PROPOSED MINING OF AGGREGATE ON A PORTION OF PORTION 31 OF THE REMAINING EXTENT OF THE FARM DRIEFONTEINEN 243, REGISTRATION DIVISION OF MOSSEL BAY, WESTERN CAPE

STORM WATER MANAGEMENT PLAN

SEPTEMBER 2020

REFERENCE NUMBER: WC 30/5/1/3/2/10258 MP

PREPARED FOR:

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DECLARATION OF INDEPENDENCE

I, Sonette Smit, in my capacity as specialist consultant declare that I:

- act as independent consultant;
- will perform the contracted work in an objective manner, even if the results and findings are not favourable to the holder of the authorisation;
- will adhere to and comply with all responsibilities as indicated in the National Environmental Management Act and Environmental Impact Assessment Regulations;
- 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;
- reserve the right to modify aspects pertaining to this study should additional information become available through ongoing research and further work in this field.

Sonette Smit  Date: 30 September 2020

CLIENT REVIEW AND COMMENT

I reviewed and understand the contents of this report. I acknowledge that this Storm Water Management Plan is based on best practice environmental methods in order to mitigate the impacts on biodiversity by separating clean and dirty water:

The aim / objective with regard to proper storm-water management is to:

» Prevent the contamination of clean runoff,

» Contain dirty water, dispose or treat it in an environmental responsible manner,

» Prevent soil erosion as a result of increased runoff from the mining area, and

Prevent the loss of stockpiled topsoil to be used during the rehabilitation phase

NB: The proposed control methods are only recommendations based on information available to the environmental consultant at the time. This is not a structual report with engineering designs, should this be required a civil engineer should be appointed to do the design of such facilities.

_____ _____

Print Name **Signature**

_____

Date

TABLE OF CONTENTS

INTRODUCTION

Haw and Inglis Civil Engineering (Pty) Ltd applied for a mining permit to mine aggregate on Portion 31 of the remaining extent of the farm Driefonteinen 243 which falls in the Mossel Bay Local Municipality in the Registration Division of Mossel Bay RD, Western Cape Province.

OBJECTIVE OF STORM-WATER MANAGEMENT

The objective with regard to proper storm-water management is to:

- Prevent the contamination of clean runoff,
- Contain dirty water, dispose or treat it in an environmental responsible manner,
- Prevent soil erosion as a result of increased runoff from the mining area, and
- Prevent the loss of stockpiled topsoil to be used during the rehabilitation phase.

PROJECT DESCRIPTION

The mining method will make use of blasting means of explosives in order to loosen the hard rock. The material is then loaded and hauled out of the excavation to the mobile crushing and screening plants. The aggregate will be screened to various sized stockpiled. The aggregate will be stockpiled and transported to clients via trucks and trailers. All activities will be contained within the boundaries of the site. The existing roads currently used to gain access to the property will be used to transport the aggregate from the mining site to the clients.

SITE CHARACTERISTICS

Topography:

The site is located on the ridge of a koppies and the ground slopes in all directions. There are no natural draining lines running through the site. Excavation did take place on the eastern side, on top of the koppies. The site is however not visible from the N2 due to the northern side being left in place. The elevation of the Driefonteinen Quarry ranges between 235-250m above sea level.

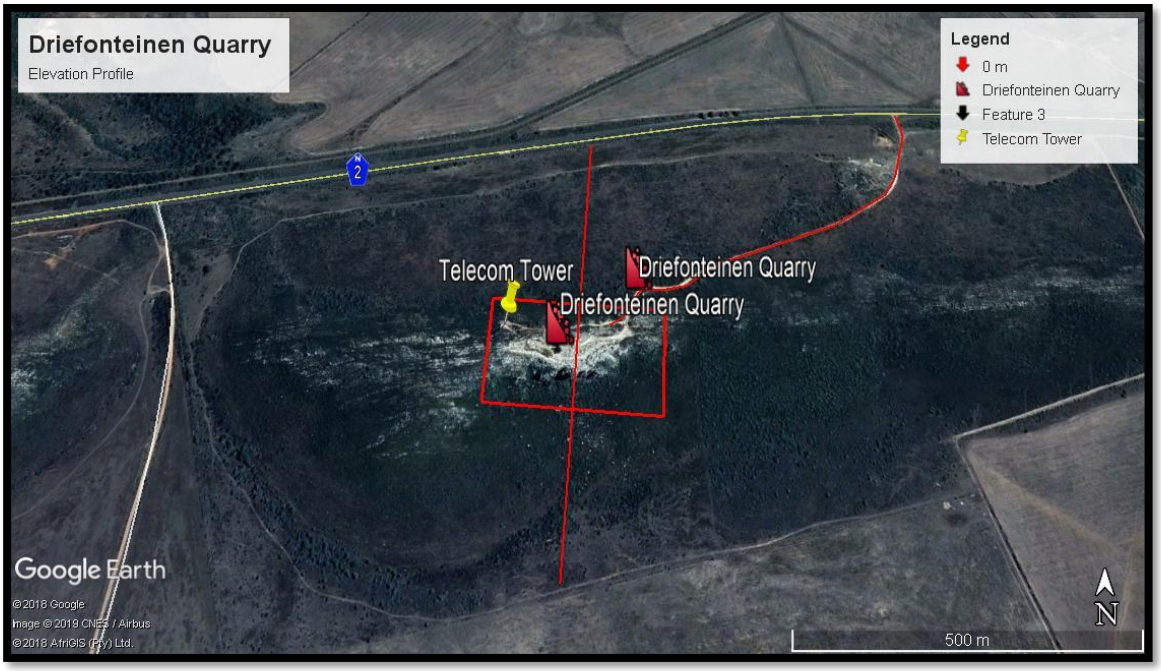

Figure 1: Elevation profile (north to south) of the study rea – Generated within Google Earth.

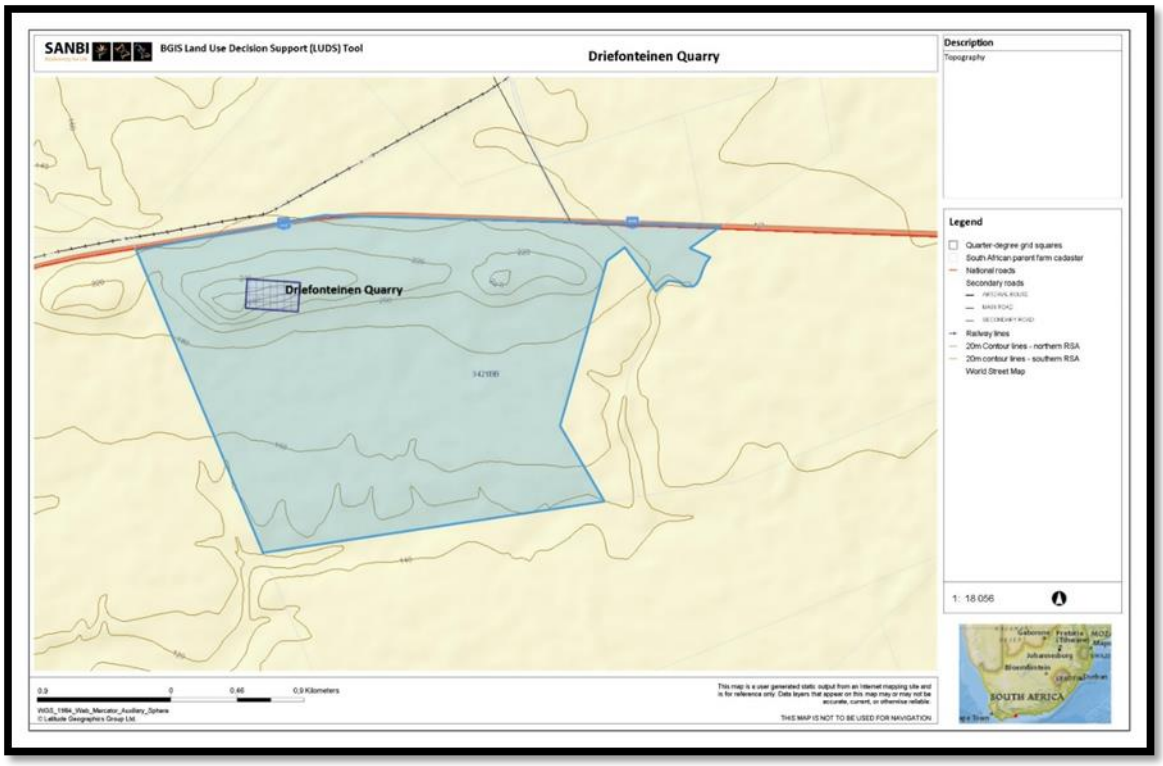

Figure 2: Topography of Driefonteinen Quarry.

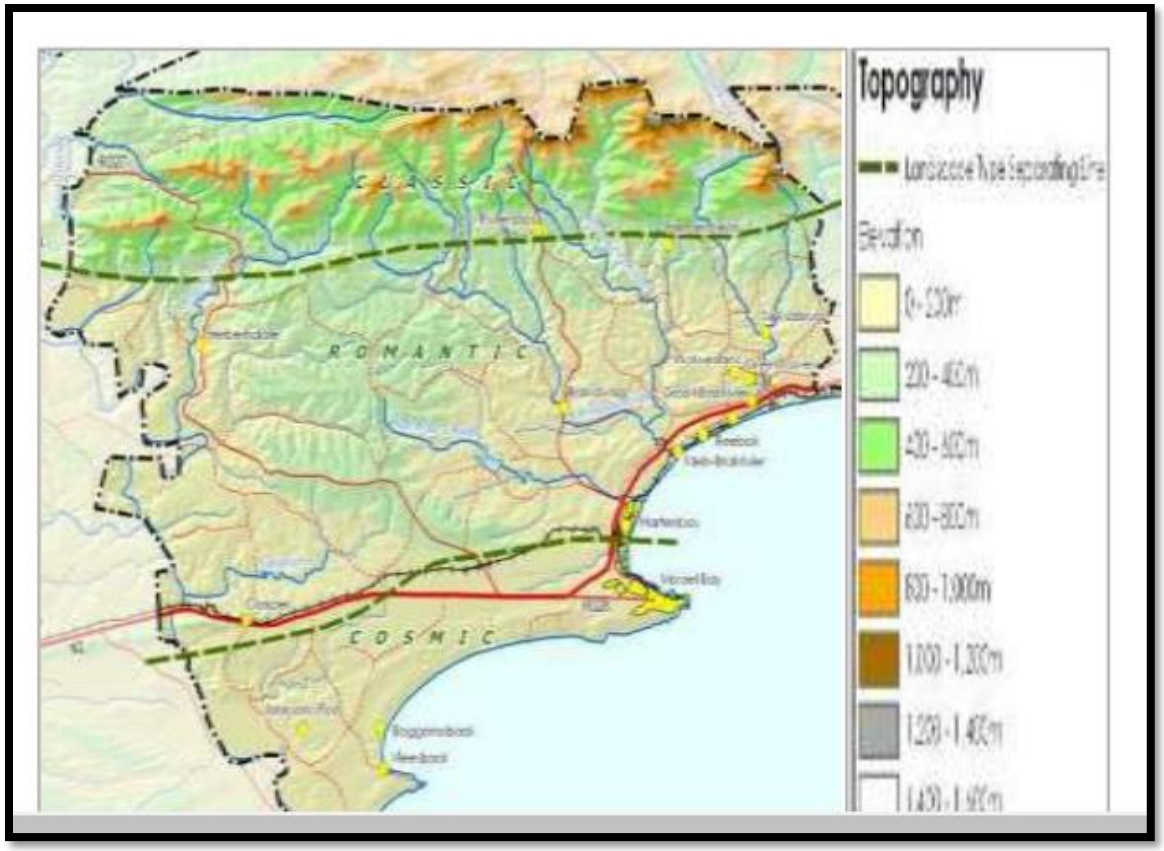

Figure 3: Topography of Driefonteinen Quarry

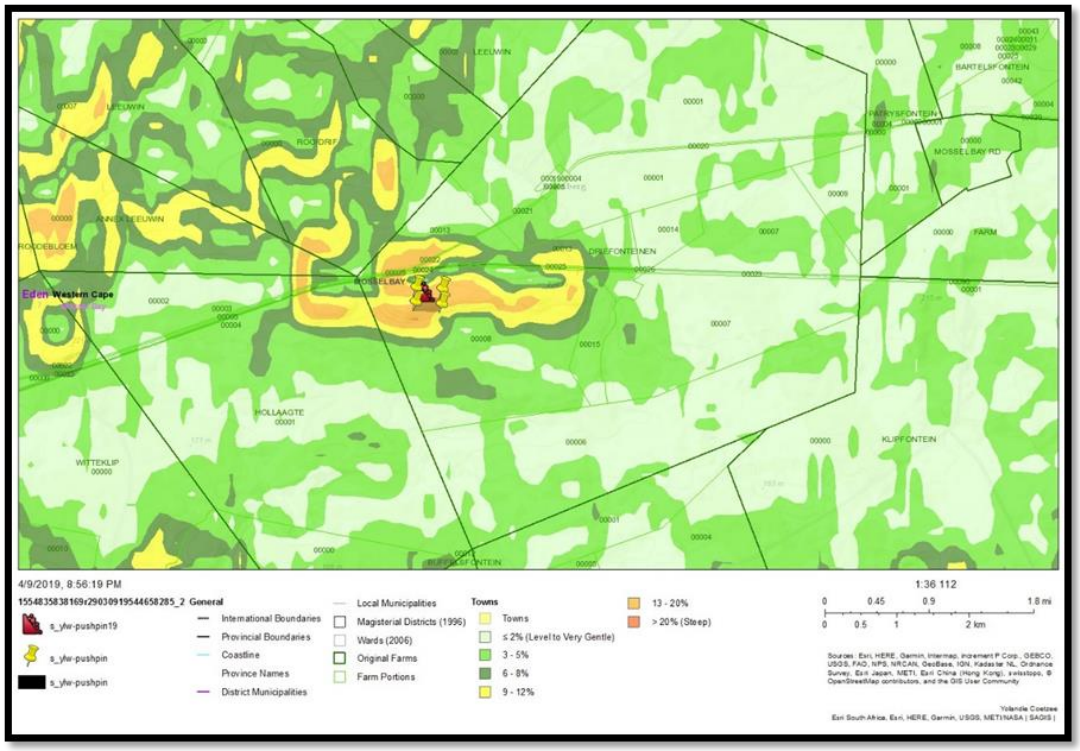

Figure 4: Topography of Driefonteinen Quarry.

Hydrology:

The proposed site falls within the Gouritz Water Management Area (WMA), specifically in the Gouritz/Goukou/Duiwenhos Sub Water Management Area, in the J40E quaternary catchment area.

The Gouritz Water Management Area (WMA) is situated in the southwest region of South Africa and falls almost entirely within the Western Cape Province. It derives its name from the largest river within its boundaries, namely the Gouritz River. The WMA borders on the Olifants/Doring WMA to the northwest, on the Breede WMA to the west, on the Lower Orange WMA to the north and on the Fish to Tsitsikamma WMA in the east. The southern border is the Indian Ocean. The quarry area will be located in the mountain area of the farm above the original ground level. Groundwater will not be impacted by during this mining operation.

A borehole will be drilled for the proposed water use, for the abstraction of water from this borehole. No water is located in the quarry pit, except during rainfall events, which then quickly drained into the ground.

Should the Applicant implement the mitigation measures proposed in this document and the EMPR the impact on the water resources surrounding the proposed site is deemed to be of low-significance as all activities will be contained within the boundaries of the site.

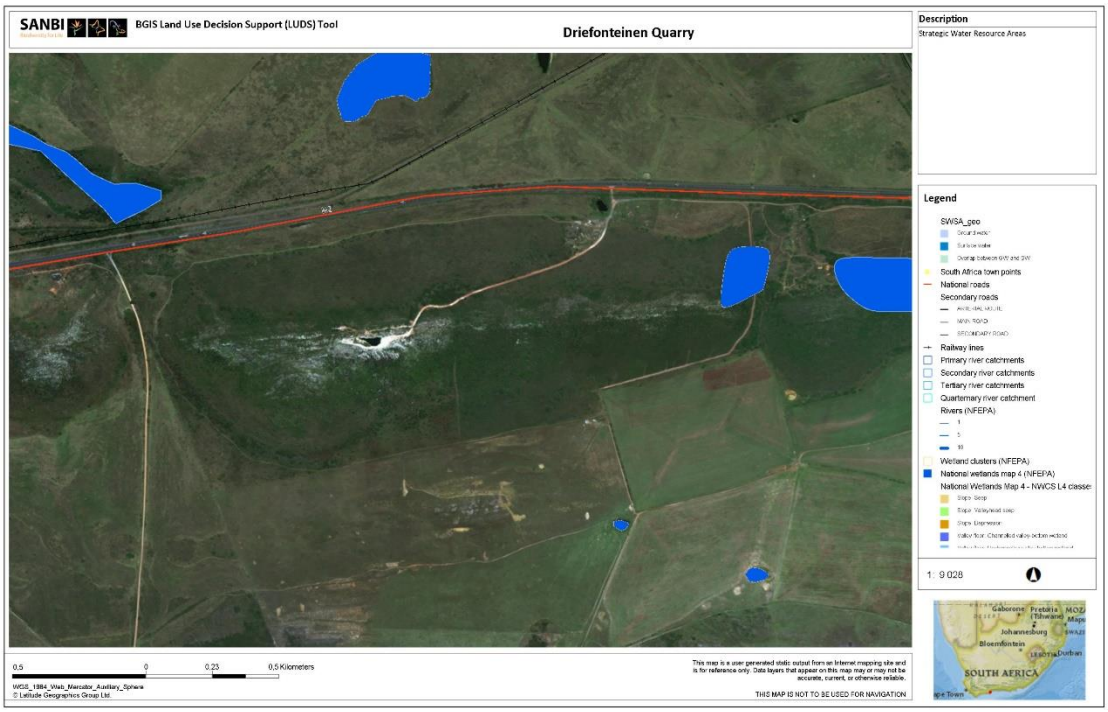

Figure 5: Surface water bodies in close proximity to the Driefonteinen Quarry.

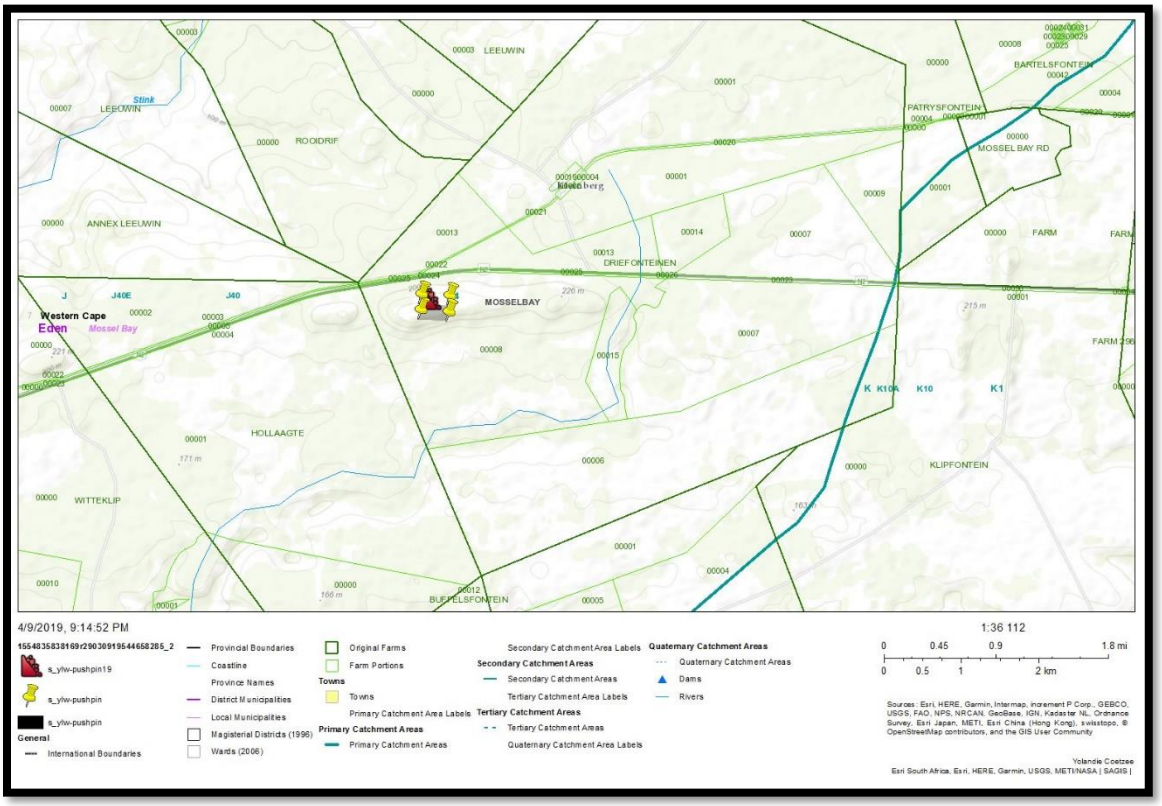

Figure 6: Rivers in close proximity to the Driefonteinen Quarry

There are no wetlands on pans in close proximity to the proposed quarry. The closest river to the site is a subsidiary to the Gouritz River, running south from the proposed quarry.

There is an existing earth dam on the proposed property that the farmer created for drinking water for livestock.

As per input from groundwater specialist - Martiens Prinsloo (Pr.Sci.Nat) MSc (Hydrogeology), M.B.A.) from Future Flow Groundwater & Project Management Solutions cc:

- "The quarry has been operational since the first half of the previous century but does not, and will not exceed 30 m depth. Current available information shows that the quarry does not require active dewatering.

- The quarry is located on top of a west / east trending ridge, at an elevation of around 250 m above mean sea level (mamsl), while the topographical elevation in the surrounding low lying areas range around 95 mamsl to the north, and 170 mamsl to the south of the ridge.

Excavating the ridge to the planned maximum depth of 30 m (thus 220 mamsl) will not lower the quarry floor to lower than the regional low lying area elevations. Therefore, even in the event that the quarry is excavated to the maximum depth, and if there should be groundwater inflows that have to the dewatered at that stage, the quarry activities will not draw down the groundwater levels in the surrounding lower lying areas where the neighbouring farmers are located as the quarry floor will be located at a higher elevation than the surrounding areas. It is therefore not possible for the quarry to have notable impact on the groundwater volumes in the surrounding area.

RISK OF CONTAMINATION

The proposed aggregate quarry does not pose a great contamination risk, the proposed mining footprint extends into an area that has previously been used for mining, and no activity will take place in any water bodies. The scale of mining operations, which can be regarded as small, and the activities and infrastructure associated with such a small scale mining operation. Most contaminants will likely be generated in small quantities due to localized spillage and leakages of hydrocarbons from mining equipment, machinery and vehicles. These contaminants can potentially cause contamination. This can mostly be effectively avoided by maintaining good practices such as;

» Using good quality equipment, machinery etc. and regular monitoring and servicing thereof;

» Correct storage and removal of used hydrocarbon fuels and liquids (e.g. within sealed containers stored on concrete slabs and removed from site by a reputable company);
» Effective and prompt execution of mitigation measures in the case of an accidental spillage.

EROSION RISK

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 must be returned to its original depth over the area.

The area must 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.

By planning the layout and position of infrastructure and with a sufficient erosion and rehabilitation plan in place the potential for erosion to occur can be maintained to an absolute minimum and localised, avoiding such impact occurring within the wetland area.

SITE SPECIFIC CONDITIONS

The Applicant intents to:

- Blasting;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The site infrastructure to be used during the operational phase will consist of:

- Drilling equipment;
- Excavating equipment;
- Earth moving equipment;
- Static crushing and screening plants.
- Access Roads;
- Site Office (6m Containers – 120m^2);
- Security Gate;
- Site vehicles;

- Parking area for visitors and site vehicles;
- Vehicle service area (48m^2);
- Wash bay (24m^2);
- Workshop (6m Containers – 24m^2);
- Salvage Yard (100m^2);
- Bunded diesel (20 000l tank) and oil storage facilities (136m^2);
- Generator on bunded area;
- Ablution Facilities (6m Container with Septic Tank);
- Weigh Bridge (18m^2); and
- Demarcated general and hazardous waste area (50m^2).

Regular vehicle maintenance may only take place at the workshop on site. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a 200 litter closed container/bin to be removed from the emergency service area to the formal workshop in order to ensure proper disposal.

Processing and Stockpile Area:

The applicant will make use of a mobile crusher to reduce the material to the dersirable sizes. The crusher will be able to move into/close to the quarry pit to crush and screen the mined material. The crushed material will then be stockpiled until removed from site. The applicant will strip the topsoil of the stockpile area prior to commencement of the activty. In order to divert clean runoff water around the stockpile area, it is proposed that the topsoil heaps be stockpiiled along the northern boundary of the stockpile area. This will prevent clean runoff water entering the stockpile area where it could be contaminated. A storm water berm must also be made along the southern boundary of the stockpile area to prevent material washing from the stockpile area into the surrounding environment, and potentially causing sedimentation of the bordering wetland system. The berm can be made from overburden removed from the mining area once the topsoil was removed and stockpiled.

Excavation:

The quarry pit will mainly drain inward as a result of the removal of the hard rock, and is unlikely to promote storm water runoff into the surrounding environment. However, it is still recommended that a storm water trench and berm be made along the northern boundary of the open cast area. The berm can be made from overburden stripped from the proposed mining area once the topsoil was removed and stockpiled. The berm must be maintained throughout the operational phase of the mining activities and stabilised when erosion does occur.

STORM WATER MANAGEMENT

In order to adequately manage the storm water at the proposed mining area, the following mitigation measures must be implemented for the duration of the site establishment-, operational- and decommissioning phases:

- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:
  - Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
  - Dirty water must be collected and contained in a system separate from the clean water system.
  - Dirty water must be prevented from spilling or seeping into clean water systems.
  - The storm water management plan must apply for the entire life cycle of the mine and over different hydrological cycles (rainfall patterns).
- Keep the clearing of natural and semi-natural grasslands to a minimum.
- Storm water must be channelled around the mining area to prevent possible contamination of clean water flowing over dirty areas.
- Ensure that structures like berms or silt traps are built to prevent possible contamination of clean water flowing over dirty areas as this can result in sedimentation,
- Storm water must be diverted around the topsoil heaps, and access roads to prevent erosion.
- Ensure that runoff from compacted or sealed surfaces is slowed down and dispersed sufficiently to prevent accelerated erosion from being initiated.
- Reduced activity at the site after large rainfall events when the soils are wet. No driving off of designated hardened roads should occur immediately following large rainfall events until soils have dried out and the risk of bogging down has decreased.
- Regularly monitor around the cleared areas, after larger rainfall events, to determine where erosion may be initiated, and then mitigate by modifying the soil micro-topography and revegetation or implementing soil erosion control efforts accordingly.
- Roads must be regularly monitored for erosion problems and problem areas should receive follow-up monitoring to assess the success of the remediation.

- Reinforce portions of existing access routes that are prone to erosion, create structures or low banks to drain the access road rapidly during rainfall events, yet preventing erosion of the track and surrounding areas
- Construction of gabions and other stabilisation features on steep slopes to prevent erosion, if deemed necessary.
- All bare areas, as a result of the development, should be revegetated, where possible, with locally occurring species, to bind the soil and limit erosion potential.
- Where it is necessary to remove surface water from the quarry site; water must be pumped to a site where it will not negatively influence the natural environment through erosion of permanent flooding, possibly the non-perennial stream.
- Prevent leakage of oil or other chemicals, strictly prohibit littering of any kind.

REHABILITATION

Upon rehabilitation of the mining area the storm water any berms on site must be removed and the area levelled. The material used to construct berms can be used in the rehabilitation of the quarry pit. Seeding of the rehabilitated area must be done in accordance with the closure actions prescribed in the EMPr and Closure Plan in order to stabilise the newly rehabilitated area and prevent erosion of topsoil.