Project Summary

Quartzstone Gold Project, B-45

December 2014

Sun & Sand Mining Resources Inc.

1.0 Introduction

Sun & Sand Mining Resources Inc. is proposing to develop the Quartzstone Gold Project, B-45 (the Project) into an operating opencast mine for commercial production of secondary gold. This Project Summary is being submitted to the Environment Protection Agency of Guyana (EPA); the Guyana Geology & Mining Commission (GGMC), Ministry of Natural Resources & the Environment as part of efforts to secure the requisite permits, in particular environmental authorisation.

2.0 Location & Accessibility

This Project Summary outlines the proposed Project Development Plan. The Project is located in Mining District #3 (Mazaruni), some 92 miles or 148 km west-southwest (WSW) of Georgetown. Access to the project area, which is heavily forested, is rather difficult. Personal and perishables are taken by river (first up the Essequibo River then up the Mazaruni River) to Itaballi, on the left bank of the Mazaruni River, and then by road to Quartzstone and then along a branch road to the location. The area is also accessible by helicopter from either Timehri or Ogle airports. Heavy equipment is transported by pontoon from Georgetown (loading at Baracara wharf, south of Stabroek Market) to Itaballi, by road though Areamu and Quartzstone, and then by branch road and jungle trails to the mine camps. Light equipment and fuel are taken by road from Georgetown through Linden and Rockstone to Suribanna Crossing on the right bank of the Essequibo River, by ferry to Sherima on the left bank of the Essequibo river, by road and ferry to Itaballi and by road, branch road and jungle trails to the mine camps.

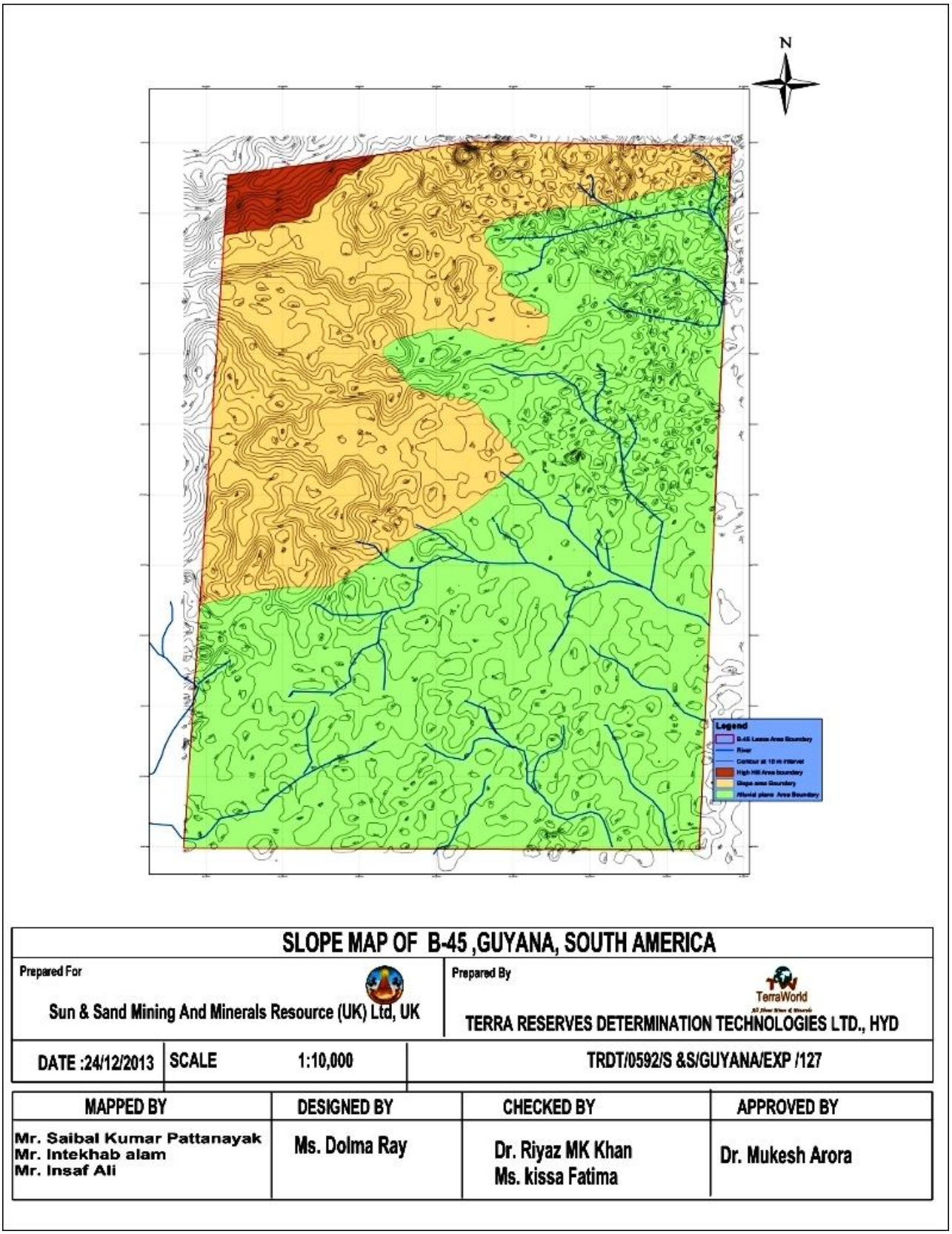
Access to the property from the Puruni River via the Ekabago Creek is extremely difficult especially in dry seasons when the Ekabago Creek becomes low and is blocked by fallen trees (tacoubas), mostly mora, along its entire length.

3.0 Extent

The prospecting license B-45 is described in the Official Gazette as follows:
Tract of state land located in the Mazaruni Mining District (No.3) and Cuyuni Mining District (No.4), as shown on the Terra Surveys Topographic Map 26NW, within the following boundaries;

Commencing from:
Point A, located at geographical coordinates of longitude of 59°27'0"W and latitude 6°29'46"N, thence at true bearing of 81°6'0", for a distance of approximately 1 mile 1240 yards, to Point B, located at geographical coordinates of longitude 59°25'32"W and latitude 6°30'N, thence at true bearing of 90°, for a distance of approximately 1 mile 1326 yards to Point C, located at geographical coordinates of longitude 59°24'0"W and latitude 6°30'N, thence at true bearing of 180°, for a distance of approximately 5 miles 1281 yards, to Point D, located at geographical coordinates of longitude 59°24'0"W and latitude 6°25'0"N, thence at true bearing of 270°, for a distance of approximately 3 miles 771 yards, to Point E, located geographical coordinates of longitude 59°27'0"W and latitude 6°25'0"N, thence at true bearing of 0°, for a distance of approximately 5 miles 814 yards, to the point of commencement at Point A.

Thus enclosing an area of approximately **12512 acres** save and except all lands lawfully held or occupied. Ref. Fig.1



SLOPE MAP OF B-45 ,GUYANA, SOUTH AMERICA			
Prepared For Sun & Sand Mining And Minerals Resource (UK) Ltd, UK		Prepared By TERRA RESERVES DETERMINATION TECHNOLOGIES LTD., HYD	
DATE :24/12/2013	SCALE 1:10,000	TRDT/0592/S &S/GUYANA/EXP /127	
MAPPED BY	DESIGNED BY	CHECKED BY	APPROVED BY
Mr. Saibal Kumar Pattanayak Mr. Intekhab alam Mr. Insaf Ali	Ms. Dolma Ray	Dr. Riyaz MK Khan Ms. kissa Fatima	Dr. Mukesh Arora

Figure 1: Slope Map of Project Area

4.0 Proposed Mining Scheme

The scope of the Project commences with an open pit mine, with an expected mine life of over 85 years. Mining scheme is proposed to extract the natural resources keeping the environmental constraints and concept of mineral conservation in mind. In the present case the appropriate method of mining for secondary deposition is open pit employing conventional mining cycle deploying excavator & tipper combination. The mining concession is divided into sections/pits and rock/alluvium is ripped from each such section/pit by excavators, loaded into tippers and transported to the processing plant. The depth of such excavations generally is not more than 2-3 m. After completion, the de-mineralized area is back filled by the waste generated during processing. Fig. 2 demonstrate the proposed and planned sections to be excavated in years to come in a systematic manner, along with the proposed location of camp, plant, tailing ponds, waste dump etc.

The following equipment is considered for mining:-

- Excavators – 2.5 m^3 bucket capacity
- Loaders – 2.5 m^3 bucket capacity
- Medium sized Dozer
- Dumper / Tipper – 15 T capacity
- Other ancillary equipment like dozer, grader, drills, water sprinkler etc will be procured as per the field requirement.

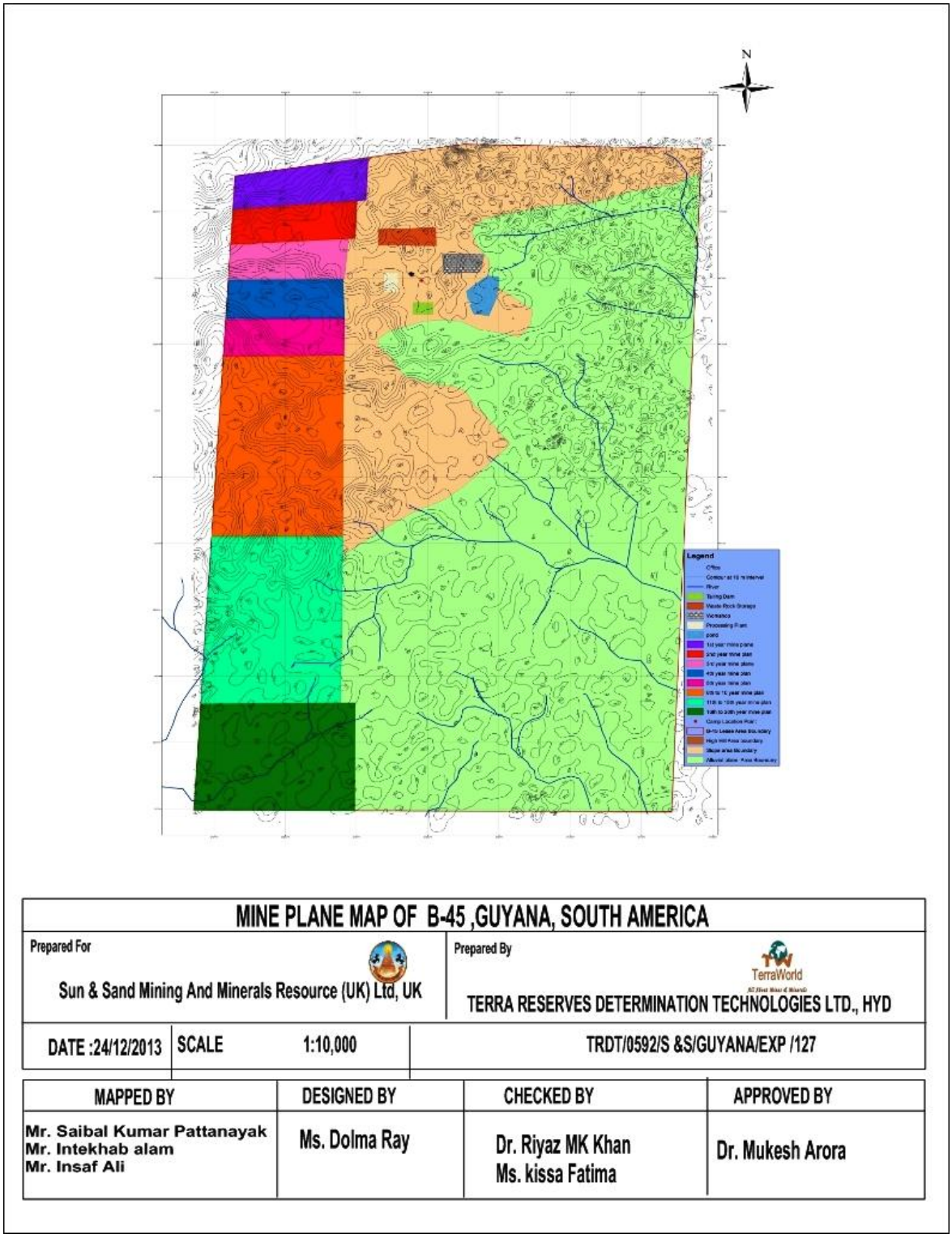


Figure 2: Mine Plan

Table 1: Fleet Planning & Production Scheduling

Processing Plant		
Gold concentrate output /month	Kg	44
Purity	%	90
Saleable Gold output /month	Kg	40
Grade	ppm	0.95
ROM handled /month	ton	41900
Working days/month	days	25
ROM handled /day	ton	1700
Planned Working hrs/day	hrs	18
Availability factor	%	80
Utilisation factor	%	70
Actual productive hrs/day	hrs	10
ROM handled/hr	ton	170
Rated Plant capacity/hr	ton	180
No. of Plants required	**unit**	**1**
Excavator		
ROM handled /month	ton	41900
Working days/month	days	25
ROM handled /day	ton	1700
Planned Working hrs/day	hrs	12
Payload of excavator	cu m	2
Fill factor	%	80
Actual capacity	cu m	1.6
Bulk density of material	ton/cum	1.7
ROM handled /pass	tons	2.72
Digging/loading/Unloading time	min/pass	3
No. of passes/hr		20
ROM handled /hr	ton	54.4
Planned Working hrs/day	hrs	12

Availability factor	%	85
Utilisation factor	%	75
Actual productive hrs/day	hrs	8
ROM handled/day/excavator	ton	435.2
Excavator required	**Nos**	**4**
Tipper		
ROM handled /month	ton	41900
Working days/month	days	25
ROM handled /day	ton	1700
Travel distance 1 way	Km	1.5
Speed	Km/hr	25
Travel time 1 way	min	4
Travel time / trip	min	8
Loading/unloading/waiting time	min	4
Total time /trip	min	12
No. of trips/hr	No	5
Planned Working hrs/day	hrs	12
Availability factor	%	80
Utilisation factor	%	65
Actual productive hrs/day	hrs	7
Payload of tipper	ton	15
Fill factor	%	90
ROM handled/trip	ton	13.5
ROM handled /hr	ton	67.5
ROM handled/day	ton	472.5
Tippers required	**No**	**4**

5.0 Ore Processing & Processing Plant Layout Plans

Ore will be processed onsite to produce a final doré bar that will be shipped off-site for further refining and upgrading. Processing will be done using a Gravity separation circuit. Plants are designed for medium to large size mining operation, and are designed for automatic classification concentration, separation & recovery of Gold Metal.

a) Classification, Concentration & Recovery of Metals from Alluvial Fields.
b) Configured as Wash Plants, Gravity Separation Plant for medium to large size Dredging Operation.

The plant proposed for this operation is Superminer which is manufactured by Dove Equipment & Machinery Co. Ltd. Ref. Fig.3, 4 and 5.

Figure 3: Superminer Proposed Plant

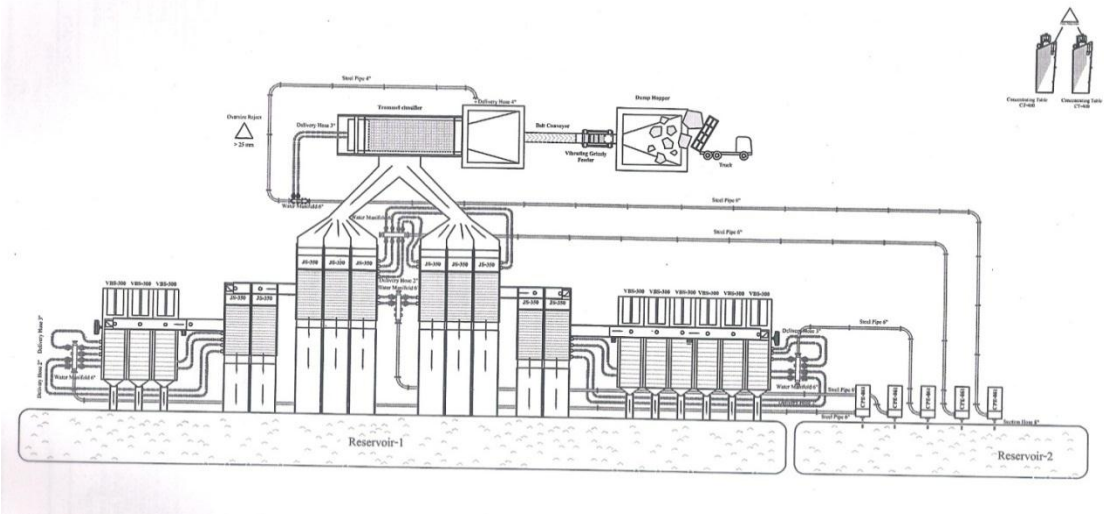


Figure 4: Superminer Proposed Plant

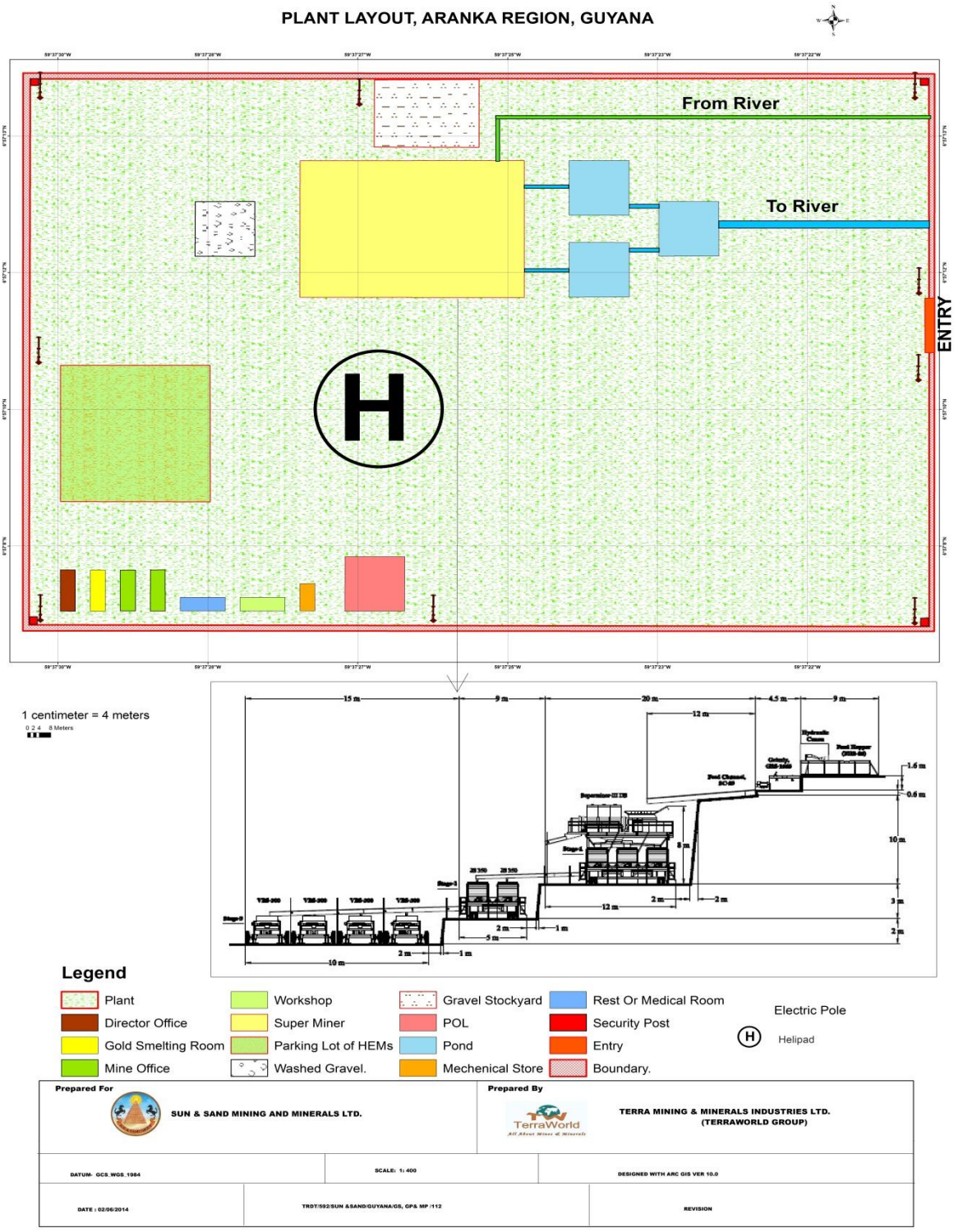


Figure 5: Plant Layout

6.0 Phase-wise Activities

The project will have following stages of activities (e.g. land clearing, construction, operation, etc.) along with the deployment of manpower:

Stage 1: Land clearance & construction of camp.
Stage 2: Land clearance & commissioning of processing plant.
Stage 3: Mine development & operations including intra mine approach roads.

6.1 Employment Details

The project will employ approximately 25 people over the 0.5 year construction and development period. Sun & Sand Mining Resources Inc. will deploy approximately 75 full time people over the next 10 to 12 years of mine life through a mining contracting company. It is anticipated that on-site housing facilities will be established for either the temporary construction workforce or the permanent mine employees. Activity wise employment details are as follows:

Stage 1: Plant manager, camp supervisor HEM (Heavy equipment machine) operations, Electrician , fabricators & security guards.

Stage 2: Plant manager, mechanic, pump man, HEM operators & security guards.

Stage 3: Mine supervisor, mine foreman, HEM operators, Gold smelters & Security guards.

6.2 Financial Assessment

The most recent Preliminary Economic Assessment completed by Terra Reserves Determination Technologies Ltd. (A TerraWorld Group company) on behalf of Sun & Sand Mining Resources Inc., indicates that the initial capital expenditure for construction will be in the order of $10 million, with another $2 million for sustaining capital over the life of the mine.

7.0 Baseline Environmental Studies

Baseline environmental studies relevant to the proposed development are expected to be undertaken in 2015. The objective of these studies is to establish a comprehensive understanding of all aspects of the environment in which the proposed project will be built. These baseline studies will provide the information necessary to ensure the Project minimizes its environmental impact and balances the needs of the Project with those of the communities and other stakeholders. The baseline study work will also assist the preparation of an Environmental Impact Statement (EIS) for submission to the Government as part of the EIA process.

8.0 Closure Plans

Upon completion of the mining process, the site will be closed and the land reclaimed and returned to a natural state per the site closure plan.