

Mining Operational Plan
For the
Hlanganisa Sand Mine
(Tugela River)



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1 INTRODUCTION

This Mining Operational Plan (MOP) has been developed for the proposed Hlanganisa Sand Mine along a portion of the Tugela River in Northern KwaZulu-Natal, as reflected in **Annexure A** hereto. 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 Hlanganisa Sand Mine is located along a portion of the Tugela River, approximately 6,5km west of the small town of Mandeni in the iLembe District Municipality (**Figure 1**).

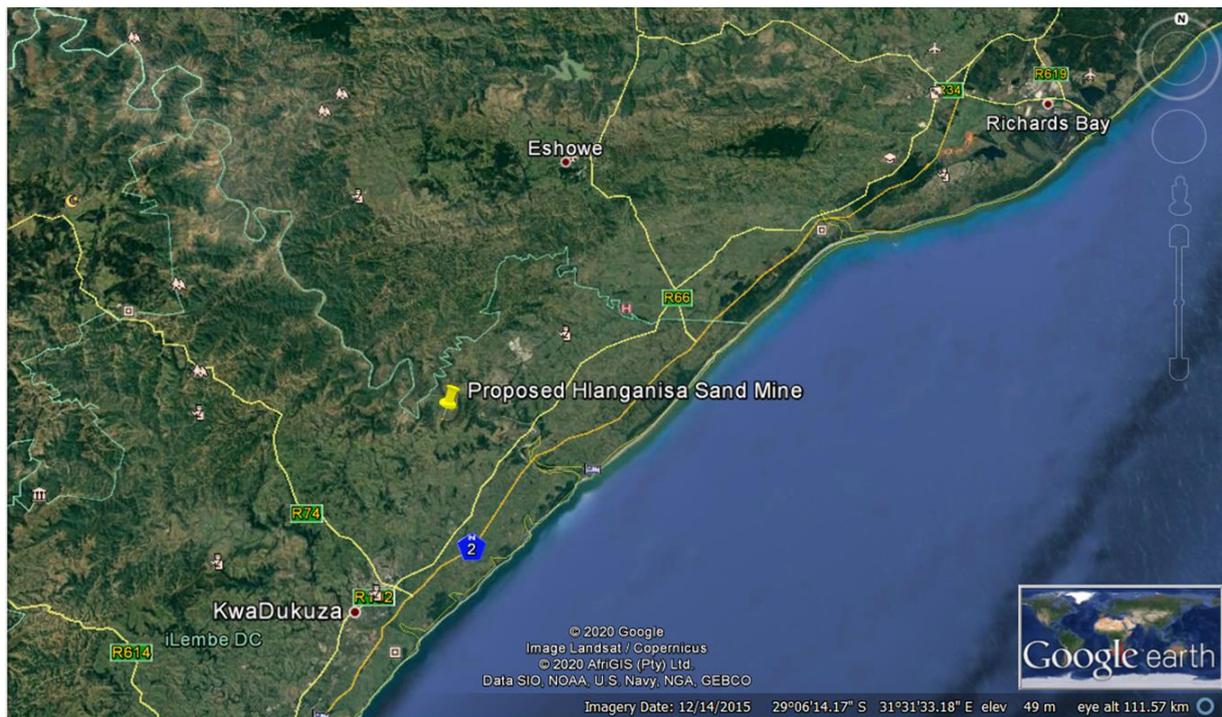


Figure 1: Regional location of proposed Hlanganisa River Sand Mine

3 SITE CHARACTERISTICS

The proposed Hlanganisa Sand Mine (Tugela River) site is located 18km inland from the Indian Ocean and is situated at an altitude of approximately 42m. The dominant land use surrounding the site is commercial sugarcane on the south west, tribal lands to the north and bushland to the south. There are no settlements on site or immediately adjacent to site, with the nearest settlement being Sans Soucis, which is located 1km to the south of the proposed mine. The site itself consists of commercial sugarcane, with some tribal lands and natural grassland pockets on the northern banks of the river. The mine itself is located on the southern bank of the Tugela River. A former iLembe District San Souci Water Treatment Works is located adjacent to the proposed mine site. There are existing access tracks that lead to this treatment works, as well as an access ramp leading to the River itself.

4 SAND DEPOSIT

The portion of the Tugela River to be mined contains extensive exposed sand bars along its course. Due to the sensitivity of the Tugela River, mining will be confined to the exposed sand bars and not the river bed or active channel. During heavy rains or floods mining of the sand bars will not be possible, which will allow for sand to be replenished. The Ichthyofaunal Survey noted that the downstream meander was subject to heavy sedimentation, which has impacted on habitat and ichthyofaunal. It follows that mining operations, if undertaken with due management at this point, will hopefully promote increased habitat diversity and increased diversity in fish diversity within the system due to the removal of excessive sedimentation.

5 MINING METHOD

The mechanical method of mining will be utilised when the sand bar is exposed and accessible from the demarcated and existing entrance ramp to the Tugela River. The mechanical mining method involves the use of various earth moving equipment configurations, primarily an excavator, and this will be used for so long as the exposed sand deposits are accessible by such equipment. The excavator will be positioned into the sand bar that is exposed and excavate the loose material and place it into an articulated dump truck (ADT). The ADT will traverse a fixed pathway along the sand bar and exit the river along an established access ramp that conjoins the deposited sand bar to the river bank, to ensure maximum possible traction angle when exiting and minimal disturbance to the riparian area and established natural river course boundaries. The sand will then be deposited in the designated stockpiling area, before it is transported off site to the local market for sale.

The use of mechanical diesel driven equipment on the exposed sand banks will require the strictest possible equipment maintenance regime to ensure that absolutely no fluids or leakages occur. The daily and shift check procedures will disqualify any piece of equipment from being deployed onto the sandbar should any leakages or other mechanical deficiency arise.

The exhaust fumes generated by the mining equipment will be limited by ensuring that all OEM scheduled services are completed in accordance with the suppliers recommendations and the observation of any excessive exhaust fumes will be grounds for removing such equipment from service until such emissions are curtailed and contained to within acceptable limits.

6 STOCKPILING AREA

The stockpiling of sand will occur within a designated stockpiling area (**Figure 2**), where it will be temporarily stored before being transported off site for sale at the local market. The stockpiling area is proposed for an area outside the Freshwater Buffers (as determined by the specialist) and the

riparian zone in an area previously cultivated with sugarcane. Surrounding the stockpiling site will be trenches and berms to ensure runoff from the area does not flow into the riparian area and ultimately into the Tugela River. The trenches will consist of silt traps and fences which will collect the runoff. This system must be regularly monitored and maintained during the lifespan of the proposed Mine.

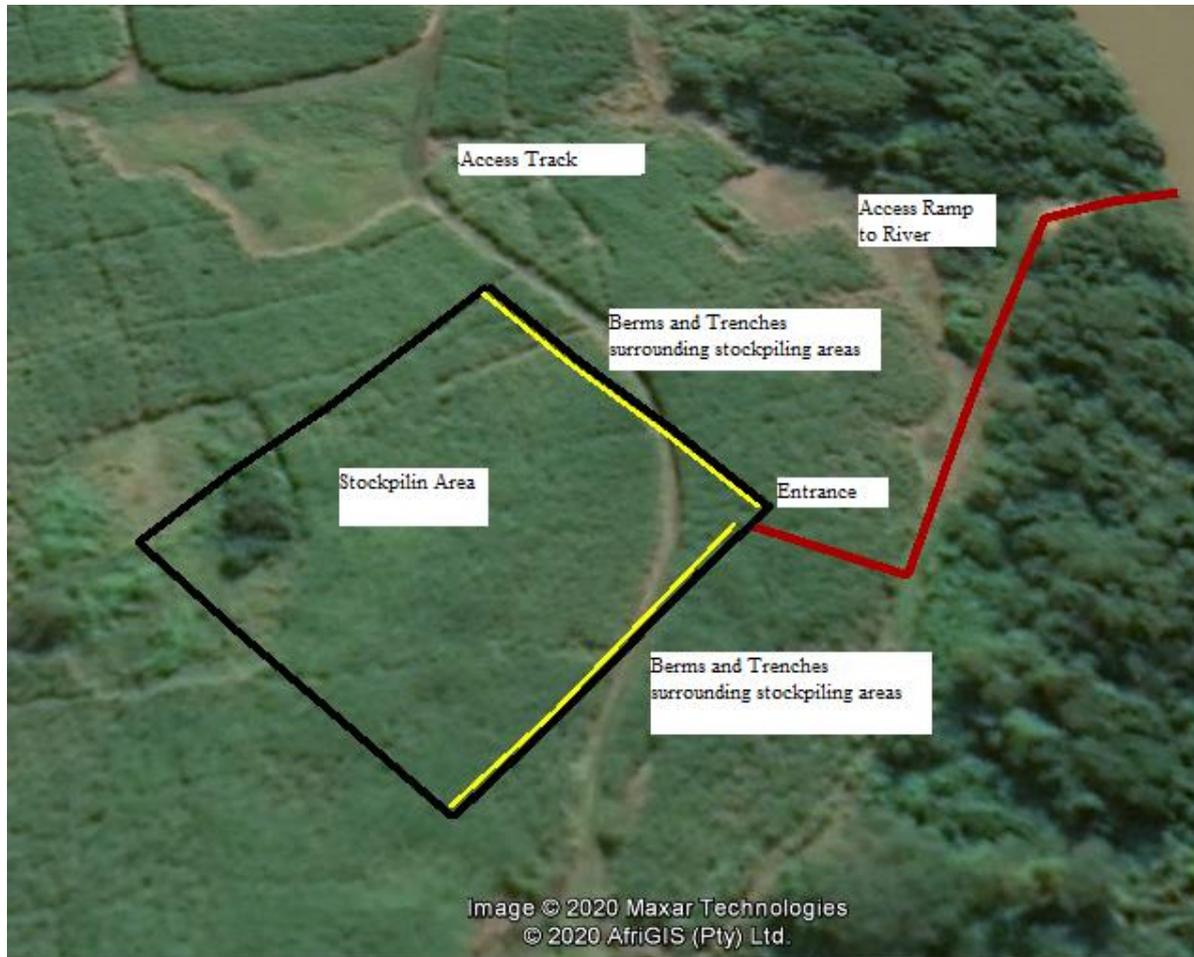


Figure 2: Proposed stockpiling area and runoff protection

7 TRANSPORT OF SAND TO LOCAL MARKET

There are existing agricultural 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.

8 THE LOCAL MARKET

The operation aims to provide high quality building sand at a reasonable price to local people 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 Hlanganisa Mine will be used by local construction

and development companies, small contractors and builders as well as government and municipal projects in the area.

9 OPERATION OF THE HLANGANISA SAND 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.

10 TECHNICAL SKILLS AND EXPERTISE

The proposed Hlanganisa Sand Mine will employ the following employees:

- 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 (if required).

Employment will be sourced from the local community, which will be made a pre-condition of the Environmental Management Plan.