## Project: Water management infrastructure, Sierra Rutile, Sierra Leone

### Project Overview:

In December 2019 DIG were awarded the drill rig access works at DM1 and DM2 mining locations as part of the wider storm water management infrastructure system on behalf of our client Sierra Rutile limited.

The works involved the drilling and blasting of approximately 100,000m3 of residual bed rock and boulders obstructing the flow of water through storm water drainage channels at the mining locations.

The rock and boulders were generally in the lower sections and floor of the channels and accessed with a tracked Atlas Copco D55 drill rig over the full length of the drains.

A range of explosives were used depending on the type, quantity and economy of the scheduled blasts, including commercial bulk ANFO, high explosive boosters, cartridges and det cord. The isolation and distance between the boulders posed a significant challenge in blast economy and safety, resulting in many blasts scheduled on the same day, with constant exclusion zone enforcement to the surrounding areas and populations.

**Client:** Sierra Rutile Ltd.

**Duration:** 6 months

## Project: Contract Mining Services, Sierra Rutile, Sierra Leone

## Project Overview:

On 1st April 2020 DIG Mining Services commenced the first of two multi-million dollar dry mining operations contracts for Sierra Rutile Limited in Sierra Leone. Sierra Rutile is made up of a number of alluvial deposits in the Bonthe District of the country some 150kms by road South of the Capitol Freetown.

DIG were appointed the principal mining services contractor under our Sierra Rutile Ltd. over a period of 3 months.

The contract required a 14,000WMT per day open pit mining operation 24 hours a day, 7 days a week, running in conjunction with the clients mining operation to build a rainy season stockpile for re-handle during inclement weather.

To achieve this DIG deployed a fleet of 2 prime mover excavators, 2 bulldozers, 12 Articulated dump trucks, a road maintenance team, and support equipment. DIG also deployed 7 expatriate supervisors and managers to ensure our clients' targets were met.

**Client:** Sierra Rutile Limited

**Duration:** 3 Months each contract

**Project: Mokula Waste Management faciltiy, Sierra Rutile, Sierra Leone**

## Project Overview:

On 1st April 2020 DIG commenced construction of a Waste Management Facility for Sierra Rutile Limited in Sierra Leone for the clients ongoing EPA commitments in line with local regulations. Sierra Rutile is made up of a number of alluvial deposits in the Bonthe District of the country some 150kms by road South of the Capitol Freetown.

The contract required the procurement and installation of various reinforced contract foundations for hydrocarbons waste oil storage, erection of Structural steelwork, hydraulically sealed burial cells for incinerated waste with leachate detection and separation systems, storm and foul water drainage and collection tanks, multi function incinerator and waste storage and separation areas.

**Client: Sierra Rutile Limited**

**Duration: 3 Months**

**Project: Gangama North Tidal Embankments, Sierra Rutile, Sierra Leone**

## Project Overview:

On 1st August 2020 DIG commenced construction of 2 tidal embankments for Sierra Rutile Limited in Sierra Leone. Sierra Rutile is made up of a number of alluvial deposits in the Bonthe District of the country some 150kms by road South of the Capitol Freetown.

The contract required construction of 2 large tidal embankments as part of the wider storm water management system for the future mining areas. The embankments were both under tidal action on the upstream sides and part of the existing drainage infrastructure on the downstream side, construction therefore required a temporary coffer dam to isolate the footprint to enable their building.

The embankments were formed from lateritic material cut from adjacent spillways which were installed for mitigation under flood events, and valve controlled HDPE pipe outfalls were installed downstream of a decant filtration system to release water into the fragile mangrove ecosystems on the tidal side in normal operation.

Most of the work was undertaken in wet season due to mining demands in accessing the new areas which brought about its own challenges.

**Client: Sierra Rutile Limited**

**Duration: 3 Months**

**Project: Mining infrastructure, Sierra Rutile, Sierra Leone**

## Project Overview:

On 1st August 2020 DIG commenced construction of mining infrastructure projects for Sierra Rutile Limited in Sierra Leone. Sierra Rutile is made up of a number of alluvial deposits in the Bonthe District of the country some 150kms by road South of the Capitol Freetown.

The contract was split into 4 sections and was part of the wider storm water and Tailings management strategy for the future and current mining areas.

60,000m3 of redundant tailings were placed across an existing tails settlement pond, 10m wide and at a length of 500m to compartmentalise the structure and allow flexibility for the ongoing tailings deposition.

A 17,000m3, 10m wide storm water channel was excavated adjacent to CP1 slimes embankment to transition water downstream away from the structure more efficiently.

A 70,000m3 void in the existing G1 wall was filled with lateritic material borrowed from adjacent pits. The wall was previously breached and washed out to allow drainage of active mining areas upstream. The closing of the void allowed a series of compartmentalised tailings depositions to be created for the ongoing operation of the process plant.

40,000m3 of washed out material from G1 wall overlying ore was removed to spoil.

**Client: Sierra Rutile Limited**

**Duration: 3 Months**

**Project: In-Pit TSF Embankment, Sierra Rutile, Sierra Leone**

## Project Overview:

On the 10th October DIG commenced construction of an in-pit future TSF partition wall for Sierra Rutile Limited in Sierra Leone. Sierra Rutile is made up of a number of alluvial deposits in the Bonthe District of the country some 150kms by road South of the Capitol Freetown.

The embankment crossed 500ln/m of an active tailings deposition and raw water recirculation pond containing both slimes tailings and water to compartmentalise the next 2 years of plant tailings deposition options. The construction of the wall and to remove 45,000m3 of unsuitable material from the footprint, a continuous coffer dam was constructed in advance of the works over the full length.

Total fill volume was 180,000m3, 25,000m3 from the adjacent overflow spillway and the remainder from an adjacent lateritic source from borrow.

The completed embankment stood at an average of 9.5m tall, with an accessible road way of 12m width crest to crest.

**Client: Sierra Rutile Limited**

**Duration: 3 Months**

## Project: East Drain Extension, Sierra Rutile, Sierra Leone

### Project Overview:

In January 2021 DIG were awarded the Eastern Drain Extension works at DM2 mining location as part of the wider storm water management infrastructure system on behalf of our client Sierra Rutile limited.

The works involved the excavation of 250,000m3 of lateritic soil from the channel hauled and stockpiled along the channel shoulders, and a further approx. 60,000m3 of drilling and blasting residual bed rock and boulders obstructing the flow of water through the channel.

The rock and boulders were generally in the lower sections and floor of the channels and accessed with a tracked Atlas Copco D55 drill rig over the full length of the drain.

A range of explosives were used depending on the type, quantity and economy of the scheduled blasts, including commercial bulk ANFO, high explosive boosters, cartridges and det cord. The isolation and distance between the boulders posed a significant challenge in blast economy and safety.

The blasted rock was later excavated and stockpiled for use in future construction projects

**Client:** Sierra Rutile Ltd.

**Duration:** 3 months