available in a timely manner on the Hanson website via the Annual Review.

1.5. Agency consultation

Schedule 5, Condition 1(a) of MP 08_0143 requires that the EMS be prepared to the satisfaction of the Secretary. **Table 4** summarised correspondence with DPIE about the EMS, and **Appendix A** provides agency comments on the current version.

Table 4: Agency consultation completed to date.

EMS Revision No.	Description
1 (15.07.2014)	EMS lodged to DPIE on 15 July 2014. DPIE requested edits to the document on 23 February 2016.
2 (10.10.2016)	EMS lodged to DPIE on 10 October 2016. DPIE requested edits to the document on 21 February 2017 before the document may be approved by the Secretary.
3 (27.03.2017)	EMS lodged to DPIE on 27 March 2017. DPIE requested edits to the document on 22 May 2017.
4 (06.04.2018)	EMS lodged to DPIE on 6 April 2018. DPIE approved the EMS 9 April 2018.
5 (November 2018)	EMS not lodged to DPIE.
6 (19.09.2019)	EMS lodged to DPIE on 19 September 2019. DPIE provided comments and requested changes on 24 September 2019.
7 (10.06.2021)	EMS lodged to DPIE on 10 June 2021. DPIE provided comments and requested changes on 16 July 2021.
7.1 (29.07.2021)	EMS lodged to DPIE on 29 July 2021.

2. Legal and other requirements

2.1. Introduction

Bass Point Quarry operates in accordance with a range of approvals, licenses and consents, each prescribing requirements for components of the environmental management of the Quarry. The following subsections present the statutory commitments relevant to environmental management of the Quarry. It is noted that non-environmental aspects of the operation such as work health and safety are beyond the scope of this document and hence are not addressed within this document.

2.2. Project Approval (MP08_0143)

The Bass Point Quarry site has operated as a basalt quarry under various names, ownership, and approvals for over a century. A chronology of previous approvals relating to conducting quarry (and associated) activities on the site can be found in the Environmental Assessment (Insite, 2011). As discussed in **Section 1.1**, the quarry currently operates under MP 08_0143 granted by the Department of Planning and Environment on 28 January 2014. Modifications to MP 08_0143 were approved in June 2017 (MOD 1) and January 2019 (MOD 2). Requirements for an EMS are stipulated under *Schedule 5, Condition 1* of MP 08_0143 (see **Section 1.3**).

2.3. Statement of Commitments

Although not specified as conditions of approval in the main text of MP 08_0143, Hanson will operate in accordance with the draft Statement of Commitments presented in the Environmental Assessment (Insite, 2011) unless these commitments are not consistent with the conditions of any legislation, approval or licence relevant to the development. The Statement of Commitments approved by DPIE are included in Appendix 3 of MP 08_0143.

2.4. Environment Protection Licence (EPL 2193)

Environment Protection Licence 2193 (EPL 2193) regulates the following scheduled activities at the Hanson Bass Point Quarry premises:

- Crushing, grinding or separating (>2,000,000 T annual processing capacity)
- Extractive activities (>2,000,000 T annual processing capacity)

EPL 2193 regulates the following:

- Discharges to air and water;
- Blasting, including the recording and reporting of each blast;
- Monitoring and recording of information;
- Receiving and recording complaints;
- Annual reporting of environmental performance;
- Notification of environmental harm.

2.5. Water Access Licence (WAL43442)

Hanson have obtained a Water Access Licence (WAL43442) in the category 'aquifer' that permits extraction of 479 units from the Sydney Basin South Groundwater Source. WAL43442 was obtained in anticipation of quarrying below 0 mAHD; currently, the quarry does not extract any groundwater.

2.6. Legislative requirements

Key legislation that will guide environmental management of the Bass Point Quarry are summarised below in **Table 5**. All listed legislation is NSW legislation.

Table 5: Summary of key legislation relevant to environmental management of the Bass Point Quarry. Note that this list is not exhaustive.

Act of Parliament	Description
<i>Environmental Planning and Assessment Act 1979</i>	This Act regulates matters relevant to MP 08_0143. MP 08_0143 was issued under the Act, and conditions of approval therein are enforceable by the NSW DPIE.
<i>Protection of the Environment Operations Act 1997</i>	This Act regulates matters relevant to EPL 2913, principally related to pollution. EPL 2913 was issued under the Act, and conditions therein are enforceable by the NSW EPA.
<i>Water Management Act 2000</i>	This Act regulates access to water resources. WAL43442 was issued by Water NSW under this Act.
<i>Biodiversity Conservation Act 2016</i>	This Act regulates the protection and conservation of biodiversity values within the terrestrial environment in NSW. Bass Point Quarry contains threatened species and threatened communities (EECs) listed under Schedule 1 and Schedule 2 (respectively) of the Act.
<i>National Parks and Wildlife Act 1974</i>	This Act regulates the protection of Aboriginal objects, places and sites in NSW. There are no known objects, places or sites in the Bass Point Quarry, however, unanticipated finds retain their protection under the Act.
<i>Heritage Act 1977</i>	This Act regulates the protection of archaeological relics, buildings, structures, archaeological deposits and features. There are no known items at Bass Point Quarry that are listed under the Act, however, unanticipated finds retain their protection under the Act.
<i>Rural Fires Act 1997</i>	This Act regulates fire-fighting coordination, and fire prevention/management in rural NSW. Hanson as the owner/occupier of the Bass Point Quarry has a duty to prevent the occurrence and minimise the spread of bushfires on/from the Bass Point Quarry.
<i>Biosecurity Act 2015</i>	This Act regulates biosecurity risks. The Act stipulates Hanson's biosecurity duties as land manager for the Bass Point Quarry.

3. Environmental management framework

3.1. Strategic framework

This EMS forms part of an integrated Environmental Management System for the Bass Point Quarry. The Environmental Management System is based on *AS/NZS ISO 14001:2004 Environmental management systems—requirements with guidance for use* and has been independently certified as meeting the requirements of ISO 14001:2015. Importantly, the Environmental Management System facilitates favourable environmental performance by providing a framework for the development and regular review of procedures used to assess, mitigate, and manage environmental impacts associated with the Bass Point Quarry.

The hierarchy of environmental management documentation relating to regulatory approvals for the Bass Point Quarry is shown in **Figure 4**.

3.2. Environmental management plans

A suite of environmental management plans has been prepared in accordance with the requirements of MP 08_0143. These management plans are briefly summarised below in **Table 6**. Note that all plans also include requirements for auditing and reporting; for brevity, this is not discussed in **Table 6** below.

The environmental management plans are revised regularly (see **Section 6**) and then submitted to DPIE for review and approval. Plans are implemented until subsequent revisions have been approved.

Table 6: Environmental management plans required under MP 08_0143.

Document	Description
Air Quality Management Plan	The Air Quality Management plan describes the site air quality management system and measures in place to promote best management practice. The plan also includes an air quality monitoring program so that Hanson are able to evaluate the environmental performance of the project and compliance with regulatory approvals. The Air Quality Management Plan is available in printed form at the site office, and on the company website.
Cultural Heritage Management Plan	The Cultural Heritage Management Plan provides guidance for the best practice management of cultural heritage within the site, for the life of the project. The Cultural Heritage Management Plan is available in printed form at the site office, and on the company website.
Landscape Management Plan	The Landscape Management Plan describes short, medium and long-term rehabilitation measures to be implemented on site. Further, the plan identifies performance and completion criteria to evaluate the performance of these rehabilitation measures. The Landscape Management Plan is available in printed form at the site office, and on the company website.

Noise and Blast Management Plan	The Noise and Blast Management Plan addresses both the noise performance and blasting performance of the project. The plan describes best practice measures to minimise noise associated with the project, and to inform blasting activities. The plan also outlines a robust monitoring program to enable evaluation of environmental performance and compliance with regulatory approvals. The Noise and Blast Management Plan is available in printed form at the site office, and on the company website.
Transport Management Plan	The Transport Management Plan describes processes in place to control vehicle movements and minimise any associated impacts (e.g. safety issues), both onsite and off-site. The plan also identifies a Driver's Code of Conduct to which both Hanson and ex-bin drivers must adhere. The Transport Management Plan is available in printed form at the site office, and on the company website.
Water Management Plan	The Water Management Plan is comprised of four, interrelated plans: Groundwater Management Plan, Killalea Lagoon Management Plan, Surface Water Management Plan, and Water Balance Assessment.
<i>Groundwater Management Plan</i>	The Groundwater Management Plan outlines a baseline monitoring program to establish ambient groundwater conditions at sensitive receivers. The plan also details trigger values and groundwater assessment criteria to monitor potential impacts on sensitive receivers during quarry expansion works, and details a contingency response plan should monitored values vary from baseline conditions (i.e. trigger criteria). The Groundwater Management Plan is available in printed form at the site office, and on the company website.
<i>Killalea Lagoon Management Plan</i>	The Killalea Lagoon Management Plan has been prepared to ensure that there are no adverse impacts on the Killalea Lagoon – an ecologically significant sensitive receiver – due to surface and/or groundwater management on site. The plan identifies potential impacts on the Lagoon as quarrying progresses on site, and describes trigger values, a monitoring regime, and contingency response measures. The Killalea Lagoon Management Plan is available in printed form at the site office, and on the company website.
<i>Surface Water Management Plan</i>	The Surface Water Management Plan describes the surface water management system on site, and design and performance criteria for relevant management elements. The plan identifies sensitive receivers and describes trigger values, the monitoring regime, and contingency response measures. The Surface Water Management Plan is available in printed form at the site office, and on the company website.
<i>Water Balance Assessment</i>	The Water Balance Assessment identifies and assesses the security of available water supply sources against the projected water demands of the project. The Assessment outlines management of water supply sources, including

reuse and recycling opportunities, and management of surplus water.

The Water Balance Assessment is available in printed form at the site office, and on the [company website](#).

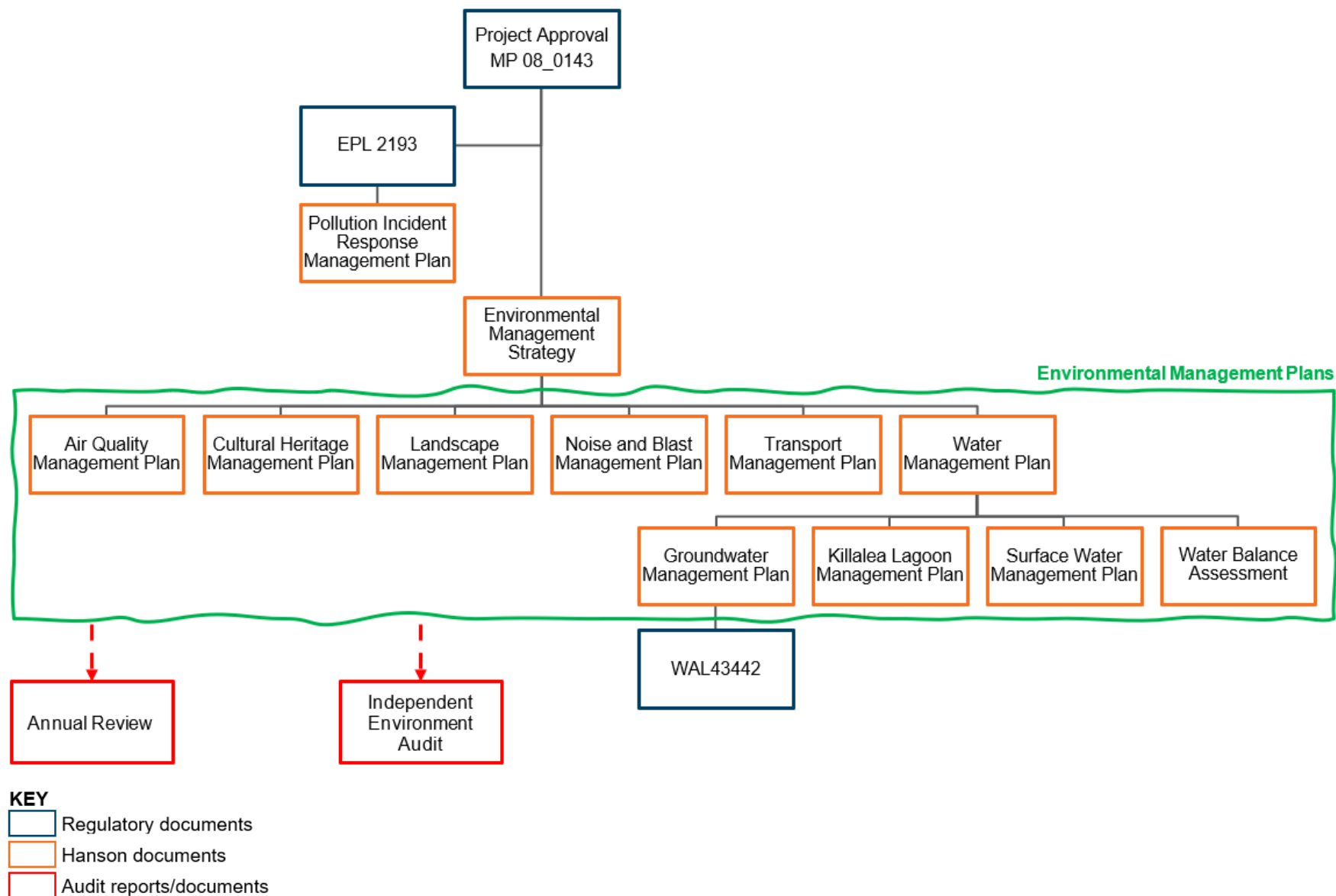


Figure 4: Environmental management documentation relating to regulatory approvals.

4. Implementation and operation

4.1. Organisational structure and responsibilities

The organisational structure of environmental personnel and their roles/responsibilities as they pertain to the Bass Point Quarry is shown in **Figure 5** and summarised in **Table 7**. It should be noted that some higher-level positions – such as the National Sustainability Manager – extend beyond Bass Point Quarry operations and are therefore not shown in **Figure 5** and **Table 7**.

4.2. Competence training and awareness

All operational personnel (including Hanson employees and contractors) will undergo environmental management awareness training as a component of the site orientation program. Training will be relevant to the roles of each personnel, and therefore at the discretion of the manager delivering the orientation. Verification of personnel competence is completed at the orientation stage, as well as via in-field 'spot checks'.

General matters of environmental management awareness, including topics related to specific activities or tasks, would be discussed via the internal communication routes discussed in **Section 4.3.1**.

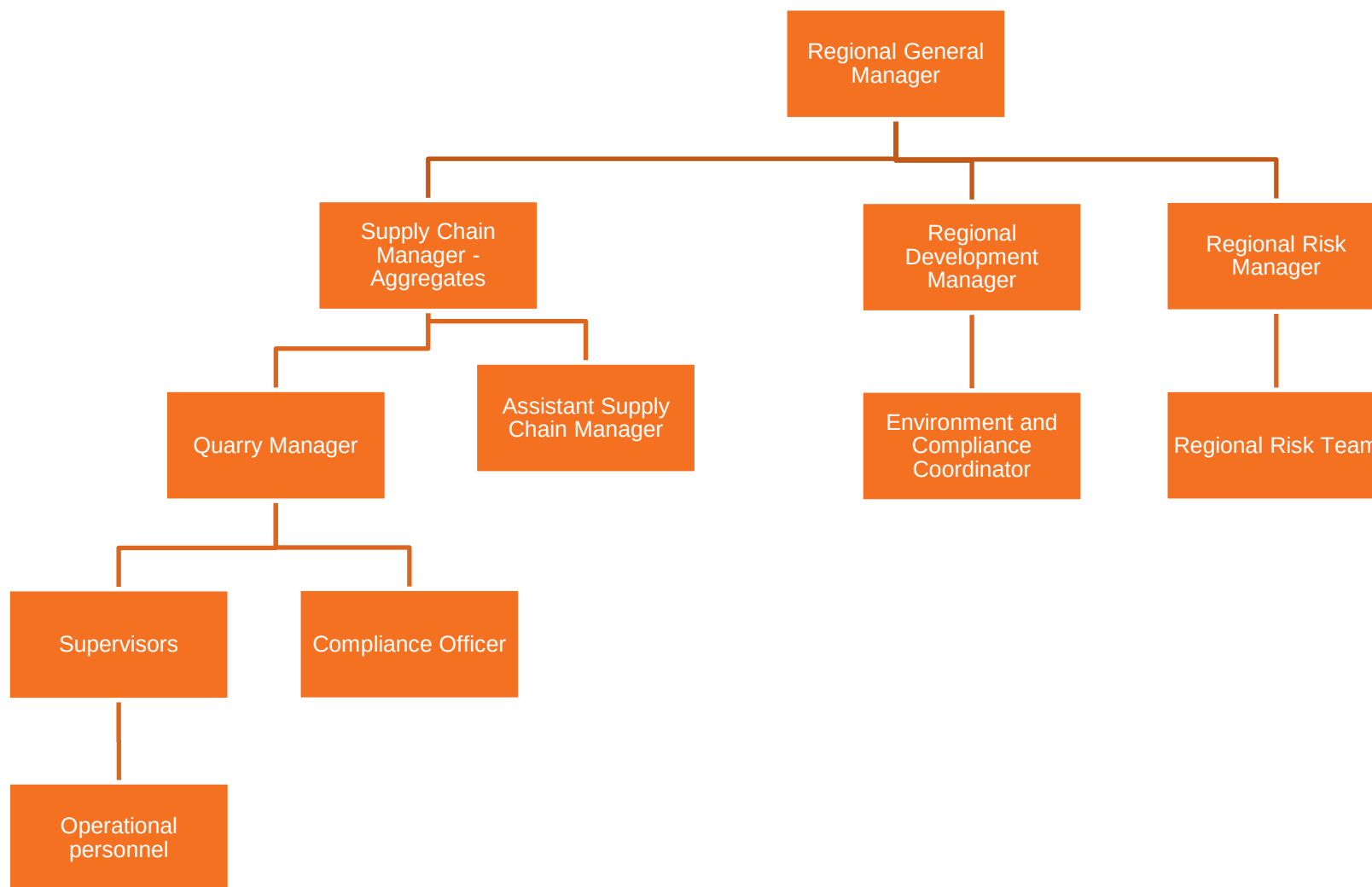


Figure 5: Organisational structure of environmental responsibilities. See **Table 7** for details of environmental responsibilities.

Table 7: Summary of environmental responsibilities for different positions in the site organisational structure.

Position	Environmental Responsibilities
Regional General Manager	• Ensure that adequate resources are available to implement the EMS and all Environmental Management Plans
Supply Chain Manager – Aggregates, Assistant Supply Chain Manager – Aggregates	• Ensure that adequate resources are available to implement the EMS and all Environmental Management Plans • Report to the Regional General Manager on environmental risks, non-compliance, and remedial actions
Quarry Manager	• Ensure compliance with the EMS (including compliance with all environmental management plans) • Facilitate and oversee monitoring programs/schedules for: ○ Licence conditions which stipulate monitoring ○ Planning conditions which stipulate monitoring ○ Discharges on/off site where there is a high risk of environmental impacts • Manage environmental risks, non-compliance, and remedial action • Secure resources for implementation of the EMS and other environmental management plans • Coordinate remedial action for environmental emergencies/spills • Coordinate complaints handling • Participate in community/stakeholder consultation • Report to the Supply Chain Manager – Aggregates on environmental risks, non-compliance, and remedial actions
Compliance Officer	• Project management, data collection and reporting for monitoring programs/schedules, including quarterly visual inspections • Document non-compliance and remedial action and report to Secretary of DPIE and/or relevant government agencies (e.g. NSW EPA) as per Project Approval and EPL • Establish procedures for environmental emergencies (including pollution incidents/Pollution Incident Response Management Plan (PIRMP)) • Organise and participate in community/stakeholder consultation • Coordinate training of all Quarry personnel • Assist with the review of EMS and other environmental management plans

Position	Environmental Responsibilities
Supervisors	• Ensure all personnel are appropriately inducted and trained regarding environmental management, monitoring procedures, and environmental emergency procedures • Project management, data collection and reporting for monitoring programs/schedules • Coordinate toolbox meetings for all Quarry personnel
Operational personnel (including employees, contractors, and visitors)	• Understanding and awareness of environmental requirements, including reporting/escalation of actual and potential environmental risk to Supervisors • Complying with relevant legislation, including regulatory approvals • Complying with this EMS and associated documents as they apply • Adherence to environmental programs and initiatives
Regional Development Manager	• Provide technical advice and support at a site level (liaise with the Quarry Manager and Compliance Officer)
Environment and Compliance Coordinator	• Provide technical advice and support at a site level (liaise with the Quarry Manager and Compliance Officer) • Coordinate review of EMS and other environmental management plans
Regional Risk Manager	• Establish and delegate environmental monitoring programs • Liaise with the Regional Development Manager and Graduate Environment and Compliance Coordinator to ensure that environmental risks are being appropriately managed
Regional Risk Team	• Audit environmental monitoring programs (e.g. Dynamic Risk Verification) • Evaluate environmental risk at a site level • Assist with management of programs/systems that control environmental risk

4.3. Communication and consultation

A summary of communication associated with the Bass Point Quarry is included as **Table 8**.

4.3.1. Internal communication

All operational personnel, including contractors, will be provided with the information they need to ensure that impacts on the environment are minimised. The usual communication routes will be harnessed to discuss environmental topics as required, including:

- Daily pre-shift toolbox meetings
- Monthly toolbox meetings
- Six-monthly site meetings
- Site Memos

4.3.2. External communication

Regular communication with government agencies, stakeholders and the local community will be maintained to promote positive working relationships, build awareness of site processes, procedures and plans, and minimise disruptions to site operations and nearby residents.

Additional newsletter-style documents are published on the Bass Point Quarry website on an as-needs basis. A newsletter is generally developed if operations will differ to the standard operations, to ensure information is available to the community and to ensure relevant stakeholders are abreast of the project operations.

4.3.3. Community Consultative Committee (CCC)

Schedule 5, Condition 6 of MP 08_0143 states the following in regard to operation of a Community Consultative Committee:

The Proponent must establish and operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. This CCC must be operated in general accordance with the Department's Community Consultative Committee Guidelines, November 2016 (or later version), and be operating within four months of the date of this approval.

Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.*
- *In accordance with the guideline, the Committee should comprise an independent chair and appropriate representation from the Proponent, Council, recognised environmental groups and the local community.*

In accordance with *Schedule 5, Condition 6* of MP 08_0143, a Community Consultative Committee (CCC) has been established as a platform for the local community to be informed of project progression. This consultative process will assist Hanson in the identification and management of specific community concerns during the course of the project, thereby facilitating the development of a collegial relationship between Hanson and local residents.

Minutes of the CCC are publicly accessible via the Bass Point Quarry website:
<https://www.hanson.com.au/about-us/regulatory-information/bass-point-quarry-project/>

The community, as well as relevant government agencies, may refer to these documents at any stage during the project life.

Currently, the CCC consists of:

- 1 x Independent Chairperson, appointed by DPIE
- 2 x community representatives
- 2 x other stakeholder representative (non-residential neighbours)
- 1 x representative from Shellharbour City Council
- 2 x representatives from Hanson, as the proponent

Note: No applications from recognised environmental groups were received

The composition of the CCC, as well as the frequency of meetings, may change over time. Any changes to the CCC will be reported in the Annual Review and published on the company website (in the meeting minutes).

Table 8: Summary of communication associated with the Bass Point Quarry.

Stakeholder	Method of Communication	Frequency	Objectives
Operational personnel	Daily pre-shift toolbox	Prior to each shift	Daily pre-shift toolbox communications, including communications between incoming and outgoing shifts, are a statutory requirement for the Bass Point Quarry workplace. The purpose of these meetings is to ensure adequate coordination and collaboration between shifts about relevant topics and job tasks.
	Monthly toolbox	Once per month	Supervisors conduct monthly toolbox meetings with their teams to summarise what has happened over the previous month, and to discuss plans for the upcoming month.
	Six-monthly site meeting	Once per six months	The Quarry Manager conducts the six-monthly site meeting to summarise what has happened over the previous six-months, and to discuss plans for the next six-months. The meeting also serves as a forum for workers to ask questions and raise safety concerns.
	Site memo	As required	Site memos may be released by management (site level, or upper management) at any time about a range of topics. Site memos are used to convey information quickly and concisely to personnel on site. Managers are responsible for disseminating site memos to relevant personnel, including contractors.
Community	Community Consultative Committee (CCC)	Quarterly	The purpose of a Community Consultative Committee is to provide a forum for elected representatives to discuss issues directly relating to Bass Point Quarry operations, environmental performance, and community relations.
	Letterbox drop	As required	The Quarry Manager or designated representative may use a letter box drop to inform immediate neighbours about aspects of operations that may be noticeable or impact on them. This would also prompt the community to raise any concerns directly with site management.
	24hr emergency hotline (1800 882 478)	As required	The 24hr emergency hotline phone number is posted on entrance signage to the site and enables the community to contact Hanson about concerns, complaints, or environmental matters. Community concerns are relayed to the Quarry Manager for resolution and follow-up contact.

	Website	As required	The Bass Point Quarry website is managed internally and is updated as required. The website: • Enables the community to readily access information on the site (including environmental monitoring) and future development/plans • Provides a means for Hanson to report complaints/concerns to the public • Provides the community with appropriate contact information for head and regional offices, and Bass Point Quarry management
Secretary (DPIE)	Annual Review	Annually	The Annual Review provides DPIE with details of environmental monitoring and results, complaints recording and results, details of non-compliance and remedial action, long-term environmental trends, and plans for activities forecast for the next reporting period. Timely lodgement of the Annual Review is a requirement of MP 08_0143.
Environment Protection Authority (EPA)	Annual Return	Annually	The Annual Return provides EPA with an environmental monitoring summary, complaints summary, overview of compliance with EPL 2193. Timely lodgement of EPL 2193 is a requirement of EPL 2193.
Other relevant government agencies (e.g. RMS, Council)	Verbal Written documentation	As required	Hanson will verbally (where applicable) and in writing notify relevant government agencies of any incident associated with the project as soon as practically possible. A detailed incident report will also be provided as required (and in accordance with the requirements of MP 08_0143).

4.4. Complaints handling and response

4.4.1. How complaints can be made

Complaints can be lodged via the following methods:

- Directly via Hanson's 24-hour, 7 day per week general Emergency Line (1800 882 478). This number is advertised on signage at the Quarry entrance
- Directly via the 'Contact us' section of the company website (i.e. online written lodgement)
- Directly via phone and/or email to the designated site contact(s), as listed on the Complaints Register (available on the Bass Point Quarry website)
- Indirectly via a member of the CCC (see **Section 4.3.3** for further information about the CCC)
- Indirectly via a government agency e.g. DPIE, EPA, Shellharbour City Council

4.4.2. Complaint investigation and response

All complaints will be registered in the complaints register and will trigger an investigation and response overseen by the Quarry Manager and/or Compliance Officer.

1. The complaint will be reviewed by the Quarry Manager or their delegate to determine the nature, date and time of the complaint. Where complainant details have been provided, the Quarry Manager or delegate will contact the complainant as soon as practicable (with an aim of within 24 hours) after receipt of the complaint.
2. Relevant monitoring data will be reviewed. Should the monitoring results indicate no exceedance of the assessment criteria, the Quarry Manager will continue to consult with the complainant in relation to managing impacts associated with the Quarry.
3. The investigation will consider the following:
 - i. What activities and/or equipment were occurring or in use at the time of the complaint.
 - ii. Whether any particular or unusual activities were being conducted at the time of the complaint.
 - iii. Other circumstances (e.g. weather conditions) that may have contributed to the complaint
 - iv. Whether on-site equipment and/or activities were the potential source of the complaint (or whether other activities in the locality may have contributed to the complaint).
 - v. What actions may be carried out to resolve the complaint and minimise the likelihood of further complaints.
4. Should the investigation result in additional monitoring, Hanson will make the results of the monitoring available for viewing by the complainant, on request.
5. Should the monitoring indicate an exceedance of the relevant criteria, the Quarry Manager will notify DPIE and the EPA (if relevant) and will implement appropriate corrective and preventive measures. In addition, the Quarry Manager will continue to consult with the complainant, as required, in relation to the complaint, until the issue is resolved.
6. In the event that multiple complaints are received from the same individual(s) *and* the Quarry can demonstrate:

- i. at least three complaints from the complainant, with demonstrated compliance with the relevant criteria in each case; and
- ii. there is documented evidence of a genuine attempt by the Quarry to discuss the issue and seek a resolution with the complainant without success.

The Quarry may, in consultation with the relevant government agencies, limit responses to further complaints from the individual(s) in this case.

4.4.3. Dispute resolution

In the event that the client, stakeholders or government agencies (other than DPIE) cannot agree on the requirements applicable under MP 08_0143, the matter will be referred to the Secretary of DPIE.

If a dispute occurs with a private landowner and cannot be resolved between the two parties, the matter will be referred to the Secretary of DPIE for resolution.

4.4.4. Complaints register

The following information will be recorded in the complaints register:

- The date and time the complaint was made
- The method by which the complaint was made
- Complainant's name (if provided)
- Complainant's telephone number and/or email address (if provided)
- Nature of complaint
- Action taken by Hanson in relation to the complaint
- Any follow-up correspondence with the complainant

The Compliance Officer is responsible for ensuring that all complaints are registered in the complaints register. The complaints register is published on the Bass Point Quarry website on a quarterly basis so that it may be accessed by the community and other stakeholders. Note that the personal/identifying information of complainants is recorded but *never* published, for privacy reasons. Similarly, a summary of complaints received during the reporting period is included in both the Annual Review and Annual Return.

4.5. Incident management

4.5.1. Incident identification

Schedule 5, Condition 7 of MP 08_0143 requires Hanson to notify DPIE and any other relevant agencies immediately after becoming aware of an incident. The notification must be in writing through the Department's Major Projects website and identify the development (including the development application number and name) and set out the location and nature of the incident. In this case an incident is defined as "a set of circumstances that causes or threatens to cause material harm to the environment; and/or breaches or exceeds the limits or performance measures/criteria in this consent."

Similarly, Condition R2 of EPL 2193 requires Hanson to notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident (in accordance with the requirements of Part 5.7 of the *Protection of the Environment Operations Act 1997* (POEO Act)).

For the purpose of environmental management at the Bass Point Quarry, the meaning of ‘material harm’ is the same as in the POEO Act, whereby it:

- involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or
- results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

An incident which causes or threatens to cause material harm to the environment (and may or may not result in an exceedance of discharge quality criteria) is referred to as a **Pollution Incident**.

An incident which is only a breach of regulatory approval condition(s) – i.e. not causing or threatening to cause material harm to the environment – is referred to as a **Non-compliance Incident**.

Substantiated complaints received by the Quarry will not be considered as incidents but will trigger an investigation and subsequent feedback to the complainant, as was discussed in **Section 4.4.2**.

4.5.2. Non-compliance incident

On identification of a non-compliance against the conditions of MP 08_0143 and/or EPL 2193 – which may or may not follow receipt of a complaint – the following protocol will be implemented:

1. The Quarry Manager will be notified of the non-compliance.
2. Hanson will immediately investigate the source of the incident, review the activities undertaken at the time and if necessary, amend operations to resolve the cause of the incident.
3. DPIE and the EPA (as deemed relevant) would be notified immediately of the potential non-compliance. Any other relevant agencies would also be immediately notified.
4. An investigation into the potential non-compliance would be instigated, with the objective of identifying the following, where appropriate:
 - the date and time of the non-compliance;
 - the duration of the non-compliance;
 - whether the non-compliance was directly related to operations within the Quarry or if any other factors contributed to the non-compliance;
 - the primary cause of the non-compliance;
 - any contributing factors which led to the non-compliance;
 - whether appropriate controls were implemented to prevent the non-compliance; and
 - corrective and preventative measures to prevent a recurrence of the non-compliance.

5. Within 7 days of the date of the non-compliance incident, Hanson will provide a detailed report to DPIE and the EPA (as deemed relevant).
6. Where the non-compliance incident is related to the criteria within *Schedule 3* of MP 08_0143: as soon as practicable, and within 7 days of obtaining monitoring data showing an exceedance of any relevant criteria in *Schedule 3* of MP 08_0143, Hanson will notify in writing any affected residents in accordance with *Schedule 4, Condition 1(a)*. Regular monitoring results will be provided to each affected landowner until the project is again complying with the relevant criteria.
 - Where the exceedance is related to air quality criteria specifically, Hanson would also provide a copy of the NSW Health fact sheet 'Mine dust and you' to the affected landowners and/or tenants of the land, in accordance with *Schedule 4, Condition 1(d)* of MP 08_0143.
7. Any non-compliance with MP 08_0143 and EPL 2193 will also be reported to DPIE in the Annual Review and EPA in the Annual Return, respectively.

4.5.3. Pollution incident

In the event of an incident which is deemed a Pollution Incident, the Quarry Manager or their delegate will be notified, who will immediately notify DPIE and the EPA (using the Environmental Line 131 555) and other agencies as described in the **Pollution Incident Response Management Plan (PIRMP)**.

Following notification, the Quarry Manager or their delegate will initiate an investigation into the cause of the incident. Once the cause has been identified, the Quarry Manager or delegate will implement corrective measures (which would be identified as part of the investigation and documented in the incident report).

Corrective and/or preventative actions will be assigned to relevant Hanson personnel. Actions will be communicated internally through planning meetings and toolbox talks, and outstanding actions will be monitored for their effectiveness upon completion.

4.6. Emergency preparedness and response

In the event that an emergency situation arises on-site or off-site that may have implications on the Quarry site (e.g. bushfire) Hanson will undertake procedures in accordance with its **Site Emergency Plan**, i.e. **trigger the emergency plan** (and the **Pollution Incident Response Management Plan (PIRMP)** as relevant).

The Site Emergency Plan is a statutory document that covers a range of emergencies/incidents and is accessible in suitable locations on site. Information included in the Site Emergency Plan includes, but is not limited to:

- Site information and contact details for the relevant authorities, technical advice and management responsibilities as well as Emergency Assembly Points (muster points)
- First Aid procedures and locations of first aid equipment
- Firefighting procedures and locations of firefighting equipment
- Spill kit locations
- Advice and procedures for a number of specific emergency scenarios (e.g. bushfire, chemical spill), including Trigger Action Response Plans

The PIRMP is a statutory document required because Hanson holds an EPL to undertake scheduled activities at the Bass Point Quarry. There is considerable overlap between the PIRMP and the Site Emergency Plan, because a pollution incident may necessitate an emergency response.

It is a statutory requirement to undertake regular testing – either as a desktop scenario or emergency drill – and review of both the Site Emergency Plan and PIRMP. This helps to ensure that operational personnel are adequately prepared to respond to an emergency. Testing and review requirements for the Site Emergency Plan and PIRMP are outlined within the respective documents.

5. Monitoring and corrective action

5.1. Environmental monitoring programs

Environmental monitoring programs have been developed for the site as per the Project Approval and are attached to this EMS. Each monitoring program has been developed in consultation with relevant guidelines/approvals to ensure compliance with relevant criteria is achieved. A summary of monitoring requirements is provided in **Table 9**. Locations of monitoring points are provided in **Figure 6** and **Figure 7**.

Table 9: Summary of environmental monitoring activities required under MP 08_0143 and EPL 2193.

Plan	Monitoring frequency	Monitoring requirements	Reporting
Air Quality Management Plan	Monthly	2 on-site Dust Deposition Gauges	- Website: Within 14 days of obtaining monitoring data - DPIE: Annual review and/or as required
	Continuous	Meteorological monitoring via BOM AWS Kiama (Bombo Headland)	DPIE: Annual review and/or as required
	Continuous	PM₁₀ and TSP via DPIE AWS Albion Park South	DPIE: Annual review and/or as required
	1-in-6 day	PM₁₀ via on-site LVAS	DPIE: Annual review and/or as required
	Continuous	- Meteorological monitoring at BOM AWS Kiama (Bombo Headland), specifically: - Wind speed - Wind direction - Rainfall - Temperature - Temperature lapse rate - Sigma Theta* - Humidity * Sigma Theta is not available at BOM AWS Kiama (Bombo Headland). It is available at DPIE AWS Albion Park South.	DPIE: Annual review and/or as required
Cultural Heritage Management Plan	Upon discovery of Aboriginal objects/features, skeletal remains, and/or historic objects	Appropriate management of: - Aboriginal objects/features - Skeletal remains - Historic objects	DPIE and other regulatory authorities as relevant: As required

Plan	Monitoring frequency	Monitoring requirements	Reporting
Landscape Management Plan	Ongoing	Weed management	DPIE: Annual review and/or as required
	Quarterly	Visual inspection by Quarry personnel to establish the condition of vegetation, evidence of dieback, and weed coverage	DPIE: Annual review and/or as required
	As required (before any vegetation clearance on site)	Pre-clearance surveys (ecological)	DPIE: Annual review and/or as required
	Biennial until 2027, then every 5 years from 2027	Photo point documentation	DPIE: Annual review and/or as required
Noise and Blast Management Plan	Quarterly	- Noise measurement at the closest monitoring locations (R6, R7, R8, R9, R11, R12) - Qualitative and quantitative measurement of prevailing local weather conditions at BOM AWS Kiama (Bombo Headland) at 15-minute intervals, including: - Mean wind speed - Mean wind direction - Aggregate rainfall - Mean air temperature - Mean relative humidity - Sigma Theta* * Sigma Theta is not available at BOM AWS Kiama (Bombo Headland). It is available at DPIE AWS Albion Park South.	DPIE: Annual review and/or as required
	Upon receipt of a noise complaint	Noise measurement at monitoring location relevant to the complaint (e.g. complainant residence)	DPIE: Annual review and/or as required

Plan	Monitoring frequency	Monitoring requirements	Reporting
	Every blast	- Monitoring of: - Airblast overpressure (dB(Lin Peak)) - Ground vibration (mm/s)	DPIE: Annual review and/or as required
Transport Management Plan	Quarterly	- Accurate record of: - The amount of quarry products transported from the site (monthly and annually) - The regional destination of quarry products transported from the site - All laden truck movements (i.e. dispatch of trucks carrying quarry products or concrete) from the site (hourly, daily, weekly, monthly, and annually)	- Website: Quarterly - DPIE: Annual review and/or as required
	Every three months	- Formal compliance observation - Audit of the complaint/incident register	DPIE: Annual review and/or as required
Water Management Plan			
Groundwater Management Plan	<i>Baseline monitoring (12-month period prior to quarrying below 0 mAHD)</i>		
	Continuous	- Groundwater quality monitoring at BT 0701, BH1 (now destroyed), and BT 0702 for: - Water level - Electrical Conductivity - Temperature Results to be downloaded and reviewed <i>quarterly</i>.	DPIE: Annual review and/or as required
	Quarterly	- Groundwater quality monitoring at BT 0701, BH1 (now destroyed), and BT 0702 to test: - pH - Electrical Conductivity - Total Dissolved Solids - Total Phosphorus (dissolved and recoverable).	DPIE: Annual review and/or as required

Plan	Monitoring frequency	Monitoring requirements	Reporting
		○ Total Kjeldahl Nitrogen (TKN) ○ Nitrite plus Nitrate as N (NOX) ○ Major Anions (Cl, SO₄, alkalinity) ○ Major Cations (Na, K, Ca, Mg)	
	Daily	• Meteorological monitoring for the calendar year, specifically: ○ Rainfall ○ Evaporation conditions	• DPIE: Annual review and/or as required
	<i>Ongoing monitoring (post-baseline)</i>		
	• As per baseline monitoring regime, informed by baseline monitoring report and any recommendations		
Killalea Lagoon Management Plan	<i>Baseline monitoring (12-month period prior to quarrying below 0 mAHD)</i>		
	Every hour	• Standpipe monitoring of: ○ Water level ○ Temperature	• DPIE: Annual review and/or as required
	Monthly	• Groundwater quality monitoring at BT 1201 (now BH3), BH4, and BT 1202 for: ○ Water level ○ Temperature ○ Electrical Conductivity Results to be downloaded and reviewed <i>quarterly</i>.	• DPIE: Annual review and/or as required
	Quarterly	• Surface water quality monitoring at Killalea Lagoon via grab sample to test: ○ pH ○ Electrical Conductivity ○ Total Suspended Solids ○ Dissolved Oxygen ○ Total Nitrogen (TN) ○ Total Phosphorus (TP)	• DPIE: Annual review and/or as required

Plan	Monitoring frequency	Monitoring requirements	Reporting
		Salinity	
	Quarterly	- Visual inspection of Killalea Lagoon including: - Water quality (e.g. clarity, presence of algae, olfactory observations) - Vegetation conditions (e.g. weed occurrence, health and extent observations) - Bank conditions - Photographs	DPIE: Annual review and/or as required
	<i>Ongoing monitoring (post-baseline)</i>		
	As per baseline monitoring regime, informed by baseline monitoring report and any recommendations		
Surface Water Management Plan	Weekly	- Visual inspection of sedimentation basins to check: - Structural integrity - Outlet for signs of scour/failure - Sediment volume - Water level	DPIE: Annual review and/or as required
	Daily during discharge	- Visual comparison of sample against 50 mg/L reference sample - Visual inspection for presence of oil and grease - Laboratory analysis of pH and Total Suspended Solids (TSS)	- Website: Within 14 days of obtaining monitoring data - DPIE: Annual review and/or as required
Water Balance Assessment	Daily, annual	Annual site water balance	DPIE: Annual review and/or as required



Figure 6: Groundwater monitoring borehole locations.



Figure 7: Monitoring locations as per EPL 2193.

5.2. Environmental audits

5.2.1. Independent Environmental Audit

Schedule 5, Condition 9 and Schedule 5, Condition 10 of MP 08_0143 state the following regarding Independent Environmental Audits:

9. *By 30 June 2014, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent must commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:*
 - (a) *be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;*
 - (b) *include consultation with the relevant agencies;*
 - (c) *assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);*
 - (d) *review the adequacy of any approved strategy, plan or program required under the these approvals; and*
 - (e) *recommend measures or actions to improve the environmental performance of the project, and/or any assessment, plan or program required under these approvals.*

Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

10. *Within 3 months of commissioning this audit, or as otherwise agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.*

Independent Environmental Audits of the Bass Point Quarry Project will be completed in accordance with the requirements of *Schedule 5, Condition 9 and Schedule 5, Condition 10 of MP 08_0143.*

5.3. Environmental reporting

5.3.1. Regular reporting

Schedule 5, Condition 8 of MP 08_0143 states the following regarding environmental performance reporting:

8. *The Proponent must provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval.*

Accordingly, Hanson will update the company website on a regular basis.

It should be noted that pollution monitoring data required under EPL 2193 must be reported within 14 days of obtaining said pollution monitoring data, as per the requirements of the *Protection of the Environment Operations Act 1997*.

5.3.2. Annual review

Schedule 5, Condition 4 of MP 08_0143 states the following regarding annual review of environmental performance:

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

Annual Review of environmental performance of the Bass Point Quarry Project will be completed in accordance with *Schedule 5, Condition 4* of MP 08_0143.

6. Review and revision

This Environmental Management Strategy will be reviewed at the intervals stipulated in *Schedule 5, Condition 5*:

Revision of Strategies, Plans & Programs

5. Within 3 months of:

*(a) the submission of an annual review under condition 4 above;
(b) the submission of an incident report under condition 7 below;
(c) the submission of an audit report under condition 9 below; or
(d) any modification to this approval (unless the conditions require otherwise),
the Proponent must review the strategies, plans, and programs required under this approval, to the satisfaction of the Secretary. The Proponent must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.*

Ultimately, this EMS is considered a 'living' document that should be reviewed and updated regularly. Given that site conditions will change as quarrying footprint and depth progresses, the EMS needs to be adaptive to remain relevant and effective.

Appendices

Appendix A – Agency consultation