LIME SALES LIMITED

BRIDGETOWN DOLOMITE QUARRY

DRIEHEUVELS QUARRY

MINING OF DOLOMITE OVER THE REMAINDER OF PORTION 7, 8, 9 OF THE FARM VLEDERMUISDRIFT NO 398, PORTION 2 OF THE FARM VOGELSTRUISDRIFT NO 335, AND PORTION 1 OF THE FARM DRIEHEUVELS NO 399, MOORREESBURG, WESTERN CAPE PROVINCE

REHABILITATION PLAN

DEPARTMENTAL REFERENCE NUMBER: WC 30/5/1/2/2/233 MR

OCTOBER 2019

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EXECUTIVE SUMMARY

Greenmined Environmental (Pty) Ltd is the consultants responsible for the S102 amendment application and associated amendment of the EMPR, and in light of this, the Annual- and Final Rehabilitation, Decommissioning and Mine Closure Plan (*in aliis verbis* Rehabilitation Plan) of the BDQ was accordingly revised to align it with the proposed changes at the mine.

The purpose of this document is to provide site management with an Annual Rehabilitation Plan as well as the Final Rehabilitation, Decommissioning and Closure Plan, compiled in terms of the NEMA Amendment Act, 2014 (Act No. 25 of 2014) read with the Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, November 2017 (GN 1228, Financial Provision Regulations 2017. The amendment of the rehabilitation plan entails a review of the following aspects:

1. Annual rehabilitation as reflected in the annual rehabilitation plan;
2. Final rehabilitation, decommissioning and closure of the mining operations at the end of the life of operations as reflected in the final rehabilitation, decommissioning and mine closure plan;
3. Remediation of latent or residual environmental impacts, which may become known in the future, as, reflected in the environmental risk assessment report.

Annual Rehabilitation Plan:

Mining commenced on the southern section of the site during 1990. The calcitic Ag-lime plant closed down round about 1999, and the quarry on the southern section was filled up and rehabilitated by the end of 2014. Metallurgical grade dolomite is mined from another quarry on the northern part of the property. Production of metallurgical grade dolomite commenced in 1998 at a new crushing, screening and washing plant erected close to the new northern quarry for this purpose. At present, the metallurgical dolomite is the main product produced on site. Dolomitic Ag-lime has been produced from the waste screenings derived from the production of the metallurgical grade dolomite. Lime Sales Ltd is the mining right holder (WC/30/3/1/2/2/233MR), with the actual mining and processing executed by SPH Kundalila (Pty) Ltd appointed as the on-site contractors.

In light of the mining method followed at Bridgetown Quarry, very little to no progressive rehabilitation is applicable to the mining area. Site management therefore did not identify any progressive rehabilitation to be implemented during the forthcoming 12 months. Although site management does not plan to do annual rehabilitation of the mining area, the monitoring plans listed in the annual rehabilitation plan will continue.

Rehabilitation, Decommissioning and Mine Closure Plan:

The BDQ mining footprint is 168.5502 ha in extent and the area proposed for the DQ is 13.1 ha. At the BDQ dolomite mining is presently, taking place in the northern section of the dolomite deposit where a quarry has been established which is expected to continue until ±2027. The original small Ag-lime quarry situated in the extreme southern part of the site, which commenced operations in 1990, has been re-filled with waste-rock material derived from the northern quarry and was covered with topsoil (2014).

Upon closure of the quarry, the mining right holder will contract the expertise of a rock engineer to guide the final design of the quarries. The rock engineer will be directed by the rehabilitation measures proposed in the 2019 EMPR, and the Rehabilitation Plan.

Upon rehabilitation, the northern excavation will be allowed to flood to the dam's full supply level of either 26 m or 34 m. As a cliffed water body enclosure the excavation will serve primarily as waterfowl and bird of prey sanctuaries, while increasing the dam's capacity by some 4 - 5 million m^3. The footprint of the southern excavation was refilled and topsoiled, and will be returned to agricultural use. All stockpiled material, plant, buildings, and road surfaces not required by the landowner will be removed and the surfaces ripped and replanted largely with wheat or a suitable grass seed mix. At the DQ, the face along the western boundary of the excavation will either be sloped at 1:3 to the pit floor, to prevent soil erosion, or be stepped by creating benches of not more than 3 meters high. Due to the nature of the project, no buildings/infrastructure have to be removed. The rehabilitation areas will therefore be returned to agricultural use and reincorporated into the surrounding farms.

Environmental Risk Assessment Report:

At this stage, no latent risks that will potentially arise during closure phase of the mining area were identified. By reason of the fact that no latent risks with regard to the management of the mining area were identified no additional monitoring, auditing or reporting requirements are required for this period (2019).

LIST OF DEFINITIONS

Abandonment: The act of abandoning and relinquishment of a mining claim or intention to mine, a voluntary surrender of the claim or mine to the next party.

Adit: A horizontal passage leading into a mine for the purposes of access or drainage.

Appropriately qualified: A person who has training in the skills appropriate to the type of work to be done, and experience of the type of mine shaft and of the size, complexity and safety classification of the deposit or the environmental conditions (or both) pertaining to the specific project.

Rehabilitation Plan: Annual Rehabilitation and Final Rehabilitation, Decommission and Closure Plan.

Biodiversity: Biodiversity is an abbreviation of “biological diversity”. It means the variety of living things – the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they are a part.

Closure: The act of sealing a redundant mine opening which is acceptable for final mine closure.

Context of an environmental impact: The overall environmental setting in which an environmental impact occurs. It includes all "natural" components and characteristics (or both) and all "human and social" components and characteristics (or both). It has both spatial and time dimensions.

Contour berm: Is an embankment of topsoil, which is placed on contour with a slope of not flatter than 1:350 not steeper than 1:200, which slopes towards a common discharge, point. The intention of this berm is to prevent erosion on rehabilitated areas. These berms should be installed at 5 m vertical intervals.

Design: The documented result of a systematic process during which all relevant factors and criteria are taken into account. The design includes the design report, the working drawings and the operations manual.

Environmental impact: Any change in the state of a component of the environment, whether adverse or beneficial, that wholly or partially results from activities, projects or developments.

Environmental integrity: The reliability of performance of the environmental impact management measures associated with the facility, with respect to the environmental performance objectives.

Environmental management programme: A programme contemplated in the Mineral and Petroleum Resources Development Act, submitted to and approved by the Director: Mineral

Development, and detailing the plan to be adopted and implemented by a mine for managing the environmental effects of the operations of the mine.

Environmental objectives: Those objectives that represent the desired state of environmental components that have been adopted for the mine.

Hazard: The potential of a mine abandoned deposit to cause harm because of failure.

Intensity of an environmental impact: The severity of the consequences of an environmental impact, as judged by suitably qualified persons.

Manager of a mine (general manager): Any competent person appointed in terms of the Mine Health and Safety Act, 1996 (Act 29 of 1996), to be responsible for the control, management and direction of a mine.

Non-beneficial: Not beneficial to the closure objective of the mine.

Perimeter berm: Is an embankment placed at the top outer edge of a stockpile. This berm's function is to prevent rainwater from washing over the edge and down the sides of the stockpile and causing erosion. It is to double up as a safety berm in order to prevent persons from driving or walking over the edge.

Rehabilitated land: Is defined as land that has previously been mined through or areas, which have been disturbed by the mining process. These areas have been levelled, covered with topsoil, fertilized, seeded and are capable of supporting a sustained long-term vegetation cover.

Redundant: Permanently no longer required for mining operation.

Reliability: The probability that a specified event will not occur in a specified time (usually expressed as a ratio, when measured in quantitative terms).

Risk: The probability that a specified event, such as failure, will occur in a specified time.

Scheduled closure: Planned closure of the mine

Significant environmental impact: An impact in respect of which consultation (with the relevant authorities and other interested and affected parties) on the context and intensity of its effects provides reasonable grounds for mitigating measures to be included in the environmental management programme. Significance is determined by the integration of the context and intensity of the effects of the impact, and the likelihood that the impact will occur.

Topsoil: means the layer of soil covering the earth which –

(a) provides a suitable environment for the germination of seed;

(b) allows for penetration of water; and

(c) Is a source of microorganisms, plant nutrients and in some cases seed.

Unscheduled closure: The closure cost associated with immediate closure and provision.

LIST OF ABBREVIATIONS

Ag-lime	Dolomitic agricultural lime
CoM	Chamber of Mines
DMR	Department of Mineral Resources
DTM	Digital Terrain Model
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EPA	Environmental Performance Assessment
EMPR	Environmental Management Program
ERA	Environmental Risk Assessment
IDP	Integrated Development Plan
I&AP's	Interested and Affected Parties
IWULA	Integrated Water Use Licence Application
MAP	Mean Annual Precipitation
MAE	Mean Annual Evaporation
MPRDA	Mineral and Petroleum Resources Act, 2002 (Act No 28 of 2002)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
PPP	Public Participation Process
RIP	Rehabilitation Implementation Plan
SABS	South African Bureau of Standards
SAWB	South African Weather Bureau
SLP	Social and Labour Plan
WCMR	Waste Classification and Management Regulations
WUL	Water Use Licence
WWF	World Wildlife Fund

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1. INTRODUCTION

Lime Sales Limited (herein after referred as the “Right Holder”) holds a mining right (WC 30/5/1/2/2/233 MR) over 168.5502 ha of the Remainder of Portion 7, 8 and 9 of the farm Vledermuisdrift No 398 and Portion 2 of the farm Vogelstruisdrift No 335 in the Moorreesburg magisterial area of the Western Cape Province. The right allows for the mining of dolomite. Bridgetown Dolomite Quarry (“BDQ”) has been operation since 1990, and the right holder now identified the need to add a 13.0949 ha area over Portion 1 of the farm Drieheuvels No 339 (hereinafter referred to as “Drieheuvels Quarry” (“DQ”)) to the current mining footprint. At present, mining takes place under a converted mining right with protocol number 86/2014 and an environmental management programme (“EMPR”), initially approved in 1997 was updated in 2009. The project is operated and managed by an on-site contractor, SPH Kundalila (Pty) Ltd, under the general supervision of Lime Sales Limited. To extend the existing mining boundaries, the right holder intends submitting a Section 102 amendment application to the Department of Mineral Resources. The S102 application necessitates an application for a Part 2 amendment of the mine’s EMPR in terms of GNR 326 Section 31.

Greenmined Environmental (Pty) Ltd (“Greenmined”) is the consultants responsible for the S102 amendment application (“S102”) and associated amendment of the EMPR, and in light of this, the Annual- and Final Rehabilitation, Decommissioning and Mine Closure Plan (*in aliis verbis* Rehabilitation Plan) of the BDQ was accordingly revised to align it with the proposed changes at the mine.

This report (the Rehabilitation Plan) stipulates the rehabilitation methods to be followed in the restoration of the BDQ mining footprint as well as the footprint proposed for the Drieheuvels Quarry (“DQ”). The report was compiled in line with Government Notice 940 of the National Environmental Management Act, 1998 [NEMA] (Act No. 107 of 1998) together with Regulation 62 of the Minerals and Petroleum Resources Development Act, 2002 [MPRDA] (Act No. 28 of 2002). The information used in this report was sourced from the BDQ site management, as well as site inspections and background information gathered from the mine’s EMPR (2009).

The purpose of this document is to provide site management with an Annual Rehabilitation Plan as well as the Final Rehabilitation, Decommissioning and Closure Plan, compiled in terms of the NEMA Amendment Act, 2014 (Act No. 25 of 2014) read with the Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, November 2017 (GN 1228, Financial Provision Regulations 2017.

1.1 PROJECT STATUS

As mentioned earlier, mining at BDQ commenced ±29 year ago and it is for this reason that a brief history of the mine (including developments and improvements) is detailed in this section.

1.1.1 History (BDQ)

The BDQ mining footprint is divided into a northern and a southern section. Mining commenced on the southern section of the Bridgetown Dolomite Quarry during 1990, in a drilling, blasting, crushing and milling operation to produce dolomitic agricultural lime ("Ag-lime"). In 1992, a second small milling plant was erected elsewhere on site to crush limestone derived from PPC near Piketberg to produce calcitic Ag-lime. The calcitic Ag-lime plant closed down in about 1999 and the quarry on the southern section was filled up and rehabilitated by the end of 2014.

During 1995/96 Lime Sales Ltd and Iscor Ltd formed a Joint Venture to exploit the dolomite deposit and successfully tendered to supply the then "Saldanha Steel Smelter" with metallurgical grade dolomite as a flux in the smelting process from a new quarry on the northern part of the property. Production of metallurgical grade dolomite commenced in 1998 at a new crushing, screening and washing plant erected close to the northern quarry for this purpose. At present, the metallurgical dolomite is the main product produced on site. When mining commenced in the northern quarry, the original small Ag-lime dolomite quarry which commenced in 1990 ceased production. Dolomitic Ag-lime has subsequently been produced from the waste screenings derived from the production of the metallurgical grade dolomite

1.1.2 Developments and Improvements (BDQ)

The following developments and/or improvements took place at the BDQ since 2009:

- The old Ag-lime plant situated adjacent to the Berg River at the extreme southern end of the project area has been demolished and the structures and foundations removed. This event has removed an environmental problem for the inhabitants of the Smuts farm and the Bridgetown camping site particularly with regard to dust and noise. In addition, the demolition of the Ag-lime plant has positively reduced the dust generated on many of the haul roads and has enabled better centralization and control of the operations.

- A new and modern Ag-lime plant has been constructed (2013) adjacent to the dolomite processing plant.

- A new weighbridge has been constructed adjacent to the old aggregate plant and the old weighbridge has been demolished.

- The old Ag-lime quarry, situated in the extreme southern part of the site, which commenced operations in 1990, has been re-filled with waste rock derived from the northern quarry and was levelled with topsoil for future wheat farming.

- An authorization from the Department of Water and Sanitation has been granted to Lime Sales Ltd to pump phreatic seepage water from the quarry to a side-stream of the Berg River (see Appendix K1 of the EIAR & EMPR, 2019).

- A new dolomite screenings stockpile and a waste dump have been commenced in the close proximity of the dolomite production plant because the original dumping sites has filled up.

- The Eskom 350 kVA power-line feeding into the dolomite production complex from the eastern side of the Berg River has been re-routed well to the south of its old position to avoid damage to the power line during blasting at the quarry.

- The quarry is being development west- and southwards to widen the pit and access the further dolomite reserves inside the resource area. In addition, the quarry sump is being deepened to the 6 mamsl elevation to better control the seepage phreatic water.

- The changes in the operating area have necessitated the re-positioning of the dust-watch collection points to affectively monitor the dust generated at the working sites.

- The prime consumer of the dolomite product produced on site (Arcelor Mittal in Saldanha Bay) has indicated that their demand for the processed dolomite will increase by about 30% for the near future.

1.1.3 S102 Amendment Proposal (DQ)

Blue Falcon Trading 94 (Pty) Ltd ("Blue Falcon") was granted a dolomite prospecting right over Portion 1 of the farm Drieheuvels 399 and Portion 2 of the farm Honigfontein 233 in 2016. In 2019, Lime Sales Ltd (same holding company than Blue Falcon) identified the need to extend the current BDQ mining footprint to include a 13.0949 ha area over Portion 1 of the farm Drieheuvels No. 399. Adding the proposed 13.1 ha to the current footprint of BDQ necessitates an application for the consent of the minister to amend the approved mining right and EMPR in terms of Section 102 of the MPRDA, 2002.

1.2 OBJECTIVE OF THE REHABILITATION PLAN

The purpose of the Rehabilitation Plan is to describe the rehabilitation processes that need to take place to ensure that the mine (BDQ & DQ) reaches its full environmental potential upon closure.

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all temporary infrastructure and waste from the site as per the requirements of this EMPR and of the Provincial Department Mineral Resources.
- Demolish/dispose of all permanent infrastructures with no post-mining use/potential.
- Ensure that no threat to underground water quality remains.
- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the damming of surface water.
- Shape and contour all disturbed areas in compliance with the EMPR.
- Make all excavations safe.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.

2. DETAILS OF THE AUTHOR

Lime Sales Ltd appointed Greenmined to revise the current Rehabilitation Plan to include both the footprints of the BDQ and the proposed DQ. Ms Christine Fouché is the responsible consultant for the project and holds a Diploma in Nature Conservation and a B.Sc. in Botany and Zoology with thirteen years' experience in doing environmental impact assessments and compliance monitoring in South Africa (see CV and proof of experience attached as Appendix R to the EIAR & EMPR).

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Declaration of Independence:

I, Christine Fouche, in my capacity as environmental control officer declare that–

- I act as independent environmental control officer in this compliance audit;
- I will perform the work relating to the audit in an objective manner, even if the results and findings are not favourable to the holder of the authorisation;
- I have expertise in conducting environmental compliance audits, including knowledge of the Act and regulations that have relevance to the activity;
- I will adhere to and comply with all responsibilities as indicated in the National Environmental Management Act and Environmental Impact Assessment Regulations.
- I do not have and will not have any vested interest in the activity other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014.

Christine Fouché Date: 31 October 2019

3. LEGAL BACKGROUND AND BEST PRACTICES

This section provides an overview of the legislative requirements applicable to the project, including the acts, guidelines and policies considered in the compilation of the Rehabilitation Plan.

3.1 THE CONSTITUTION OF SOUTH AFRICA, 1996 (ACT NO. 108 OF 1996)

The legislative motivation for this project is underpinned by The Constitution of South Africa, 1996 (Act No. 108 of 1996), which states that:

The State must, in compliance with Section 7(2) of the Constitution, respect, protect, promote and fulfil the rights enshrined in the Bill of Rights, which is the cornerstone of democracy in South Africa. Section 24 of the Constitution:

24. Environment

-Everyone has the right-

(a) To an environment that is not harmful to their health or well-being; and

(b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-

(i) Prevent pollution and ecological degradation;

(ii) Promote conservation; and

(iii) Secure ecologically sustainable development and use of natural resources while promoting a justifiable economic and social development.

Section 24 of the Constitution of South Africa requires that all activities that may significantly affect the environment and require authorisation by law must be assessed prior to approval. In addition, it provides for the Minister of Environmental Affairs or the relevant provincial Ministers to identify:

- New activities that require approval;
- Areas within which activities require approval; and
- Existing activities that should be assessed and reported on.

Section 28(1) of the Constitution of South Africa states that:

"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".

If such pollution or degradation cannot be prevented, then appropriate measures must be taken to minimise or rectify such pollution or degradation. These measures may include:

- ❖ Assessing the impact on the environment.
- ❖ Informing and educating employees about the environmental risks of their work and ways of minimising these risks;
- ❖ Ceasing, modifying or controlling actions which cause pollution/degradation;
- ❖ Containing pollutants or preventing movement of pollutants;
- ❖ Eliminating the source of pollution or degradation; and
- ❖ Remedying the effects of the pollution or degradation.

3.2 THE MINERALS AND PETROLEUM RESOURCES ACT, 2002 (ACT NO. 28 OF 2002) [MPRDA]

The table below summarises the relevant sections in terms of the MPRDA, 2002.

Table 1: Summary of the relevant rehabilitation sections of the MPRDA, 2002

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Environmental Management	Section 37	*Requires that the principles set out in section 2 of NEMA must apply to all prospecting and mining operations, and that the generally accepted principles of sustainable development must be applied by integrating social, economic and environmental factors during the planning and implementation phases of mining projects.*
	Section 38	*Requires the applicant to manage all environmental impacts in accordance with his or her environmental management plan (EMPR) or the approved EMPR.*
	Section 39	*Deals with the requirements of an EMP/EMPR, whichever is applicable.*
Financial Provision	Section 41	*Financial provision needs to be provided and annually asses the environmental liability.*
Closure Certificate	Section 43	*Holder of a mining right is responsible for all environmental liabilities as may be identified in the EMP, application needs to be made to the regional manager for the closure certificate.*
Removal of Infrastructure	Section 44	*When the mining operation comes to an end the mine may not remove buildings, structures or objects which may not be demolished or removed in terms of any other law.*

3.2.1 Regulation 527 of the MPRDA, 2002

Government Notice No. R.527, as published in the Government Gazette, 23 April 2004 (GG No. 26275, Volume 466) of MPRDA stipulate that the following closure objectives must form part of the EMPR:

- ❖ Identify the key objectives for closure of the operation to guide the project design;

- ❖ Development and management of environmental impacts;
- ❖ Provide future land use objectives for the site; and
- ❖ Provide proposed closure costs.

Table 2: Requirements of Government Notice 527

AREA OF CONCERN	REGULATION	LEGAL REQUIREMENTS
The need to prevent and alleviate pollution arising from mining activities.	Regulation 42(1)	*Section 42(1) of the MPRDA stipulates that the closure process must start at the commencement of a mining operation and continue throughout the entire life of the mine. Furthermore, future closure and land use objectives must be included in the EMP Section 42(1) d stipulates that any environmental damage or residual impacts that are identified during the Environmental Risk Assessment (ERA) phase must be acceptable to all Interested and Affected Parties (I&AP's) in line with Section 24(a) of the National Constitution.*
Mine Closure	Regulation 43	*A closure plan contemplated in Section 43(3)(d) of the Act, forms part of the EMPR or EMP, as the case may be, and must include – a summary of the results of progressive rehabilitation undertaken.*
Part III of R 527 deals with environmental regulations for mineral development, petroleum exploration and production.	Regulation 56	*In accordance with applicable legislative requirements for mine closure, the holder of a prospecting right, mining right, retention permit or mining permit must ensure that –The land is rehabilitates, as far as is practicable, to its natural state, or to a predetermined and agreed standard or land use which conforms with the concepts of suitable development.*

3.3 THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) [NWA]

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the NWA is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways, which take into account:

- ❖ Meeting the basic human needs of present and future generations;
- ❖ Promoting equitable access to water;
- ❖ Redressing the results of past racial discrimination;
- ❖ Promoting the efficient, sustainable and beneficial use of water in the public interest;
- ❖ Facilitating social and economic development;
- ❖ Providing for growing demand for water use;
- ❖ Protecting aquatic and associated ecosystems and their biological diversity;

- ❖ Reducing and preventing pollution and degradation of water resources;
- ❖ Meeting international obligations; and
- ❖ Managing floods and droughts.

The following sections of the NWA, 1998 are relevant.

Table 3: NWA, 1998 applicable sections

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Prevention and remedying effects of pollution.	Section 19	*Any situation exist or which may cause or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.*
Control of emergency incidents.	Section 20	*Incidences of pollution needs to be reported the Department and the relevant catchment agency*
General principles: Water uses	Section 21	*Apply for a Water Use Licence for any controlled activity. This section is applicable for the BDQ for;* *(a) Taking water from a water resource*

3.4 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO 107 OF 1998) [NEMA]

The National Environmental Management Act (NEMA) strives to regulate national environmental management policy and is focussed primarily on co-operative governance, public participation and sustainable development. NEMA makes provisions for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state and to provide for matters connected therewith.

The following sections are relevant.

Table 4: NEMA, 1998 applicable sections

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Principles that may significantly affect the environment.	Section 28	*General duty of care on every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.*
Control of emergency incidents.	Section 30	*Incidences of pollution needs to be reported the Department.*

AREA OF CONCERN	SECTION	LEGAL REQUIREMENTS
Environmental Management Plan.	Section 34	*A draft EMP must include –* *information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of –* *(iv) rehabilitation of the environment;* *as far as reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally acceptable principle of sustainable development, including where appropriate, concurrent or progressive rehabilitation measures.*

3.4.1 Regulation 1228 of NEMA, 1998

NEMA, GNR 1228 GG 41236, known as the NEMA Financial Provision Regulations, 2015 (amended 2017), was promulgated in November 2015, and in terms of these regulations holders of a mining right are allowed a transitional period of 39 months (19 February 2019) from the date of promulgation to comply. The compliance date was extended to 19 February 2020.

As mentioned earlier the right holder must annually update the annual rehabilitation, final rehabilitation and remediation of latent environmental impacts and ensure it is compliant with the Financial Provision Regulations of 2015. The reports need to be conducted in the format that was supplied in the regulations as per Appendix 5 and Appendix 6.

3.5 THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO 57 OF 2008) [NEM:WA]

The rehabilitation measures must be aligned with the objections of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA) which includes:

(a) To protect health, well-being and the environment by providing reasonable measures for—
   (i) Minimising the consumption of natural resources;
   (ii) Avoiding and minimising the generation of waste;
   (iii) Reducing, re-using, recycling and recovering waste;

(iv) Treating and safely disposing of waste as a last resort;
(v) Preventing pollution and ecological degradation;
(vi) Securing ecologically sustainable development while promoting justifiable economic and social development;
(vii) Promoting and ensuring the effective delivery of waste services;
(viii) Remediating land where contamination presents, or may present, a significant risk of harm to health or the environment; and
(ix) Achieving integrated waste management reporting and planning;

(b) To ensure that people are aware of the impact of waste on their health, well-being and the environment;
(c) To provide for compliance with the measures; and
(d) Generally, to give effect to Section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being

3.5.1 Waste Classification and Management Regulations, 2013 (GNR 634)

Waste Classification and Management Regulations (WCMR) promulgated under the National Environmental Management: Waste Act, 2008 (NEM:WA) (effective 2013) provides mechanisms to:

- Facilitate the implementation of the waste hierarchy to move away from landfill;
- Reuse, recovery and treatment;
- Separate waste classification from the management of waste;
- Divert waste from landfill and into utilisation where possible; and
- Provide measures to monitor the progress

The Waste Classification and Management Regulations ultimately enables the improved and more efficient classification and management of waste; provide for safe and appropriate handling, storage, recovery, reuse, recycling, treatment and disposal of waste and will also enable accurate and relevant reporting on waste generation and management. All waste generators, excluding domestic generators, must ensure that the waste they generate is classified within 180 days of its generation.

All wastes that were classified in terms of the “Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste in terms of the Department of Water Affairs’’ (2nd Edition, 1998; Department of Water Affairs and Forestry) or alternative classifications that were approved prior to the WCMR taking

effect, must be re-classified and assessed within three years from the commencement of these Regulations.

Reference is made to the NEM:WA, part 8 of Chapter 4 regarding contaminated land:

All owners of land that is significantly contaminated become obliged to report that contamination is occurring. Part 8 of Chapter 4 is concerned with the remediation of contaminated land. This new legal regime for identifying contaminated land, determining its status and the risk that it poses, and regulating the remediation process is introduced. This law imposes significant legal obligation on the owners of land and on those who cause contamination, with potentially serious financial consequences. Part 8 applies where the pollution only manifest sometime after the contamination occurred and also where the action of a person (for example, the excavation of land pursuant to a development) results in a change to pre-existing contamination. Along with the notice brining Part 8 into effect, norms and standards for the remediation of contaminated land and soil quality (list certain contaminants and specify soil screening values for human health and environmental protection). This act also has several important implications for the sale of and, sellers who know that their lands is contaminated can no longer keep silent and this is classified as an offence.

3.6 FURTHER ACTS RELEVANT TO MINE REHABILITATION

- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).
- The South African Mineral Resource Committee (SAMREC) Code. Of particular importance in this regard is the determination of whether Bridgetown Dolomite Quarry has made an adequate provision for environmental rehabilitation in terms of Section 41 of the MPRDA.

3.7 BEST PRACTICE AND INTERNATIONAL GUIDELINES

Mine closure is an international challenge. South Africa has produced various well-known and reputable guidelines on matters directly linked and or associated with mine closure. Such was the need for guidelines to manage mine closure provisions in a consistent manner provided for by the DMR (2005).

These guidelines are the only official mine closure guideline as contemplated in Regulation 54(1) in the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

Of particular importance is that this guideline document governs the closure cost assessment process in South Africa and is applied by the DMR through its respective regional managers in each province.

The Chamber of Mines (CoM) (2007) issued a guideline for the rehabilitation of mined land. This document is a result of scientific knowledge experts. It is an on the ground reference document which provides written guidelines on the best rehabilitation techniques. Of value is how the document distinguishes between the financing, the planning and the licensing components of a typical mining program.

The World Wildlife Fund (WWF) in 2012 published a discussion document named the "Financial provision for the rehabilitation and closure in South African Mining: Discussion Document on Challenges and recommended improvements". The document focuses on the adequacy of financial provisions and pulls a very strong link between insufficient financial allocations and that of derelict and abandoned mines in South Africa. The document further emphasizes the importance of establishing a dependency between the EMPR/EMP and financial provision which is updated and adequate

Recently a released guideline from the Government of Western Australia (GWA 2011) provides insight to the importance of mine closure. The guidelines (GWA 2011) in particular state that planning for mine closure is a critical component of environmental management in the mining industry. Notably is that this industry leading practice also requires that planning for mine closure should start before mining commence and should continue throughout the life of the mine until final closure and relinquishment. This approach enables better environmental outcomes. It is also good business practice, as it should avoid the need for costly remedial earthworks late in the project lifecycle.

4. ENVIRONMENTAL AND PROJECT CONTEXT

4.1 PROJECT LOCATION

The mining right held by Lime Sales Limited extends over 168.5502 ha of the Remainder of Portion 7, 8 and 9 of the farm Vledermuisdrift No 398 and Portion 2 of the farm Vogelstruisdrift No 335 and allows for the mining of dolomite. The table below lists the GPS coordinates of the current mining footprint.

Table 5: GPS coordinates of the mining footprint of Bridgetown Dolomite Quarry.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	33°05'03.09"	18°49'24.10"	-33.084191°	18.823361°
B	33°05'04.72"	18°49'27.91"	-33.084644°	18.824419°
C	33°05'06.07"	18°49'36.58"	-33.085019°	18.826828°
D	33°05'10.72"	18°49'38.52"	-33.086311°	18.827367°
E	33°05'13.81"	18°49'38.39"	-33.087169°	18.827331°
F	33°05'17.72"	18°49'38.96"	-33.088256°	18.827489°
G	33°05'24.09"	18°49'41.18"	-33.090025°	18.828106°
H	33°05'25.86"	18°49'45.20"	-33.090517°	18.829222°
J	33°05'28.63"	18°49'45.65"	-33.091286°	18.829347°
K	33°05'31.13"	18°49'43.09"	-33.091981°	18.828636°
L	33°05'36.04"	18°49'42.55"	-33.093344°	18.828486°
M	33°05'31.47"	18°49'46.47"	-33.092075°	18.829575°
N	33°05'29.57"	18°49'48.74"	-33.091547°	18.830206°
P	33°05'24.41"	18°49'47.76"	-33.090114°	18.829933°
Q	33°05'22.27"	18°49'45.84"	-33.089519°	18.829400°
R	33°05'14.82"	18°49'45.36"	-33.087450°	18.829267°
S	33°05'14.17"	18°49'57.48"	-33.087269°	18.832633°
T	33°05'19.28"	18°49'59.81"	-33.088689°	18.833281°
U	33°05'27.30"	18°49'59.79"	-33.090917°	18.833275°
V	33°05'32.95"	18°50'01.45"	-33.092486°	18.833736°
W	33°05'40.21"	18°50'01.38"	-33.094503°	18.833717°
X	33°05'43.06"	18°49'59.64"	-33.095294°	18.833233°
Y	33°05'44.40"	18°50'00.02"	-33.095667°	18.833339°
Z	33°05'48.19"	18°50'02.57"	-33.096719°	18.834047°
1A	33°05'50.69"	18°50'06.02"	-33.097414°	18.835006°
1B	33°05'51.94"	18°50'08.60"	-33.097761°	18.835722°
1C	33°05'54.10"	18°50'13.04"	-33.098361°	18.836956°
1D	33°05'55.28"	18°50'15.31"	-33.098689°	18.837586°
1E	33°05'57.62"	18°50'23.57"	-33.099339°	18.839881°
1F	33°05'58.94"	18°50'24.72"	-33.099706°	18.840200°
1G	33°06'00.49"	18°50'26.24"	-33.100136°	18.840622°
1H	33°06'05.86"	18°50'20.24"	-33.101628°	18.838956°
1J	33°06'12.80"	18°50'18.61"	-33.103556°	18.838503°
1K	33°06'15.37"	18°50'19.01"	-33.104269°	18.838614°
1L	33°06'15.80"	18°50'16.17"	-33.104389°	18.837825°
1M	33°06'18.17"	18°50'11.36"	-33.105047°	18.836489°
1N	33°06'18.33"	18°50'01.19"	-33.105092°	18.833664°
1P	33°06'17.36"	18°49'56.05"	-33.104822°	18.832236°

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
1Q	33°05'44.08"	18°49'28.30"	-33.095578°	18.824528°
1R	33°05'29.69"	18°49'28.56"	-33.091581°	18.824600°

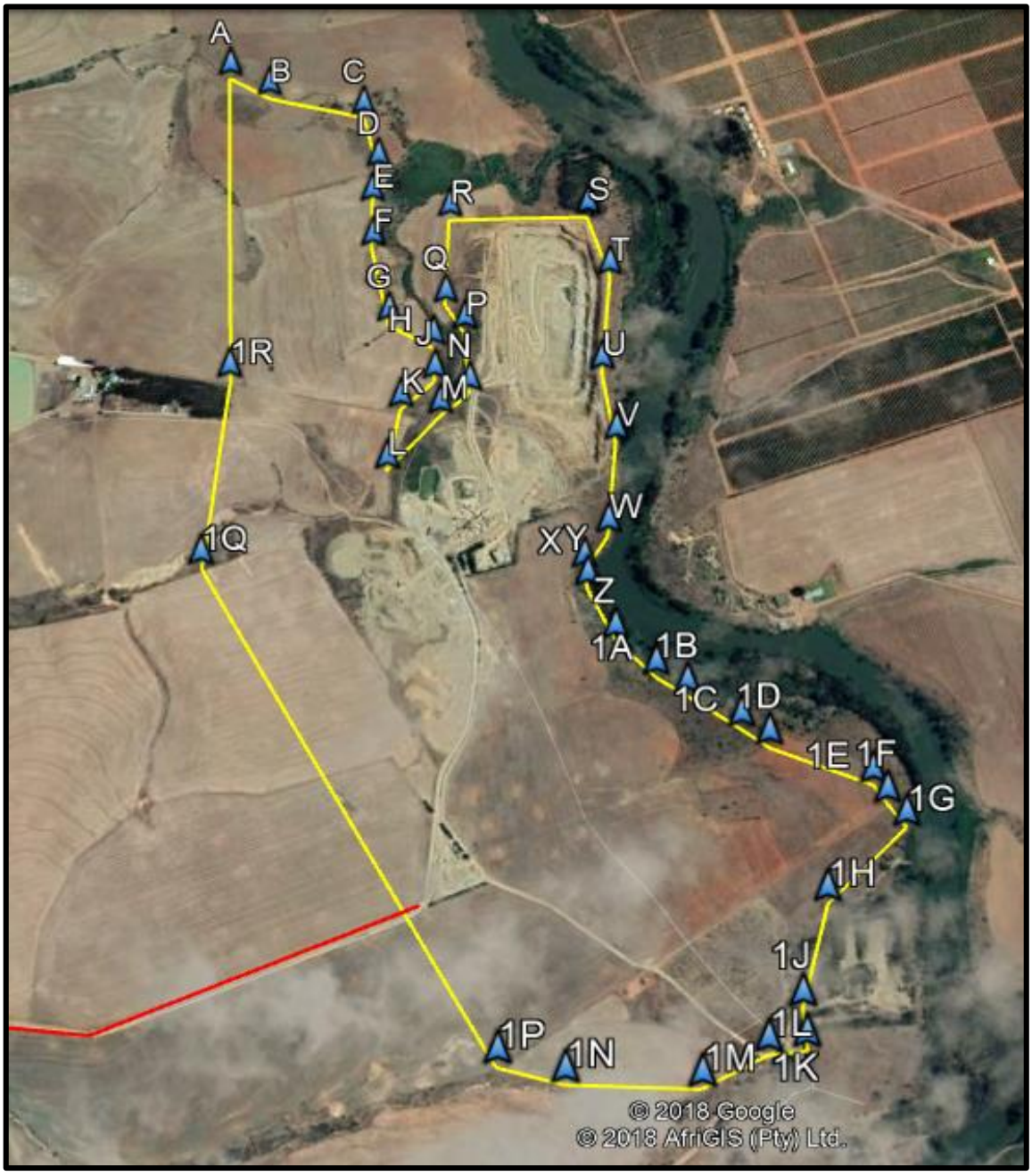

Figure 1: Satellite view of the current mining footprint of Bridgetown Quarry. (Image obtained from Google Earth)

The proposed extension area (Drieheuvels Quarry) falls within the GPS coordinates as listed below.

Table 6: GPS coordinates of the extension area.

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
1S	33°07'13.28"	18°51'07.52"	-33.120355°	18.85209°
1T	33°07'19.47"	18°51'14.58"	-33.122075°	18.85405°
1U	33°07'23.14"	18°51'12.06"	-33.123095°	18.85335°
1V	33°07'20.51"	18°51'09.79"	-33.122365°	18.85272°
1W	33°07'20.80"	18°51'06.80"	-33.122444°	18.85189°
1X	33°07'21.76"	18°51'06.62"	-33.122712°	18.85184°
1Y	33°07'25.16"	18°51'08.86"	-33.123655°	18.85246°
1Z	33°07'25.77"	18°51'08.28"	-33.123825°	18.85230°
2A	33°07'23.85"	18°51'04.14"	-33.123293°	18.85115°
2B	33°07'25.53"	18°51'00.61"	-33.123757°	18.85017°
2C	33°07'16.29"	18°50'51.47"	-33.121192°	18.84763°
2D	33°07'14.04"	18°51'00.25"	-33.120568°	18.85007°

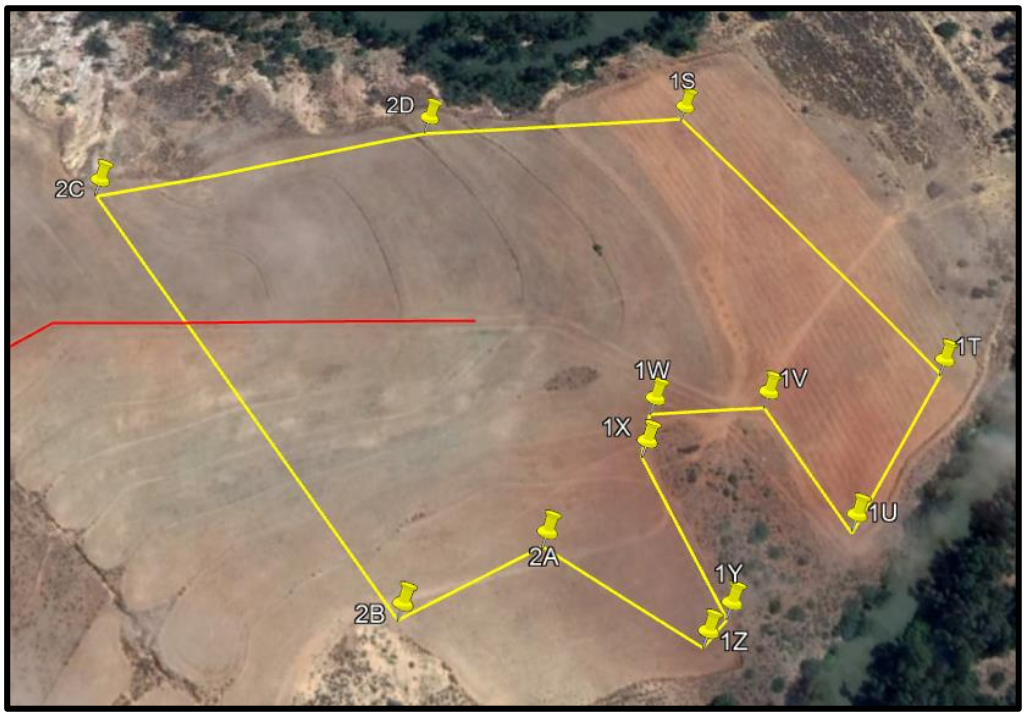

Figure 2: Satellite view of the proposed extension area on Portion 1 of the farm Drieheuvels 399. (Image obtained from Google Earth)

4.2 PRESENT MINING OPERATIONS (BDQ)

Current operations entail mining dolomite from the (northern) quarry situated on Portion 2 (RE) of the farm Vogelstruisdrift No. 335 and Portion 9 (RE) of the farm Vledermuisdrift No. 398 at a present average run of mine rate of 500 000 "in situ" tons per year. The mined dolomite is processed to produce metallurgical grade dolomite for the Arcelor Mittal Plant

(ex-Saldanha Steel) situated near Saldanha Bay. In addition to this product, the by-products of dolomitic agricultural lime (Ag-lime) and aggregate are also produced on the site. Given the present “in situ” proved and indicated ore reserves of 26.08 Mt (calculated April 2018) in the total resource area, and a run of mine production rate of 500 000 tons of in situ dolomite per year, the site has an estimated further life of ±52 years.

BDQ has the following infrastructure on site:

- Buildings and infrastructure of the office and workshop complex;
- Salvage yard;
- Explosive magazine;
- Metallurgical dolomite processing plant;
- Aggregate plant and Ag-lime production plant;
- Settling ponds and water abstraction equipment;
- Weighbridge and control centre; and
- Access and haul roads.

The products produced from the quarry comprise:

- metallurgical grade dolomite (main product)
- dolomitic Ag-lime (by-product)
- Aggregate products (by-product)

The primary mining processes involve the production of metallurgical dolomite:

1. Drilling, blasting and hauling dolomite rock from the quarry;
2. Crushing, screening and washing the metallurgical grade dolomite (+13 mm to -40 mm sized product);
3. Further crushing, milling and screening the -13 mm dolomite for Ag-lime;
4. Screening the -13 mm material and crushing and screening run of mine (“ROM”) rock for aggregate and dolomitic sand production;
5. Pumping water from the Berg River for washing the metallurgical dolomite and pumping phreatic water out of the northern quarry;
6. Abstracting excess phreatic ground water from the quarry; and
7. Recovery of all the slimes generated in the washing process in (2) above as additional feed material for Ag-lime production.

4.2.1 Northern Section

The quarry mined in the northern section of the dolomite deposit (phase 1) is expected to continue until ±2071. Topsoil and overburden is removed ±20 m ahead of the advancing top production benches. Due to the dolomite karst topography, up to 40% of the "overburden" is recovered as dolomite product. The topsoil is placed in berms away from but surrounding the mining area. Overburden is trucked to the overburden dumps.

The northern section quarry now covers an area of ±13 hectare and the present average depth is ±6 mamsl below land surface. The quarry production benches are 9 m high and accessed by a 1:11 sloping haul road situated on the western side of the deposit. The deposit has been thoroughly prospected to below the +7 amsl elevation and dolomite reserves for a further 52 years have been proved at this deposit. The ROM dolomite is brecciated and friable and this results in excessive "fines" (i.e. -13 mm size) being generated in the blasting and crushing process. This material is not suitable for metallurgical dolomite and comprises up to 40% of the ROM rock. Consequently, a large dolomite screenings stockpile has been built up on the site during the past years. The screenings are utilized to produce Ag-lime, fine aggregate and sand.

It is planned to mine the northern section quarry to the +7 m elevation (i.e. an average depth of ±40 m below land surface) over its full extent. At that stage further proved dolomite resources will still be available in the quarry floor. A decision will then be taken whether to continue mining this deposit or whether to start opening up the southern section. The decision will depend on the amount of ground water seeping into the quarry and the stability of the quarry, sidewalls.

Access to the quarry production benches entails deepening the existing western haul road in a northerly and then an easterly direction to completion of the resources.

Mining will only be conducted within the dolomite body to avoid the soft phyllite rock on the western hanging-wall side. The pillar width between the eastern side of the excavation and the dam (Berg River) will continue to be monitored in terms of water seepage and permeability, especially with respect to possible voids or fissures. To date no seepage from the eastern sidewall has been encountered and the dolomite rock is competent. Assuming that the metallurgical dolomite product demand remains at the average production rate of 250 000 tons (ROM 500 000 t/a), then the remaining life span of the northern section quarry is theoretically 52 years (until 2071).

4.2.2 Southern Section

The southern deposit has not yet been thoroughly prospected and this dolomite resource at present can only be described as an indicated reserve. The deposit contains high-grade dolomite together with transgressing greenstone dykes, sills, and silicious dolomite zones. This makes delineation of this ore-block problematical at this stage, and the area still requires more intensive exploration drilling. However, one borehole proved good grade dolomite to 80 m below the land surface. To date the prospecting has indicated a potential dolomite reserve of 3.8 million tons, which would meet specifications on two adjacent sections of land that together cover an area of 19 hectare.

Four prospecting programmes have explored this deposit, but it would be inappropriate at this stage to draw up a realistic mine plan until further prospecting has clarified the geology. The two designated southern mining areas are in wheat lands and close to the Berg River. The overburden is deeper than in the northern section quarry and this will eventually afford the opportunity of partly back filling the Northern Quarry with overburden from the Southern Quarry. It is planned to resume intensive prospect drilling in the southern dolomite section in ±2022 so that the mine plan can be designed and mining commence before the northern section quarry is mined out.

The life of the southern section can only be estimated as the reserves are only indicated at 3.8 million tons but not proven. Assuming the same constraints apply to the southern section, the life of this section is estimated at 10 years. If for practical reasons, the proposed life span is reduced to 8 years then the whole deposit will be mined out by ±2033.

4.2.3 Mineral Processing

Metallurgical Ore Process

Drilling, blasting and hauling are conducted as a normal operation. Grizzly screening is a necessity in the overburden removal phase to recover fresh dolomite that occurs as pinnacles or boulders in the otherwise overburden soil waste for crushing. Slimes management entails the following:

- Collection of slimes from washing screens and dewatering screen in sludge troughs to thickener tank.
- Pumping from thickener tank underflow to slimes dam for final settling.
- Provision for the following in slimes dam:
  - Clear water overflow to pumping sump for return as clear plant water.
  - Access for FEL or excavator to recover dried slimes as feed material to Ag-lime plant.

Given that the slimes only constitute the dust washed off the coarse metallurgical grade 13 mm to 40 mm after removal of -13 mm fines in the primary dry screen, these slimes constitute less than 1% of production.

Aggregate Production Process

Dolomite aggregate is produced essentially from the -13 mm screenings that are rejected at the metallurgical plant.

The range of aggregate products are:

- -22 to +14 mm (nominally 19 mm aggregate)
- -14 to +10 mm (aggregate)
- -20 mm to dust (nominally waste screenings)
- -10 to +5 mm (aggregate)
- -5 to +2 mm (nominally grit)
- -5 mm to dust (nominally sand)

4.3 PROPOSED MINING OPERATION (DQ)

4.3.1 Site Establishment Phase

The site establishment phase will entail the demarcation of the DQ mining boundaries, identified sensitive areas, and stripping and stockpiling of topsoil to access the mineral.

No clearing of indigenous vegetation is needed as the study area was extensively altered to allow for wheat cultivation, and the footprint of the proposed extension area was restricted to the existing wheat field of the landowner.

It is proposed that topsoil removal will be restricted to the exact footprint required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area within the mining boundary, to be replaced during the rehabilitation of the area. If possible, the topsoil (and overburden) berms must be stored along the north-western and north-eastern boundaries of the mining footprint to screen the operation from residents along the eastern bank of the river.

The proposed DQ will be reached via the existing road from BDQ that links up with the Gouda road. From the Gouda road, the existing access road to the farm will be used to reach the DQ. Haul roads into the excavation will be extended as mining progresses. All haul roads to be established will be below the threshold of the NEMA, 1998 EIA Regulations, 2017.

The infrastructure/equipment to be established/introduced at DQ, during the site establishment phase, will be of temporary nature and consist of:

- A chemical toilet;
- One excavator;
- One front-end loader;
- One 5 000 litre water cart (part time);
- Appropriate waste receptacles; and
- Approximately two ADT trucks.

4.3.2 Operational Phase

During the operational phase the hard rock, at the DQ, will be loosened by blasting, upon which it will be mechanically recovered with drilling-, excavation- and earthmoving equipment that will load the ADT's. The rock will then be delivered to the existing crushing and screening plant of BDQ where it will be processed and stockpiled as part of the existing operations. The existing infrastructure and labour force of BDQ will be used for the duration of the DQ operational phase.

At present, the mine plan is to commence mining at the north-eastern boundary, cutting the excavating into the rise of the hill in a western direction. Mining the footprint in this manner will create a single face that will be stepped/sloped when the western boundary is reached. No mining will take place within the 1:100 year floodline of the Berg River and due to the small scale of the mining footprint; the quarry depth will be limited to the groundwater level.

4.4 TOPOGRAPHY

The study area is characterized as a rolling hill landscape into which the Berg River is incised with cliff faces formed where the dolomite offers greater resistance to erosion. While the riverbed is at 24 m mamsl adjacent to the site, the river is impounded by the Misverstand Dam to a full supply level at 26 m elevation.

The topography of BDQ varies between ±71 mamsl in the south-west (being the highest point) and ±37 mamsl in the south-east (the lowest point being near the Berg River). The current topography of BDQ is largely unnatural due the mining activities that resulted in steep gradients; most obvious on the sides of the pit. While the higher watersheds of the site rise to 65 m, the excavations were developed on the lower lying spurs at between 40 and 50 m in the southern section and 40 and 55 m in the northern section with the full preservation of the cliffs. The expropriation area for a raised dam wall impoundment follows the ±36 m contour allowing for an assumed increased of the dam level from 26 m to ±35 m.

The natural topographical slope of the proposed DQ mining area is in an eastern direction from the highest point of the current wheat field towards the lower reaches of the riparian vegetation at the Berg River. The highest point of the proposed mining area is at 62 mamsl (north-western corner) with the lowest laying at 37 mamsl (south-eastern corner). The DQ will cut into the eastern slope of the hill. Due to the nature of the activity, the topography of the hill will be altered in that the eastern facing rise will be mined out; to be rehabilitated with a stepped/sloped face along the western boundary of the proposed mining area.

4.5 VISUAL CHARACTERISTICS

The visual character of the surrounding areas mainly comprises of an agricultural setting, intersected by the Berg River, road- and electricity infrastructure. The area west of the Berg River is known for its rolling wheat fields, while to the east of the river the landowners established centre pivot irrigated fields and vineyards.

The proposed extension area (DQ) will mainly be visible from the north-east, east and south due to its position against the eastern rise of the hill. The operation will be screened towards the north, north-west.

4.6 GEOLOGY

4.6.1 Bridgetown Dolomite Quarry

The Malmesbury Group constitute three disparate tectonostratigraphic terranes juxtaposed by major structural discontinuities. From the south-west to the north-east, these comprise the Tygerberg Formation, the Swartland Subgroup, and the Boland Subgroup, separated by the Saldanha- Franschhoek and Piketberg-Wellington Fault zones. The Bridgetown Formation in which the dolomite ore body occurs, is constituted by a structurally bound unit within the Piketberg-Wellington Fault zone, and probably comprises a distinct exotic unit. The age of the Malmesbury Group is not well constrained, however, it probably lies within the age range 718 Ma – 630 Ma, but older than the Cape Granite Suite (500 – 630 Ma) which intrudes the Group.

The Bridgetown Formation is constituted by three members, easily distinguishable by their lithotypes.

1. The basal member comprises the BDQ, which forms the exploitable ore body. In places, this dolomite unit contains dykes of intercalated andesitic basaltic tuffs, which have now regressed to greenschists.

2. This unit is in turn overlain by the Bridgetown Greenstone Member, consisting of a series of andesitic tuffs and lava flows, which have been metamorphosed and deformed to greenschists and;

3. The uppermost member consisting of a fine grained chert unit, probably of sedimentary origin.

Four phases of deformation have affected the Bridgetown Formation. The two earliest phases D1 and D2 are associated with syntectonic Pan African (circa 550 Ma) greenschist facies metamorphism, producing distinct axial planar cleavages. The third phase of deformation (D3) to affect the Bridgetown Formation is inferred to be coeval with the Permo-Triassic Cape Fold Belt orogen (circa 260 Ma). The fourth phase of deformation recorded by the Bridgetown Formation comprises a series of high crustal level brittle fractures and joints, predominantly striking northwest associated with inversion and reactivation of the PWFZ during Upper Jurassic – Lower Cretaceous extension.

The Bridgetown Formation is currently juxtaposed west of the PWFZ for approximately 19 km as a fault bounded southerly plunging antiformal trace. To the west and south, the dolomite body is juxtaposed to a muscovite phyllitic schist, with minor interbedded pssamitic horizons. This unit is partially decomposed, yielding a ripple depth of 5 m. The structural disposition of the dolomite ore body is difficult to unravel due to the lack of suitable marker horizons. However, the earliest phase of deformation recorded by the unit appears to be related by a period of isoclinals folding about a vertically dipping north south striking axis. This phase of folding appears to have substantially tectonically thickened the dolomite. The second main phase of deformation recorded within the dolomite is characterized by close folding along a vertical north northwest vertically dipping axial plane, refolding the earlier cleavage.

To the east of the dolomite, the phyllitic units dip consistently to the west at approximately 60° west, whilst there is evidence along the scarp slope of the Berg River that the main foliation dips 19° to the east. The dolomite body therefore appears to occupy the core of an antiformal trace, striking N160°E. The third phase of folding to have affected the dolomite unit appears associated with the Permo-Triassic Cape Fold Belt origin. Two prominent joint sets occur within the dolomite unit, with a subordinate third joint set. The main jointing within the dolomite comprises a normal east west striking jointing, combined with a coeval conjugate shear joint set striking approximately N044°E and N135°E. The northern and southern dolomite ore bodies may be dislocated from each other along a conjectural fault striking approximately N135°E. Field evidence for this conjectural fault is present by the formation of a series of ilmenite gossans along the inferred trace of the fault. Given the rheological contrast between the dolomite and the surrounding

phyllitic schists, it is probable that the margins of the dolomite ore body are in sheared contact with the phyllites.

Geological investigations have comprised geological mapping combined with phased drilling programs and supported by geochemical analyses of the ore body. Two ore blocks have been defined, comprising a northern and a southern ore body. The southern ore block was exposed in the old Ag-lime quarry and the northern ore block out-crops along the western bank of the Berg River, forming a prominent scarp face. Where the top of the dolomite unit is exposed, a prominent karst surface has developed, with solution cavities extending up to 18 m below the palaeo-surface, although most of these structures are in the order of a few meters deep, and are infilled by an iron rich partially consolidated late Tertiary sandy loam and clay containing alluvial quartz pebbles and cobbles. The dolomite is of biogenic origin, with stromatolitic linkages being visible within the massive algal bioherms. Minor grit and sand horizons are interbedded within the dolomite, and are laterally impersistent. Relict volcanics are also present within the dolomite, which are now rendered to greenstones and greenschists. These appear to have been andestic in origin, and are disposed as a series of minor dikes and sills.

In the northern orebody, a prominent greenstone dyke has been identified, striking northwards and concave to the east. In the southern orebody, greenstone intrusives are apparent in surface outcrop and have been recorded in boreholes.

To the north of the old Ag-lime quarry, greenstone was encountered in borehole BH-1 at a depth of 14 m below natural ground level, dipping at approximately 25°. The apparent recorded thickness of this unit is 7 m, which suggests that a portion of the southern ore body is underlain by a 7 m thick sill.

The southern dolomite ore body has been proven to a depth of 80 m below natural ground level during the drilling of borehole BH-1, whilst the northern ore body has been proven to a depth of 50 m.

While the soils overlying the phyllites and psammites are typically Swartland soils, deep red Hutton and Oakdale soils developed in places over the Southern dolomite body where two centre pivot irrigation systems previously stood. These soils derive from palaeo-weathering surfaces remnants of which exist on the high lying ground west and mostly east of the Berg River. The Northern dolomite body however, shows no soil profile as the fresh dolomite is exposed in a typical karst landscape.

4.6.2 Drieheuvels Quarry

The Drieheuvels dolomite deposit is hosted within the lower greenschist facies, Pan-African Bridgetown Formation (~650 – 600 Ma) of the Malmesbury Group meta-volcanosedimentary sequence of the NNW-SSE trending Saldania (~550 Ma) orogenic sub-province and is included within the Boland litho-stratigraphic terrain. The Bridgetown Formation is locally defined by a NW-SE trending tabular body of grey-cream to white coloured dolomite. The dolomite body retains and average width of about 200 - 350 m on the surface and dips approximately 45˚ towards the east. Structurally, the deposit represents a continuous band of outcrop and sub-outcrop of the eastern limb of a west verging regional anticline that can be traced for approximately 14 km along the Berg River. Collectively the local lithologies of the Bridgetown Formation consists of massive dolomite interbedded with meta-volcanosedimentary sequences (collectively referred to as greenstones by previous authors due to the pervasive existence of green coloured secondary minerals such as chlorite, actinolite and epidote) of meta-basalt, meta-tuff, meta-greywacke, graphitic schist, muscovite-quartz schist, phyllitic shale, chert and jasperlite (Slabber, 1995).

The dolomite body in the Drieheuvels Project area is bordered immediately to the south-west and north-east by chert, phyllite and greenstone dominated metavolcanics and metasediments. The LexRox due diligence report concluded that the laboratory results confirm that the dolomite samples collected from the 100 m due diligence RC drilling program on the Drieheuvels 399 property are generally comparable and almost certainly of better quality when compared to dolomite mined and processed into a saleable product at the SPH Bridgetown Quarry (LexRox 2017).

4.7 HYDROLOGY

4.7.1 Surface Water

The study area is situated in the Upper Berg sub-water management area that forms part of the greater Berg Water Management Area (ID 18). The NFEPA (National Freshwater Ecosystem Priority Areas) status of the study area is classified as a no priority area.

BDQ was established directly adjacent to the Berg River (western bank of the river). The most prominent surface water resources of the study area comprise of the:

- Berg River;
- Misverstand Dam impoundment area of the Berg River; and
- Two main drainage channels generally forming the northern and southern boundaries of the overall site.

The water quality of the Berg River / Misverstand Dam is regularly monitored both upstream and down- of the mining operations. The results showed virtually no difference in the quality of up-, and downstream samples.

Water is extracted from the Berg River for the purpose of washing and beneficiating the dolomite (BDQ). This water is not potable and is used in small quantities for toilet facilities and landscaping. Lime Sales Ltd has a valid water use licence (reference number 23/20/98 dated 18 August 1998) to extract 73 000 m^3 per year from the Berg River. The water used for washing the dolomite is drained as effluent to two settling ponds where the fines and sludge is separated from the water. This purified river water is immediately re-cycled into the washing process, and the dolomite fines and sludge tailings are used to manufacture Ag-lime after drying. Lime Sales Ltd was also granted two water use registration certificates (No. 22064757 dated 04 September 2002, and No. 22038867 dated 11 October 2002) to store water and use the water at the project.

The proposed DQ falls within 500 m of the Berg River and therefore may require a Water Use Authorisation in terms of Section 39 of the NWA, 1998 for water uses as defined in section 21(c) and 21(i). The right holder is in discussion with the DWS to determine the way forward.

4.7.2 Groundwater

Two water-monitoring boreholes were installed to the west and east of the northern quarry in 2006 and are monitored at bi-annual intervals. Since the boreholes were installed, the water table in both boreholes have remained reasonably steady at 10.67 m and 11.09 m below the land surface at the western and eastern boreholes respectively.

Phreatic water which seeps into the quarry is sub-standard. This water is contaminated by the phyllite rock types which surround the dolomite deposit, and cannot be used for industrial purposes because it corrodes the pumps, screens and machinery. However, some of this water is used to reduce dust emissions. The balance of the phreatic water is pumped to the dry side-stream to the west of the

quarry where it soaks into the soft alluvium and evaporates before the side stream reaches the Berg River. The DWS granted Lime Sales Ltd a general authorization to pump seepage water to the side-stream.

The right holder indicated that the DQ mining footprint would only be mined up to the groundwater level.

4.8 MINING, BIODIVERSITY AND GROUNDCOVER

When the footprint of the BDQ and the proposed footprint of the DQ are layered over the Mining and Biodiversity Map, the areas extend over an area of highest biodiversity importance with a corresponding rating of highest risk for mining.

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) shows the following areas of importance occurring within/near the study area:

- Bergrivier CBA1: Aquatic,
- Swartland CBA1: Terrestrial, and
- Swartland ESA2: Restore.

According to the national vegetation cover map, the footprint of BDQ and the proposed footprint of the DQ falls within the Swartland Shale Renosterveld vegetation type (FRs9) as classified by Mucina and Rutherford (2012). The vegetation type is classified as Critically Endangered with 90% of natural areas transformed.

Doug Jeffery Environmental Consulting and Facilitation Services conducted a botanical survey of the northern section of the BDQ. The study identified two vegetation types within the mine's footprint called the Succulent Karoo of the dolomite substrate and the Floodplain vegetation along the Berg River. The botanical study noted that the Succulent Karoo vegetation is of high conservation value, and every effort should be made to conserve a viable, representative portion of the shrubland habitat. In 2002, Bayflora Indigenous Nursery conducted a phased search and rescue to remove three important Red Data species namely *Ixia dubia, Moraea neopavonia,* and *Antimima mucronata* as well as geophytes of importance. The search and rescue operation was done in the areas to the west, north-west and south of the mining footprint.

Although the proposed DQ lays within the Swartland Shale Renosterveld vegetation type, the site-specific groundcover was highly altered by wheat cultivation. No natural occurring Renosterveld remains within the proposed footprint.

4.9 CULTURAL AND HERITAGE ENVIRONMENT

Prof HJ Deacon and Ms BE Burger conducted an Archaeological Impact Assessment (AIA) in 1996 for the (then) proposed Bridgetown Mine. The survey recorded a low-density scatter of stone artefacts at a number of points in the landscape but not of these were rated as having other than low archaeological significance. The study further identified two sets of ruined buildings in a very poor state on the property. The age of the structures was not established but could have been 100 years or more and the historical significance if any was unknown. The AIA concluded that there are no know archaeological occurrences of significance on the property, and mining will not affect these resources. The report further mentioned that if the quarry (BDQ) will threaten the ruined structures on the property, their possible historical significance be investigated before demolition. According to site management, the ruins mentioned in this report falls outside the mining boundaries and will not be demolished.

At the proposed DQ footprint, no sites of archaeological or cultural importance were identified during the site inspection. The SAHRA palaeontological sensitivity map shows that the area is of Low concern.

4.10 LAND CAPABILITY AND SURROUNDING LAND USE

BDQ is surrounded by extensive wheat farms with localized irrigated crop farming (primarily on the eastern bank of the Berg River). While the central and southern areas which have been planted with wheat show an average yield of 4-4.5 ton/ha per year, the northern section has no agricultural land capability given its rocky nature.

The mine also borders the upper reaches of the Misverstand Dam (to the east) and its' associated recreational activities such as boating and restricted shore-side development by comparison to the main dam recreational area at Misverstand / Matjiesfontein. The optional land capability for recreational development along the dam is rather limited on the "mining properties" by the presence of the dolomite cliffs, which isolate the site from the water, while the isolated lower riverbanks are subject to winter flooding at present and will be completely inundated by a dam wall increase.

The surrounding land use includes intensive irrigation farming activities that include:

- Irrigated annual crops under centre pivot (wheat, sweetcorn, watermelon, melon, and tomatoes);
- Citrus and deciduous fruit orchards; and

- ❖ Vineyards.

Portion 1 of the farm Drieheuvels 399 is situated in a rural setting bordered to the north / north-east by the Berg River, and the expropriated area for the raised dam wall impoundment of the Misverstand Dam. The farm is mainly used for wheat cultivation, and the majority of the property has been altered to allow for this land use.

5. ANNUAL REHABILITATION PLAN

Appendix 3 to the Financial Provision Regulations, 2015 states that the objectives of the annual rehabilitation plan are to:

a) Review concurrent rehabilitation and remediation activities already implemented;
b) Establish rehabilitation and remediation goals and outcomes for the forthcoming 12 months, which contribute to the gradual achievement of the post-mining land use, closure vision and objectives identified the holder's final rehabilitation, decommissioning and mine closure plan;
c) Establish a plan, schedule and budget for rehabilitation for the forthcoming 12 months;
d) Identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
e) Evaluate and update the cost of rehabilitation for the 12-month period and for closure, for purposes of supplementing the financial provision guarantee or other financial provision instrument

5.1 IMPLEMENTATION AND REVIEW OF TIMEFRAMES

The annual rehabilitation plan will be applicable for a 12-month period commencing from the date of approval thereof by the Department of Mineral Resources. The document will be reviewed during the 11th month of the operative period to ensure the timeous submission of the subsequent annual review.

5.2 MONITORING RESULTS

Bi-annual water monitoring takes place at five positions in and around BDQ. The mine further implements the following monitoring programs to manage the impact on the environment:

- ❖ Dust monitoring;
- ❖ Noise monitoring; and
- ❖ Blasting vibrations monitoring.

5.2.1 Dust Monitoring

The EMPR of BDQ states that the present natural ambient dust levels are high during ploughing and high wind conditions during dry summer months. These dust levels are augmented by the following operations at the mine:

- Blasting: Given the fact that blasts are conducted in the overburden horizon, which contains red soil cover and soil fill in cavities. As mining progressed in depth, blast dust reduces significantly and once blasting regularly takes place below the phreatic surface in moist rock blast dust is further reduced;
- Crushing and Milling;
- Loading; and
- Delivery vehicles driving on delivery routes.

Bridgetown Quarry conducts monthly (two 14-day cycles) monitoring of fallout dust levels and the results are compared with the standards prescribed in the National Dust Control Regulations, 2013. The site has four dust monitoring units comprising of one four-bucket unit named Smit unit, and three single bucket units placed at the office, workshop and dam.

Below see, the monitoring results as stipulated in the compliance table published in the April – March 2019 Dust Monitoring Report:

Table 7: Fallout dust monitoring results

Unit name	**Residential or Non-residential Area**	**Applicable Compliance - Dustfall rate (D) (mg/m^2/day) – averaged over 30 days.**	**Fallout dust result (September – October)** **(mg/m^2/day)**	**Non-compliant or compliant. Two within a year, not sequential months.**
Smit	(Non-residential)	D < 1200	506 (1st cycle) 132 (2nd cycle)	Compliant in this period. Compliant for the year. No exceedances.
Office (Single)	(Non-residential)	D < 1200	432 (1st cycle) 82 (2nd cycle)	Compliant in this period. Compliant for the year. No exceedances.
Workshop (Single)	(Non-residential)	D < 1200	496 (1st cycle) 931 (2nd cycle)	Compliant in this period. Compliant for the year. No exceedances.
Dam (Single)	(Non-residential)	D < 1200	918 (1st cycle) 52 (2nd cycle)	Compliant in this period. Non-compliant for the year. Exceedances in January, February.

It is proposed that the fallout dust monitoring system, already in place at BDQ, will be extended to include the proposed DQ area.

5.2.2 Noise Monitoring

The present noise sources, apart from those associated with the agricultural operations of the surrounding environment, are:

- Drilling and blasting;
- Loading of haul trucks;
- Crushing, screening and washing;
- Dispatch vehicles on delivery routes.

Despite relative proximity to surrounding farmsteads from the present noise complaints have, in the past, been reported from Die Pont relating to blast noise, vehicle traffic and loading at the Ag-lime plant (before it was demolished), cracks in walls and windows. Blast noise measurements conducted in 1994 by the DMR recorded a noise level of 124 dB at a distance of 150 m from the blast. This is 10 dB lower than the maximum recommended air blast level of 134 dB. Noise levels at the complainant's house, ±1.7 km from the blast, were therefore deemed well below the limits. The 2009 EMPR notes that at 1.8 km distance blast noise is the same as that of a car door being closed 5 m away from the listener.

Given the location of the plant 500 m from most of the surrounding facility, noise levels are below the recommended 55 dBA for residential areas and in light of the location of the plant in a valley, noise levels of ±40 dBA are within 5 dBA of the recommended after hours noise levels of rural areas at 35 dBA. Given the proximity of Bluegum trees to all residences, it is worth noting that when wind of 15 m/s blows through the trees, a noise level on the ground below the trees of 70-80 dBA is generated, drowning all other distant noise. To improve the situation a 6 m high earth berm, around the demolished Ag-lime Plant, has reduced vehicle and loading noise to acceptable limits and blasting operations are only conducted when climatic conditions are suitable.

The right holder contracts a qualified Occupational Hygienist to monitor the personal noise exposure of the employees working at the quarry. The monitoring is done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA; SANS 10103:2008 and quarterly reported to DMR.

Noise zones are demarcated on site as recommended by the specialist and all employees working within the noise zones or with noisy equipment are supplied with

sufficient ear protection. BDQ will extend its noise-monitoring programme to the DQ once it is operational.

5.2.3 Blasting Vibrations Monitoring

The ground vibrations of each blast event are monitored and subsequently captured into a report stating its compliance with the USBM limits (RI 8507, 1980). Blast vibrations are monitored at various positions in the mining area, as well as at some surrounding properties.

The following table reflects vibration levels in solid hornfels rock, compared to levels measured on site. As expected, levels in the dolomite are much lower given the fractured (brecciated) nature of the rock body. Vibration levels outside the dolomite body is negligible given the poor transmissivity of the phyllites.

Table 8: Blast transmissivity in solid hornfels.

SOURCE	DISTANCE FROM BLAST (m)	PPV (mm/s)
Blast transmissivity in solid hornfels	200	20
	500	3.6
Blast transmissivity on site	150	3.5

(PPV: Peak Particle Velocity)

When compared to the recommended maximum vibration levels it is clear that even in solid rock conditions, no damage to surrounding farmsteads will occur as the result of blast vibration, nor will it be necessary to implement special blasting practice or blast design to reduce blast vibration.

Private structures on the eastern bank of the Berg River are situated 350 m from the present blasting operations and some of the company's structures are situated 150 m away. For the past 15 years, the PPV has been measured at every blast following on complaints from the farm Die Pont (550 m away from the blasts) that some windows and walls were cracked due to blasting. Subsequent investigations revealed that the blasting was not responsible. No other complaints regarding structural damage caused by blasting vibrations have been received and there is no evidence that any damage has been caused by vibrations due to blasting.

Blasting is proposed approximately once per month at the DQ, and the blasting vibration monitoring will be done with each blast.

5.2.4 Water Quality Monitoring

The quality of the Berg River is regularly monitored both upstream and downstream of the intersection of the side-stream and the results show that the quarry water has no influence on the quality of the Berg River. Bi-annual water monitoring takes place at the following five locations:

- Berg River downstream of the mining area;
- Berg River upstream of the mining area;
- Eastern borehole;
- Western borehole; and
- Quarry pit (northern).

The water quality results are filed and available for auditing purposes at the site office. The current water-monitoring programme of BDQ will be extended to include the DQ mining area. Water samples will be collected from the Berg River upstream and downstream of the mining operations.

5.3 SHORTCOMINGS IDENTIFIED

No shortcomings, in the annual rehabilitation plan of the BDQ, were identified, other than the need to add the proposed DQ expansion area. The 2019 revision of the annual rehabilitation plan includes the proposed expansion area, and therefore the annual rehabilitation is deemed sufficient.

5.4 REHABILITATION ACTIVITIES FOR THE FORTHCOMING 12 MONTHS

Due to the mining method conducted at Bridgetown Quarry very little to no progressive rehabilitation is applicable to the mining area. Site management therefore did not identify any rehabilitation to be implemented during the forthcoming twelve months. Although site management does not plan to do annual rehabilitation of the mining area, the monitoring activities listed above will continue

5.5 REVIEW OF THE PREVIOUS YEAR'S REHABILITATION ACTIONS

The 2018 annual rehabilitation plan did not identify any progressive rehabilitation to be implemented at the mine. In this circumstance, no annual rehabilitation activities can be reviewed.

5.5.1 Areas planned to be rehabilitated

Not applicable.

5.5.2 Actual area rehabilitated or remediated

Not applicable.

5.5.3 Motivation for deviation from planned rehabilitation

Not applicable.

5.6 COSTING

As stated in Section 5.4 no rehabilitation activities for the forthcoming 12-months were identified and therefore no cost for annual rehabilitation is applicable. Although site management does not plan to do annual rehabilitation of the mining area, the monitoring plans listed above will continue, and the associated costs were included in the table below.

Table 9: Proposed annual monitoring cost

.PROPOSED ANNUAL MONITORING COST	
ITEM	**COST**
Blast Monitoring	No additional cost
Occupational Hygienist Surveys	R 90 000.00
Monthly Fallout Dust Monitoring	R 36 840.00
Water Monitoring	R 5 440.00
Total	**R 132 280.00**

6. REHABILITATION, DECOMMISSIONING AND MINE CLOSURE PLAN

The objective of the final rehabilitation, decommissioning and mine closure plan (According to MPRDA) is to identify a post-mining land use that is feasible through;

a) Providing the vision, objectives, targets and criteria for final rehabilitation, decommissioning and closure of the project (as described above);
b) Outlining the design principles for closure;
c) Explaining the risk assessment approach and outcomes and link closure activities to risk rehabilitation;
d) Detailing the closure actions that clearly indicate the measures that will be taken to mitigate and/or manage identified risks and describes the nature of residual risks that will need to be monitored and managed post closure;
e) Committing to a schedule, budget, roles and responsibilities for final rehabilitation, decommissioning and closure of each relevant activity or item of infrastructure;
f) Identifying knowledge gaps and how these will be addressed and filled;
g) Detailing the full closure costs for the life of project at increasing levels of accuracy as the project develops and approaches closure in line with the final land use; and
h) Outlining monitoring, auditing and reporting requirements.
(Financial provision regulations, 2015 appendix 4)

It is the intention of Bridgetown Dolomite Quarry to start defining those appropriate relinquishment criteria, considering each of the following aspects:

- Removal of alien vegetation and establish indigenous land cover;
- Surface and groundwater quality and impacts on the receiving environment;
- Long term stability and erosion of structures that will remain on the site;
- Land use and post closure aesthetics; and
- Social and economic impacts related to a potential reduction in economic potential of an area and the potential long-term burden placed on future generations related to post mining maintenance.

The following objectives are leading closure indicators, which need to be applied across all the domains, and read in conjunction with the principles, which embody the strategic objectives. The rehabilitation plan must address all the areas associated with closing the operations, of which rehabilitation and re-vegetation forms part of a component. The first step in developing the overall mine closure strategy is to identify potential post mining land use options and establish key objectives for closure to be incorporated in the project design.

The preferred post mining land use for both the BDQ and the proposed DQ is agriculture, whereby the excavation areas will be designed as natural land features. At the BDQ, the two excavations will be allowed to flood to the dam's full supply level of either 26 m or 34 m. As cliffed water body enclosures it will serve primarily, as water fowl and bird of prey sanctuaries, while increasing the dam's capacity by some 4 to 5 million m^3. When the northern section quarry has been mined to completion, the quarry pit will be ceded to the DWS. The face of the DQ excavation (along the western boundary) will either be sloped at 1:3 to the pit floor, or be stepped by creating benches of not more than 3 meters high.

In this context, the primary objectives for the closure of the mining operations are:

- Establish a safe and stable post-mining land surface which supports vegetation growth and is erosion resistant over the long-term;
- Re-establish a self-generating ecosystem comprising local indigenous fauna and flora which resembles the surrounding environment, as close as practical;
- Leave site in a safe, stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post-operational use;
- Minimise downstream impacts on vegetation due to interruption of drainage; and
- Identify any potential long-term soil, surface water or groundwater pollution associated with the operations and formulate an action plan to address this.

The following general specifications (listed below and presented in the following figures) will be standard throughout the rehabilitation process:

- An overburden bench about 4 - 5 m wide must be constructed around the perimeter of the quarry excavations.
- Vegetation must be established on sloped benches to stabilise the soil and lessen the visual impact.

Bench Planting:

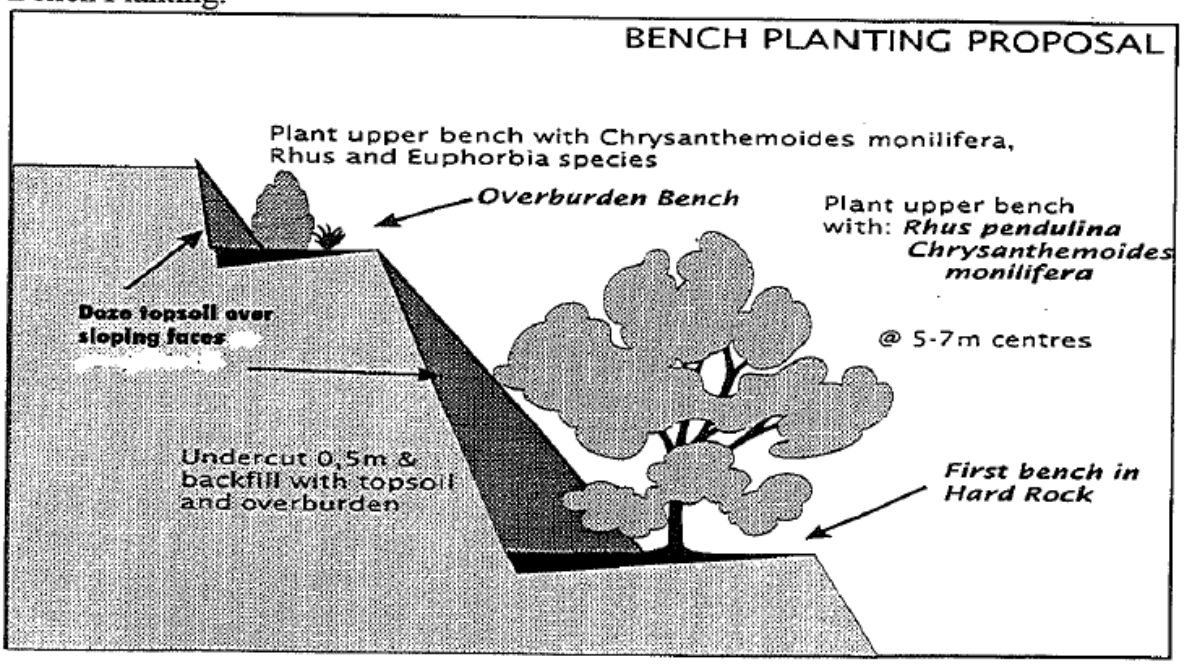

Figure 3: Bench planting proposal.

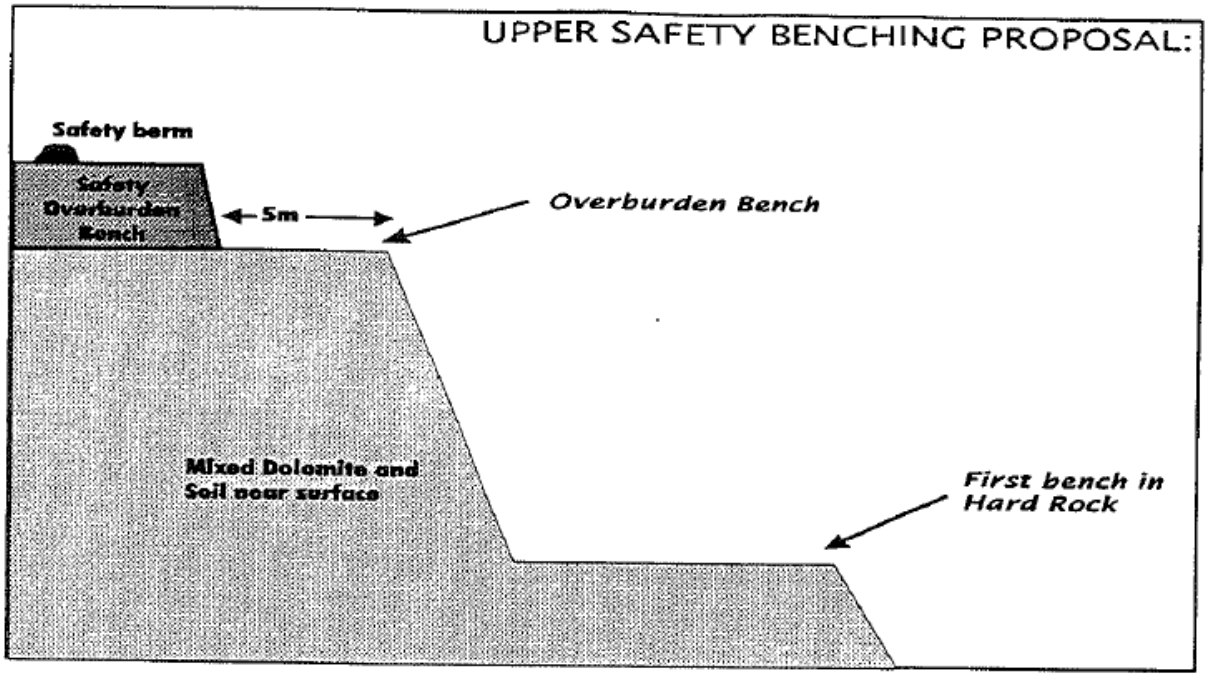

Figure 4: Upper safety benching proposal.

6.1 CLOSURE STRATEGY GUIDED BY THE ENVIRONMENTAL RISK ASSESSMENT

The overall objective of the closure plan is to minimize adverse environmental impacts associated with the quarrying activities whilst maximising the future utilisation of the property. The idea therefore, is to leave the mined out dolomite quarries in a condition that reduces all negative impacts associated with the area.

Significant aspects to be borne in mind in this regard is visibility of the mining scar, re-vegetation of the mining footprint, stability and environmental risk in an old mine environment. The depression and immediate area of the working must also be free of weeds and alien vegetation.

The proposed quarrying and rehabilitation procedures was formulated to optimise the extraction of raw material while creating stable quarry sides that will not present an unreasonable safety risk once mine closure was approved. Mining operations will be conducted in stages, corresponding to the creation of precision blasted quarry sides and benches towards the base of the working.

The decommissioning phase and closure of the quarry will in addition to precision blasted quarry faces involve removal of all debris and rehabilitation of areas not rehabilitated during the operational phases of the project. This will comprise the scarification of compacted areas, reshaping of areas, topsoiling and regeneration of all prepared surfaces. The crusher and screening plants will be dissembled and all other infrastructural development such as haulage roads and stockpile areas will be rehabilitated.

6.2 DESIGN PRINCIPLES

Upon closure of the mine (BDQ & DQ), Lime Sales Ltd will contract the expertise of a rock engineer to guide the final design of the quarries. The rock engineer will be directed by the following rehabilitation measures.

6.2.1 Northern Section (BDQ)

The northern section will require the bulk of the investment to decommissioning and rehabilitation measures as listed below:

I. Excavation:

When the final perimeter of the northern section quarry is reached, upper level perimeter benching will be conducted. This involves the construction of an approximately 5 m wide overburden bench with a face height of 2 to 3 m to act as a safety bench around the entire periphery of the excavation. The southern faces are up to 10 m higher than the eastern, northern and western faces and will be bench planted to reduce their impact on the adjacent Berg River / Misverstand dam.

The optimal situation to be achieved would be if the water in the flooded excavation could circulate naturally. This can best be achieved if the Misverstand dam full supply level is increased to level 34 m and two short slots at level 30 m can be developed into the dam to the north and east. If however, the Misverstand dam full supply level is not increased, then one slot should be developed to the east at the 24 m level. Water circulation would still occur, but at a much slower rate.

II. Plant and Stockpiling Area

When the overburden dump reaches its final configuration, the leading edges will be seeded, and once the dump has been completely developed, the surface of the dump will be levelled, fertilized and seeded.

Furthermore, optional excavation rehabilitation includes the dumping of overburden followed by topsoil over the upper faces.

Upon final closure, all plant is to be removed. Any excess stock is to be placed neatly in one section of the stockpiling area. The entire area is to be ripped, topsoil and seeded to the farms preference of seed mix.

III. Buildings and Structures:

All buildings not required by the farmer must be demolished and their foundations removed and tipped in the quarry floor before flooding. The resultant hardened areas are to be ripped, top soiled and seeded.

6.2.2 Southern Section (BDQ)

In the southern mining section, very few activities must remain if the operational measures were successfully implemented. The bulk of the rehabilitation in this phase will be taken up by the excavation of a water ingress point from the (by then possibly increased) Misverstand Dam. It is proposed to allow water in through a blasted adit with a floor level of 30 m (i.e. advance existing bench level 30 m in the area and allowing the quarry to flood). This will be done should the excavation not be filled by then by waste rock from the northern section (no longer applicable as the quarry was already refilled).

All hardened surfaces such as roads or other high activity areas not required by the landowner will be ripped by a dozer, top soiled and seeded with a grass seed mix as required by the farmer, including wheat if required.

As the topsoil in the southern excavation is thicker and continuous, some of this area's topsoil will be used in the rehabilitation of the northern quarry and the remainder will be stored in 3 m high windrows until final rehabilitation of the mining area.

6.2.3 Final rehabilitation (BDQ)

Access Roads

Access roads or portions thereof that will no longer be required by the landowner will be removed and rehabilitated to the satisfaction of the Regional Manager (DMR). Unwanted roads will be ripped or ploughed, and if necessary appropriately fertilised. Any gate, wall or fence erected by BDQ must be removed as per agreement with the landowner. Storm water control structures, such as berms, will be installed to prevent erosion of the rehabilitated roads.

Alien Invader Control

The aim of alien vegetation control is to effectively identify and remove alien vegetation and understand the importance of indigenous vegetation. The flood plain vegetation (outside operational mining footprint) was significantly invaded by alien invader plant species upon destruction of the natural vegetation due to trampling by sheep and cattle. Control of the problem plants must take place during the decommissioning phase.

6.2.4 Drieheuvels Quarry

Upon cessation of the mining activities, the area will be fully rehabilitated. The face along the western boundary of the excavation will either be sloped at 1:3 to the pit floor, to prevent soil erosion, or be stepped by creating benches of not more than 3 meters high. Due to the nature of the project, no buildings/infrastructure have to be removed. The right holder will comply with the minimum closure objectives as prescribed by DMR and detailed below:

Rehabilitation of the excavated area:

- The excavated area will serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation will be dumped into the excavation.
- No waste will be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored will be returned to its original depth over the area.
- The area will be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager (DMR) may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification

Final rehabilitation:

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), maintenance, and clearing of invasive plant species.

- ❖ All equipment, plant, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).

- ❖ Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

- ❖ The management of invasive plant species will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

- ❖ Final rehabilitation will be completed within a period specified by the Regional Manager (DMR).

- ❖ Control of invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management will implement an invasive plant species management plan during the 12 months' aftercare period to address germination of problem plants in the area.

6.3 POST-MINING LAND USE

6.3.1 Bridgetown Dolomite Quarry

Upon rehabilitation, the northern excavation will be allowed to flood to the dam's full supply level of either 26 m or 34 m. As a cliffed water body enclosure the excavation will serve primarily as waterfowl and bird of prey sanctuaries, while increasing the dam's capacity by some 4 - 5 million m^3.

In the southern mining section, it is proposed that water will be allow in through a blasted adit with a floor level of 30 m. This will be done should the excavation not be filled by waste rock from the northern section (no longer applicable as the quarry was already refilled).

All stockpiled material, plant, buildings, and road surfaces not required by the landowner will be removed and the surfaces ripped and replanted largely with wheat or a suitable grass seed mix. These areas will therefore be returned to agricultural use and reincorporated into the surrounding farms.

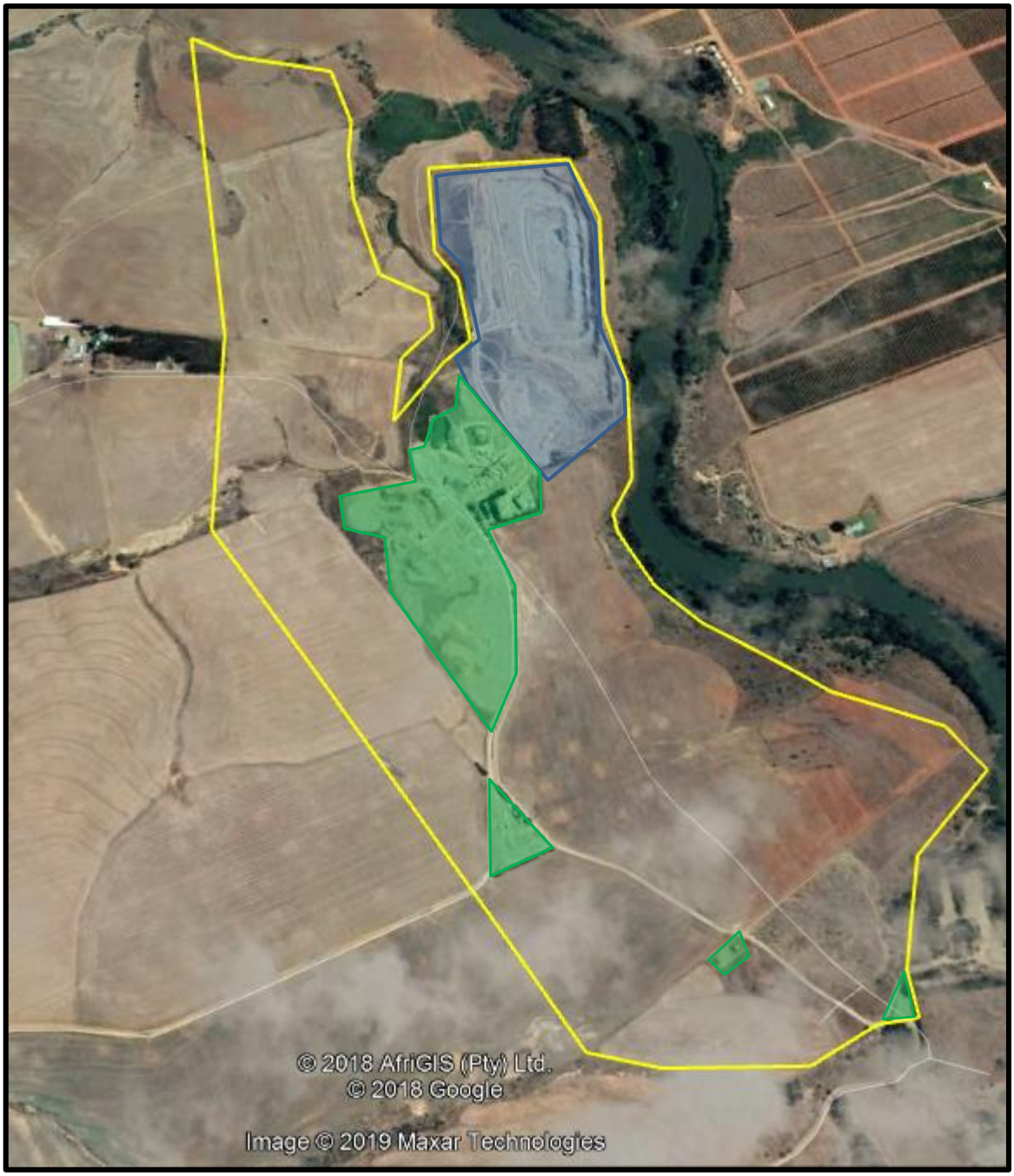

Figure 5: Satellite image (2019) of the Bridgetown Dolomite Quarry mining area to be rehabilitated upon final closure. The blue polygon shows the northern excavation to be flooded. The green polygons include the stockpile areas, processing areas, offices and settling ponds that will be decommissioned to return the footprint area back to agricultural use.

6.3.2 Drieheuvels Quarry

Upon cessation of the mining activities, the area will be fully rehabilitated and the mining footprint will be returned to the landowner for agricultural use.

Figure 6: Satellite image (2019) of the proposed mining area to be rehabilitated upon final closure of the Drieheuvels Quarry. The green polygon shows the excavation area to be sloped and returned to agricultural use after rehabilitation.

6.4 CLOSURE ACTIONS

The closure goals and objectives, stipulated in the Environmental Management Programme (EMPR), are to ensure that post-use rehabilitation achieves a stable and functioning landform consistent with the surrounding landscape, other environmental values and agreed land use.

The environment affected by the mining operations must be rehabilitated, as far as is practicable, to its natural state or to a predetermined and agreed to standards or land use which conforms with the concept of sustainable development.

6.4.1 Rehabilitation of the BDQ Mining Area

Northern Section

I. Excavation:

- Implement upper level perimeter benching when the final perimeter is reached. This should involve the construction of a ±5 m wide overburden

bench with a face height of 2 to 3 m to act as a safety bench around the entire periphery of the excavation.

- ❖ Dump rocks and coarse material removed from the excavation into the quarry before flooding.
- ❖ Place overburden and topsoil over the benches to provide a suitable medium for the establishment of vegetation.
- ❖ Bench plant the southern faces to reduce their impact on the adjacent Berg River / Misverstand dam.
- ❖ If the Misverstand Dam full supply level is increased to 34 m, two short slots at level 30 m must be developed into the dam to the north and east to allow natural circulation of the flooded excavation.
- ❖ If however, the Misverstand dam full supply level is not increased, then a single slot must be developed to the east at the 24 m level.
- ❖ Do not deposit any waste into the excavation.

II. Plant and Stockpiling Area:

- ❖ Seed the leading edges of the overburden dump once it reaches its final configuration.
- ❖ Level the surface of the dump and fertilise it prior to seeding.
- ❖ Remove all plant upon final closure.
- ❖ Place any excess stock neatly in one section of the stockpiling area.
- ❖ Rip, topsoil and seed the entire area. Compacted areas must be scarified to a depth of at least 200 mm and graded to an even surface condition, before the previously stored topsoil is returned to its original depth over the area.

III. Building and Structures:

- ❖ Demolish all buildings with foundations not required by the farmer. Tip the building rubble into the quarry before flooding.
- ❖ Upon completion of operations all structures or objects must be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act [MPRDA], 2002 (Act No. 28 of 2002)"
  - *Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.*

- *Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.*
- *The site* shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

❖ Rip, topsoil and seed the resultant hardened areas. Compacted areas must be scarified to a depth of at least 200 mm and graded to an even surface condition, before the previously stored topsoil is returned to its original depth over the area.

Southern Section

I. Plant and Stockpiling Area

❖ Remove all plant and stockpiled material upon final closure.
❖ Upon completion of operations all structures or objects must be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act [MPRDA], 2002 (Act No. 28 of 2002):
❖ Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
❖ Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
❖ The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
❖ Rip, topsoil and seed the resultant hardened areas. Compacted areas must be scarified to a depth of at least 200 mm and graded to an even surface condition, before the previously stored topsoil is returned to its original depth over the area.

6.4.2 Drieheuvels Quarry

I. Rehabilitation of the excavated area:

- ❖ Make use of the excavated area as a final depositing area for the placement of overburden.
- ❖ Dump the rocks and coarse material (removed from the excavation) into the excavation.
- ❖ Do not deposit any waste into the excavations.
- ❖ Return the topsoil to its original depth once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures.
- ❖ Fertilise the area if necessary to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

6.4.3 Final Rehabilitation

- ❖ Rehabilitation of the surface area must entail landscaping, levelling, top dressing, land preparation, seeding and maintenance, and weed / alien clearing.
- ❖ All infrastructures, equipment, plant, temporary housing and other items used during the mining period must be removed from the site.
- ❖ Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- ❖ Weed or alien invader species must be removed as classified by as the National Environmental Biodiversity Act [NEM:BA] (Act No. 10 of 2004) and the Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species (as amended 2016).
- ❖ Final rehabilitation must be completed within a period specified by the Regional Manager.

6.4.4 Fauna

Bridgetown Dolomite Quarry will aim to encourage native fauna to return to the rehabilitation areas. Some of the invertebrate species will be introduced in the topsoil. This introduction will be maximised through the direct return of topsoil to the

rehabilitated areas. Typically, faunal groups will quickly colonise any area, which contain the resources they require such as food, shelter and breeding sites. As one of Bridgetown Dolomite Quarry closure objectives is to re-establish a self-generating ecosystem comprising local native vegetation, which resembles the surrounding environment, as close as practical, this will encourage the return of native fauna. Additionally, the preservation of the cliffs for mammals and birds as well as tall blue gums for fish eagle nesting sites has contributed positively to the faunal and bird preservation.

6.4.5 Maintenance and Monitoring

Rehabilitated areas need to be monitored and managed after the initial rehabilitation. Bridgetown Dolomite Quarry primary tool for maintenance of the rehabilitated area will be monitoring of the reinstated areas until the closure certificate was issued. If areas are identified that are considered unsatisfactory then maintenance may include, but not be limited to:

- Replanting failed or unsatisfactory areas;
- Repairing any erosion problems;
- Fire management; and
- Pest and weed control.

6.4.6 Success Criteria and Monitoring

To assess when the rehabilitation and re-vegetation process is complete, Bridgetown Dolomite Quarry will develop a set of completion criteria. These criteria will be reviewed by Bridgetown Dolomite Quarry senior management before being submitted to the regulatory authorities (DMR) for approval and sign off.

The approved set of completion criteria will be used as a basis for assessing the closure of the mining operations, with Bridgetown Dolomite Quarry required to comply with the specified criteria before the land management can be relinquished. The completion criteria will be reviewed every two years with the rehabilitation plan and updated to include findings of Bridgetown Dolomite Quarry mine rehabilitation research and development program as well as additional requirements of the regulatory authorities.

When selecting completion criteria, consideration must be given to the climatic conditions in the area. Using simple percentage species and percentage cover may not be appropriate, as this is dependent on when the samples are taken. This will

also be informed by the Botanical survey completed for the project. If the baseline was established during a wet year and the assessment undertaken during drought, the criteria will not be met. The rehabilitated and re-vegetated areas will be monitored to determine the progress of the programme. Monitoring is likely to be a combination of methods and may include photographic monitoring, transects and standard plot areas.

6.4.7 Impact Specific Procedures

The table below provides a summary of the impact specific procedures associated with the closure of the mine.

Table 10: Summary of the impact specific procedures

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
SOCIO-ECONOMIC		
❖ The retrenchment processes will be followed as per requirements of the applicable legal process; and ❖ All existing social investments will be phased out over an agreed period with beneficiaries.	❖ The rehabilitated mining environment at the BDQ and DQ, shall be made safe; ❖ Where possible infrastructure will remain for social investment opportunities, this will be decided in conjunction with the Integrated Development Plan (IDP) of the area and the local authorities (i.e. municipality). The soils and land capability will be rehabilitated to near pre-mining conditions; and ❖ All fences and walls erected around the mine would be dismantled and either disposed of at a permitted disposal site or sold as scrap (provided these structures would no longer be required by the post-mining landowner). Fences erected to cordon-off dangerous excavations will remain in place and will be maintained as required.	❖ The Social and Labour Plan (SLP) must be audited on an annual basis; ❖ Any commitments made to I&AP'S will be attended to the relevant I&AP's satisfaction as agreed upon between the I&AP'S and the mine.
TRAFFIC AND SAFETY		
❖ Ensure that all roads rehabilitated and or left behind, are safe and in good working condition, maintaining public safety and access to site and monitoring points.	❖ N/A	❖ Any degradation to the road will be repaired with consultation of the roads department (if required).
TOPOGRAPHY AND EROSION CONTROL		
❖ Former Digital Terrain Model (DTM's) will be used to establish what contours were present prior to mining and these will be used to help shape the area according to the final topographical plan; and ❖ The area will have contours constructed to prevent soil erosion.	❖ All slopes which may incur erosion will be profiled in such a way that a preferential down drain can be installed; ❖ Rehabilitated profiles must ensure free drainage of water and should be contoured to fit in with the catchment dynamics; ❖ Erosion control measures such as contour banks and cut off berms should be constructed and soil vegetated in rehabilitated areas. On gentle slopes, water will be encouraged to flow off the rehabilitated surface as surface flow, as quickly as possible without causing erosion;	❖ Should it be noted that designs are not being followed, rehabilitation activities will cease and corrective measures will be taken to ensure design specifications are achieved. Specialists will be consulted if necessary; ❖ Any pooling will be addressed by filling depression and / or grading areas and re-vegetating such sites; ❖ Any erosion will also be addressed utilising contour berms, gabion structures if necessary or a specialist will

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
	❖ All other slopes will have contour drains installed to prevent erosion at intervals of no more than 5 M vertical and have a slope of no steeper that 1:250. These contour drains will have an upslope basin with down slope berms; ❖ On achieving the profile to within 10° of the final elevation, the fill areas can be pegged out with stakes and these cut off on the elevation of the final profile. The final fill material will be placed around these until the stakes are covered; and ❖ Erosion control measures such as contour banks and cut off berms should be constructed and soil vegetated in rehabilitated areas. On gentle slopes, water will be encouraged to flow off the rehabilitated surface as surface flow, as quickly as possible without causing erosion.	be consulted if necessary. Any eroded soils will be lifted and returned to the affected area; ❖ Any deficiencies will be corrected by placing material in these areas as per the rehabilitation plan; ❖ Additional material or soil will be brought in if required; ❖ Records of soil placement and package thickness will be kept on a monthly basis during the mining phase; ❖ Where the soil depth is compromised the areas will be filled with topsoil; ❖ Silt build-up in water management facilities/dams will be cleared and deposited in residue deposits if dirty; ❖ Any compacted soils will be ripped or disked and re-vegetated with indigenous flora. Vegetation will then be monitored in these areas; ❖ All recommendations made by the specialists will be implemented where deemed appropriate; ❖ An alien invasive management program will be implemented for the control and eradication of alien invasive species on site. This plan will give preference to mechanical control methods. Any chemicals utilised will be used responsibly. Where required DWS will be consulted with regards to the use of certain chemicals
SURFACE WATER CONTROL		
❖ Surface water at BDQ and DQ will be managed as per GN704 and all clean water will be diverted around the rehabilitated area; ❖ All water that falls on the rehabilitated area will be managed in such a way that no erosion will occur through the use of contour drains; ❖ Potential dirty water will be directed to containment dams or silt dams; ❖ There shall be no long-term reduction in the availability of water to meet local environmental values.	❖ Actions shall be taken during rehabilitation to ensure that surface and groundwater hydrological patterns/flows will not be adversely affected by the rehabilitation; ❖ Surface and groundwater levels and quality will reflect original levels and water chemistry; ❖ Natural drainage lines will be followed to reduce loss of water in the natural catchments.	❖ N/A

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
ECOLOGY		
❖ The rehabilitated area will temporarily be fenced off once seeded to prevent surface disturbance and allow vegetation to establish and stabilise.	❖ Vegetation in rehabilitated areas will have equivalent values as surrounding natural ecosystems; ❖ The rehabilitated ecosystem will have equivalent functions and resilience as the target ecosystem; ❖ Soil properties will be appropriate to support the target ecosystem; ❖ The rehabilitated areas will provide appropriate habitat for fauna; ❖ Fauna utilisation, abundance and diversity appropriate to specified post mining land use; and ❖ Berms will be maintained. This will be undertaken by vegetating all berms to ensure that they are stable. The berms will also be inspected to ensure that there are no cracks, which could cause leakage. The berms will only be demolished should the area prove to be free draining with no pollution potential after rehabilitation.	❖ Should it be noted that designs are not being followed, rehabilitation activities will be amended to ensure corrective measures will be taken to ensure design specifications are achieved. Specialists will be consulted if necessary; ❖ The Botanical specialist's recommendations from bio monitoring and from annual floral surveys of rehabilitated areas will be implemented as soon as possible; ❖ An alien invasive management programme will be implemented for the control and eradication of alien invasive species on site. This plan will give preference to mechanical control methods. Any chemicals utilised must be used responsibly.
LAND USE		
❖ To ensure that rehabilitation is done to such an extent that land use potential is regained for agricultural use (BDQ & DQ) and dam use for birds of prey (BDQ).	❖ Soil samples will be taken from rehabilitated areas annually over the full period of closure to determine soil fertility, depth compaction, acidity and mine related pollution. This should be conducted by qualified specialist who will also recommend actions and remedial measures to correct any issues observed on site; ❖ Only after the levelled areas have been inspected and approved by the Mine Manager/Site Manager will topsoil be placed to a depth of 0.5 m (where possible the original topsoil types should be placed back into the area where it was found). The topsoil layer must be as even as possible, i.e. it must be smooth and the depth must remain consistent throughout; ❖ Once the topsoil has been replaced, vehicle movement will be restricted to prevent compaction of the topsoil. All runoff	❖ N/A

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
	from freshly top soiled areas will be channelled to pollution control structures so that eroded soil does no leave the property; ❖ Rehabilitated areas will be vegetated within the same growing season (before or during the rainy season). A suitable seedbed will be prepared to enhance the penetration and absorption of water, thereby giving the seed the best possible chance to germinate. The seeding depth should be very shallow to provide better germination. For most grass species seeding depth is approximately 5-15 mm; ❖ Rehabilitated areas will be re-vegetated with local indigenous flora as far as possible; and ❖ Once the seed mixture has been sown, the land must be rolled to ensure consolidation around the seeds and effective moisture retention.	
GROUNDWATER		
❖ Monitoring will continue for at least 12 months after rehabilitation to detect and report on changes in the groundwater regime.	❖ N/A	❖ Should significant changes in qualities or levels be observed then: ❖ All high-risk facilities will be inspected to ensure no severe problems occur in these areas, which have resulted in poor quality leachate. ❖ Any issues observed will be reported to the environmental manager and respective site manager; ❖ A geo-hydrologist will be consulted with regards to any additional mitigation or management activities which can assist in resolving potential pollution, such as cut-off drains; ❖ Should substantial decreases in groundwater levels or quality be observed in boreholes utilised by surrounding community then Bridgetown Dolomite Quarry will need to find solutions in conjunction with affected parties; ❖ All leaks identified will be repaired; and ❖ Silt build-up in water management facilities/dams will be cleared and deposited in soil stockpiles if clean or in residue deposits if dirty.

CLOSURE MANAGEMENT OBJECTIVES	SPECIFIC PERFORMANCE CRITERIA	ACTION REQUIRED
AIR QUALITY AND NOISE		
❖ Dust suppression should be undertaken at site, for the duration of the rehabilitation phase, especially during the dry season and during windy conditions.	❖ N/A	❖ Should ambient dust levels exceed recommended standards and frequencies as per the NEM:AQA, then the management plan for dust will be re-evaluated and assessed to improve dust control on site. Actions could include: ❖ Use of dust binding agents in areas of high dust generation; ❖ Consideration of sprinkler systems in areas of high dust generation; and ❖ More frequent spraying. ❖ Should ambient noise levels exceed target levels: ❖ Additional noise measurements will be taken at all sensitive receptors beyond the mine boundary in question, initially those nearest to the mine and working further away until levels are within acceptable levels; and ❖ Utilisation of sound buffers or screens around noise sources; ❖ Enclosing point sources in sound-proof enclosures if possible; ❖ Utilising silencers on equipment.

6.5 CLOSURE SCHEDULE

At this stage, it is proposed that the rehabilitation of the BDQ mining area will take approximately twelve months to complete, with the DQ mining area taking approximately three months to reinstate and slope. The timeframes of implementation of the rehabilitation actions are as indicated in the table below.

According to the MPRDA Section 43 (4) refers to the issues of a closure certificate and stipulates the following:

"Section 43(4) Issuing of a closure certificate -

(4) An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report.

Table 11: Closure schedule

CLOSURE SCHEDULE	
DECOMMISSIONING / CLOSURE ACTION	**TIMEFRAME**
BRIDGETOWN DOLOMITE QUARRY – NORTHERN SECTION	
Excavation: ❖ Build upper level perimeter bench; ❖ Dump excess rocks and coarse material into the quarry before flooding; ❖ Place overburden and topsoil over benches; ❖ Bench plant the southern faces; ❖ If Misverstand Dam supply level is increased to 34 m – develop two short slots at level 30 m to the north and east; ❖ If Misverstand Dam supply level is not increased – develop a single slot to the east at 24 m level; ❖ Dispose all waste off-site.	Month 1 – 5
Plant and Stockpiling Area: ❖ Seed the edges of the overburden dump; ❖ Level the surface of the overburden dump, fertilise and seed; ❖ Remove all plant; ❖ Place excess stock in one section of the stockpiling area; ❖ Rip, topsoil and seed the entire area.	Month 6 – 8
Buildings and Structures: ❖ Demolish all buildings and foundations, and tip building rubble into the quarry prior to flooding;	Month 9 – 10

CLOSURE SCHEDULE	
DECOMMISSIONING / CLOSURE ACTION	**TIMEFRAME**
❖ Rip, topsoil and seed the entire area.	
BRIDGETOWN DOLOMITE QUARRY - SOUTHERN SECTION	
Plant and Stockpiling Area: ❖ Remove all plant and stockpiled material; ❖ Rip, topsoil and seed the entire area.	Month 11 – 12
DRIEHEUVELS QUARRY	
Excavation: ❖ Slope/bench the western face of the excavation; ❖ Dump excess rocks and course material into the excavation before placing overburden and topsoil; ❖ Place overburden and topsoil; ❖ Seed the reinstated area; ❖ Leave the access road in the same or better condition than it was found; and ❖ Dispose of all waste and remove all mining related equipment.	Month 1 – 4
MAINTENANCE AND AFTER CARE (BDQ & DQ)	
❖ Erosion Monitoring ❖ Weeds and Invader Plant Control	12 months duration after final closure of the mining area

6.6 IMPLEMENTATION AND RESPONSIBILITY OF CLOSURE PLAN

Implementation of the closure plan is ultimately the responsibility of Lime Sales Ltd. Upon commencement of the closure phase daily compliance monitoring will be the responsibility of the site manager. The site manager will be responsible for ensuring compliance with the guidelines as stipulated in the EMPR as well as the prevention and/or rectification of environmental incidents. The right holder will appoint an Environmental Control Officer to oversee compliance of the rehabilitation/closure activities (together with the Environmental Monitoring Committee (if applicable)).

6.6.1 Site Management Responsibility List

- Inspect area for erosion, pooling and/or compaction;
- Soil survey and soil quality and depth monitoring;
- Inspect water management facilities;
- Surface water monitoring;
- Groundwater monitoring;
- Floral surveys need to be conducted to monitor cover abundance, plant succession and community structure;
- Monitor any ecologically sensitive species should they be observed on site.

6.6.2 Management of Information and Data

The Rehabilitation Plan must include a description of the management strategies, and all information and data relevant to mine closures. These records are valuable during the all phases of mining to provide:

- A history of closure and implementation at the site;
- A history of past developments;
- Information for incorporation into state and national natural resource databases; and
- The potential for improved future land use planning and/or site development.

Where practicable, the closure information system should contain an information database for each domain or feature, where all available information is collated and reviewed with the objective of building a ‘base’ of information for that particular domain or feature. Information may include, but not be limited to, the status of the domain or feature, information from spatial datasets and databases, design and construction information, operation and monitoring information or other information that meets a specific purpose (e.g. maps, area statistics, species lists or modelled

environmental impacts). All technical reports should be referenced and included in the database.

6.7 IDENTIFIED GAPS IN THE PLAN

The assumptions made in this plan, which relate to the closure objectives and associated impact on the receiving environment, stem from site-specific information gathered by the project team. No gaps in the Rehabilitation, Decommissioning and Mine Closure Plan could be identified.

6.8 RELINQUISHMENT CRITERIA FOR CLOSURE ACTIVITIES

The following relinquishment criteria (as listed in the table below) are proposed for the closure activities of the Bridgetown Dolomite Quarry as well as the proposed Drieheuvels Quarry.

Table 12: Relinquishment criteria

RELINQUISHMENT CRITERIA FOR CLOSURE ACTIVITIES			
CATEGORY	**RELINQUISHMENT CRITERIA**	**INDICATORS**	**REPORTING REQUIREMENTS**
Slope stability and safety.	The site is safe for use by humans and animals for the near future.	Code of practice to combat rock fall and slope instability related accidents in surface mines.	Appropriate risk assessment undertaken and control measures are in place that will continue to meet agreed requirements.
Flooding of excavations (BDQ).	Closure certificate issued by DMR upon receipt of supporting comments from DWS.	Rehabilitation actions approved by DWS.	Site inspection conducted by officials from DWS and DMR.
Sloping of the excavation.	Closure certificate issued by DMR.	Rehabilitation actions approved by DMR.	Site inspection conducted by officials from DMR.
Decommissioning of all structures and haul roads.	No visible man-made structures should remain (other than those agreed on with the landowner). Haul roads removed and sloped to blend with the natural landscape.	Closeout inspection by site management upon end of decommissioning phase.	Photographic evidence that infrastructure has been removed.
Soil erosion	Implementation of erosion control measures or the establishment of vegetation in denuded areas.	Engineered structures to control water flow	Proof in final closure report that required structures are in place and functional.
Vegetation	Seeding of a cover crop after topsoiling.	Biodiversity monitoring	Monitoring report
Invader plant management	Continuous management of invader plants until the establishment of the first cover crop.	Biodiversity monitoring	Monitoring report
Land Use	Land capability and productivity similar to that, which existed prior to mining.	Land capability and productivity	Comparison to equivalent areas.

6.9 CLOSURE COST ESTIMATE

Financial provision (Regulation 54 of the MPRDA, 2002) is the amount needed for the rehabilitation of damage caused by the operation, both at sudden closure during the normal operation of the project and at final, planned closure. This amount reflects what it will cost the Department to rehabilitate the area disturbed in case of liquidation or abscondence. Financial provision for environmental rehabilitation and closure requirements of mining operations forms an integral part of the MPRDA. Section 41 of the MPRDA and Regulations 53 and 54 promulgated in terms of the MPRDA deal with financial provision for mine rehabilitation and closure.

Based on the extent of the current disturbance and by utilising the Department of Mineral Resources guideline document for calculating financial provision Bridgetown Dolomite Quarry need to provide a financial provision value of R 2 646 803.74 (calculated October 2019). The financial provision amount does not exceed the value of the rehabilitation trust (see table below) in place with the DMR, and therefore the right holder is not required to provide a shortfall. Refer to *Part A(1)(f)(i)(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline* of the 2019 EMPR for an explanation as to how the financial provision amount was calculated.

Table 13: Comparison of the financial provision calculation outcome, with the current financial guarantee at DMR

DOCUMENT	AMOUNT (RANDS)
2019 Financial Provision Calculation	R 2 646 803.74
Value of the combined rehabilitation trust in place at DMR	R 3 064 021.00
SURPLUS	**R 417 217.30**

6.10 MOTIVATION FOR AMENDMENTS MADE TO THE FINAL REHABILITATION, DECOMMISSIONING AND MINE CLOSURE PLAN.

The Final Rehabilitation, Decommissioning and Mine Closure Plan was amended to include the proposed Drieheuvels Quarry that will become part of the BDQ mining footprint should the Section 102 amendment application be approved.

7. MONITORING, AUDITING AND REPORTING

In compliance with applicable legislation, the mining right holder will conduct monitoring of the mining activities for the duration of the decommissioning and closure phase. The compliance of the site will be audited and reporting will be done to the relevant authorities. The table below stipulates the actions to be followed in this regard. Monitoring, auditing and reporting needs to be conducted until mine closure has been approved by the DMR and the closing certificate obtained.

Table 14: Monitoring, auditing and reporting requirements

MONITORING, AUDITING AND REPORTING REQUIREMENTS			
AUDIT	**RESPONSIBLE PERSON**	**FREQUENCY OF AUDIT**	**CLOSE OUT APPROACH**
LEGISLATED AUDITING AND REPORTING			
Environmental Auditing	**Internal Review**		
	Site manager to ensure compliance with Environmental Management Programme and Closure Plan.	Daily compliance monitoring.	Any non-conformance must immediately be addressed by site management and weekly reported on.
	External Auditing		
	External Environmental Consultant	Annual auditing and reporting to the Department of Mineral Resources.	Depending on the significance of the findings, site management has a maximum of four weeks to address and close out auditing results.
Financial Provision Review	**Financial Provision Review** Greenmined Environmental	Annual review of the financial provision, and reporting of the findings to the Department of Mineral Resources	Should the review of the financial provision indicate a shortfall the holder of the right would increase the financial provision to meet the audited financial provision within 90 days from the date of the signature.
Health and Safety Auditing	Health and Safety Manager	Monthly auditing of health and safety aspects on-site. Monthly reporting to the Mine Health and Safety division of the Department of Mineral Resources.	Depending on the significance of the findings, site management has a maximum of 48 hours to address and close out auditing results.
MONITORING			
Blast Monitoring (if applicable)	Health and Safety Manager Blaster	Monitoring done during each blasting event.	Should the study indicate results of concern, the blast design of the following blast needs to be adapted to prevent a reoccurrence.

MONITORING, AUDITING AND REPORTING REQUIREMENTS			
AUDIT	**RESPONSIBLE PERSON**	**FREQUENCY OF AUDIT**	**CLOSE OUT APPROACH**
			Any damage that results because of the blast needs to be repaired or compensated for by the mining right holder.
Fallout Dust Monitoring	Dust Monitoring Specialist	Monthly Fallout Dust Monitoring	Site management has a maximum of two weeks to develop and implement a dust management plan should the dust level standard (1 200mg/m²/day) be exceeded.
Invader Plant Monitoring	External Environmental Consultant	Annual Monitoring	Site management has a maximum of two weeks to review and implement the invader plant control plan should Category 1a & b plants in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 15 of 1973) and the Alien and Invasive Species Regulations, 2014 (amended 2016) germinate on-site.
Noise Monitoring	Noise Monitoring Specialist	Monthly Noise Monitoring	Site management has a maximum of one week to designate additional noise zone where applicable. Hearing protection equipment must be available to employees at all times.
Water Monitoring	CSIR - Stellenbosch	Bi-annual Quality Monitoring	Immediate action is required should the results of the water quality test exceed the SANS 241:2006 & 2015 levels.

7.1 SCHEDULE FOR REPORTING REQUIREMENTS

The following table stipulates the reporting requirements and how document updating will be handled:

Table 15: Reporting requirements

REPORTING REQUIREMENTS			
AUDIT	**LEGISLATION**	**REPORTING REQUIREMENTS**	**UPDATE DISCLOSURE**
Environmental Auditing	NEMA; EIA Regulations, 2014	Reporting on the environmental compliance of the mining area will be in accordance with Regulation 34 of the NEMA EIA Regulations, 2014. The environmental audit report will contain the information set out in Appendix 7 of the said Regulation.	The environmental audit report will indicate the ability of the EMPR and Closure Plan to adequately manage the activity. Should the reports not be sufficient, amendment will be proposed.
Financial Provision Review	NEMA Amendment Act, 2014 (Act No 25 of 2014) Financial Provision Regulations, 2015	Reporting on the financial provision for closure of the mining area will be in accordance with Section 24P of the NEMA Amendment Act, 2014 (Act No 25 of 2014) read with the Financial Provision Regulations 2015.	The auditor will report on the adequacy of the financial provision and any adjustments that need to be made to the financial provision.
Health and Safety Auditing	Occupational Health and Safety Act, 1993 Mine Health and Safety Act, 1996	Reporting on the health and safety compliance of the mining area will be in accordance with the Mine Health and Safety Act, 1996.	The safety manager will annually updates the Code of Practices applicable to the site.

7.2 MONITORING PLAN AND COMPLIANCE ASSESSMENT

The following list presents the monitoring programmes to be implemented on site for the duration of the decommissioning phase.

Table 16: Monitoring Programmes

MONITORING PROGRAMMES	
MONITORING UNIT	**FREQUENCY**
DUST MONITORING	
Fallout Dust Monitoring: Fallout dust monitoring is an effective method to identify priority control areas that result in excessive dust emissions. Fallout dust, also known as precipitating dust, is monitored to identify the fine dust particles that are liberated and can travel from the site to another location. The BDQ already has four fallout dust units that will be used to monitor the dust levels during the decommissioning phase. The dust-monitoring programme will be extended to include the DQ mining area when applicable. The dust units are emptied monthly and the collected particular matter weighed to determine the dustfall rate averaged over 30 days. The non-residential fallout dust standard allocation of 600 – 1200 mg/m²/day is used for the dust units at the site.	Monthly until final closure of the site.
Gravimetric Dust Monitoring: Gravimetric sampling of dust is the internationally acceptable method to determine respirable dust concentrations of a site. This monitoring is implemented to determine the level of exposure employees are subjected to during each shift as prolonged exposure to atmospheric dust can five rise to a number of lung disorders or diseases. Personal and/or static monitoring is done by a qualified Occupational Hygienist in accordance with the guidelines for gravimetric sampling published under the auspices of the Department of Mineral Resources – Guidelines for the Compilation of a Mandatory Code of Practice – No. 1 Personal Exposure to Airborne Pollutants.	Quarterly until final closure of the site
NOISE MONITORING	
Personal Noise Monitoring: Personal noise exposure monitoring is done to determine the noise levels employees are exposed to during an eight-hour shift. Excessive noise exposure can lead to hearing loss and therefore continuous monitoring and demarcation of noise zones are of the utmost importance. This	Quarterly until final closure of the site

MONITORING PROGRAMMES	
MONITORING UNIT	**FREQUENCY**
monitoring is conducted by a qualified Occupational Hygienist who has to submit his findings on Form 21.9(2)(e) prescribed by the Department of Mineral Resources in terms of the National Environmental Management: Air Quality Act, 2004 (Act No 39. of 2004).	
SOIL EROSION MONITORING	
Soil Erosion: The definition for erosion is defined in the Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983) as the loss of soil through the action of water, wind, ice or other agents including the subsidence of soil. Soil erosion monitoring has to be implemented by site management to prevent the loss of exposed soil because of the mining activities. If the replaced topsoil stay exposed it is especially vulnerable to soil erosion. It is therefore proposed that a cover crop be planted if vegetation does not establish within the first six months of topsoil spreading.	Weekly monitoring for the first 6 months or until the first cover crop has established
WEEDS AND INVADER PLANT MONITORING	
Management of Weed or Invader Plants: All species listed in terms of the Alien and Invader Species (AIS) regulations published in terms of section 97(1) of NEM:BA as amended 2016, are deemed to be declared invasive species, and should be managed accordingly. When identifying weeds that need to be eradicated from the site the plants listed in the AIS regulations are used as guideline. Control of weeds and alien invasive plant species is an important aspect after topsoil replacement and seeding has been done in an area. Site management must implement an alien invasive plant management plan during the 12-months aftercare period to address germination of problem plants in the area.	Monthly monitoring for the duration of the decommissioning phase.
STORM WATER MONITORING	
Storm Water Monitoring: The risk of erosion or loss of topsoil due to uncontrolled storm water flowing through the decommissioning area can be reduced through proper monitoring and implementation of effective storm water infrastructure. Monitoring needs to continue during the 12 months aftercare period.	Monthly monitoring for the duration of the decommissioning phase.

MONITORING PROGRAMMES	
MONITORING UNIT	**FREQUENCY**
HEALTH AND SAFETY MONITORING	
Management of Health and Safety Risks All operations must comply with the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) as well as the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Daily monitoring for the duration of the decommissioning phase.

8. ENVIRONMENTAL RISK ASSESSMENT REPORT

The objective of the environmental risk assessment report is to:

a) ensure timeous risk reduction through appropriate interventions;
b) identify and quantify the potential latent environmental risks related to post closure;
c) detail the approach to managing the risks;
d) quantity the potential liabilities associated with the management of the risks; and
e) outline monitoring, auditing and reporting requirements.
(Financial Provision Regulations, 2015 Appendix 4)

8.1 ASSESSMENT PROCESS USED TO IDENTIFY AND QUANTIFY LATENT RISKS

8.1.1 Methodology

The methodology for the assessment of the potential latent risks entailed the use of the following:

DEFINITIONS AND CONCEPTS

<u>Environmental significance:</u>

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement
- The degree of environmental significance depends on the nature of the risk
- The importance is rated in terms of both biophysical and socio-economic values
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into risk magnitude and risk significance. Risk magnitude is the measurable change (i.e. intensity, duration and likelihood). Risk significance is the value placed on the change by different affected parties (i.e. level of acceptability)

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact:

The positive or negative effects on human well-being and / or the environment.

Consequence:

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood:

A qualitative term covering both probability and frequency.

Frequency:

The number of occurrences of a defined event in a given time or rate.

Probability:

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment:

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology to be used:

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence x Overall Likelihood

Determination of Overall Consequence:

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For determining the environmental significance in terms of consequence, the following factors were chosen: Severity/Intensity, Duration and Extent/Spatial Scale. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity:

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects affects the biophysical and socio-economic environment.

The following table will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 17: Monitoring Programmes

Type of criteria	Rating				
	1	**2**	**3**	**4**	**5**
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 18: Rating of duration used in the assessment of potential latent risks

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Table 19: Rating of extent / spatial scale used in the assessment of potential latent risks

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighboring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Table 20: Example of calculating overall consequence in the assessment of potential latent risks

Consequence	Rating
Severity	Example 4
Duration	Example 2

Consequence	Rating
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 21: Rating of frequency used in the assessment of potential latent risks

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 22: Rating of probability used in the assessment of potential latent risks

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible

Rating	Description
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 23: Example of calculating overall likelihood in the assessment of potential latent risks

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD **(**Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the significance of the risk, which is a number that will then fall into a range of **insignificant risk, uncertain risk** or **Significant Risk**, as shown in the table below.

Table 24: Determination of overall significance in the assessment of potential latent risks

Significance or Risk	Insignificant risk (cc)	Uncertain risk (bb)	Potential significant risk (aa)
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 – 19.9

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision-making process associated with this event, aspect or impact.

Table 25: Description of environmental significance and related action required in the assessment of potential latent risks

Significance	An insignificant risk (cc)	A uncertain risk (bb)	A potential significant risk (aa)
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Improve management measures to reduce risk.

Based on the above, the significance rating scale has been determined as follows:

A potential Risk (aa) — Risks of a substantial order. Mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these.

An uncertain risk (bb) — Risk would be negligible. Almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple.

An insignificant risk (cc) — There would be very small to no risk.

8.1.2 Description of Latent Risks

At this stage, no latent risks that will potentially arise during closure phase of the mining area (BDQ and/or DQ) were identified.

8.1.3 Results and Finding of Risk Assessment

Not applicable as no latent risks were identified.

8.1.4 Changes to the Risk Assessment Results

N/A

8.2 MANAGEMENT ACTIVITIES

No additional management activities are necessary as no latent risks were identified.

8.3 COST ESTIMATE

Not applicable as no latent risks were identified.

8.4 MONITORING, AUDITING AND REPORTING REQUIREMENTS

By reason of the fact that no latent risks with regard to the management of the mine were identified no additional monitoring, auditing or reporting requirements are required for this auditing period.

9. CONCLUSION

This Rehabilitation plan needs to be followed together with the EMPR and its amendments when it is decided that the end of mining has been reached. This document gives the necessary information when planning the rehabilitation of the mine together with the cost associated with the rehabilitation.

Sufficient work needs to be undertaken during the life of mine, to ensure that all key environmental issues and workable management mechanisms are relevant to mine closure are identified timeously as s will allow strategies, mitigation measures and closure designs to be designed, assessed and reviewed in the years leading up to closure.

Lime Sales Limited commits itself to providing all the necessary resources to ensure that the rehabilitation of the mine (BDQ & DQ) is done in such a way that will be acceptable to all parties involved. The mine or site management must understand and accepts the responsibility to rehabilitate the disturbed areas.

10. SIGNATURE OF AUTHOR

NAME	SIGNATURE	DATE
Christine Fouche		31 October 2019

11. UNDERTAKING BY RIGHT HOLDER

I, ……., the undersigned and duly authorised thereto by ..... ……. that Bridgetown Dolomite Quarry will comply with the provisions of the MPRDA and its Regulations as set out in Government Gazette no. 26275 (23 April 2004), as well as NEMA.

I have studied and understand the contents of this document and duly undertake to adhere to the conditions as set out therein, unless specifically or otherwise agreed to in writing.

Signed at …….. on this ……day of ……20……

_____

Name:

Designation:

12. REFERENCES

- Chamber of Mines of South Africa, 1981. Guidelines for the rehabilitation of land disturbed by surface product mining in South Africa, Johannesburg
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- Rees, D. W. 2014. Environmental Management Programme Report (EMPR Update - June 2014) Bridgetown Dolomite Quarry. Geological and Mining Consultants.