Mining Operational Plan

For the proposed

Ramphal Sand Mine

(Umkomaas River)

August 2021

Contents Page

Figures:

Images:

Annexure A:

Master Layout Plan

1 Introduction

This Mining Operational Plan (MOP) has been developed for the proposed 4.12ha Ramphal Sand Mine along a portion of the Umkomaas River in Southern KwaZulu-Natal. This Report aids in determining the most suitable method and approach to the establishment of the planned mining activities on the area indicated in this application.

2 Mining Location

The site of the proposed Ramphal Sand Mine is located along a portion of the Umkomaas River, approximately 6km to the north-west of the Umkomaas town within the southernmost portion of the eThekwini Metropolitan in KwaZulu-Natal (**Figure 1**).

Figure 1: Regional location of proposed Ramphal Sand Mine

3 Site Characteristics

The climate of Umkomaas is subtropical and characterised as being warm and temperate with mild frost free winters. The majority of rainfall falls in the spring and summer months due to increased convection and cloud formation. The mining site itself is located 16m above sea level on a portion of the Umkomaas River outside the estuarine functional zone. The mining site is surrounded by large undulating hills and extensive bush vegetation. There are no communities living onsite or immediately adjacent to the mine site. There is an existing dirt track/gravel road that runs adjacent to the Umkomaas River within the riparian area. The site has been previously mined.

The main terrestrial vegetation type is degraded grassland located directly to the south of the western portion of the existing gravel access track/road. The historical construction of the roadway as well as cattle grazing has resulted in the disturbance of the adjacent vegetation, which is currently dominated by common, pioneer grass species as well as alien species such as Tithonia diversifolia. The degraded grassland vegetation community is therefore no longer considered to be representative of intact KwaZulu-Natal Coastal Belt Thornveld. Floral species diversity is likely to increase in areas further upslope of the existing access road, however, mining vehicles will be restricted to the existing roadway and no additional disturbance to the surrounding vegetation will therefore occur. The area is known to be an important birding area, with over 300 species of birds being recorded on the South Coast Birding Route.

Four Drainage Lines are traversed by an existing gravel access road before they enter into the riparian zone of the Umkomaas River. This road will be utilised by mining vehicles in order to access the proposed mining site. The existing gravel road is established and no further inroads into the Drainage Lines or riparian vegetation will occur. These Drainage Lines are ephemeral in nature and are only likely to contain surface water after heavy rainfall events.

4 SAND DEPOSIT

The portion of the Umkomaas River associated with the mine extent is a lower foothill river characterised by a lower gradient, mixed-bed alluvial channel with sand and gravel dominating the bed. The River is characterised by a wide (approximately 50-100m), deep (>2m) active channel which is bordered by incised channel banks. Wide flood terraces occur on the northern, south eastern and south western banks of the river, however a steep hillside is located directly to the south of the portion of the river channel within which sand mining is proposed and this area is characterised by a narrow, confined riparian zone.

5 MINING METHOD TO BE UTILISED

The proposed sand mining process uses a floating barge system (**Image 1 and 2**) to which is attached a del pipe of 8 inch HDPE (plastic) with a steel suction bit for pumping sand from the river to a sediment pond (**Annexure A – Master Layout Plan**). The pipe is kept buoyant above the river bed and floated above the surface by means of a series of floats connecting from the floating barge to the outlet area. The pipe length itself and the laying thereof, therefore, causes no negative impact or disturbance of the river bed, the river flow, or the river bank.

The head of the pipe contains a jet and suction mechanism which jets out approximately 35 m^3 of water an hour to agitate the sand, which is then simultaneously sucked back into the pipe at 450 m^3 per hour, thereby negating any possible silt plume and/or consequential siltation effects downstream.

The laying of the pipe has no negative impact on the river, the river bed and the river bank.

There are three small sediment ponds proposed as indicated in the Master Layout Plan. Due to the sediment ponds being strategically located on disturbed portions of the property, no riparian vegetation removal is required. These areas will however, be required to be rehabilitated after 5 years or when the sediment pond is no longer needed.

The sand is then transported to an existing stockpiling site near the mine office and some distance away from the River. It must be noted, the quality of the water re-entering the river from the sediment ponds having been naturally filtered through the clean sand is, therefore, of a better quality than it was when first pumped from the river.

Image 1: Example of floating barge system (the system to be utilised at the Ramphal site will be smaller in scale than in the image shown)

Image 2: Example of the pipe leaving the water and river bank to traverse to the sediment ponds

6 SEDIMENT PONDS

Turbidity originating from the sediment pond must be controlled in one of two manners before re-entering the River:

1. Increase the time of the residence of water located within the sediment pond. This can be undertaken via the shape of the pond or deepening to back section towards the outlet to reduce the flow of the water and promote the settlement of smaller particles.
2. The setup of sediment capturing devices. This to capture the finer particles before entering the River.

7 STOCKPILING AREA

There is an existing stockpiling area on the Applicants property that is being utilised by the Applicants wife for a separate mining permit application. The Ramphal Sand Mine will utilise this existing stockpiling area to negate the need to clear further indigenous vegetation.

8 EROSION AND STORMWATER PROTECTION

Stormwater Management and Control:

It must be noted that the proposed stockpiling area is in existence and is located on a relatively flat gradient. It is not envisioned that stormwater runoff will be a significant issue. The Freshwater Specialist has recommended silt traps as a measure to control erosion and stormwater runoff to capture sediment laden runoff on areas where this is a significant problem such as disturbed areas along the access road and within the mining permit area itself.

Silt traps measures to be implemented include:

- Install silt traps where applicable.
- Remove sediment from silt fences/traps on a weekly basis.
- Sediment traps must not be removed immediately after the completion of rehabilitation.
- Sediment traps must only be removed once at least 80% indigenous vegetation cover has re-established on disturbed, bare soils.

Erosion control:

Measures must be undertaken to control erosion. Stabilise areas at risk of erosion with 'soft' stabilization techniques as determined upon consultation with a suitably qualified specialist (e.g. geotextiles, fibre mats / nets / blankets / bags, brush mattresses, live staking etc.). Furthermore, revegetate disturbed areas as soon as possible after the stabilizing of soils. Indigenous grass plugs can be used in combination with an indigenous grass seed mix for revegetation.

9 TRANSPORT OF SAND TO LOCAL MARKET

There are existing tracks in good condition leading to the proposed mining site, therefore no new access or exit roads will be required to be constructed. These access tracks will be maintained to ensure they can sustain the regular movement of heavy vehicles and machinery.

10 THE LOCAL MARKET

The operation aims to provide high quality building sand at a reasonable price to local customers while creating jobs, assisting small businesses and encouraging development in the local community. A substantial market currently exists for building sand - locally, provincially and nationally. This market, based on forecasts by SAMI (South Africa's Mineral Industry), is expected to experience sustained growth over the next 10 years. The sand from the Ramphal Sand Mine will be used by local construction development in the area.

11 OPERATION OF THE MINE

The mine will operate for a period of two years from the time of issuing of a mining permit, and thereafter will become renewable for three further consecutive one-year periods, which totals a maximum five year operational period.

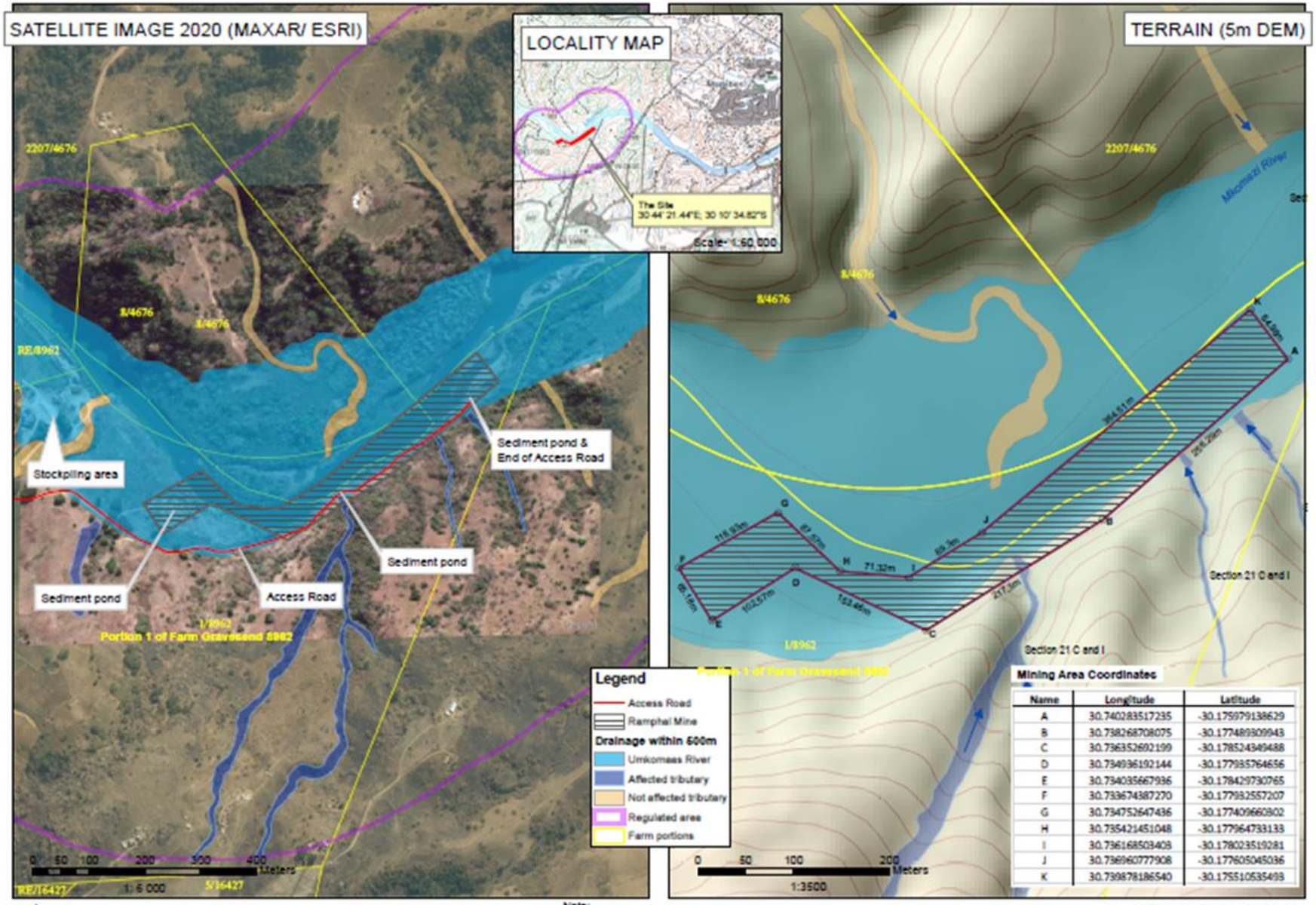
12 TECHNICAL SKILLS AND EXPERTISE

The proposed Ramphal Sand Mine will employ the following workers:

- A Mine Manager (a highly skilled Manager);
- Machine and heavy vehicle operators (containing the appropriate driving licenses and operating certificates);
- General Labourers (low skilled persons); and
- Security (as required).

Employment will be sourced from the local community as a priority, which policy rule will be endorsed as a pre-condition, as described in the Environmental Management Plan (EMP).

Annexure A: Master Layout Plan



Mining Area Coordinates

Name	Longitude	Latitude
A	30.740283517235	-30.175979138629
B	30.738268708075	-30.177489309943
C	30.736352692199	-30.178524349488
D	30.734936192144	-30.179385764656
E	30.734035667936	-30.178429730765
F	30.733674387270	-30.177982557207
G	30.734752647436	-30.177409660802
H	30.735421451048	-30.177964733133
I	30.736168503408	-30.178023519281
J	30.736960777908	-30.177605045036
K	30.739878186540	-30.175510535493

NORTH

Map prepared by J. Kitching, GIS specialist. Scale- 1:See map frame (on A3).

Note:
1. Mine extent: 4.12Ha
2. All areas & measurements subject to survey.
3. Environmental data as supplied.

RAMPHAL SAND MINE

APPLICANT: MR. RISHI RAMPHAL