



APPROVALS - SUSTAINABILITY - COMPLIANCE

***Environmental Management Plan
Annual Audit***
**Pakenham Quarry, Mt Shamrock Road,
Pakenham, VIC**

February, 2022



for

Holcim Australia Pty Ltd

DISCLAIMER

AUDITING METHOD

This audit report is based on a representative sample of systems and information using the ‘*evidence based approach*’ as provided for in AS/NZS ISO 19011:2019 *Guidelines for auditing management systems*. This approach was adopted to verify that environmental risks are being systematically managed in accordance with the audit criteria as specified in the audit scope section of this report.

Information presented within the Report relies on:

- the completeness and accuracy of information provided by those personnel available for interview (after reasonable professional interrogation of the accuracy of such information); and
- the condition of the site as observed during the day(s) of the site inspection; and
- the completeness and accuracy of records, monitoring data and previous reports that were within the system or made available to support Audit enquiries.

It is emphasised that this Audit is a ‘snapshot in time’ and environmental conditions, business operations and/or management practices may vary at times following the audit period.

The detail provided within the audit report largely reports by exception; discussing areas identified for improvement far more than when commendable practices were observed and/or verified. This approach is considered to provide a more concise report, with a focus on continuous improvement.

The Audit Report is intended for those named on the distribution list. The Audit report should only be reproduced and distributed in full.

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General Information

Audit Title:	Environmental Management Plan Annual Audit
Site Office:	Mt Shamrock Rd, Pakenham
Site/ Dept. Manager:	Leigh Elliott, Quarry Manager
Audit Conducted By (Environmental Specialists)	
Lead Auditor:	Stephen Jenkins, Director, EnviroRisk Management
Signed:	
Auditor:	Simon Leverton, Senior Consultant, EnviroRisk Management
Signed:	
Date Audit Completed:	24 th February, 2022
Client Representative	
Name:	Leigh Elliott
Title:	Quarry Manager, Holcim
Audit Personnel	
Interviewees/Attendees:	Leigh Elliott – Quarry Manager Matt Dodd – Quarry Manager, Lang Lang Quarry Esta Kocsis – Graduate Environmental Engineer Nathan Thomas – Operations Manager Andrew Clarke - Site Supervisor, Naturelinks
Report Distribution	
Leigh	Quarry Manager, Holcim
Stephen Jenkins	EnviroRisk Management Pty Ltd (Master Copy)

Executive Summary

This report describes the outcome of the annual independent Environmental Management Plan (EMP) audit conducted at Holcim's Mt Shamrock Road Quarry, Pakenham. The quarry has been in operation since 1974. In 2008 approval for the extension of quarrying works was granted by the Victorian Minister for Planning subject to the quarry being managed in accordance with an EMP that covers all the environmental management requirements specified by the applicable planning, extractive industry and environmental regulators. The EMP was prepared and approved by the regulators in January, 2008. It has since been reviewed and revised, with the current version coming into effect in October 2015. A recently revised version of the EMP is currently being reviewed by the Cardinia Shire as part of its approval process. It is understood the updated EMP will capture, as reasonably practicable, the requirements of the newly introduced Environment Protection Act 2017, its associated Regulations and reference standards.

Auditee: Holcim Australia Pty Ltd – Mt Shamrock Road Quarry

Audit Scope: A detailed evaluation of compliance by Holcim with the requirements of the '*Mt Shamrock Quarry – Environmental Management Plan, version 3: August 2015*'.

The audit comprised the conducting of interviews with a range of Holcim and other personnel, examination of documentation and records (audit evidence), a guided inspection of the quarry site and surrounding area, and the completion of a detailed protocol which lists all commitments and obligations contained within the EMP. Photographs were taken to illustrate items raised for attention and to support audit determinations, and are appended to this report.

Recommendations for action have been prepared together with a list of the specific EMP nonconformities that were identified during the audit.

Audit Findings and Conclusions:

The audit has found that over the 12 month audit period the quarrying operations substantially conformed to the requirements of the EMP and its associated documents. The following commendable items were noted:

- No environmentally related complaints were received and recorded;
- Environmental quality monitoring data was compliant with the limits specified in the EMP and EPA Licence;
- Objectives and targets specified in the EMP were met for all items except greenhouse gas emission reductions;
- Vegetation planting around the rim and rehabilitated faces of the quarry, and within the net gain offset areas, has been well managed and continues to progress according to plan;

- Holcim has maintained an active and informative engagement with stakeholders (as represented in the ERC); and
- Holcim has demonstrated a proactive approach to environmental management, particularly in the areas of dust control, vegetation rehabilitation and environmental monitoring.

Four (4) minor nonconformities were identified and are set out in Table 1 below. Eighteen (18) observations were made leading to recommendations to improve environmental management at the site.

Table 2 sets out our recommendations for addressing the nonconformities and improvement opportunities identified in this audit.

Table 3 summarises the outcomes of the audit with respect to the objectives and targets set out in Parts B and C of the EMP, together with those from the previous nine audits. For the year 2021 all the objectives and targets specified in the EMP were met except for the greenhouse gas emissions target.

From examining evidence made available during the audit, discussions with site personnel, and inspections in and around the quarry area and surroundings, we conclude that the EMP and related management documents are being substantially and effectively implemented. All objectives and targets for environmental management were achieved except the greenhouse gas emissions target. Actions to achieve this target for 2022 are already in progress. A small number of relatively minor items requiring attention were identified during the audit, and recommendations have been made for actions to address these.

EMP Ref.	Rating	Nonconformity
2.6.2	mnc	Greenhouse gas emission reduction target of 3% was not achieved.
2.12.3	mnc	E-waste is a priority waste and must be identified, collected and stored separately for removal by a suitably authorised contractor for treatment at a lawful place.
	mnc	Annual waste survey to establish the types, quantities and re-cycling/ re-use percentages for all site wastes was not completed.
	mnc	Quantifiable and achievable annual waste reduction targets for the site for each waste stream identified by the annual survey have not been set.

Table 1 – Nonconformities

EMP Ref.	Recommendation
2.6.2 <i>Greenhouse Gas Emissions</i>	1. Progress with completing the re-routing of haul traffic within the quarry to achieve the expected approximate 50% reduction in haulage distance per tonne of material.
2.12.3 <i>Waste Management</i>	2. E-waste is a priority waste and must be identified, collected and stored separately for removal by a suitably authorised contractor for treatment at a lawful place.
	3. Conduct an annual waste survey to establish all waste types, quantities and re-use/recycle percentages (by mass).
	4. Set measurable and achievable waste reduction and diversion-from-landfill targets for each waste stream/type as identified in the annual survey.
EMP Ref.	Improvement Opportunity
s.5 Training & Awareness	i. All new employees be provided with an overview summary of the important elements of the EMP and its origin from the legislated EES process, <i>in lieu</i> of the full induction at a later date.
s.A, 9 Compliance Planner	ii. Consider converting the Compliance Planner into (or replacing it with) a more interactive real time software platform that shows the status of compliance at any given time, automatic reminders sent to key personnel, overdue notices, etc.
s.B, 2.4.3 Surface Water	iii. A potential contributing factor to the elevated pH of the surface water discharge is run-off from the cement mixing area. Where measured discharge pH is consistently above 8 this should be investigated further and measures put in place to mitigate the impact if it is found to be significant.
	iv. Develop clear instructions on how to check dam/pit water for the presence of toxic algae during the weekly inspections. If toxic algae are suspected, waters need to be sampled and sent for laboratory analysis.
s.B, 2.4.3 Ground Water	v. Holcim should implement the recommendations of the AECOM Groundwater and Spring Review letter report of 3/3/22.
	vi. Consideration of a peer review (by an agreed independent hydrogeologist) of the spring water report be revisited should concern continue to be raised by neighbours following the winter period.
s.B, 2.5.3 Slope Stability	vii. The recommendations of the AECOM report dated 2/12/21 should be implemented where applicable to land under Holcim's control.
s.B, 2.7.1 Traffic Management	viii. Relocate a larger version of the 7am truck arrival warning sign to the left hand side of Mt Shamrock Road.
s.B, 2.8.3 Net Gain Management Plan	ix. Reinstate the sign at the southern gate of the larger NGO site.
s.B 2.13.3 Waste Management	x. An additional clear label should be fixed above the oil drum collection bin identifying its correct contents (e.g. "Chemical Containers (Reportable Priority Waste)").

	xi.	Provide site personnel awareness training (including penalties for non-compliance) regarding priority waste, reportable priority waste, and the new EPA requirements for correct segregation, storage and disposal from the site .
s.B, 2.13.3 Housekeeping	xii.	The spill kit in blue barrel at main quarry pit, and the kit at the crusher plant, should be checked for complete contents.
s.B, 2.14.3 Storage & Handling	xiii.	Investigate with the owner of the on-site electrical transformer unit regarding its polychlorinated biphenyls (PCB) status. If residual PCBs are present a clean up of leaked oil will likely be required.
s.B, 2.15.3 Donazzan's Dam	xiv.	Include provision in the Weekly Inspection pro forma for entering piezo gauging results from Donazzan's Dam.
s.C, 4.1.1 Vehicle Inspection	xv.	Naturelinks to include electronic confirmation of inspection via their in-house app for each occasion that their vehicles go on site.
s.C, 4.1.2 Cleandown of Vehicles, Machinery and Equipment	xvi.	Naturelinks to undertake a risk assessment of weed seed transfer via vehicles/equipment accessing the Holcim site and NGO areas for all works. Controls will include limiting the areas vehicles can go, dry cleaning equipment before leaving site, and if necessary cleaning vehicles at site workshop area with pressure equipment, with details of cleaning events logged in field notes diary or similar.
s.C, 4.3 Weed and Vermin Control	xvii.	An area of pampas grass was noted adjacent to the main quarry pit. This should be treated if reasonably practical and in a way that avoids water contamination.
	xviii.	Seek clarification from Naturelinks that at all times only properly trained and currently licensed personnel undertake herbicide application activities at the site.

Table 2 – Recommendations & Improvement Opportunities

EMP Section	2009		2010		2011		2014		2015		2016		2017	
	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target
Air Quality	Achieved	Partially met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Noise	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Blasting	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Not met	Achieved	Met	Achieved	Met	Met	Met
Surface Water, Drainage, and Groundwater	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Not met
Slope Stability	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Greenhouse Gas Emissions	(not established)	Partially met	Achieved	Partially met	Achieved	Partially met	Achieved	Not met, to be revised	Achieved	Partially met	Achieved	Not met	Met	Met
Traffic Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Net Gain	Progress towards achievement	Met, however progress too slow	Progress towards achievement	Met	Progress towards achievement	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Cultural Heritage	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Fire Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Water Conservation	Achieved	Met	Achieved	Met	Achieved	Met	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Management	Achieved	Not met	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Met	Met	Not met
Housekeeping/Preventative Maintenance	Achieved	(not established)	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Storage & Handling	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Donazzan's Dam Integrity	Achieved	Met	Not fully achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Rehabilitation & Vegetation	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met

Table 3 – Objectives and Targets

EMP Section	2018		2019		2020		2021	
	Objective	Target	Objective	Target	Objective	Target	Objective	Target
Air Quality	Achieved	Met	Achieved	Met	Achieved	Partially Met	Achieved	Met
Noise	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Blasting	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Surface Water, Drainage, and Groundwater	Achieved	Met	Achieved	Met	Achieved	Not met	Achieved	Met
Slope Stability	Achieved	Met	Achieved	Met	Achieved	Achieved	Achieved	Met
Greenhouse Gas Emissions	Achieved	Not met	Achieved	Not met	Achieved	Not met	Achieved	Not met
Traffic Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Net Gain	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Cultural Heritage	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Fire Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Water Conservation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Housekeeping/Preventative Maintenance	Achieved	(not established)	Achieved	Met	Achieved	Met	Achieved	Met
Storage & Handling	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Donazzan's Dam Integrity	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Rehabilitation & Vegetation	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met

Table 3 – Objectives and Targets (continued)

1.0 BACKGROUND

The Holcim Mt Shamrock Road Quarry has been in operation since 1974. In 2001 an application was made for the quarrying activities to be extended. An Environmental Effect Statement (EES) was prepared and after public comment and a panel review, permission for the extension was granted by the Victorian Minister for Planning subject to the quarry being managed in accordance with an Environmental Management Plan (EMP) to cover all the environmental management requirements specified by the applicable planning, extractive industry and environmental regulators. An EMP was prepared for Holcim (then CEMEX) by EnviroRisk Management Pty Ltd (“EnviroRisk”) and issued on 18th January, 2008. The EMP has since been reviewed and revised by Holcim, with the current version coming into effect in October 2015. A recently revised version of the EMP is currently being reviewed by the Cardinia Shire as part of its approval process. It is understood the updated EMP will capture, as reasonably practicable, the requirements of the newly introduced Environment Protection Act 2017, its associated Regulations and reference standards.

Works to extend the quarry commenced in February, 2008. The aerial photographs in Appendix 2 show the quarry prior to extension works, two years after Stage 1 of the extension commenced (i.e. 2010), and at various stages thereafter until the present. The land forming the extension is in the south west corner of the quarry, as shown in photograph 1.

This report describes the outcome of the annual audit of the EMP, conducted as specified in section 8.1 of the Plan. Holcim advised that it provided the Environmental Review Committee (ERC) with a copy of EnviroRisk’s Audit Plan for comment prior to the audit.

2.0 OBJECTIVES

The objectives of the audit are to evaluate the extent of implementation of the EMP by Holcim over the audit period (Feb 2021 to Feb 2022), determine whether the limits, commitments and undertakings set out in the EMP are being complied with and implemented, and provide a public report on the findings to Holcim for presentation to the ERC.

3.0 SCOPE & CRITERIA

The scope of the audit is to undertake a detailed evaluation of compliance by Holcim with the commitments and requirements set out in the ‘*Mt Shamrock Quarry – Environmental Management Plan, version 3: August 2015*’. Specifically, the scope includes an examination of:

- the actions taken in implementing the EMP;
- the compliance with prescribed limits; and
- the environmental monitoring conducted in accordance with the environmental monitoring program appended to the EMP.

In addition, the status of progress towards implementing the recommendations of previous audits was reviewed. The site component of the audit was conducted through site interviews, documentation examination and an accompanied site inspection at the quarry and its surroundings over the period 23rd – 24th February, 2022. Prior to this a selection of audit evidence (in electronic format) was requested from Holcim for review by the auditors. This was done to reduce in-person time on site during the COVID-19 pandemic.

4.0 AUDIT TEAM

Stephen Jenkins - Project Director & Lead Auditor

Stephen is the Director of EnviroRisk Management and an Exemplar Global-accredited Lead Environmental Auditor (EMS, Compliance, Due Diligence and Facilities and Process). He is also a Certified Environmental Practitioner, and a Victorian EPA-appointed Environmental (Industry Facility) Auditor (appointed pursuant to the *Environment Protection Act, 2017*).

Stephen was formerly an operations scientist with the Victorian EPA, and worked as an environmental manager with Richard Oliver Risk Managers before establishing EnviroRisk Management in 1995. Stephen developed the AuditMASTER™ Environmental Management software package based on his many years of experience conducting reviews of Environmental Management Systems. He has conducted systems/risk audits of a large variety of sites including food processing, building and construction, automotive parts manufacturers, plastics and related industries.

Stephen's role in this project was as Audit Leader, providing expert input and direction, and quality-assuring deliverables through peer review.

Simon Leverton – Auditor (water & waste specialist)

Simon is a Senior Project Manager and Exemplar Global-accredited Lead Environmental Auditor (EMS, Compliance, Site Contamination Assessment and Facility). He has over 43 years' experience as a scientist, and over 33 years in the environment industry. He is also a Certified Environmental Practitioner. Simon has a broad range of industrial expertise in both the public and private sectors. He worked for the Victorian EPA for 6 years during which time he managed works approvals and licences for a wide range of industries in the water and wastewater sectors, and landfills. He was also extensively involved in motor vehicle policy evaluation and development, enforcement, and community consultation programs. In the early 1990's he was a senior officer with WA's Water Corporation (trade waste) and later became pollution control manager for that state's then Waterways Commission. As Principal Environmental Scientist with GHD in Perth, Simon was involved in developing environmental management plans for numerous clients. Simon has extensive environmental auditing experience over a range of industry sectors, including quarries, brickworks and other building materials industries.

Simon undertook the site component of the audit, conducting interviews and inspections, and prepared all documentation for internal and client review, and finalised this to completion.

5.0 CRITERIA

The audit criteria are the documented obligations, commitments, requirements and undertakings by the auditee against which audit evidence is compared to determine whether they have been met. The 'primary' criteria for this audit are set out in the three sections of the EMP. 'Secondary' criteria are the supporting documents appended to the EMP, applicable legal and other (Standards, guidelines) requirements and, more generally, industry best practice. The audit report will reference these as appropriate.

The audit protocol (Appendix 1) is used to record the findings against each of the primary criteria. The protocol lists each EMP commitment together with its section reference. Where management measures specified in the EMP have a timing requirement against them, this has been included in the left hand column of the protocol against each measure as appropriate. Areas shaded grey were not included in the audit as these criteria have either expired or were settled in previous audit(s).

The audit team examined Holcim's actions in carrying out each of these commitments and recorded the evidence of these actions (either documentary, or by observation during site inspection) in the far right column. Auditor comments were recorded in the middle column.

For each commitment, the audit team has determined whether the actions and their timing fully satisfy the commitment. If so, **conformity (C)** is indicated in the fourth column. If not, a nonconformity is recorded as either:

- **minor (mnc)** if the environmental impact of the non-conformity is likely to be contained within the site, or have limited off site impact, or is a documentation issue, or
- **major (MNC)** for a potential or actual significant off-site impact on the environment, and/or a legal compliance issue, including non-compliance with prescribed limits in the EMP.

Where an opportunity for management improvement is identified, an **observation (O)** is recorded. Some criteria are not auditable for various reasons, such as not being relevant at the stage of the works being examined by the audit. In this case, the criterion is designated **not auditable (NA)** and an explanation of the reason for this is entered in the comments section.

Photographs have been taken of various locations around the site as evidence of the measures and actions taken to implement EMP commitments, and in some cases highlight opportunities for improvement or commendable actions. These are referenced in the protocol where appropriate and shown in Appendix 2.

The audit included a determination of achievement against each of the objectives set out in the EMP, based on the overall findings, and also whether the specific objectives and targets for

each section have been met (fully, partially or not at all). The results of this are summarised in s.7.6 and Table 3 below.

6.0 METHODOLOGY

The audit was conducted in accordance with AS/NZS ISO 19011:2019 *Guidelines for auditing management systems* and progressed through the following stages:

6.1 Audit Program (Schedule)

Once EnviroRisk was engaged a draft Audit Program was prepared and provided to Holcim for review and comment. Holcim provided the program to the ERC for comment in October, 2021. Due to the COVID-19 pandemic the program was modified from previously audits to reduce in-person time spent on site by the auditors. No comments were received from Holcim in relation to the program.

6.2 Pre-Audit Initial Evidence Review

A list of documentary evidence available in electronic format was provided to Holcim to send to the auditors for review prior to the site component.

6.3 Site Component

The site component commenced with a brief opening meeting with the Quarry Manager and other relevant personnel. Arrangements for the audit were confirmed as per the Audit Program.

The auditor then conducted a detailed site inspection accompanied by the Quarry Manager. The inspection included the quarry and rehabilitation areas, the screening vegetation plantings on the western rim of the quarry site, equipment 'graveyards', the EPA sampling point, Net Gain Offset areas, northern quarry boundary and Donazzan's Dam. A second site inspection was conducted on day 2 that included the maintenance area, crushing plant, cement mixing and silo, and settlement ponds.

Meetings, discussions, interviews, sighting of evidence and completion of the audit protocol occurred in the site office over days 1 and 2. Holcim personnel present for some or all of this time were Matt Dodd (former Quarry Manager), Nathan Thomas (Operations Manager), Leigh Elliott (Quarry Manager) and Esta Kocsis (Graduate Environmental Engineer). The auditors also reviewed the outcomes and recommendations of the previous audit report (EnviroRisk, 2021).

At the end of day 2 a closing meeting was held with the Quarry Manager, former Quarry Manager and Operations Manager at which the preliminary audit findings were presented (subject to further evidence that was being collected by the auditee).

6.4 Reporting

The preparation of a detailed audit report describing the processes and findings of the audit, including recommendations for any future management actions to correct non-compliances and improve environmental management at the quarry.

7.0 FINDINGS & DISCUSSION

7.1 Overall

The audit has found that over the 12 month audit period the quarrying operations substantially conformed to the requirements of the EMP and its associated documents. The following commendable items were noted:

- No environmentally related complaints were received and recorded;
- Environmental quality monitoring data was compliant with the limits specified in the EMP and EPA Licence;
- Objectives and targets specified in the EMP were met for all items except greenhouse gas emission reductions;
- Vegetation planting around the rim and rehabilitated faces of the quarry, and within the net gain offset areas, has been well managed and continues to progress according to plan;
- Holcim has maintained an active and informative engagement with stakeholders (as represented in the ERC); and
- Holcim has demonstrated a proactive approach to environmental management, particularly in the areas of dust control, vegetation rehabilitation and environmental monitoring.

Four (4) minor nonconformities were identified and are set out in Table 1. Eighteen (18) observations were made leading to recommendations to improve environmental management at the site.

Table 2 shows the implementation status of the recommendations to correct nonconformities from previous EMP audits. All recommendations have been closed out (although the greenhouse gas emissions target was not achieved during the audit period Feb 2021 to Feb 2022 due to other factors).

The following sub-sections provide some further detailed findings on relevant key areas of site activity.

7.2 Surface Water Quality Management & Monitoring

The cement mixing area at the crusher plant was inspected. Washdown from this process enters a wedge pit which itself discharges to the quarry surface water system and eventually to Donazzan's dam from where excess water is discharged off site. It is possible that cement mixing residues are contributing to the elevated pH that is consistently detected at the discharge point (i.e. between 8.5 and 9, but not above 9 and therefore within the specified Licence limit). Whilst the water discharge quality is not a nonconformity it is considered best practice that processes involving environmentally hazardous chemicals be, as far as reasonably practical, contained and prevented from causing offsite release of harmful residues. It is

therefore recommended that the cement mixing area should be further investigated as a proactive measure.

Surface water bodies on the quarry site have a green colour – in the case of the quarry pits this may be mineral in origin. Donazzan's Dam also has a greenish hue. A recommendation is made to include in the weekly checklist some Agriculture Department guidance instructions on how to detect the presence of toxic algae.

7.3 Waste Management & Monitoring

The site is managing the solid waste streams well with improvements noted in signage and bin availability. Correct segregation of some priority wastes still needs further attention but has improved since the previous audit. In particular attention is drawn to methods for E-waste collection, storage and removal for reprocessing and recycle. This requires an on-going effort to ensure the culture of correct waste minimisation, segregation and storage is embedded into routine work practices. Conducting the required annual waste survey and setting annual targets, which lapsed in 2021, needs to be kept up as part of the cultural shift to more sustainable practices in this area.

7.4 Landscape Rehabilitation Management

Landscape rehabilitation is progressing according to the plans specified for the quarry. The Net Gain Offset areas appear to be well maintained. Infill plantings in the Phase A and B area (western quarry slopes) are being physically impacted by megafauna (kangaroos, deer). Weed management is on-going and appears to be largely effective. A recommendation is made concerning the use of vehicles and equipment on site to minimise them carrying weed seeds off site. Pressure cleaning facilities are available for use at the site workshop if necessary.

7.5 Greenhouse Gas Emissions Reduction Target

The site has calculated that, after the renewable energy component is excluded from the calculation, an approx. 11% increase in greenhouse gas emissions occurred over the audit period.

This was reportedly due to breakdown in on-site crusher plant requiring the use of crushing plant being brought onto the site, powered by diesel motors. Another factor cited was market demand for a more highly crushed aggregate, which increased the embedded energy of that product thereby increasing the energy use and emissions per tonne of product.

Holcim advises that re-routing truck haulage within the quarry using a newly constructed 'road bridge' is estimated to halve the greenhouse gas emissions due to diesel combustion, and should bring the overall emissions for the site next year down to below target.

7.6 Objectives & Targets

Table 3 summarises the outcomes of the audit with respect to the objectives and targets set out in Parts B and C of the EMP, together with those from the previous nine audits. For the

year 2021 all the objectives and targets specified in the EMP were met except for the greenhouse gas emissions target.

Implementing the recommendations in this report should enable all objectives and targets to be met going forward.

Table 1 - Nonconformities

EMP Ref.	Rating	Nonconformity
2.6.2	mnc	Greenhouse gas emission reduction target of 3% was not achieved.
2.12.3	mnc	E-waste is a priority waste and must be identified, collected and stored separately for removal by a suitably authorised contractor for treatment at a lawful place.
	mnc	Annual waste survey to establish the types, quantities and re-cycling/ re-use percentages for all site wastes was not completed.
	mnc	Quantifiable and achievable annual waste reduction targets for the site for each waste stream identified by the annual survey have not been set.

Table 2 - Progress and Status of Nonconformity Recommendations from Previous two Audits

EMP Ref.	Rating	Nonconformity	Recommendation	Status as at 27 Feb 2022
2021				
s.A, 6.3	MNC	Non-compliant water quality monitoring data was not reported to EPA in the Annual Performance Statement.	Notify EPA that the APS submitted in 2020 was in error and provide details of measures to be taken to avoid a recurrence.	Completed.
s.B, 2.1.3	mnc	Dust deposition samples for three consecutive months were not retrieved from any of the sampling locations.	Document and implement contingency procedures in the event that the air quality monitoring contractor is unable to retrieve dust deposition samples at the specified intervals for transport to the laboratory for analysis.	Completed.
s.B, 2.4.2	mnc	A number of pH and turbidity exceedances were recorded in samples taken at the EPA Licence discharge point during discharge of surface water from the site.	Undertake an investigation into the cause(s) of the turbidity and pH exceedances measured at the EPA Licence discharge point during discharge of surface water from the premises. Implement necessary controls and other measures as necessary to ensure Licence discharge limits are met at all times.	pH probe replaced – levels have reduced since then. No exceedances recorded.
s.B, 2.4.2	mnc	The turbidity meter was found to be almost a year overdue for factory calibration, and standard turbidity and pH solutions are not being routinely used prior to conducting monthly water quality monitoring.	Document and implement a water quality monitoring procedure that includes instructions on the correct use and field calibration of water quality monitoring instruments. The procedure should align with EPA sampling guidelines and the instrument manufacturers' specifications.	Completed.

EMP Ref.	Rating	Nonconformity	Recommendation	Status as at 27 Feb 2022
s.B, 2.6.2	mnc	The site did not meet its annual greenhouse gas emission reduction target.	Investigate further measures that can be taken to achieve the annual greenhouse gas reduction target for the site. Include consideration of offsets such as carbon offset purchasing, and the sourcing of electricity from renewable generation.	Completed.
2020				
2.6.2 GHG Emissions	mnc	Holcim did not meet its energy reduction target of 3% year on year.	Investigate further measures to reduce energy usage per tonne of product delivered. These could include benchmarking the site against similar sites in Australia and overseas, and adopting strategies used elsewhere (as applicable).	Site has purchased renewable energy offsets as a way of achieving its GHG emissions reduction target, however other factors resulted in the target not being met for 2021.
2.12.3 Waste Man't	mnc	Waste streams at maintenance/service area not being properly segregated.	Develop further measures to ensure: <ul style="list-style-type: none"> co-mingling of recyclable and regulated wastes in landfill skip ceases; use of inappropriate or improperly labelled waste bins within workshop ceases, by removing bins from site; cardboard waste is compacted in the cardboard recycling skip. 	Completed.
Part C, s.1.4.1	mnc	The Landscape and Rehabilitation Management Plan has not been reviewed as required.	Review the LRMP to ensure that it contains up to date and relevant land management practices, before the next stage of rehabilitation works commences, document the review and present to ERC for comment	Completed and waiting for Council approval.

EMP Ref.	Rating	Nonconformity	Recommendation	Status as at 27 Feb 2022
			and agreement. The review should involve the contractor Naturelinks.	

Table 3 – Objectives and Targets

EMP Section	2009		2010		2011		2014		2015		2016		2017	
	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target	Objective	Target
Air Quality	Achieved	Partially met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Noise	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Blasting	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Not met	Achieved	Met	Achieved	Met	Met	Met
Surface Water, Drainage, and Groundwater	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Not met
Slope Stability	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Greenhouse Gas Emissions	(not established)	Partially met	Achieved	Partially met	Achieved	Partially met	Achieved	Not met, to be revised	Achieved	Partially met	Achieved	Not met	Met	Met
Traffic Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Net Gain	Progress towards achievement	Met, however progress too slow	Progress towards achievement	Met	Progress towards achievement	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Cultural Heritage	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Fire Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Water Conservation	Achieved	Met	Achieved	Met	Achieved	Met	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Waste Management	Achieved	Not met	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Not met, in progress	Achieved	Met	Met	Not met
Housekeeping/Preventative Maintenance	Achieved	(not established)	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Storage & Handling	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Donazzan's Dam Integrity	Achieved	Met	Not fully achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met
Rehabilitation & Vegetation	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met	Met	Met

Table 3 – Objectives and Targets (continued)

EMP Section	2018		2019		2020		2021	
	Objective	Target	Objective	Target	Objective	Target	Objective	Target
Air Quality	Achieved	Met	Achieved	Met	Achieved	Partially Met	Achieved	Met
Noise	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Blasting	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Surface Water, Drainage, and Groundwater	Achieved	Met	Achieved	Met	Achieved	Not met	Achieved	Met
Slope Stability	Achieved	Met	Achieved	Met	Achieved	Achieved	Achieved	Met
Greenhouse Gas Emissions	Achieved	Not met	Achieved	Not met	Achieved	Not met	Achieved	Not met
Traffic Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Net Gain	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Cultural Heritage	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Fire Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Water Conservation	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Waste Management	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Housekeeping/Preventative Maintenance	Achieved	(not established)	Achieved	Met	Achieved	Met	Achieved	Met
Storage & Handling	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Donazzan's Dam Integrity	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met
Rehabilitation & Vegetation	Achieved	Met	Achieved	Met	Achieved	Met	Achieved	Met

8.0 CONCLUSIONS & RECOMMENDATIONS

From examining evidence made available during the audit, discussions with site personnel, and inspections in and around the quarry area and surroundings, we conclude that the EMP and related management documents are being substantially and effectively implemented. All objectives and targets for environmental management were achieved except the greenhouse gas emissions target. Actions to achieve this target for the year ending February 2023 are already in progress. A small number of relatively minor items requiring attention were identified during the audit, and recommendations have been made for actions to address these.

Table 4 sets out our recommendations for addressing the nonconformities and improvement opportunities identified in this audit.

Table 4 – Recommendations & Improvement Opportunities

EMP Ref.	Recommendation
2.6.2 <i>Greenhouse Gas Emissions</i>	1. Progress with completing the re-routing of haul traffic within the quarry to achieve the expected approximate 50% reduction in haulage distance per tonne of material.
2.12.3 <i>Waste Management</i>	2. E-waste is a priority waste and must be identified, collected and stored separately for removal by a suitably authorised contractor for treatment at a lawful place.
	3. Conduct an annual waste survey to establish all waste types, quantities and re-use/recycle percentages (by mass).
	4. Set measurable and achievable waste reduction and diversion-from-landfill targets for each waste stream/type as identified in the annual survey.
EMP Ref.	Improvement Opportunity
s.5 Training & Awareness	i. All new employees be provided with an overview summary of the important elements of the EMP and its origin from the legislated EES process, <i>in lieu</i> of the full induction at a later date.
s.A, 9 Compliance Planner	ii. Consider converting the Compliance Planner into (or replacing it with) a more interactive real time software platform that shows the status of compliance at any given time, automatic reminders sent to key personnel, overdue notices, etc.
s.B, 2.4.3 Surface Water	iii. A potential contributing factor to the elevated pH of the surface water discharge is run-off from the cement mixing area. Where measured discharge pH is consistently above 8 this should be investigated further and measures put in place to mitigate the impact if it is found to be significant.
	iv. Develop clear instructions on how to check dam/pit water for the presence of toxic algae during the weekly inspections. If toxic algae are suspected, waters need to be sampled and sent for laboratory analysis.
s.B, 2.4.3 Ground Water	v. Holcim should implement the recommendations of the AECOM Groundwater and Spring Review letter report of 3/3/22.
	vi. Consideration of a peer review (by an agreed independent hydrogeologist) of the spring water report be revisited should concern continue to be raised by neighbours following the winter period.
s.B, 2.5.3 Slope Stability	vii. The recommendations of the AECOM report dated 2/12/21 should be implemented where applicable to land under Holcim's control.
s.B, 2.7.1 Traffic Management	viii. Relocate a larger version of the 7am truck arrival warning sign to the left hand side of Mt Shamrock Road.
s.B, 2.8.3 Net Gain Management Plan	ix. Reinstate the sign at the southern gate of the larger NGO site.

s.B, 2.12.3 Waste Management	x.	An additional clear label should be fixed above the oil drum collection bin identifying its correct contents (e.g. "Chemical Containers (Reportable Priority Waste)").
	xi.	Provide site personnel awareness training (including penalties for non-compliance) regarding priority waste, reportable priority waste, and the new EPA requirements for correct segregation, storage and disposal from the site .
s.B, 2.13.3 Housekeeping	xii.	The spill kit in blue barrel at main quarry pit, and the kit at the crusher plant, should be checked for complete contents.
s.B, 2.14.3 Storage & Handling	xiii.	Investigate with the owner of the on-site electrical transformer unit regarding its polychlorinated biphenyls (PCB) status. If residual PCBs are present a clean up of leaked oil will likely be required.
s.B, 2.15.3 Donazzan's Dam	xiv.	Include provision in the Weekly Inspection pro forma for entering piezo gauging results from Donazzan's Dam.
s.C, 4.1.1 Vehicle Inspection	xv.	Naturelinks to include electronic confirmation of inspection via their in-house app for each occasion that their vehicles go on site.
s.C, 4.1.2 Cleansdown of Vehicles, Machinery and Equipment	xvi.	Naturelinks to undertake a risk assessment of weed seed transfer via vehicles/equipment accessing the Holcim site and NGO areas for all works. Controls will include limiting the areas vehicles can go, dry cleaning equipment before leaving site, and if necessary cleaning vehicles at site workshop area with pressure equipment, with details of cleaning events logged in field notes diary or similar.
s.C, 4.3 Weed and Vermin Control	xvii.	An area of pampas grass was noted adjacent to the main quarry pit. This should be treated if reasonably practical and in a way that avoids water contamination.
	xviii.	Seek clarification from Naturelinks that at all times only properly trained and currently licensed personnel undertake herbicide application activities at the site.

9.0 REFERENCES

1. EPA Victoria, Legislation, guidelines, etc (various).
2. EnviroRisk, 2021. Environmental Management Plan Annual Audit, Pakenham Quarry, Mt Shamrock Road, Pakenham, VIC, issued 6th April, 2021.
3. Mt Shamrock Quarry Environmental Management Plan, version 3, August 2015 and associated documents.
4. AS/NZS ISO14001:2016 *Environmental management systems*.
5. AS/NZS ISO19011:2019 *Guidelines for auditing management systems*.
6. [Reportable priority waste | Environment Protection Authority Victoria \(epa.vic.gov.au\)](https://epa.vic.gov.au/reportable-priority-waste)

Appendix 1

Audit Protocol

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
SECTION A - ADMINISTRATION				
2	Quarry Operations – <ul style="list-style-type: none"> Production rate Processes Hours of operation 	Approx. 1.18 million t/y production rate. Hours are still current. No work has been conducted outside these hours. Holcim advises no blasting has occurred outside the specified hours.	C	Holcim former Quarry Manager – pers. Comm.
3	Roles & Responsibilities – <ul style="list-style-type: none"> Organisational chart 	As specified in the org chart; no change advised. This has been updated in the revised EMP currently awaiting Council approval.	C	EMP, p11.
4	Environmental Review Committee The ERC has been established, and will operate, under a procedure laid down by Council. Holcim will cover all the administrative costs of the ERC, including the fees of the Chairperson, and will provide secretariat services to the ERC. The ERC will monitor and review the performance of the quarry against the Permit, the Work Authority and this EMP (as varied from time to time), provide advice and facilitate community understanding of quarry operations and their management.	Minutes accessed via <i>allpossibilities</i> website, indicate meetings cover a wide range of issues, and involve considerable technical detail when applicable. Q4 report not available on website yet; reportedly in process of being prepared for uploading. <u>Minutes:</u> On-going concern by residents regarding groundwater monitoring results is noted. In short, residents are questioning why springs appear not to be flowing as expected after rainfall periods, appearing to contradict the consultant's claim that quarrying activities are not impacting groundwater fluctuations as monitored.	C	ERC Meeting quarterly reports 2021 (Q1, Q2, Q3); ERC meeting minutes (Feb, July, Aug, Nov 2021); LRMP report (Naturelinks), 2021; 2020 Groundwater & Spring Review letter report, AECOM, Jan, 2021; Donazzan's Dam Integrity Report, AECOM, Jan 2021; Slope Stability Inspection Report, AECOM, Jan 2021.

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C - Conforms;</p> <p>MNC –Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc –Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
		<p>Quarry manager commended for responsive and co-operative approach.</p> <p><u>Quarterly Reports:</u> Comprehensive. Include nonconformities and how dealt with.</p>		
5	<p>Training & Awareness</p> <p>A copy of this EMP is to be kept and displayed in the foyer of the Quarry gatehouse. The EMP will also be accessible by all Holcim-approved users on Holcim's computer intranet.</p> <ul style="list-style-type: none"> All new and current employees will be briefed on the EMP as part of their site (re-)induction and training. All employees will receive re-induction training every year. All contractors working at the site will be briefed on the EMP as part of their site (re-induction). Employees with specific key roles/responsibilities under the EMP will have their competency verified prior to being assigned to carry out those roles. <p>Records of training will be maintained within the SHE system.</p>	<p>Copy of EMP kept in QM's office. Holcim advises one new employee started in 2021.</p> <p>One new employee – started September, 2021. This person has not been briefed on EMP specifically, and would have to wait until the annual induction that includes EMP in more detail. Suggest all new employees be provided with an overview summary of the important elements of the EMP and its origin from the legislated EES process.</p> <p>Re-induction at start of year (22/1/21) for all employees.</p>	<p>C</p> <p>O</p>	<p>New employee induction documents (Sep, 2021). Sample – re-induction (includes EMP toolbox).</p> <p>EMP induction toolbox talk (ppt presentation).</p>

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	Where no employees with suitable training are available to carry out specific key roles/ responsibilities under this EMP, those roles/ responsibilities will be carried out by suitably qualified persons or companies contracted by Holcim for that task.			
5.1	<p>Personnel having responsibilities for carrying out monitoring activities as specified in the monitoring program will be trained and tested for their competence to carry out such activities, and certified as such, by a specialist in the relevant field.</p> <p>An Appointment of Environment Training Specialists Procedure (Appendix 1) has been developed for this process and approved by (then) Department of State Development, Business and Innovation (now Economic Development, Jobs, Transport and Resources, DEDJTR).</p>	<p>As above.</p> <p>Field calibration has been undertaken internally by Holcim staff. Holcim procedure developed internally using similar procedure from another Holcim site. Holcim considered it was not reasonable to get ALS to train employee in work that they could do themselves.</p> <p>New procedure developed for WQ tester to follow. Calibration of WQ equipment is done by QM.</p>	C	EMP version2 doc. Pakenham Quarry Surface Water Quality Testing procedure, Sep 2021.
6.0	Procedures have been developed for both internal (within Holcim) and external (between Holcim and external interested parties) communication and reporting. A separate procedure has been prepared to manage environmental complaints received from external parties such as members of the public and local residents.			
6.1	<p>Internal Communications</p> <p>The SHE Guideline 2.2 Consultation sets out details of communications within Holcim on</p>	<p>Monthly SIT meetings. Includes regular dust control topic for discussion.</p> <p>Toolbox meetings – daily pre-start.</p>	C	<p>SIT minutes sighted, Jan-Dec 2021.</p> <p>Toolbox book sighted.</p>

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	<p>environmental issues, which for Pakenham Quarry is through the site's Safety Improvement Team (SIT). The procedure describes how meeting outcomes are minuted and the minutes distributed to other employees. At SIT meetings environmental progress and performance under the EMP will be reviewed and discussed, and actions authorised. Environmental issues will be raised with other employees at toolbox meetings which will be conducted as required. All toolbox meetings are recorded using the Attachment 2.1A - Toolbox Talk Form.</p>	<p>SIT meetings track progress in EMP performance and implementation through audit completion, incident resolution, and compliance planner status. SIT meeting agenda now has a permanent agenda item for EMP Progress & Implementation.</p> <p>Toolbox meetings occur every morning – enviro issues raised as applicable. Toolbox pre-start talks are logged in Toolbox book.</p>		
6.2	<p>Incidents</p> <p>All environmental incidents are to be reported, recorded and investigated in accordance with SHE Guideline 5.1 - Incident Reporting, Recording & Investigation. The INX/iCare incident database (INX/iCare) is to be used for reporting and recording details of each incident and the measures taken to resolve it. The system automatically forwards incident notifications through to</p>	<p>Hazards register (INX/iCare) sighted – a number of minor incidents recorded, including minor WQ exceedance (turbidity, reported to EPA). Bowser line got broken (break away coupling prevented fuel spill). Approx. 40L oil spilled in workshop (incident reporter recently trained in spill response). Incidents were recorded and actions implemented. System considered to be working well.</p>	C	Register printout (since Feb 2021). Spill response training attendance (June, 2020).

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	management for completion. Every incident and the details surrounding it are available through INX/iCare and is used by management for progress status and review purposes, and to compare against performance targets.			
6.3	<p>External Communications</p> <p>SHE Guideline 4.7 - Community Engagement details how Holcim facilities are required to communicate and engage with the wider community regarding local issues. The site-specific Environmental Reporting Procedure (Appendix 2) specifies procedures for compliance reporting to the ERC and other stakeholders, and the frequency and nature of reporting of monitoring data, etc. Statutory reporting requirements such as those applying to the EPA Licence are also detailed in this procedure. This procedure also details the steps to take in notifying residents living near the quarry when quarry activities are planned which have the potential for off-site impacts (Note: Appendix 2 does not have this information;</p>	<p>ERC reporting – quarterly reports. Statutory reporting EPA (Annual Performance Statement - APS). Resident notification.</p> <p>Quarterly reporting occurs prior to ERC meetings. Reports posted on website and made available to community.</p> <p>EPA Annual Report (APS) – minor no non-compliances reported.</p> <p>Key resident (D Petty) contacted prior to each blasting event.</p>	C	EMP – Appendix 2 – Env Reporting Procedure (28/11/13) Quarterly reports – on ERC website; Annual Report to EPA (APS, 1/7/20-30/6/21), dated 9/8/21; Blasting Records (s.2.3) – sample sighted.

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	Appendix 8 specifies comms to ERC/residents re blasting).			
6.4	<p>Complaints</p> <p>A register of all complaints received is maintained as specified in Holcim's SHE Guideline 5.1 – Incident Reporting, Recording & Investigation. Any complaint received, or referred by a government agency, is directly and accurately recorded and managed in INX/iCare which includes the provision for the following information (as specified). INX/iCare can be accessed electronically at any time by authorised Holcim users to view any complaints received and the actions taken.</p> <p>A full and up-to-date copy of the Complaints Register can be generated by INX/iCare and will be made available to members of the ERC upon request.</p> <p>A copy of all complaints received since the previous meeting of the ERC is to be provided to members of the ERC prior to each meeting of the ERC.</p> <p>A sign has been erected and maintained at the approach to Pakenham Quarry that</p>	Commendably, no complaints were received or recorded for the period.	NA	

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC –Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc –Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	clearly shows to approaching persons the following information: (as per EMP).			
7	Records Records that are generated as part of the EMP are to be managed according to QMS Procedure PN1.1 Control of Documents. This procedure specifies the identification, storage, protection, retrieval, retention and disposal of records required as part of this EMP.	Records are generally well maintained and complete.	C	Records sighted during this audit.
8.1	EMP Audit EMP to be audited annually.	Holcim advises ERC notified of audit beforehand and given opportunity for input, etc. No feedback from ERC re audit program.	C	3 rd quarter minutes of ERC meeting.
8.2	Procedure and Personnel Certification All monitoring procedures that form a part of this EMP have been certified by an expert in the relevant field as being appropriate (see also 5.1 Appointment of Specialist Consultants). Personnel conducting monitoring measurements and inspections have been certified by a specialist in the relevant field as being competent (see also 5.1 Appointment of Specialist Consultants).	Holcim advises one change in specialists conducting monitoring.	C	

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC – Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc – Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
8.3	EMP Review Every 5 years.	EMP has been reviewed and amended, and was submitted to Council for approval in October, 2021.	C	Email (copy) to Council, 18/10/21.
8.4	EMP Variation The EMP may be varied from time to time as changing circumstances require. All variations to the EMP must receive the written consent of the Minister for Planning. EMP variation will be conducted in accordance with the quarry's EMP Review Procedure .	As above.	NA	
9	Compliance Planner The Compliance Planner (Appendix 7) details the activities to be carried out (on a monthly basis over the course of the specified 12 month period) to ensure that all environmental compliance obligations are met. Each activity in the spreadsheet is signed off upon completion, and the matrix is reviewed and if necessary revised where compliance obligations change during the 12 month period.	This is now on the QM's laptop and is being used to ensure timely completion of monitoring and other EMP-related activities. Consider converting the Planner into a more interactive real time platform that shows the status of compliance at any given time.	C O	Compliance Planner, 2021
SECTION B – OPERATIONAL MANAGEMENT & MONITORING				

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C - Conforms;</p> <p>MNC -Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc -Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O - Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA - Not Audited or Applicable (see "Comments" section for reason why)</p>				
1	<p>Operations & Impacts</p> <p>All significant environmental hazards and incidents are documented and recorded within the INX/iCare electronic database. The hazards associated with each operation and activity carried out at the quarry, together with the corresponding actual or potential environmental impact(s) for each of the hazards are also available for viewing by all authorised personnel. SHE standard control procedures are generic and apply to all Holcim aggregates site, whilst the site specific controls apply to Pakenham Quarry alone.</p>	Holcim advises no change in site operations since last audit, therefore EMP is current for risks and hazards on site.	C	
2.1	Air Quality			
2.1.1	<p>Objective</p> <p>To prevent dust emissions from the Pakenham Quarry operation from causing a nuisance at residences or sensitive sites within the surrounding area.</p> <p>To ensure that dust levels do not adversely impact on the health and amenity of persons in the surrounding area.</p>	Objectives have been fully achieved. No nuisance or dis-amenity likely to have been caused.	C	No complaints. No evidence to the contrary re health and amenity.
2.1.2	Targets	Targets have been met.	C	Blue Atmosphere - monthly AQM reports (Jan-Dec 2021)

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	<p>100% Compliance with Permit requirements , namely the following levels to be achieved at any residence or other sensitive site:</p> <p>PM₁₀ no greater than 64 µg/m³ (1-hour average)</p> <p>Dust deposition no greater than 4g/m²/month (no more than 2g/m²/month greater than background)</p> <p>No (0) justified complaints from sensitive receptors.</p>	<p>Reactive Monitoring – no quarry-triggered exceedances are recorded and were conveyed to QM. If these occur they need to be entered into the system as incidents.</p> <p>Deposition – no quarry-triggered exceedances for the data obtained.</p> <p>No justified complaints received.</p>		
2.1.3	Management Measures			
As required	Dust emissions from unpaved surfaces are to be controlled using the following measures: Wet suppression - all dust generating areas such as site roads will be watered, as required, to suppress dust during operation.	Water cart (new) operates during quarry operations (6 days/wk) when no stripping occurring.	C	Observation – truck observed in action.
As required	Water used for dust control may be dosed where appropriate with dust control additives to enhance stabilisation and reduce water use.	Holcim advises no dosage of additives is used.	NA	Pers. comm. – LE
As necessary	Relevant operations will be suspended if adequate water cannot be applied for dust control.	Holcim advises this was not done during the audit period.	C	

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	<p>Revegetation of exposed surfaces, including the following measures:</p> <ul style="list-style-type: none"> Vegetation and topsoil removal will be limited to the smallest practicable area and revegetated as soon as possible following clearance; Soil stockpiles will be allowed to self-seed when left for extended periods of time; The extent of areas prone to erosion will be restricted wherever possible; Exposed surfaces will be rehabilitated in a timely manner in accordance with the Landscape Rehabilitation and Management Plan (LRMP). Where revegetation or minimal land exposure is limited by procedural requirements, chemical (dust) suppression methods may be used. 	<p>Rehabilitation is proceeding very well, and in accordance with the LRMP (see details below). Topsoil stockpiles appear stable. Exposed areas along NW and southern rim are not reportedly a dust generation problem.</p>	C	Observation; photographs
As necessary	On days of unfavourable conditions, a review of on site practices will be undertaken to identify actions that can mitigate dust generation.	Reportedly existing practices have been followed.	C	

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As necessary	Unpaved roadways will be watered on a needs basis during load and haul activities to minimise dust from vehicle movement.	Haul roads mostly observed to be well watered and not generating excessive dust.	C	Observation; photographs
All times	When moving stock, load sizes will be managed to avoid spillages.	Drivers advised during induction to cover load and clean off excess material from rails/frame. No spillages observed.	C	Observation
All times	Speed limits will be defined and communicated to all machinery operators. Where necessary speed limits will be enforced by quarry management.	Speed limit specified in induction. Signs on site and in Traffic Management Plan. No obvious speeding vehicles observed during the audit.	C	Observation
As necessary	Paved/sealed roadways within the quarry will be maintained in a clean state to minimise dust from vehicle movement.	Street sweeper observed in operation – sealed surfaces only (inside quarry and down Mt Shamrock Rd to corner). Paved surfaces of external road appeared clear of mud.	C	Observation
All times	All road registered vehicles that cart quarried materials shall be covered by suitable tarpaulins or enclosed blinds prior to leaving the quarry and entering public roadways.	Periodic checks are made of vehicles. Tarpaulin checks indicated a single nonconformity in May. Corrected immediately.	C	Observation; Quarterly Report to ERC (tarping checks)
All times	All road registered vehicles, other than passenger cars (GVM <4t), will pass through the wheel wash facility prior to leaving the quarry and entering public roadways.	Wheel wash was in operation.	C	Observation

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As necessary	Roadways immediately beyond the site entrance will be regularly inspected and swept to prevent the build-up of material.	Weekly road sweeper deployed. Included in site inspection checklist.	C	As above.
All times	Travel distance will be minimised through appropriate site layout and design.	Haul bridge under construction which will reduce haul distance by 1km per truck movement (roughly 50%).	C	Pers. Comm - LE
All times	Vehicle movements will be restricted to defined areas.	Traffic management plan on office wall – copy attached in Appendix 2 - Photographs.	C	Traffic Management Plan (TMP)
All times	Speed limits will be defined, and where necessary enforced, for vehicles on the site.	30kph (stockpile area) and 40kph on haul roads. 30kph in defined areas.	C	Signs in place; TMP
As required	Dust emissions from stockpiles will be mitigated where required to ensure targets are met by: <ul style="list-style-type: none"> Wet suppression using sprinklers; Covered storage of fine material; Limiting the height and slope of the stockpiles; Limiting drop heights from conveyors; and Use of wind breaks. 	Water truck used on stockpiles, fixed sprinklers installed. Some conveyors can be raised/lowered to minimise drop heights. Dust is generated at the crushing plant, and when trucks are loaded from stockpiles, however suppression measures are working to reduce emissions.	C	Observation.
All times	Dust emissions from conveyors will be minimised by: <ul style="list-style-type: none"> Minimising drop heights; and Appropriate design of hopper load systems to ensure a good fit with trucks, 	Measures are in place. Dust is generated from conveyors, but is reduced through the use of fixed sprays. These were observed in the crusher plant operations room. Operator advised that water sprays are always working	C	Observation during inspection. Photograph 64.

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	and use of appropriate enclosures for hoppers.	when plant in operation. If they malfunction, the processing has to be stopped and the spray fixed otherwise visibility of the process is impaired.		
All times	Dust emissions during material handling will be minimised by: <ul style="list-style-type: none"> Minimising drop heights; Regularly cleaning up any spillages; and Appropriate design of hopper load systems to ensure a good fit with trucks, and use of appropriate enclosures for hoppers. 	No further changes in dust management measures since previous audit period Observed to be operating effectively.	C	Observations (photographs).
All inductions	All site personnel will be instructed to immediately report situations resulting in elevated dust emissions to the manager (or their supervisor).	No change to induction booklet. Inductions are occurring.	C	Dust Management procedure; induction attendance (sample sighted).
All times	Monthly monitoring of dust deposition.	No exceedances.	C	See above
Within 1 month of EMP approval	A weather monitoring station with display will be installed in the Pit Manager's office.	QM and other managers have phone app which shows station read-out – sighted.	C	Observation
All times	Records of wind speed and direction will be stored on or off site for a period of 12 months. If the records are stored off site, the	Wind speed and direction sighted on share site – real time.	C	Blue Atmosphere – records data for summary in AQ reports.

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	data must be readily available to the site for analysis by the site personnel or their representatives in the case of complaints and to assist in interpreting dust monitoring data.			
All times	Dust emissions and potential dust generating activities and areas will be monitored visually during quarrying activities.	Monthly site checks are conducted to monitor for a range of issues including dust. No excessive dust related issues were noted during these checks.	C	Monthly site inspections, 2021 (sample)
As required	Analysis and reporting of dust samples for compliance will be undertaken by an experienced entity independent of the operator.	ALS does analysis of deposition samples, and Blue Atmosphere (BA) prepares reports (both deposition and reactive monitoring).	C	BA summary reports for 2021 sighted; examples of ALS reports sighted.
All times	Community complaints will be monitored during works to assess the operations against objectives and targets.	Holcim advises no air related complaints have been received.	C	
Monthly	All data is reviewed by an external consultant. In the event of any exceedances the site is notified immediately and relevant data is forwarded to the Quarry Manager.	No exceedances reported that were verified as attributable to site activities.	C	Blue Atmosphere monthly reports – Jan-Dec 2021
All times	One (1) hourly average PM ₁₀ data will be provided to the Pit Manager's office from the 'reactive monitoring stations'.	No exceedances reported. Holcim personnel now have access to real time reactive monitoring data through a web share site. Procedure requires action when 80% level is exceeded.	C	As above.

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All times	All complaints are to be recorded in the INX/iCare database.	See above in Section A. No dust complaints received.	C	INX/iCare records
All times	All communications are to be undertaken as per the SHE Communication Procedure.		C	ERC minutes; Quarterly Reports to ERC
As required	Monitoring data are to be provided to ERC as per the SHE Communications Procedure.	Quarterly reports provided to ERC.	C	Quarterly reports to ERC (from <i>allpossibilities</i> website).
All times	Dust generating activities will be controlled by watering or other means to achieve compliance targets based on reactive monitoring data, visual observation or staff feedback.	As described above.	C	Observation. Monitoring data as noted above
As required	If necessary, dust generating activities will cease until corrective actions result in achievement of targets, or wind conditions are such that targets are achieved.	None reported.	NA	
All times	The site Incident Management procedure will be followed to rectify all reported dust incidents.	Exceedances are recorded as incidents. No dust incidents recorded (where attributable to site).	C	
2.1.4	Monitoring Schedule	Monitoring is conducted as per the schedule in Appendix 11. No site-attributable exceedances.	C	Blue Atmosphere – Reports Jan-Dec 2021; ALS lab reports, dated Feb 2021-Jan 2022 (except Mar, 2021); Summary Table of Results.
2.2	Noise			
2.2.1	Objective	Objective achieved.	C	No complaints of excessive noise.

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	To prevent noise from the Pakenham Quarry causing nuisance/annoyance to persons at noise sensitive sites in the surrounding area.			Monitoring data, 2021 (sample sighted).
2.2.2	<p>Targets</p> <p>Compliance with the noise restrictions specified in the Permit, namely noise emanating from operations on the site, other than noise associated with blasting activities, must not exceed 45dB(A) L_{Aeq} measured at the nearest sensitive site outside Holcim site boundary.</p> <p>Noise emanating from works associated with the construction of noise attenuation mounds is exempt from this limit except that it must not exceed 68dB(A) L_{Aeq} at any time.</p>	Target met. No exceedances recorded.	C	Monitoring data, 2021 (sample sighted)
2.2.3	Management Measures			
As required	Extra acoustic measures will be implemented when excavation activities occur within 10m (vertical) of the quarry rim, eg. bunding along the perimeter of the works area.	Holcim advises not required – no exceedances measured.	NA	
	The base of the secondary crusher will be enclosed and access doors kept closed at all times.		C	Direct observation.

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Within 2 months of EMP approval	Broadband reversing beepers (squawkers) or similar will be installed and used on heavy earth moving equipment.	Holcim advises this is the case on all long-term plant on site.	C	Onservation
Complete	A sign will be erected and maintained, in a place that is clearly visible to truck drivers leaving the quarry, advising that trucks should avoid using engine brakes on Mt Shamrock Road. (see EMP s.2.7 of EMP).	Signs in place (black lettering on yellow background, 2 off).	C	Observation
As required	Regular preventative maintenance (PM) is performed on mobile equipment to reduce unnecessary vibrations and rattles.	Service Reports on sample of site vehicles sighted. Includes provision for unusual noise check.	C	Komatsu Service Reports (sample)
During works	Monitoring of community complaints will be undertaken during the extraction works to assess achievement of the objectives and targets, as required.	No complaints received.	C	INX/iCare Register
As per Schedule	Monitoring of noise at noise sensitive locations will be undertaken as per the Monitoring Schedule (EMP s.2.2.4).	All locations comply. Calibration of SLM conducted before each round of measurements.	C	Noise Monitoring field notes and monitoring records, 2021 (sample sighted).
Monthly	Monthly Housekeeping inspections will be carried out to assess noise conditions and the effectiveness of preventative measures.	Monthly housekeeping checks are conducted. A boundary noise subjective check is made as part of these, and noticeable sources noted for further investigation.	C	Monthly inspection records – sample sighted.

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As required	All complaints are to be recorded in INX/iCare.	None recorded.	NA	INX/iCare Register
As required	All internal communication to be undertaken as per the SHE Guideline 2.2 Consultation .	EMP compliance is a regular agenda item in the monthly SIT meetings.	C	SIT meeting minutes sighted.
	Monitoring results will be kept in the office of the QM and be made available for inspection at reasonable notice during normal working hours.	Field data sheets are filed and available for sighting.	C	Data as per above.
Monthly	Monitoring data will be provided to ERC in accordance with the Environmental Reporting Procedure.	Noise monitoring data is reported to ERC on 3-monthly basis. Quarterly provision of these data is considered appropriate as ERC meets every quarter.	C	Quarterly Reports to ERC sighted.
As applicable	In the event that noise from site operations is above 45 dB(A) L_{Aeq} as measured according to SEPP N-1 at a sensitive site, strategies for noise abatement will be developed and implemented to achieve compliance.	No readings above the specified levels have been obtained that are attributable to quarry noise.	C	Noise Monitoring Results (2021)
2.2.4	Monitoring Schedule		C	Fortnightly noise monitoring data summary sheet 2021; Calibration Certificates for SLM and calibrator (HK Calibration Technologies) dated 19/2/21.
2.3	Blasting			

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2.3.1	Objective To ensure that vibration from blasting operations is controlled to comply with DPI environmental guideline limits for new operations. To ensure that blasting operations generally are conducted in a manner that minimises the risk of adverse environmental impact.	Objectives have been achieved.	C	
2.3.2	Targets 100% compliance with DPI environmental guideline limits for new operations – PPV 5mm/sec for 95% of blasts in 12 Month period. Peak Airblast of 115dB for 95% of blasts in 12 Month period.	Targets met. No exceedances.	C	Blasting monitoring data (sample) – 23 Aug, 29 June.
2.3.3	Management Measures			
All blasting events	Blasting will be carried out in general accordance with the SHE Guideline 3.18 – Blasting & Explosives, and in strict accordance with the Quarry Blasting Procedure (Appendix 8).		C	Documentation for blasts (sample selected as specified above).
All times	Except with the written approval of the Responsible Authority, blasting will be restricted to between the hours of 11:00am and 12:00 noon and between 2:00pm and	Times as specified were complied with.	C	As above and below.

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	3:00pm Monday to Friday. No blasting will occur on a Saturday, Sunday or public holidays. If blasting is approved outside these times, notice must be given to all potentially impacted residents, to the satisfaction of the Responsible Authority.			
All blasting events	<p>Air and ground vibration resulting from blasts will be measured at the nearest sensitive sites to the extraction area, or some other convenient location that will permit the vibration at the nearest sensitive site to be reliably estimated.</p> <p>The current monitoring locations (see Figure 1 in the Monitoring Schedule) namely the quarry office (V1), the north-east corner (V2), Toomuc Valley Road (V3) and Waterhouse property (V4) will continue to be used to assess blast noise and vibration.</p>	Residents notified prior to each blast (procedure specifies two residents).	C	Blasting records files (2) – sample of blast documents and records (blasting checklist, etc.).
	Vibration measurements will be monitored. In the event that the vibration measurements indicate that the 95% DPI regulatory guideline limits may be exceeded in future blasts, the blasting specification and shot-firing practice must be reviewed and	Minor individual blast elevated level occurred 20 September, 2021 (116 dB at Waterhouse Shed), however the 95% compliance criterion for all blasts for the year was not exceeded, nor was the maximum individual level for all blasts (120dB). Holcim commendably had the exceedance investigated by Terrock, and	C	Summary of monitoring results sighted. Email string to DJPR (21/8/21); Terrock Blast Investigation Report, 29/9/21.

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	modifications made, as appropriate, to ensure continuing compliance.	reported it to DJPR. Cause considered to be due to weather conditions and orientation of blast face. Holcim advises no complaints were received.		
2.3.4	Monitoring Schedule	Vibration monitoring is conducted by the blasting contractor, Terrock. Vibration monitoring equipment is factory-calibrated annually, with certificates kept by Terrock and made available when requested.	C	Vibration Monitoring Summary Data Sheet, 2021; Reports for blasts (sample selected); calibration certificates for monitors (20 provided, sample checked for currency).
2.4	Surface Water, Drainage and Groundwater			
2.4.1	Objectives To minimise any potential impact on receiving waters. To progress water management such that any discharge to surface waters is during periods of very high rainfall only. To ensure that water discharged from the Quarry does not affect the beneficial uses of the receiving waters. To assess any long term trends in groundwater levels.	Objectives achieved.	C	
2.4.2	Targets 100% compliance with the requirements of the EPA Licence.	Annual medians are shown in APS – minor turbidity & conductivity non-compliances	C	EPA Licence 544; APS 2021; Monitoring Data summary tables (2021).

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	100% conformity with groundwater level monitoring requirements	noted, likely caused by rain event leading to farm runoff. Mean daily flow calculated to be approx. 0.5ML (total divided by number of discharge days), about half the Licence limit.		Groundwater level summary data (quarterly reports to ERC)
2.4.3	Management Measures			
December 2008	Implement pump and containment systems such that quarry surface water runoff is captured and re-used from Donazzan's Dam to uses around the site. Before water is allowed to flow from Donazzan's Dam to the v-notch discharge point it will be tested to confirm its permissible TDS concentration. This WMS will enable the site to reduce discharge events & any possible TDS breaches.	Pump and containment system continues to be operated on site.	C	Observation – pump house inspected.
All times	Discharge of water from the site will be managed and monitored (for both quality and discharge volume) in accordance with the EPA Licence. <i>Note that all surface water discharging from the premises must meet Licence conditions when sampled at the sampling point (i.e. V-notch weir).</i>	Data shows a single exceedance for maximum turbidity on 29/10/21 – 42NTU (limit 30NTU), maximum conductivity on 6/6/21 – 1,217 µS/cm (limit 1,200), and minor exceedance of annual median turbidity of 18NTU (limit 15NTU). pH appears to be consistently elevated up until change of electrode in Dec 2021 – this drift was noted in the field calibration data	C	WMWI-03 Record Sheets – various sampled; WQ Discharge Summary Tables, 2021; Monthly discharge volume data (measured at V-notch weir), Summary Table 2021; WQ field calibration table, Sep-Dec 2021. Observation. Photograph 65.

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		<p>supplied and highlights the importance of field calibration of equipment against standard solutions on the day of monitoring.</p> <p>A potential contributing factor to the elevated pH of the surface water discharge could be run-off from the cement mixing area. Where measured discharge pH is consistently above 8 Holcim should investigate this further.</p>	O	
Every 12 months	Sediment in the settlement ponds is removed at least once every 12 months and stockpiled within other areas of the quarry.	Sediment was removed from pond, May 2021.	C	Invoice, MC Earthmoving, May, 2021.
	<p>Algae will be controlled by:</p> <ul style="list-style-type: none"> maintaining flowing water across ponds and Donazzan's Dam, minimising nutrient input, eg. by maintaining a septic tank pump out frequency of at least once a year, maximising nutrient uptake, discharge or isolation from the water column, maximising dissolved oxygen levels by circulating water, ensuring water bodies receive sufficient water to provide regular and significant overflows, 	<p>No algal growth was reported, other than a possible minor area of edge discoloration which washed away without spreading. Quarry pit waters are green coloured. Unclear whether this is algae or some other factor (mineral leaching).</p> <p>As dam/pit water is supplied to a resident, and also used for dust suppression, there is a potential risk of human health impact if people are exposed to toxic algal species (blue-green algae/<i>Cyanobacterium sp.</i>). Develop clear instructions on how to check dam/pit water for toxic algae during the</p>	<p>NA</p> <p>O</p>	Inspection Check lists (sample sighted); observation - Photos

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	<ul style="list-style-type: none"> ensuring water bodies have no stagnant zones, and that all sections of the water bodies are subject to flowing water when rainfall enters the system, managing the catchment areas directly upstream of Donazzan's Dam to reduce the amount of nutrients entering a water body, and reviewing ponds and dams to evaluate and act to avert potential stagnant areas. 	<p>weekly inspections (see https://agriculture.vic.gov.au/farm-management/water/blue-green-algae-in-water/bluegreen-algae-and-irrigation-water - “Checking your irrigation water for blue-green algae”). If toxic algae are suspected, waters need to be sampled and sent for laboratory analysis – contact ALS for guidance on this.</p>		
As required	<p>In the event of algal bloom(s);</p> <ul style="list-style-type: none"> Water body flushing to break up and inhibit algal growth, and dissolved air flotation and surface skimming to remove algal mass, will be considered as short term remedial measures, a specialist will be engaged to assist with treatment and removal, records will be kept of all such occurrences to help determine likely trends that could assist in future water body management, chemical treatments (eg. use of herbicides/algicides) will only be used as a last resort measure if required, and 	<p>As above, Holcim advises the Dam has not experienced an algal bloom during the year 2020.</p>	NA	

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	then only with prior approval from the relevant government agency (for water bodies situated on existing creeks).			
All times	The plantings undertaken as part of the water quality management system will be maintained in accordance with the Landscape and Rehabilitation Management Plan (eg weed control, plant replacement).	Plantings observed to be well maintained, and confirmed in LRMP annual report.	C	Annual LRMP Report, Naturelinks, Feb, 2022. Observation, photographs
During initial clearing	Areas of vegetation disturbance and ground cover shall be minimised during opening up of new operational areas to prevent erosion.	Works localised to area of operation.	C	Observation
All times	Clearing and construction activity associated with the development of the site shall be carried out in accordance with "Construction Techniques for Sediment Pollution Control" EPA Publication No 275 (as amended).	Observed to be conducted satisfactorily.	C	Observation
As required	Soil stockpiled for later rehabilitation works will be stored in mounds no greater than 2m high and contoured and grassed to minimise erosion. Mounds will be constructed and located to minimise any visual disturbance and to avoid contamination with other materials.	Stockpiles along western rim observed to be self-seeding and generally within maximum height specification.	C	Direct observation
As required	Overburden will be stored in worked out areas of the excavation for later use in	Overburden is located within quarry where rock has been removed.	C	Direct observation

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	rehabilitation, or sold or used to rehabilitate final faces when terminal faces are available. Overburden storages will be constructed to control drainage and maintain stability.			
As required	Diversion drains will be provided around the top of the quarry and workings to direct surface run-off away from operational areas.	Drains observed to be in place.	C	Direct observation
As required	Channelling of water flow (rill formation) will be minimised and any channel flows stabilised.	Minor rill erosion near southern rim noted, which appeared to be stable/weathered. Holcim advises this will be stabilised further once the access roadway is discontinued (estimated later in 2022).	C	Direct observation
As required	Where practical, erodable areas that remain bare and undisturbed for long periods (i.e. greater than 2 months) will be stabilised by covering with mulch, anchored fabric or topsoil covered and seeded with Sterile Rye grass.	Erodible areas have been minimised. Extensive plantings have been established and maintained in rehabilitation areas. Steep embankments along the southern boundary are not practically able to be stabilised in this way.	C	Direct observation, photographs
As required	The dual triple interceptor system (trap – TIT) treating washwater from the plant and equipment wash down pad will be regularly maintained in effective working condition.	Workshop and pug mill TITs pumped in November.	C	Plendrive, 15&20/11/21 – 4x6.5kL pump out receipts, septic 1° & 2° tanks
Quarterly	Groundwater level gauging will be conducted quarterly, and an annual evaluation	Detailed report indicates that overall, groundwater levels are consistent with water levels since at least 2015. The report notes –	C	AECOM letter report, 3 Mar 2022, 2021 Groundwater and Spring Review, Pakenham Quarry.

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	<p>undertaken, to determine how the groundwater levels respond to the following:</p> <ul style="list-style-type: none"> Seasonal rainfall changes; Extension of the quarry; Revegetation to parts of the plateau surface; and Progressive rehabilitation of quarry. 	<p>“the monitoring (data) collected over the 2021 monitoring period does not show any significant changes based on quarry operations.”</p> <p>Holcim should implement the recommendations of the AECOM Groundwater and Spring Review letter report of 3/3/22.</p> <p>From the ERC minutes it is clear that not all neighbouring residents concur with the assessment's findings. Consideration of a peer review of the spring water report be revisited should concern continue to be raised by neighbours following the winter period.</p>	<p>O</p> <p>O</p>	
Annual	<p>Properties surrounding the quarry will be regularly assessed to confirm that the assessed beneficial uses of groundwater (in accordance with SEPP Groundwaters of Victoria) on the properties is supported by actual practices.</p> <p>Note: All SEPP's have now been revoked by the EP Act, 2017. Environmental values (formerly 'beneficial uses') are now specified in the Environmental Reference Standard, May, 2021.</p>	<p>The AECOM report states (6.3 <i>Assessment of impacts to environmental values</i>):</p> <p>“Based on the available data, the water quality and spring flow observations suggest that recent activities (post 2001) at the quarry have had not impacted on the current surrounding environmental values of groundwater.”</p>	C	<p>As above.</p> <p>ERC Meeting minutes, February & July, 2021</p>

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Fig 4&5	Water Management System			
2.4.4	Monitoring Schedule As per Appendix 11 (as amended by new EPA Licence conditions) - <ul style="list-style-type: none"> • Dams #1 and #2 Visual Inspection • Settlement Ponds #1 and #2 Visual Inspection • Donazzan's Dam Visual Inspection • V-notch Weir Flow Rate • EPA Sampling Point testing 	Monitoring activities conducted as specified.	C	WMWI-03 Record Sheets – all sighted. Monthly discharge flow reports, summary table; Weekly Inspection Records (V-notch, Donazzan's Dam, Pit dams)
2.5	Slope Stability			
2.5.1	Objective To ensure slopes both outside and within the Quarry are as stable as possible to minimise the risk of landslip.	Achieved.		No new slips/landslides reported.
2.5.2	Target No avoidable landslips.	Met.	C	
2.5.3	Management Measures			
As specified in the s.173 Agreement	Planting of deep-rooted trees in landslip areas (i.e. as revealed within EES report Slope Stability, Figure 6, 2001 Aerial Photography Interpretation and Figure 8 URS 2005) will progressively be undertaken in accordance with the Landscape Plans (ref..	Established in 2015 EMP audit	NA	

[illegible]

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	Regular visual monitoring of the slopes in Toomuc Valley on land owned by Holcim will be conducted.		C	Monthly inspection checklists sighted (sample).
	Monitoring of the condition of any vegetation or new drainage and replanting or repairs will be undertaken as necessary as part of Landscape and Rehabilitation Management Plan.		C	As below
As required	The progressive excavation will require ongoing rehabilitation activities to control erosion, and then make all the earthworks safe and compatible as possible with the surrounding landscape. Construction and revegetation will be undertaken in accordance with consultant's reports and requirements as per the site Work Plan.		C	As per LRMP below
As required	The rehabilitated slopes will require construction of internal and surface drainage, vegetation establishment, fill compaction, trial sections, and development of technical specifications under the guidance of a geotechnical specialist and reviewed with the Department of Primary Industries in accordance with the Work Plan	(see LRMP section below)	C	

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	Landscape and Rehabilitation Report specifications.			
As specified in Monitoring Schedule	Regular visual monitoring of all slopes including any rehabilitated slopes, overburden stockpiles, operating faces and crushed stockpiles will be conducted and if any change in the slope conditions (such as cracking, heaving or settlement of the quarry walls or floor, increased areas of seepage or any other unexpected movement) is observed, specialist geotechnical advice will be sought.	Inspections indicate slopes are stable.	C	Monthly Slope Stability Checklists (sample)
2.5.4	Monitoring Schedule	Inspections are being done monthly.	C	As indicated above
2.6	GHG Emissions			
2.6.1	Objective To minimise greenhouse gas (GHG) emissions resulting from quarry works and operations.	Achieved.	C	
2.6.2	Targets Implement the recommendations of the Energy Action Plan, as updated from time to time. Achieve current annual targets, namely,	Target not achieved.	mnc	GHG calculation spreadsheet (2021).

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	overall reduction target of 3% in CO ₂ -e (t) for combined fuel, electricity and explosives usage.			
2.6.3	Management Measures			
All times	Aim for continuous improvement of GHG intensity of production by identifying and controlling energy intensive processes as part of Holcim national Energy Efficiency Opportunities (EEO) program.	Site reports an increase in the purchase of renewable energy to 24%. Into the future, haul road realignment is expected to reduce travel distances by 50%, with impact on ghg emissions overall of approx. 7-10% reduction.	C	
Completed	Nominate an energy manager within the quarry to ensure that steps are taken to meet energy and GHG reduction targets; and	QM has overall responsibility.	C	
All times	Incorporate energy and GHG awareness into training of managers and supervisors.	Demonstrated in previous EMP audits.	NA	Plant operator training certificates.
2.6.4	Monitoring Overall reduction target of 3% in CO ₂ -e (t) for combined fuel, electricity and explosives usage.	Not met for 2021.		GHG Calculator (spreadsheet), 2021.
2.7	Traffic Management			
2.7.1	Objective To minimise the impact of quarry traffic on the local amenity.	Objective is being achieved to the extent practicable. Early truck arrivals (before 7am) were unavoidable, and dealt with appropriately.	C O	Photograph 57

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		Consider relocating the warning sign to left hand side of road and making it bigger.		
2.7.2	Target Compliance with (or completion of) all actions specified in the s.2.7.3 of this EMP.	Complies – target met.	C	
2.7.3	Management Measures			
All times	The wheels of all trucks leaving the site must be clean before trucks travel onto any part of the public road network. All trucks leaving the site will be cleaned by passing through the wheel and truck wash facility at the main gate (see s.2.1.3 of EMP).	Wheel wash in operation.	C	Observation
	All vehicles carrying materials from the site must be loaded and transported in a manner which prevents spillage of materials onto a public road.	Drivers are inducted – states minimum requirements. Periodic inspection of tarpaulins being in place.	C	As above; Inspection Report (QM – monthly).
All times	Early morning truck movements are to be scheduled to avoid queuing outside the boundary of the site.	No trucks are accepted onto site before 7am – signage (hours of operation) is in place at entrance. Reported some minor problems with queuing before 7, which were appropriately dealt with (typically related to new drivers. Sign relocation may help, as recommended above).	C	Induction records (sample sighted), induction booklet.

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	All vehicles associated with quarry activities, including trucks and machinery, must enter and exit the site via Mt Shamrock Road.		C	Observation
	A sign to be erected and maintained, and clearly visible to truck drivers leaving the quarry, advising that trucks avoid using engine brakes on Mt Shamrock Road.	Signs in place.	C	Observation
2.7.4	Monitoring Housekeeping checks (monthly)	Random checks of tarpaulin compliance as part of checklist.	C	Gatehouse operator – visual checks; ERC Quarterly report (visual checks data)
2.8	Net Gain Management Plan			
2.8.1	Objective To provide vegetation that offsets the loss of vegetation associated with the Quarry and provides a net gain of Habitat Hectares.	Long term objective – progress continues to be made towards achieving it.	C	
2.8.2	Target Establishment of vegetation in accordance with the Native Vegetation Management Framework and the Net Gain Offset Management Plan (NGOMP, Biosis Research, September 2007 – Appendix 13) by January 2009 (as specified in the s.173 Agreement)	Area is maintained by Naturelinks. Weeding and maintenance has continued.	C	
2.8.3	Management Measures			

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	An appropriate sign will be erected to inform residents/visitors of the site's ecological characteristics, purpose and value.	Sign at southern gate is damaged and on the ground – needs to be reinstated.	O	Observation (photographs)
To commence immediately upon appointment of OSM	Plants of local provenance will be propagated, or seeds collected for dispersal as specified in the Appendix to the NGOMP.	Confirmed at previous EMP audits. Net Gain areas are now well established and regularly maintained. Inspection confirmed established growth.	C	Aerial photographs, observations.
As required	Plantings that do not survive will be replaced.	No replacements noted in Naturelinks report – plantings doing well.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)
As required	Supplementary watering of plantings will be carried out as required and permitted by prevailing water restrictions.	Watering was not required during the audit period due to above average rainfall.	C	As above
Monthly during June-December	Weed (including identified woody weed) control works will be conducted on a monthly basis during the primary weed season (June to December inclusive) and at other times as required.	Weeds observed to be well managed, as confirmed by Report.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)
2.8.4	Monitoring OMP Audit (Years 1,2,5,7,10) Visual inspection (6-monthly in Mar, Sep) of offset area to identify rabbit-caused damage - where significant damage identified, rabbit proof fence to be installed.	External audits completed. Visual inspections have occurred.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022); 6-monthly LRMP report (Naturelinks), Jan-Jun 2021.

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2.9	Cultural Heritage			
2.9.1	Objective Preserve, by relocation, all items of cultural heritage identified in accordance with Wurundjeri ‘Consent to Disturb’ (“Consent”) conditions.	All works now completed.		
2.9.2	Targets 100% compliance with Consent conditions.	Met.		
2.10	Fire Management			
2.10.1	Objective To ensure that the risk of fire is minimised.	Objective has been achieved.	C	
2.10.2	Target No fires	Met – none reported.	C	
2.10.3	Management Measures			
Within 3 months of EMP approval	Establish off-site fire prevention measures to be followed during periods of high fire risk.	BMP, developed as part of Emergency Procedures flipchart, has been updated and reviewed by local CFA. Commendably this is now reviewed and updated annually to keep abreast of changing conditions.	C	Bushfire Management Plan (BMP), Dec 2021; email from CFA approving revised Plan (6/12/21).
Annually	Undertake annual on-site fire prevention works, prior to the declaration of the “Fire Danger Period”, in consultation with the Responsible Authority and the local Country Fire Authority.	A range of prevention works undertaken - <ul style="list-style-type: none"> Evacuation drills (one recorded – night shift covered being done later this month - February) Extinguisher checks 	C	Evac checklist – 24/12/21; Spill scenario drill 22/12/21; smoke alarm checks (6/21, 12/21); Bushfire Readiness Inspection confirmed – Dec 2021; iCare –

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		<ul style="list-style-type: none"> Site inspection and fuel removal Smoke alarms/detectors BMP checklist completed prior to fire season. Actions arising closed out. 		Bushfire preparation checklist completed, actions closed out.
All times	Access for all emergency vehicles will be provided and maintained at all times through the site.	Access is provided.	C	Observation
All times	Fire prevention and response equipment will be provided and maintained in accordance with the Holcim Emergency Response Procedure and Quarry Emergency Procedures flip chart.	As specified above. CFA permits are for total fire ban days occurring during the specified period of the permit, and require certain practices to be followed during the specified hot works on such a day. Site's safety paperwork covers off on this. No total fire ban days for 2021 – CFA website.	C	CFA Permits (D08 20/21 S40.025, D08 20/21 S40.026, 21/2217930C) for specified hot works during Fire Danger Period.
2.10.4	Monitoring (see EMP)	Evac drills (one done) – actions arising being implemented. Smoke alarms tested June and December. Fire suppression systems in mobile plant checked.	C	Drill records as above
2.11	Water Conservation			
2.11.1	Objective To conserve potable water supplies.	Objective achieved.	C	
2.11.2	Target	Holcim advises that there is no mains water supply at the site.	NA	

[illegible]

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As required	Silt removed from the settling ponds and silt traps will be incorporated into product stockpiles or overburden materials for use in progressive reclamation.	Triple Interceptor cleanout – all EPA waste transport certificates were sighted.	C	EPA Waste Records (11/1/21; 21/5/21; 28/5/21)
As required	All prescribed industrial waste (PIW, now referred to as <i>priority waste</i>) such as waste oil is to be stored, and transported from the site, in accordance with EPA prescribed waste transport requirements (Reference 6)	Reportable wastes are well segregated, stored and appropriately labelled. It was observed that items of electronic waste (E-waste) were placed in a metals bin for disposal off-site. E-waste is a priority waste and is prohibited from landfill. As such it must be identified, collected and stored separately for removal by a suitably authorised contractor for treatment at a lawful place. An additional clear label should be fixed above the oil drum collection bin. Co-mingling of PWs was noted in some of the storage skips, requiring additional personnel awareness training.	C mnc O O	JJ Richards Invoices covering range of waste removal events from site. Photographs 59, 60.
Annual	The site's septic sewage system will be pumped out regularly.	Two septs maintained, emptied November, 2021.	C	Plendrive Waste Disposal – invoice dated 25/11/21
Annual	Conduct an annual waste survey to establish the types, quantities and re-cycling/ re-use percentages for all site wastes.	No evidence that annual waste survey has been conducted. A summary spreadsheet of waste consigned off site through weighbridge was sighted, however it does not breakdown	mnc	Summary Table of wastes for 2021

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		waste categories sufficiently and there is no data behind this.		
Annually	Use the outcomes of the annual survey to set quantifiable and achievable annual waste reduction targets for the site for each waste stream identified.	No evidence sighted that waste reduction targets have been set for 2022.	mnc	
2.13	Housekeeping/Preventative Maintenance			
2.13.1	Objective Establish effective housekeeping checks and preventative maintenance programs to control environmental hazards.	Achieved.	C	
2.13.2	Target Housekeeping audits identify no more than 5% nonconformity practices (except where applied to Consent conditions, where 0% nonconformity applies)	Monthly inspections cover all issues. Scoring shows target is met.	C	Monthly inspections by QM.
2.13.3	Management Measures			
Timing	Action			
Monthly	Housekeeping checks will include the following environmental issues: <ul style="list-style-type: none"> Chemical and fuel bunding; Bund content and drainage point valve in off position; Spill clean-up and spill kit equipment contents; 	Small number of minor items were identified for action during the inspections. Spill kit in blue barrel at main quarry pit, and at crusher plant, should be checked for contents.	C O	Environmental Hazard Inspections – 2021; photograph 55.

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	<ul style="list-style-type: none"> Waste container labelling; Tarping practices; Road and vehicle cleanliness; Unusual noises; Visual dust presence of significance; and Segregation of Inert type wastes from solid and from industrial wastes. 			
Monthly/ annually	<p>PM system checklists are available to capture:</p> <ul style="list-style-type: none"> Fixed System Dust Suppression Watering truck and sweeper vehicles Water spays and lines Spill Kits <p>Dust extraction units will be serviced annually.</p>	<p>Three dust extractors – serviced 4 times in 2020. Water sprays – inspection conducted monthly. Faulty items regularly picked up and maintenance scheduled and completed. Spill kits checked and restocked by contractor. Most found to be well stocked. Water truck observed in action.</p>	C	<p>Wamgroup – Silo venting, pug mill and Dust extraction service records (Mar, Jun, Sep, Dec 2021);</p> <p>Absorb – Spill kit service report Feb, July, Dec 2021; Spill kit map; PM inspection reports (water sprays - sample); PM repairs; Water Truck maintenance PMs, 2021.</p>
2.14	Storage & Handling			
2.14.1	<p>Objective</p> <p>To minimise chemical and fuel run-off and land contamination due to spillage/ release/ stormwater flushing.</p>	Objective achieved.		
2.14.2	<p>Target</p> <p>No visible oils/fuels in stormwater discharging from discharge point.</p>	Targets met.	C	Observation; Water quality monitoring data sheets (sample).

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	No significant soil contamination.			
2.14.3	Management Measures			
All times	Signage will be maintained around bunded fuel tanks describing the filling procedure to be followed.		C	Observation
All times	All fuels and chemicals in containers over 100 litres will be bunded when stored or in use.	Measure met at maintenance depot and contractor's container in quarry. Hazmat storage cabinet installed in the latter.	C	Observation
As required	Captured rainwater within fuel/oil storage bunds will be released through triple interceptor prior to release to the stormwater system.	No captured rainwater evident in areas inspected. Bunds are enclosed or roofed.	NA	Observation
As required	Areas of significantly hydrocarbon-contaminated soil will be excavated and remediated in accordance with the Hydrocarbon Land-farming Procedure.	None reported or observed. Some minor oil weeping was noted around the on-site electrical transformer. This should be further investigated with the owner of the unit regarding its polychlorinated biphenyls (PCB) status.	NA O	Observation. Photograph 63.
2.15	Donazzan's Dam Integrity			
2.15.1	Objective To maintain the structural integrity of Donazzan's Dam.		C	
2.15.2	Target No leakages, spills or other containment failures associated with the Dam.	None reported. Target met.	C	

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2.15.3	Management Measures			
5 yearly	Engage specialist geotechnical consultant to review dam structural integrity. Next review to be conducted in 2025.	Consequence assessment process is underway and progressing. Other recommendations will be progressed after this assessment is complete. Vegetation removal recommended needs to go through approval process as it is within the Net Gain Offset area. Piezos and dam crest have been surveyed.	C	Email trail with AECOM; AECOM, Donazzan's Dam-Pakenham Quarry Intermediate Inspection Report, 8/1/21; Survey plan of dam.
	(Not in EMP) Piezometers are gauged to detect standing water, every month.	Inspection pro forma does not include provision for piezo gauging.	O	Field notes – Donazzan's Dam inspection
SECTION C – REHABILITATION: PROVISION, STATUS & PLAN UPDATE				
1	Rehabilitation and Vegetation			
1.1	Objectives The main objectives for the landscape and rehabilitation of the quarry operations area are to: <ul style="list-style-type: none"> create an ecological community with a predominance of indigenous species to provide a contribution to net gain objectives and habitat hectares. minimise the visual impact of the proposed extension from surrounding viewpoints stabilise soil. 	Objectives are considered to have been met.	C	Photographs

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	<ul style="list-style-type: none"> • create an environment that will provide habitat for local and migratory fauna. • create a safe and functional landscape. • reinforce the local landscape character through the use of indigenous EVC units of the Pakenham area • address drainage issues. • ensure that existing vegetation is maintained where practicable, • ensure that landscape screening and rehabilitation is successfully established and subsequently maintained. minimise the visual impact of the quarry operation upon the existing landscape of the local area, • ensure that vehicles entering or leaving the site do not spread weed seeds to or from the site. 			
1.2	<p>Targets</p> <p>Successful establishment and maintenance of landscape screening and rehabilitation in accordance with the Work Plan attachment <i>Landscape and Rehabilitation Report, ERM</i> (January 2005) and the <i>Landscape & Rehabilitation Management Plan, 2007,</i></p>	Targets have been met – quarry rehabilitation planting is progressing as planned. Irrigation systems are assisting the process.	C	Observation - Photographs; Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)

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	(LRMP) to the satisfaction of the DPI and the Responsible Authority. Maintenance of existing vegetation where practicable.			
1.4	Management Measures			
1.4.1	<p>General</p> <p>The Landscape and Rehabilitation Management Plan (LRMP) has been prepared to deal with general rehabilitation and landscaping under the Work Plan and associated documentation, slope stability planting, and surface water plantings, as required by the Permit. This plan addresses issues relating to maintenance including plant establishment, erosion control, weed control, planting protection, fencing, safety and other relevant management issues. The LRMP covers all planting and rehabilitation within the quarry operational and non-operational areas. The LRMP deals in detail with the management of the following aspects of quarrying operations as they relate to landscape and rehabilitation:</p> <ul style="list-style-type: none"> • Vehicle Management - Inspection of Vehicles, Clean down of Machinery, Vehicles and Equipment, Use of public roads and pathways, Provision of public safety • Topsoil Scraping and Stockpiling • Weed and Vermin Control, and Herbicide Use • Existing Vegetation Management, including: <ul style="list-style-type: none"> ○ Seed Collection ○ Topsoil spreading ○ Hydro-seeding ○ Setting out works ○ Fencing and Signage ○ Supervision ○ Cleaning Up ○ Erosion control ○ Maintenance during plant establishment period of 52 weeks • Soil Testing 			

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	Reference should be made to the LRMP for all such issues arising as part of the on-going maintenance of landscaped and rehabilitated areas. The following sections refer to the LRMP, attached to the EMP at Appendix 6. For further details on each section referenced on the left hand side, please refer to the LRMP.			
LRMP s.2.1	<p>A Rehabilitation (“Rehab”) Manager is to be appointed with responsibility for the following:</p> <ul style="list-style-type: none"> • Ensuring any contractors and staff are aware of the LRMP and its requirements; • Carrying out any monitoring, testing and corrective actions; • Reporting and reviews as specified in this LRMP; • Land management practices undertaken; • Rehabilitation works completed; • Complaints received and properly recorded and actioned; • Nonconformities and corrective actions; and • Results of site inspections. <p>The Rehab Manager may change as the project progresses through the detailed design, quarrying/planting stages, to the on-going management phases, during rehabilitation.</p>	Rehab Manager is Leigh Elliott, Quarry Manager, Holcim. Works are conducted by Holcim Personnel (JE) and Naturelinks (contractor).	C	LRMP, June 2014, Rev 3 (appended to EMP)

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LRMP s.2.2	The Rehab Manager will submit land management reports (as part of the Quarterly Report) to the Quarry Manager on a 3 monthly basis during the quarrying phase. Land management reports should be prepared every two years from the commencement of rehabilitation.	Rehab contractor submits monthly reports to Rehab Manager covering work scope and inspection checks. Rehab Manager reports to ERC quarterly on progress. Rehab contractor has submitted a report covering 2021 year progress. A range of issues are covered and recommendations for further works made. The altered reporting frequency will be addressed in the revised LRMP.	C	Holcim 3 monthly report to ERC; Mt Shamrock Condition Report, 2021 (Naturelinks, 2022); Daily Works Checklists (Naturelinks), submitted to Holcim monthly.
LRMP s.2.3	Any complaints received from the public regarding land management issues associated with the conservation and rehabilitation components of the quarry's activities will be entered and retained in the INX/iCare electronic incident database. The INX/iCare electronic database will be kept throughout the quarrying, planting and rehabilitation and ongoing land management phases.	Holcim advises no complaints received.	NA	
LRMP s.2.4	Nonconformities may be identified through the process of monitoring, the complaints register, site inspections and site audits or through the LRMP review process. It is the responsibility of the Rehab Manager to	Kangaroos identified as knocking over new plantings. Deer also identified as consuming new plantings. Actions to mitigate these impacts are recommended in the Condition Report (Naturelinks).	C	Vegetation Monitoring sheets (monthly); Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)

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	ensure that these nonconformities and required corrective actions are documented and corrective actions implemented within a reasonable time frame.	Holcim advises that nonconformity definition has been included in the draft LRMP v4 currently being reviewed.		
LRMP s.2.5	Where testing of soils for contaminants is indicated, sampling will be done by trained personnel and analysis conducted by an analytical laboratory that is NATA accredited for each analysis. Results will be evaluated against the requirements of State Environment Protection Policy (Prevention and Management of Contamination of Land) and any associated standards referenced in the SEPP (as applicable).	Not applicable, no contaminant testing of soils is conducted.	NA	
LRMP s.2.6	It will be necessary to review and revise the LRMP to ensure that it contains up to date and relevant land management practices during the course of the rehabilitation. The Quarry Manager and nominated management personnel will review the LRMP prior to commencement of each stage of the rehabilitation operations, and biannually (6-monthly) thereafter following the LRMP reports outlined above.	Holcim advises that the draft LRMP rev4 has been reviewed by the ERC as part of their review of the revised EMP. The revised EMP is now awaiting planning authority sign-off.	C	

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	All reviews will be documented, records maintained and both record of reviews and minutes of review meeting(s) will be retained. A summary of the outcomes of each review will be communicated to all relevant staff. A copy of the draft reviewed EMP will be submitted to the Environmental Reference Committee for its comments before finalisation.			
LRMP s.4.1	<p>Vehicle Management.</p> <p>Vehicles working exclusively within the extractive limit area, do not have to be inspected or washed down. Machinery, vehicles and equipment in the following recommendations refers to equipment used during:</p> <ul style="list-style-type: none"> Rehabilitation works / clearing / farm operations. Vehicles involved in land management. (Patrolling tracks, tractors and farm equipment). 			
s.4.1.1	<p>Vehicle Inspection.</p> <ul style="list-style-type: none"> Inspection of machinery and vehicles coming from infested or unknown areas Determine inspection requirements for vehicles, machinery and equipment moving between jobs, districts Request that all contract vehicles and machinery are inspected prior to arrival on site Develop inspection procedures and locations to suit industry and environmental requirements 	<p>Vehicles inspected before entering Holcim (not recorded). Also undergo fortnightly check (recorded). Equipment is cleaned before entering site (no record kept). Naturelinks advises it rarely works on Phytophthora-infected sites. If so, vehicles cleaned when leaving and return from site.</p> <p>Naturelinks agree to electronic confirmation of inspection for each occasion that vehicle goes on site.</p>	<p>C</p> <p>O</p>	HSE PROCEDURE - HYGIENE PROCEDURES_0235, June 2018 (Naturelinks);

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	<ul style="list-style-type: none"> Establish and maintain a checklist for vehicles, machinery and equipment inspected. 			
s.4.1.2	<p>Clean Down of Machinery, Vehicles and Equipment</p> <ul style="list-style-type: none"> Determine appropriate cleaning practices for vehicles, machinery and equipment moving between jobs, districts Clean down machinery, vehicles and equipment from contaminated or unknown areas in accordance with established practices above, prior to arrival on site Clean down all machinery before departing site, at an on-site clean down facility Clean down facilities away from water courses, in an area that can be monitored for future germination are available at the site workshop. Avoid moving machinery in wet conditions where clay removal is difficult Develop work practices which avoid contamination of vehicles and machinery 	<p>Naturelinks agree to undertake a risk assessment of weed seed transfer via vehicles/equipment accessing the Holcim site and NGO areas for all works. Controls will include limiting the areas vehicles can go, dry cleaning equipment before leaving site, and if necessary cleaning vehicles at site workshop area with pressure equipment.</p>	<p>C</p> <p>O</p>	<p>HSE PROCEDURE - HYGIENE PROCEDURES_0235, June, 2018 (Naturelinks).</p>

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	<p>and prevent the spread or introduction of additional weed seeds. Ensure contractors conform to these practices</p> <ul style="list-style-type: none"> Develop remedial action plans for controlling isolated weed outbreaks that occur within the work project area. 			
s.4.1.3	<p>Use of Public Roads and Pathways</p> <p>Where public roads and pathways are used, the Rehab Manager shall ensure they are maintained free of earth, rock or other materials that may fall from plant and equipment. All such material dropped onto public roads and pathways shall be properly removed and cleared.</p>	Roads were observed to be free of debris.	C	Observation
s.4.1.4	<p>Public Safety</p> <p>The Rehab Manager shall ensure adequate provision is made for the safety of the public by providing suitable temporary barriers, fencing, ramps, warning signs, lighting and any other protective devices at all locations of potential risk.</p> <p>All necessary measures shall be taken to protect the health of persons on or within the vicinity of the site from conditions that are or may be dangerous to health, including</p>	<p>Quarry boundaries are fenced and gates are locked. Signage provides warning to members of the public not to enter the quarry. A barrier at the entrance to the quarry prevents unauthorised access. Procedures are in place to protect personnel working within the quarry area. Dust suppression measures are described elsewhere in this protocol. An audit of WH&S measures on site is outside the scope of this audit.</p>	C	Observation.

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	the noxious effect of dust, fumes, or other hazards.			
LRMP s.4.2	<p>Topsoil Scraping and Stockpiling</p> <p>Existing site topsoil that is to be re-used on site shall be stockpiled within the works boundary, in an area that will not be subject to traffic or other compaction. The stockpile is not to be located on areas of native vegetation to be retained, or within the drip-line of existing trees.</p> <p>Consideration should be given to bulkage factor, settling and some natural spreading of the topsoil into adjacent areas. The stockpile will be limited to <2m high.</p>	Topsoil storages observed. Holcim advises no new stockpiling of topsoil has occurred.	C	Observation
LRMP s.4.3	<p>Weed and Vermin Control</p> <p>A weed control program will be implemented focussing on noxious weeds utilising a combination knock-down and pre-emergent herbicide. Noxious weed eradication in the area to be planted will be an ongoing requirement.</p> <p>During the plant establishment and maintenance phase, weeds will be kept clear of individual plants through the use of a mulch ring and spot spraying. The mulch</p>	<p>Weed spraying is done by Naturelinks and Holcim personnel. Locations are recorded. Nominated weeds are targeted. Records are maintained of areas treated for weed infestation. Evidence of dead weeds noted confirming mitigation activities. Naturelinks staff observed conducting spot weed spraying (in tyvex suit PPE) at SE Extraction Area rehabilitation works.</p>	C	Weed control records (sample of Holcim Weekly Environmental Worksheets); Naturelinks HSE Daily Inspection Checklists (sample sighted). Observation. Photograph 56.

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	shall be located within a diameter of 1m of tree seedlings. (further details in LRMP) Records will be kept to monitor the location, type and extent of all weed infestation. Used as a reference, these records can be used over time to establish the most appropriate and effective means of control for this site.	An area of pampas grass was noted adjacent to the main quarry pit. This should be treated if reasonably accessible.	O	
s.4.3.1	<p>Herbicide Use</p> <p>Any areas to be planted, which have been colonised by noxious weed species, should be herbicide treated with a non-residual knock-down herbicide at a minimum of twice prior to planting.</p> <p>Spraying of herbicides is not recommended near drainage lines. It is recommended that cut and paint methods be used on woody weeds in these areas.</p> <p>NOTE: The application of herbicides must be undertaken by a contractor or trained quarry personnel with a valid licence, Agricultural Chemical Users Permit (ACUP) as required, and in accordance with the manufacturer's recommendations for concentration of herbicide and frequency of application.</p>	<p>Holcim advises that the revised LRMP currently awaiting approval includes the following statement –</p> <p><i>Where it has been shown that a residual knock-down herbicide is more effective than non-residual herbicide, justification of its use must be provided to the Rehab Manager prior to use.</i></p> <p>Personal herbicide Licences/permits supplied by Naturelinks. Andrew is site supervisor however it is not clear whether he had a valid licence prior to becoming trained and accredited in February 2022. Clarification is needed to ensure that at all times only properly trained and currently licensed persons undertake herbicide application activities at the site.</p>	<p>C</p> <p>O</p>	<p>Alan Rondeau (ChemCert certificate - current); Andrew Clarke (ChemCert Accreditation, 23/2/22); Bronwyn Richardson (ChemCert Accred. 1/3/18 - current); Hugh Bolt ChemCert issued 6/5/17; Kyle Cassidy, AusChem issued Apr 2021 – current; Robert Ramsden, ACAH Cert III, Mar 2020 – current.</p>

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LRMP s.4.4	<p>Existing Vegetation Management</p> <p>Aside from control of weed species as listed above, maintenance should include:</p> <ul style="list-style-type: none"> Monitoring health of retained and planted vegetation and checking for pests and diseases, Treatment of disease or other infestation in vegetation, as necessary and as approved in consultation with DSE, and Control of pest animal species. <p>(see LRMP for further specific details of management measures)</p>	As above for comment on herbicides used, control of pests/vermin.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022); observation.
LRMP s.4.5	<p>Seed Collection</p> <p>Seed collection from on-site indigenous vegetation is to be undertaken by a qualified specialist in indigenous revegetation. Collected seed will be supplemented by seed collected off-site. Supplementary seed must be sourced locally, and be collected in accordance the necessary permits. (see LRMP for further specific details regarding seed collection.)</p>	Holcim advises that additional plant species of local provenance are to be included in the revised LRMP for planting in rehabilitation areas. Seed collection will be conducted by Naturelinks' personnel. Drought tolerant species in particular will be utilised.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)
LRMP s.4.6	<p>Topsoil Spreading</p> <p>Existing site topsoil, sourced from onsite stockpiles established prior to excavation,</p>	Not relevant at this stage (applies after works ceases).	NA	

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	will spread over the quarry floor to a minimum depth of 200mm to provide a growing medium for indigenous vegetation and exotic grasses. Timing is to be determined to maximise the viability and germination of the indigenous seed collected and minimise weed invasion.			
LRMP s.4.7	Hydro- Seeding Hydro-seeding or other soil stabilisation/seeding/ mulching methods should be undertaken by a qualified specialist in indigenous revegetation, in consultation with Landscape Contractors. Timing is to be coordinated with the spreading of topsoil, to maximise the viability and germination of the indigenous seed collected and minimise weed invasion.	Holcim advises this was done during 2021 by NatureLinks in south west corner.	C	Mt Shamrock Condition Report, 2021 (Naturelinks, 2022)
LRMP s.4.8	Setting Out Works Holcim shall be responsible for accurately setting out the works prior to breaking any soil and for checking the works in progress.	Works are checked regularly whilst in progress.	C	Monthly reports (Naturelinks)
LRMP s.4.9	Fencing and Signage A cyclone mesh fence is to be located at the perimeter of the proposed Works Authority	Fencing and signage in place. Sign needs to be replaced at NGO area (noted elsewhere in protocol).	C	Observation

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	Boundary. Signage is to be compliant with industry standards.			
LRMP s.4.10	<p>Supervision</p> <p>The Rehab Manager or nominated quarry staff shall be present at the site of works at all times. Nominated representatives shall have had experience in executing work equal in nature and magnitude to the work described in this Plan.</p> <p>Contractors shall designate in writing to the Quarry Manager the name of their approved representative who shall have authority to direct work and to whom site instructions will be given by the Quarry Manager of his nominee.</p> <p>Contractors shall also designate how they will have authority over any subcontractors, and who will issue instructions to any subcontractors.</p> <p>Contractors shall keep one full set of drawings and specifications on site at all times to be available for inspection by the Rehab Manager or his/her nominee, or Inspectors from authorities with jurisdiction over the works. The drawings shall be</p>	<p>Holcim advises that its works personnel are in daily contact with Quarry Manager, and observe contractor works. Naturelinks has a nominated contact person for site works. Drawings have been provided to Naturelinks.</p>	C	

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	adequately protected to sustain the documents in a clear and readable form for the duration of the works.			
LRMP s.4.11	Cleaning Up All equipment and debris will be removed from the site at the completion each stage of planting. The site shall be left tidy. During the implementation of planting piles of rubbish shall be removed leaving the site in a tidy condition at the end of each working day.	No evidence of debris from planting works remaining on site.	C	Observation
LRMP s.4.12	Erosion Control Areas susceptible to erosion will be treated with approved erosion control techniques. The specific technique will be dependent on site conditions but may include hydro-mulching, erosion control matting or other approved techniques.	No signs of significant erosion observed. Minor evidence of this observed along southern boundary internal face.	C	Observation
LRMP s.5	Ongoing & Post-Operations Maintenance Holcim shall continue to monitor and maintain the site; however, plant replacement will not be undertaken solely for visual screening reasons. The landscape will operate as a “natural” system and is expected to be self-sustaining, and similar to surrounding forest environments.			
	Ongoing maintenance, monitoring and rectification will be carried out by, and under the direction of, the site Rehabilitation (“Rehab”) Manager and will include (but not necessarily be limited to):	No change from previous audit. Maintenance currently occurring by Holcim personnel and through Naturelinks (as described above) during operational phase of quarry.	C	Vegetation Monitoring Monthly reports (sample sighted); Naturelinks documentation (various, as cited above).

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
<p>*Conformity is rated as follows:</p> <p>C – Conforms;</p> <p>MNC –Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue);</p> <p>mnc –Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue);</p> <p>O – Observation; opportunity for improving the management system and/or operational controls exists.</p> <p>NA – Not Audited or Applicable (see “Comments” section for reason why)</p>				
	<ul style="list-style-type: none"> • Maintenance of the surface of site access tracks. • Maintenance of all fences and signs. • Pruning branches overhanging and imposing on access tracks. • Monitoring and control of weeds as necessary, ensuring weed controllers have attended a DSE ‘Farm Chemical User Course’ or equivalent and have appropriate approvals. • Monitoring health of retained and planted vegetation and checking for pests and diseases. • Monitoring stability of berms and berm walls. • Replant terrestrial planted areas that have failed and provide significant gaps on the horizon line. • Regrading necessitated by erosion and washouts. • Rehabilitation of quarry water management system. • Treatment of disease or other infestation in vegetation as necessary and as approved in consultation with DSE. 			

Section/ Timing	EMP Requirement – Summary	Auditor's Findings & Comments	Conf*	Audit Evidence
*Conformity is rated as follows: C - Conforms; MNC –Major nonconformity (potential or actual significant offsite impact on the environment, and/or legal compliance issue); mnc –Minor nonconformity (minor actual or potential environmental impact, may be contained within site or have limited off site impact; documentation issue); O – Observation; opportunity for improving the management system and/or operational controls exists. NA – Not Audited or Applicable (see “Comments” section for reason why)				
	<ul style="list-style-type: none"> Control of pest animal species. 			
EMP s.1.4.2	At the completion of all quarrying activities, the site is to be reviewed to ascertain plant losses. Replanting as part of the ongoing monitoring and maintenance is to continue for a period of 12 months after completion of extraction after which the planting will rely on natural regeneration.)	Not applicable at this time, quarrying activities are continuing.	NA	

Appendix 2

Photographs



Photograph 1: Before extension



Photograph 2: January 2010



Photograph 3: May 2011



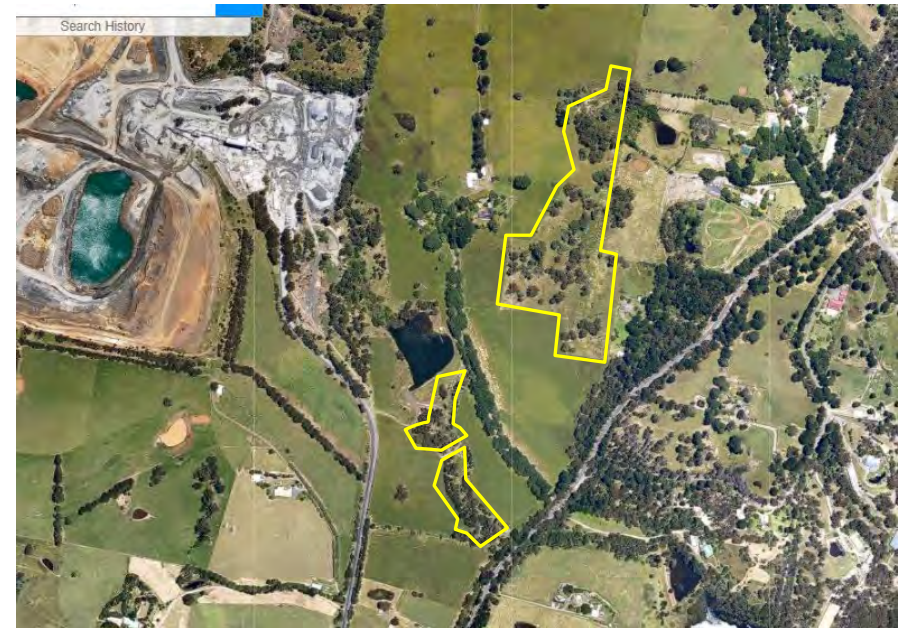
Photograph 4: April 2014



Photograph 5: December 2015



Photograph 6: December 2016



Photograph 7: October, 2017 (above). Net Gain Offset areas are shown outlined in yellow. For comparison, the photo opposite is from Jan, 2014.



Photograph 8: February, 2019.



Photograph 9: October, 2019



Photograph 10: Traffic Management Plan, 2019



Photograph 11: December, 2020.

2021-22



Photograph 12: December, 2021 (net gain offset areas shown with yellow bordering).



Rehabilitation Areas. KEY: Phase A & B (Teal), 0.8 Hectare (Green), Southern Extraction (Red), South-East Extraction (Blue), Extraction (Orange), Phase C (White), Landslip (Pink) and Net Gain (Yellow).



Photograph 13: Rehabilitation works Southern Extraction area, looking west.



Photograph 14: As above. Hydromulched SW face in distance.



Photograph 15: Newly seeded and planted “0.8 ha” area, southern face.



Photograph 16: As above, including extraction area and pit.



Photograph 17: Quarry pit in southern part of site.



Photograph 18: Phase C rehabilitation area (NE of quarry), looking west.



Photograph 19: As above.



Photograph 20: Waste tyres being stored for later recycle.



Photograph 21: Waste rubber conveyor belts stored for later re-use/recycle.



Photograph 22: Equipment “graveyard”. Items with oil or other potentially contaminating fluids are first drained and the fluids securely stored for later removal by specialist licensed waste contractors.



Photograph 23: Empty pesticide containers stored under cover for later removal by licensed waste contractor.



Photograph 24: Pesticide container mounted on sealed trailer.



Photograph 25: Phase C and natural vegetation along northern boundary of quarry.



Photograph 26: "Extraction" area.



Photograph 27: Phase C/Extraction, looking south.



Photograph 28: As above but looking west.



Photograph 29: Quarry from north rim, looking south west.



Photograph 30: As above, looking south.



Photograph 31: As above, looking SE.



Photograph 32: Phase A & B rehabilitated slopes. Tree guards knocked over by 'roos.



Photograph 33: As above.



Photograph 34: As above.



Photograph 35: Phase A & B along the rim, looking south.



Photograph 37: Vegetation at NE corner of site (not a designated rehabilitation area).



Photograph 38: As above – boundary with Pony Club.



Photograph 39: Gate to EPA sampling location.



Photograph 40: EPA Licensed Discharge Point (flow monitor and sampling location) – front and side view.



Photograph 41: Looking downstream from EPA sampling location.



Photograph 42: Looking upstream from EPA sampling location.



Photograph 43: Donazzan's Dam – reed growth along edge of dam.



Photograph 44: Donazzan's Dam – dam wall looking east.



Photograph 45: Dam discharge outlet at foot of dam wall.



Photograph 46: Donazzan's Dam, looking south. Reed growth along dam wall clearly visible.



Photograph 47: Net Gain (north) area.



Photograph 48: As above.



Photograph 49: As above.



Photograph 50: Main quarry pit.



Photograph 51: Pit pumped water offtake and loading standpipe.



Photograph 52: As above - diesel powered pump.



Photograph 53: Bird life present in main quarry pit.



Photograph 54: Main quarry pit – middle pump with spill kit.



Photograph 55: Main quarry pit – third pump, with spill kit (blue barrel).



Photograph 56: Main quarry pit – pampas grass on embankment (access limited).



Photograph 57: Mt Shamrock Road – sign is small and obscured by vegetation.



Photograph 58: Maintenance area – clearly labelled bins.



Photograph 59: As above, except the sign on the right is misplaced.



Photograph 60: Drum bin (maintenance area) would benefit from clear signage.



Photograph 61: Lubricant storage and dispensing container, maintenance area.



Photograph 62: Electronic waste being disposed into metals bin.



Photograph 63: Electrical transformer, shows signs of oil seepage.



Photograph 64: Crusher control room, showing water sprays in operation. Processes are stopped if sprays are not working.



Photograph 65: Cement mixing area, a potential source of elevated pH in the site's surface water system.



Photograph 66: Settlement pond prior to water entering Donazzan's Dam.