Project Description of the Proposed Expansion of the Gotok Limestone Quarry Project of Rio Tuba Nickel Mining Corporation

1.0 PROJECT BACKGROUND

On 13 June 2019, the Rio Tuba Nickel Mining Corporation (RTNMC) was granted with separate ECC (ECC-CO-1801-0001) for its Gotok Limestone Quarry Project (**Annex 1**). Formerly, the quarry operation was part of ECC No. 0201-021-313 granted to RTNMC for the Hydrometallurgical Processing Plant (HPP) Project in 2002. In the same year, RTNMC requested for transfer of ownership and responsibility of the main components of the project to the Coral Bay Nickel Corporation (CBNC) while RTNMC will retain ownership and responsibility for the following:

1. Gotok Limestone Quarry;
2. Water Intake Dam;
3. Causeway and trestle;
4. Ore supply and pile management;
5. Siltation ponds and canals management; and
6. Road maintenance and other existing RTNMC facilities.

The ECC granted to RTNMC in 2019 includes the quarry operation with an annual extraction rate of 725,000 WMT within the 13-ha allowable area inside the MPSA No. 213-2005-IVB (**Annex 2**) and the crushing plant operation. Since the start of its operation inside the MPSA, RTNMC was only allowed to quarry within the 13.0-ha allowable area.

RTNMC started its commercial production of limestone in 2005. With the continuous limestone extraction, the operation will only last up to 2021. The two (2) industries located within the Rio Tuba Processing Export Processing Zone (RTEPZ) are CBNC and GRAYMONT (PHILIPPINES) INC. (GPI), which depend on the continuous supply of limestone from the Gotok Quarry.

To extend the mine life of the Gotok Limestone quarry, RTNMC would like to apply for the expansion of its development area within the MPSA to 46.90 ha. For this proposed expansion project, RTNMC has already applied and was granted with a Strategic Environmental Plan (SEP Reference No.) Clearance from the Palawan Council for Sustainable Development (PCSD) on May 27, 2021 (**Annex 3**).

In addition to the SEP Clearance, other documentary requirements such as the Mining Project Feasibility Study (**Annex 4**) and the copy of the Complete and Final Exploration Report duly signed by a competent person and received by the Mines and Geosciences Bureau (MGB) (**Annex 5**).

2.0 PROJECT LOCATION AND AREA

2.1 Location, Vicinity and Accessibility

The Gotok Limestone Quarry operation of RTNMC is within its 84.5-ha MPSA bounded by the coordinates shown in **Table 1**. The MPSA of RTNMC is located within the boundaries of two (2) barangays namely: Iwahig and Sandoval, Municipality of Bataraza.

RTNMC is only allowed to quarry 13.0 ha out of the 84.5-ha MPSA as indicated in its ECC. The geographical coordinates of the 13.0-ha allowable is provided in **Table 2**.

On the other hand, the crushing plant is located in the minesite area of RTNMC inside the RTEPZ. It is also within the boundary of Barangay Rio Tuba in the Municipality of Bataraza. **Table 3** shows the coordinates of the crushing plant area.

Location map and vicinity map are provided as **Figures 1** and **2**, respectively.

Table 1. PRS 92' Geographic Coordinates of MPSA No. 213-2005-IVB

Corner	Latitude	Longitude
1	8°35'50"N	117°27'45"E
2	8°36'20"N	117°27'45"E
3	8°36'20"N	117°28'15"E
4	8°35'50"N	117°28'15"E

Table 2. Geographical coordinates of 13.0-ha Quarry Limestone quarry area

Corner	Latitude	Longitude
Phase 1		
1	8°36'4.29"N	117°27'48.26"E
2	8°36'4.26"N	117°27'52.05"E
3	8°36'3.21"N	117°27'50.74"E
4	8°35'59.78"N	117°27'50.41"E
5	8°35'58.50"N	117°27'49.56"E
6	8°35'57.59"N	117°27'47.81"E
7	8°35'57.90"N	117°27'46.45"E
8	8°35'58.92"N	117°27'45.32"E
9	8°36'0.93"N	117°27'45.54"E
Phase 2		
1	8°36'17.50"N	117°27'47.30"E
2	8°36'20.00"N	117°27'48.00"E
3	8°36'20.00"N	117°27'52.76"E
4	8°36'18.44"N	117°27'54.16"E
5	8°36'16.66"N	117°27'54.32"E
6	8°36'15.06"N	117°27'54.47"E
7	8°36'13.27"N	117°27'54.92"E
8	8°36'12.11"N	117°27'56.52"E
9	8°36'10.27"N	117°27'58.32"E
10	8°36'08.09"N	117°27'56.93"E
11	8°36'08.70"N	117°27'54.06"E
12	8°36'06.12"N	117°27'53.32"E
13	8°36'06.25"N	117°27'47.86"E
14	8°36'13.10"N	117°27'46.40"E
15	8°36'15.00"N	117°27'46.01"E

Table 3. Geographical coordinates of the crushing plant area located inside the RTEPZ

Corner	Latitude	Longitude
1	8°33'33.61"N	117°25'36.36"E
2	8°33'30.34"N	117°25'36.36"E
3	8°33'30.34"N	117°25'34.93"E
4	8°33'27.44"N	117°25'34.93"E
5	8°33'27.44"N	117°25'32.14"E
6	8°33'29.00"N	117°25'32.14"E
7	8°33'29.00"N	117°25'31.27"E
8	8°33'30.23"N	117°25'31.27"E
9	8°33'30.23"N	117°25'29.65"E
10	8°33'31.98"N	117°25'29.65"E
11	8°33'31.98"N	117°25'31.13"E
12	8°33'32.64"N	117°25'32.22"E
13	8°33'32.64"N	117°25'32.95"E
14	8°33'33.61"N	117°25'32.95"E

For its proposed expansion, RTNMC applies to increase its development area to 59.90 ha including the 13.0 ha current quarry area. The new development area (46.9 ha) is bounded by the coordinates presented in **Table 4**. The site development plan is also provided in **Figure 3**.

Table 4. Geographical coordinates of the proposed development area

Corner	Latitude	Longitude
1	8°35'50"N	117°27'45"E
2	8°36'00"N	117°27'45"E
3	8°35'59.28"N	117°27'46.63"E
4	8°35'57.49"N	117°27'47.67"E
5	8°35'57.31"N	117°27'50.33"E
6	8°35'58.08"N	117°27'51.69"E
7	8°36'0.31"N	117°27'51.80"E
8	8°36'3.18"N	117°27'52.92"E
9	8°36'3.20"N	117°27'50.62"E
10	8°36'3.26"N	117°27'48.77"E
11	8°36'0.93"N	117°27'46.60"E
12	8°35'59.28"N	117°27'46.63"E
13	8°36'00"N	117°27'45.00"E
14	8°36'5.65"N	117°27'45.00"E
15	8°36'5.66"N	117°27'47.32"E
16	8°36'12.17"N	117°27'47.30"E
17	8°36'12.17"N	117°27'48.75"E
18	8°36'16.06"N	117°27'47.96"E
19	8°36'16.34"N	117°27'49.66"E
20	8°36'14.46"N	117°27'48.41"E
21	8°36'12.59"N	117°27'48.71"E
22	8°36'5.58"N	117°27'49.70"E
23	8°36'5.31"N	117°27'55.46"E
24	8°36'7.69"N	117°27'56.68"E
25	8°36'7.01"N	117°27'59.21"E
26	8°36'9.19"N	117°28'0.60"E
27	8°36'11.01"N	117°27'58.79"E
28	8°36'12.16"N	117°27'57.18"E
29	8°36'13.98"N	117°27'56.66"E
30	8°36'15.53"N	117°27'56.57"E
31	8°36'17.35"N	117°27'56.32"E
32	8°36'18.89"N	117°27'54.92"E
33	8°36'18.91"N	117°27'50.49"E
34	8°36'20.00"N	117°27'50.83"E
35	8°36'20.00"N	117°27'55.00"E
36	8°36'20.00"N	117°28'2.72"E
37	8°36'17.72"N	117°28'3.54"E
38	8°36'18.79"N	117°28'10.69"E

Corner	Latitude	Longitude
39	8°36'18.96"N	117°28'10.69"E
40	8°36'20.00"N	117°28'10.07"E
41	8°36'20.00"N	117°28'15.00"E
42	8°36'10.00"N	117°28'15.00"E
43	8°36'5.72"N	117°28'15.00"E
44	8°36'5.69"N	117°28'3.67"E
45	8°35'52.68"N	117°28'3.71"E
46	8°35'52.66"N	117°27'56.99"E
47	8°35'51.93"N	117°27'55.72"E
48	8°35'51.51"N	117°27'54.57"E
49	8°35'51.00"N	117°27'53.17"E
50	8°35'50.74"N	117°27'52.27"E
51	8°35'50.61"N	117°27'51.64"E
52	8°35'50.46"N	117°27'50.09"E
53	8°35'50.33"N	117°27'48.77"E
54	8°35'50.26"N	117°27'47.88"E
55	8°35'50.26"N	117°27'47.40"E
56	8°35'50.13"N	117°27'45.87"E

The project site is accessible from Puerto Princesa City via land and air travel. By land, commercial buses and vans are available transport service that traverse the provincial road across the Municipalities of Aborlan, Narra, Sofronio Española, and Brooke's Point before reaching Bataraza. Land travel is approximately five (5) hours. By air, RTNMC has a private airplane that flies directly to Rio Tuba from Puerto Princesa Airport.

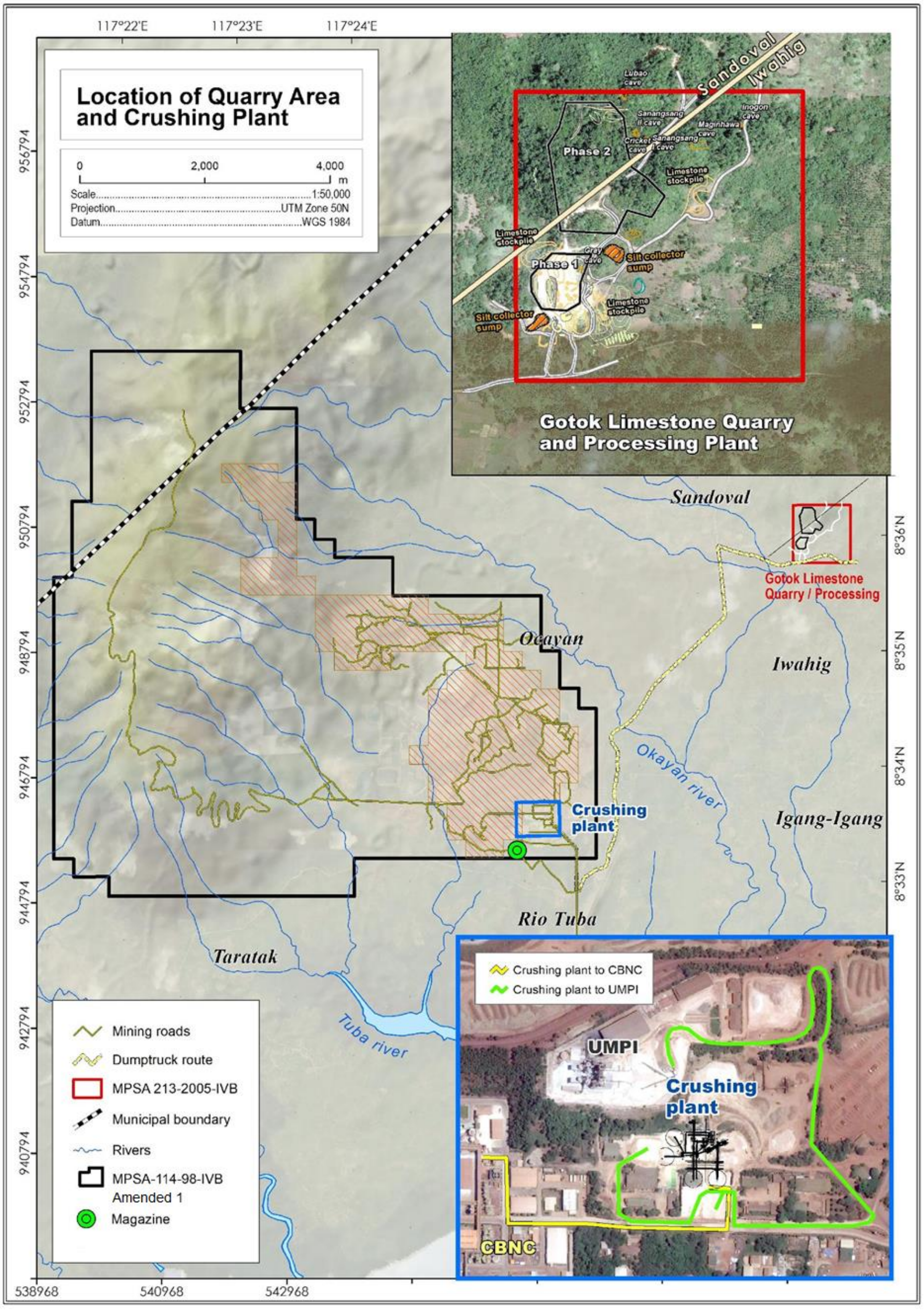


Figure 1. Location of the Gotok Limestone Quarry Project

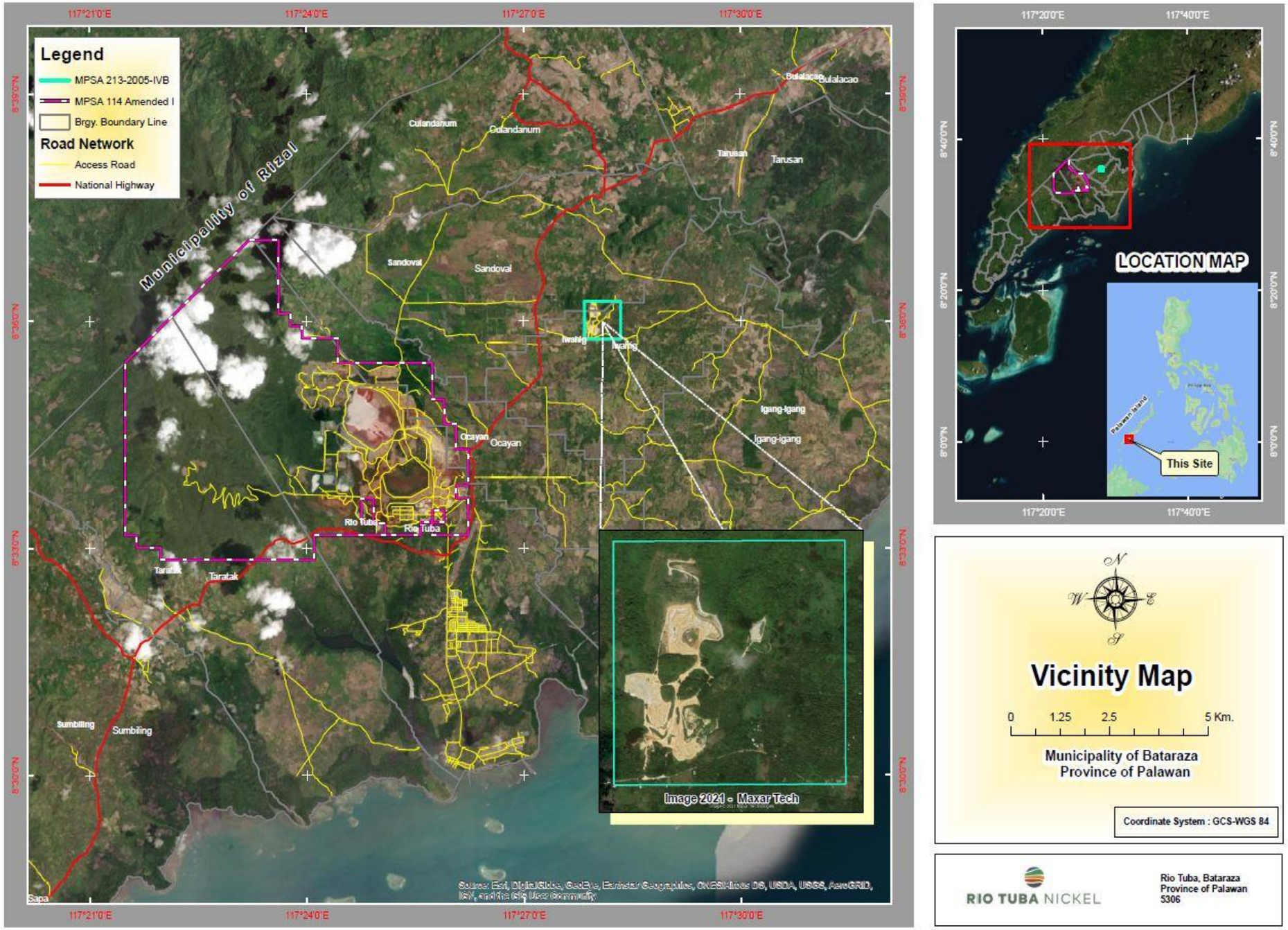
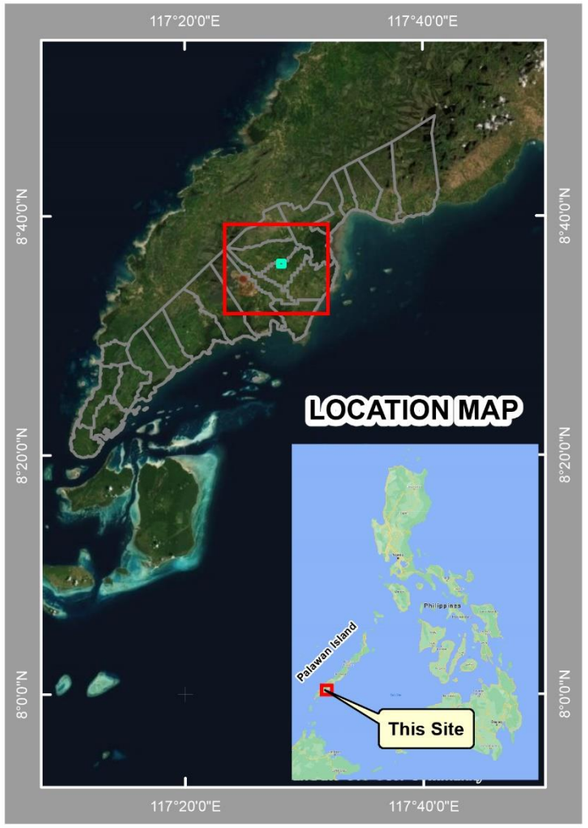
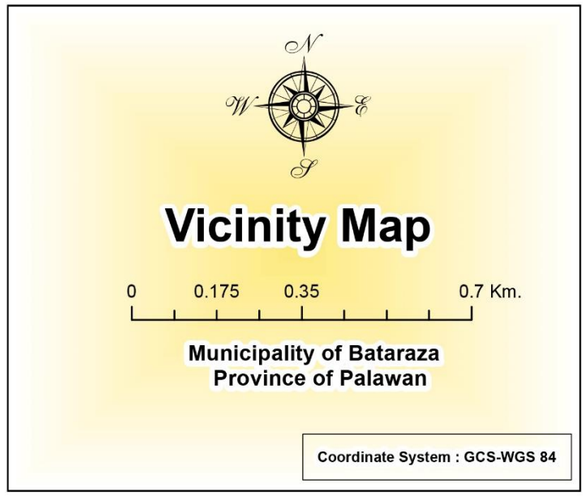


Figure 2. Vicinity map of the Gotok Limestone Quarry Project





RIO TUBA NICKEL

Rio Tuba, Bataraza
Province of Palawan
5306

Figure 3. Vicinity map of the Gotok Limestone Quarry Area

2.2 Delineation of Impact Areas

There are three (3) barangays that serve as the host barangays for the Gotok Limestone Quarry Project. The quarry operation is within the boundaries of Barangays Iwahig and Sandoval as shown in **Figure 1** while the crushing plant is within Barangay Rio Tuba. These three (3) barangays are considered as direct impact areas.

Figure 2 shows the vicinity map of the Gotok Limestone Quarry and the Crushing plant operation. In **Figure 3**, communities and school near the quarry area are shown.

3.0 PROJECT RATIONALE

The ECC covering the operation of the Gotok Limestone Quarry was approved in 2003. Consequently in 2005, RTNMC started its commercial production of limestone. RTNMC currently supplies the limestone requirement of CBNC and GPI located within the RTEPZ.

CBNC operates the HPP while GPI produces lime slurry which is being supplied to CBNC. The HPP refines raw limonitic nickel ore into an intermediate downstream product of mixed nickel sulfide. As part of the mitigating measures of the HPP, CBNC adds crushed limestone from RTNMC and lime slurry from GPI to the wastewater and tailings to increase from a pH 6 to pH 8 to 8.5.

In addition, the operation of the Gotok Quarry has brought positive impacts to its impact communities. These include the following:

Continuous direct employment of locals
The current operation of the limestone quarry and the crushing plant employs around 170 residents of the host barangays. With the proposed expansion of quarry area, the employment of these residents will be secured for another 10 or more years.

Continuous implementation of the Social Development and Management Program (SDMP) and continuous support from the Corporate Social Responsibility (CSR) Fund
The host barangays of Iwahig, Sandoval, and Rio Tuba are beneficiaries of the programs/projects funded under the SDMP since it started its operation. With the proposed expansion of the quarry area, not only the life of the quarry will be extended but also the benefits from the SDMP and CSR of RTNMC that the impact barangays will receive.

Continuous contribution to the economic activity in the area
To support its operation, RTNMC primarily sourced its materials and supplies from local enterprises, whenever available. By extending the life of the quarry to at least 10 years, the local communities will continue to benefit from the company.

Payment of various taxes, permit fees to the government
The same with the other benefits previously stated, the local government of Bataraza shall continue to receive revenues from various types such as income taxes, excise taxes, withholding taxes, and property taxes, among others.

4.0 PROJECT ALTERNATIVES

RTNMC has considered different options prior to its plan to apply for the amendment of its ECC. These options are presented in **Table 5**.

Table 5. Project alternatives considered by RTNMC

Aspect	Standard Criteria	Options Considered	Assessment
Quarry Area	● Remaining mineral resources ● Cut-off grade ● Profitability	● To extend the quarry area beyond the 13.0 ha but still within MPSA No. 213-2005-IVB ● Do nothing	With the remaining mineral resources within MPSA No. 213-2005-IVB, the proposed expansion of the quarry area is estimated to extend the mine life up to more than 10 years. By doing nothing, Gotok Limestone Quarry only has up to year 2021 remaining in its life. End of the mine life means end of the benefits being received by the local communities thru royalty, direct employment, SDMP, and generation of taxes. Also, CBNC and GPI will have to resort to finding another supplier that will be able to satisfy their limestone requirement in terms of size, grade, and volume.
Power and water requirement	● Availability ● Total power and water requirement ● Location of power and water source	Continue using its existing power and water sources	RTNMC will still use its current source of power: one (1) 700 kW Diesel Generator and two (2) 350 kW Diesel Generator. RTNMC will continue to source its water requirement for the washing plant and road watering from the following: • Water wells 2 and 3 • Umawi Stream • Mine pit and siltation ponds • Tagpisa Siltation pond (back-up source) Tagpisa Siltation pond (back-up source)
Pollution control measures		Extend its dust control measures and install silt control structures at the proposed quarry area	RTNMC shall employ water spraying activities along hauling roads and proposed new access roads. To control silt, RTNMC shall develop a drainage plan and determine locations where silt collector sumps should be constructed.

5.0 PROJECT COMPONENTS

5.1 Current Operation

The current operation of RTNMC includes the quarry operation at the Gotok Limestone quarry area and the crushing plant operation at the minesite. All of the existing facilities of RTNMC for the Gotok Limestone operation and the corresponding area allotment are presented in **Table 6**.

Table 6. Summary of the area allotment of the current facilities of the Gotok Limestone Quarry Project

Facilities	Area (ha)
A. Within MPSA of Quarry (213-2005-IVB)	
Approved quarry area	13.00
Ancillary facilities	0.90
Access road	0.15
Sub-total (A)	**14.05**
B. Within MPSA 114-98-IV Amended 1	
Crushing Plant Facilities	2.526
Product Handling Facilities, Transport (portion of Macadam road)	0.770
Storage area of explosives	0.500
Sub-total (B)	**3.800**
C. Common facilities with RTNMC Nickel Operations	
Townsite infrastructures	5.26
Hospital	0.09
Airport facilities	20.00
Plantsite Facilities	1.10
Sub-total (D)	**26.45**
D. Hauling road (Portion of macadam road, barangay and provincial roads)	**6.80**
Total Project Area	**51.10**

As seen in **Table 6**, the current project has a total area of 51.10 ha. Out of the total area, only 14.05 ha are within the MPSA No. 213-2005-IVB and only 13.0 ha are approved for quarry activities.

Other facilities of the project such as the crushing plant and the storage of explosives are located at the minesite area of RTNMC. The location of the crushing plant is proximate to the CBNC HPP and the GPI Limemilk Plant, which is advantageous in terms of product transport.

The location of these existing facilities is presented in the site development map projected as **Figure 4**.

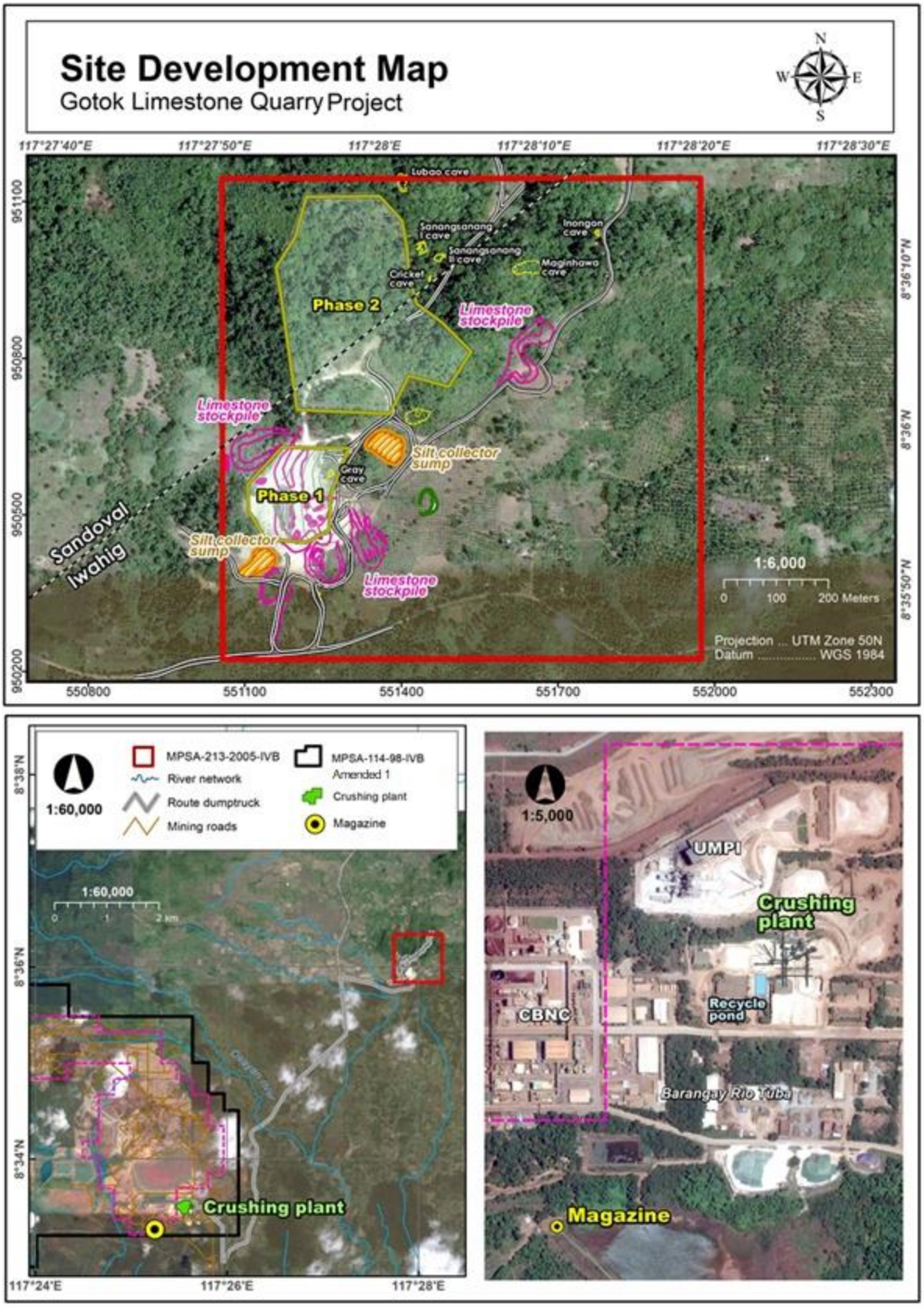


Figure 4. Site Development Map of the current Gotok Limestone Quarry Project operation

5.2 Proposed Operation

To extend the minelife of the Gotok Limestone Quarry, RTNMC is proposing to expand its development area to 59.90 ha. The proposed new area of 46.9 ha is still within its current MPSA as seen in the proposed site development plan (**Figure 5**).

With the proposed quarry area, access roads and structures for drainage shall also be developed. The proposed additional areas are provided in **Table 7**. To mitigate the impacts of the proposed new area, RTNMC shall delineate and maintain buffer zone areas as seen in **Figure 6**.

By applying for the expansion of the area, the RTNMC's operation is projected to extend up to 2033 as seen in the proposed long-range plan (**Figure 7**).

Table 7. Summary of the area allotment for the proposed Gotok Limestone Quarry Expansion Project

Facilities	Area (ha)
A. Within MPSA of Quarry (213-2005-IVB)	
A1. Existing	
Approved quarry area	13.000
Ancillary facilities (silt collector sumps and stockpile area)	0.900
Access road	0.150
A2. Proposed	
New quarry area	46.900
Access road	2.450
Ancillary facilities (silt collector sumps and stockpile area)	6.450
Sub-total (A)	**69.850**
B. Within MPSA-114-98-IV Amended 1	
Crushing Plant Facilities	2.526
Product Handling Facilities, Transport (portion of Macadam road)	0.770
Storage area of explosives	0.500
Sub-total (B)	**3.796**
C. Common facilities with RTNMC Nickel Operations	
Townsite infrastructures	5.260
Hospital	0.090
Airport facilities	20.000
Plantsite Facilities	1.100
Sub-total (C)	**26.450**
D. Hauling road (Portion of macadam road, barangay and provincial roads)	**6.800**
TOTAL	**106.896**

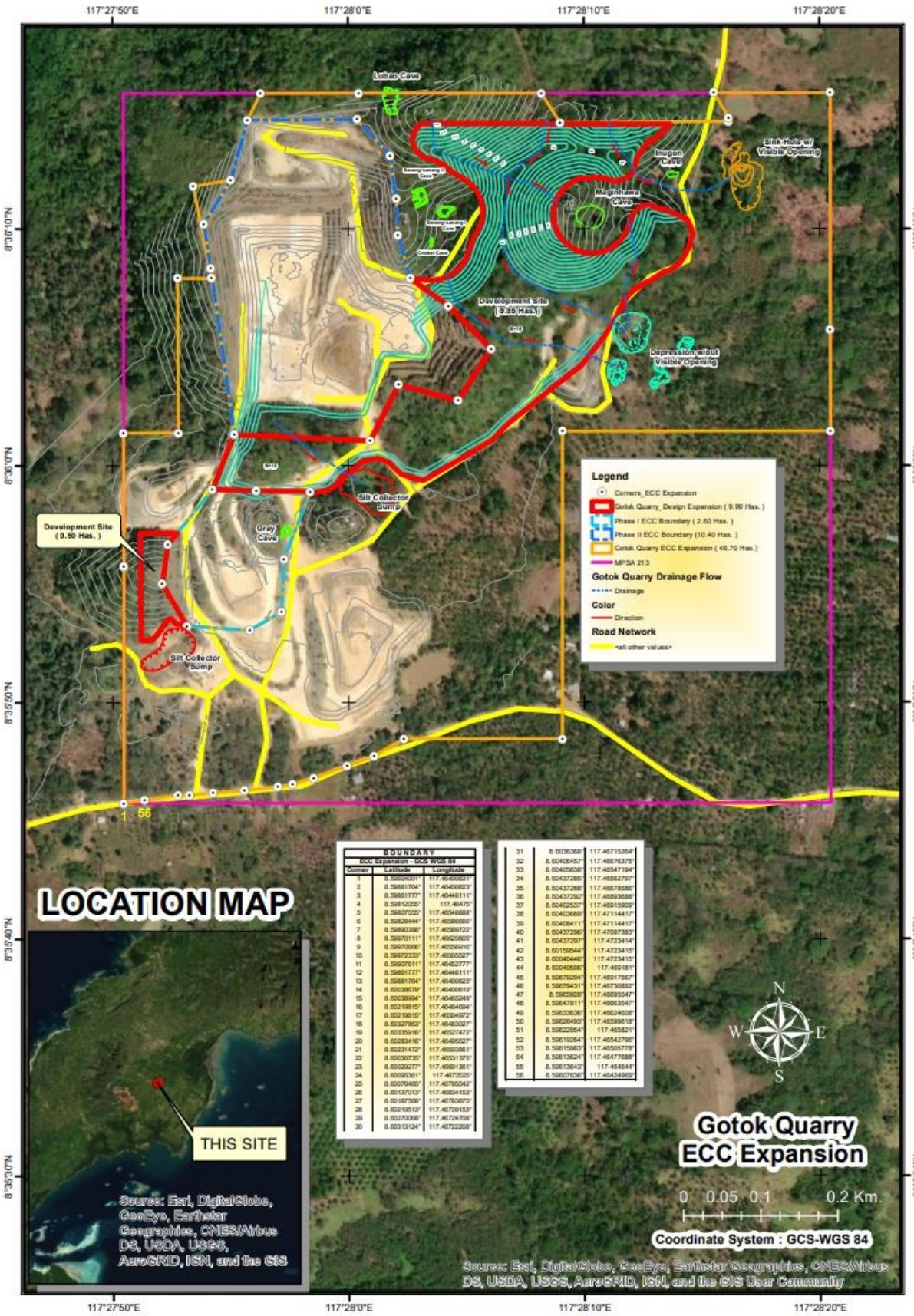


Figure 5. Proposed site development plan of the Gotok Limestone Quarry Expansion Project

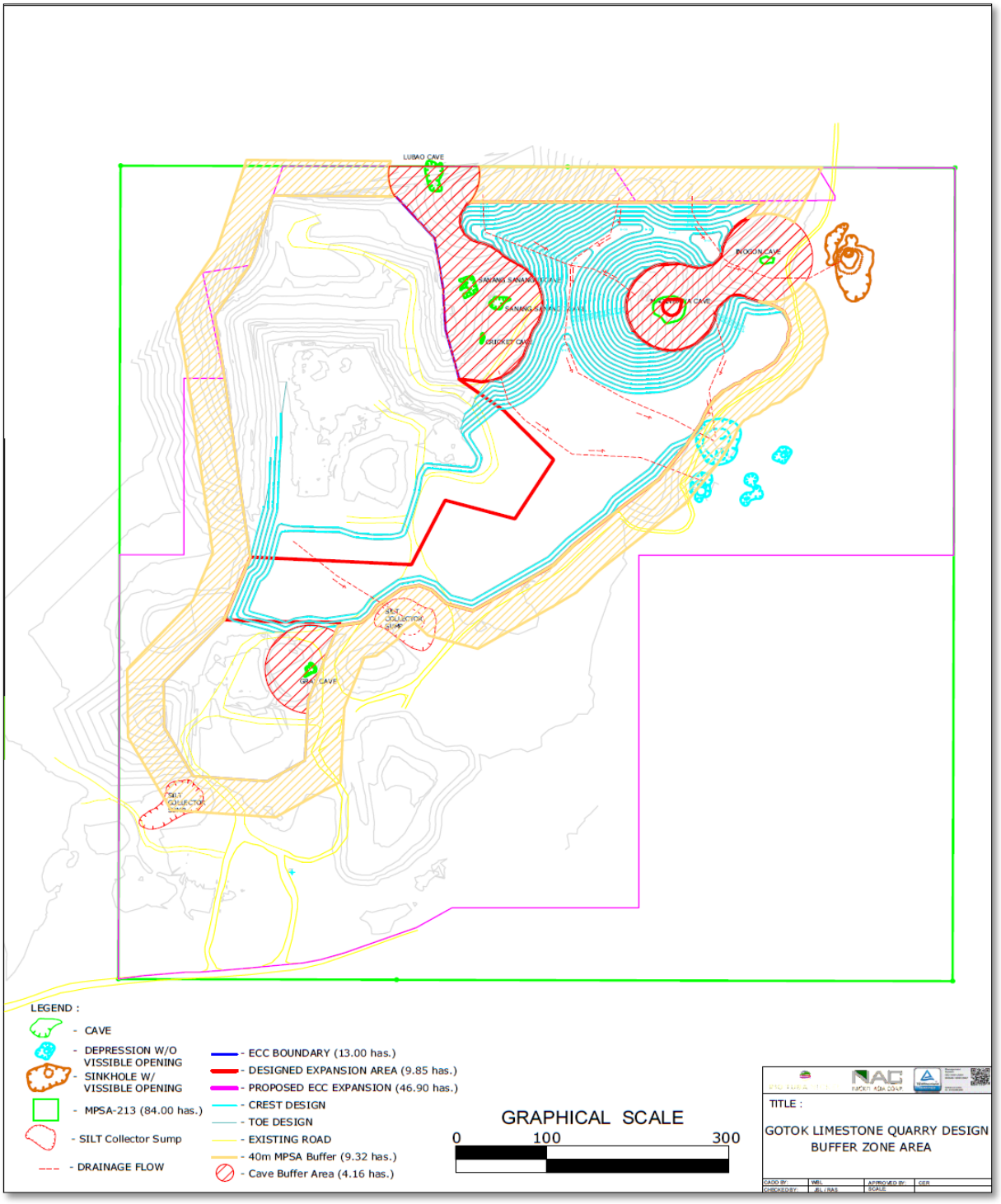


Figure 6. Proposed Buffer zone area of the Gotok Limestone Quarry Expansion Project

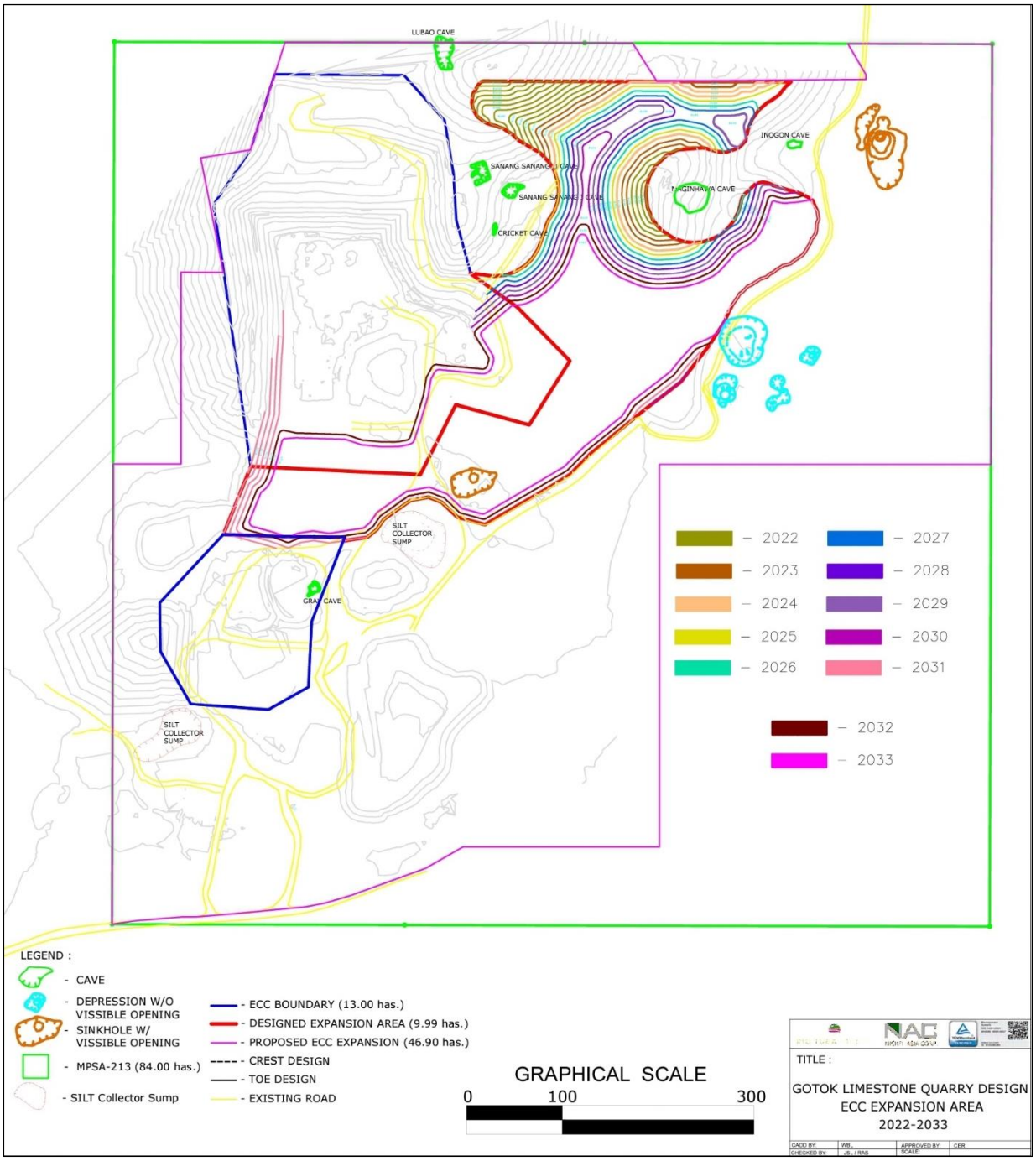


Figure 7. Projected Mining Schedule of the Gotok Limestone Quarry Expansion Project, 2021

Given the long-range plan from 2022 to 2033, **Table 8** provides the projected annual supply and demand.

Table 8. Projected Limestone supply and demand

Year	Quarrying (WMT)	Crushing (WMT)
2022	725,000	725,000
2023	725,000	725,000
2024	725,000	725,000
2025	725,000	725,000
2026	725,000	725,000
2027	725,000	725,000
2028	725,000	725,000
2029	725,000	725,000
2030	725,000	725,000
2031	725,000	725,000
2032	725,000	725,000
2033	600,000	600,000

Source: RTNMC, 2021

As seen in **Table 8**, the extraction rate shall be maintained same as the ECC allowed rate of 725,000 WMT. **Table 9** shows the number required for every type of equipment.

Table 9. Vehicles and heavy equipment requirement for the proposed expansion quarry operation

Equipment	Existing (EPRMP)	Proposed (Feasib)
PRODUCTION EQUIPMENT		
A. Dump trucks	21 units (VOLVO/FM 64R, 6x4)	21 units (VOLVO/FM 64R, 6x4)
B. Wheel Loader	10 units	8 units
C. TX-Loader	2 units	2 units
D. Bulldozers	2 units	2 unit
DRILLS		
Air Track Drill Machine	4 units	4 units
OTHER EQUIPMENT		
A. Fuel Lorry	1 unit	1 unit
B. Maintenance Truck	1 unit	1 unit
C. Road Grader	1 unit	1 unit
D. Truck Trailer	1 unit	1 unit
E. Air Compressor	2 unit	2 unit

5.3 Product handling Facilities, Transport

No changes shall be made in the current hauling route of RTNMC. However, access roads shall be constructed for the proposed new quarry areas. There will be a total of 21 dump trucks traversing the hauling route every hour.

5.4 Pollution Control Devices

Gotok Quarry Area

Dust control measures

Current practice of RTNMC is to conduct water spraying along the hauling and access roads. The company employ local laborers to do this activity as see in **Plate 1**. For the portion of haul roads that are unpaved, RTNMC enforces a speed limit of 30kph to minimize dust generation.

Siltation

In addition, silt from bare areas may be carried by runoff water during heavy downpour. The existing quarry area of RTNMC has two silt collector sumps located at the downstream portion to prevent siltation of nearby waterbodies (**Figure 8**).

For the proposed new quarry area, RTNMC shall develop a drainage plan to direct the run-off water to the two existing sumps.

Figure 8. Strategic location of the silt collector sumps

Plate 1. Water spraying of the hauling road

Domestic Waste Management

As part of its solid waste management, RTNMC has designated garbage bins within the buildings and waste disposal areas around the site. These bins are regularly cleaned and emptied. On the other hand, hazardous wastes such as busted lamps, metal craps and other hazardous materials are collected and placed in a designated area prior to treatment/disposal. These wastes are properly recorded and labelled.

Crushing Plant Area

Dust Control Measures

At the crushing plant area, various equipment are installed to control dust and minimize its dispersion. These equipment are the following:

- Mist sprayer along the product discharge section of the conveyor belt system;
- Tarpaulin cover for open spaces and stockpiles;
- Cover for conveyor belt system to prevent prevailing wind or momentary gustiness from blowing dust particles from the crushed limestone;
- Wind breaker made of tarpaulin installed along path of prevailing wind direction; and
- Regular watering at the peripheries and immediate vicinity of the crushing plant to sustainably suppress dust.

RTNMC also enforces a speed limit of 30 kph for all service vehicles and dump trucks using the plant access roads.

Silt Control Measures

The crushing plant requires the use of water in its operation and therefore generates wastewater that is directed to the water settling/recycling pond. The pond has a capacity of 1,200 m^3 and installed with catchbasin at its entry/inlet for initial filtering and regular desilting. Collected silt from the pond is also being sold to CBNC.

In case of overflow, the pond discharges to the Upper Kinurong Pond and then flows to Lower Kinurong Pond before finally discharging to Rio Tuba River.

Plate 2. Water settling/recycling pond

Magazine Area

Health and Safety Measures

The magazine buildings of RTNMC are located near Upper Kinurong Siltation pond. The area is secured by double perimeter fences measuring about 8 feet in height. In between magazines, berms were installed as part of the compliance with the recommendation included in the Risk Associated with Accidental Explosion of Explosives Magazine and its Mitigation study conducted by Conex.

Four out of five (5) magazines are made fully of reinforced concrete, protected by steel doors and hardened double locks while one (1) magazine is made up of two (2) joined container-type magazines located in one perimeter fence.

Plate 3. Constructed berm at the Magazine area

6.0 PROCESS/TECHNOLOGY

6.1 Quarrying Operation

6.1.1 Clearing and Grubbing

Prior to any clearing/activities, RTNMC shall secure a cutting permit from concerned government agencies that is duly endorsed by the PSDC as compliance to one of the conditions of the SEP Clearance.

After securing a cutting permit, the more sizeable and thicker trees will be cut down by logging. Inventories shall be made and properly reported to the DENR. With the use of bulldozers and backhoes, the remaining stunted and unusable growth as well as the topsoil will be loaded unto trucks and transported to stockpiles areas where it will be stored for later use during rehabilitation.

6.1.2 Drilling and Blasting Operation

The Gotok Limestone Quarry Project Flowchart is presented in **Figure 9**. Same with the existing operation of RTNMC, drilling and blasting activities will be done to produce the required fragmentation of 16" size products for feed to the Jaw Crusher with an opening of 20 inches.

According to RTNMC's 2021 Feasibility Study, the Proposed Expansion of the Gotok Limestone Quarry Project will follow 10-year production plan with a 15-masl final elevation. **Figure 10** shows the final pit design.

For drilling, a TH-CD-650 Hydraulic Crawler Drill machine equipped with a compressor shall be used. The drill hole diameter is 3.0 inches or 76 mm. To produce 19,200 DMT, 300 holes need to be drilled, at 64 DMT per hole using a 0.2 to 0.4 kg/m^3 power factor.

The blasting operation shall follow the following specifications:

- Staggered echelon pattern
- Distance spacing of 3.0m apart.
- Design burden of is 3m.
- Drill hole diameter is 3.0 inches (76mm).
- Bench height is 5m.
- Blast hole depth is 5.5m, inclusive of a 0.5 m sub-drill to prevent hard toes.
- Charging of the 5.5 m drill hole consists of a primer using 1kg 50mm dynamite, a column charge of Ammonium Nitrate Fuel Oil (ANFO), and 25mm limestone for stemming.

Figure 11 shows the cross-sectional details of the drilling and blasting patterns.

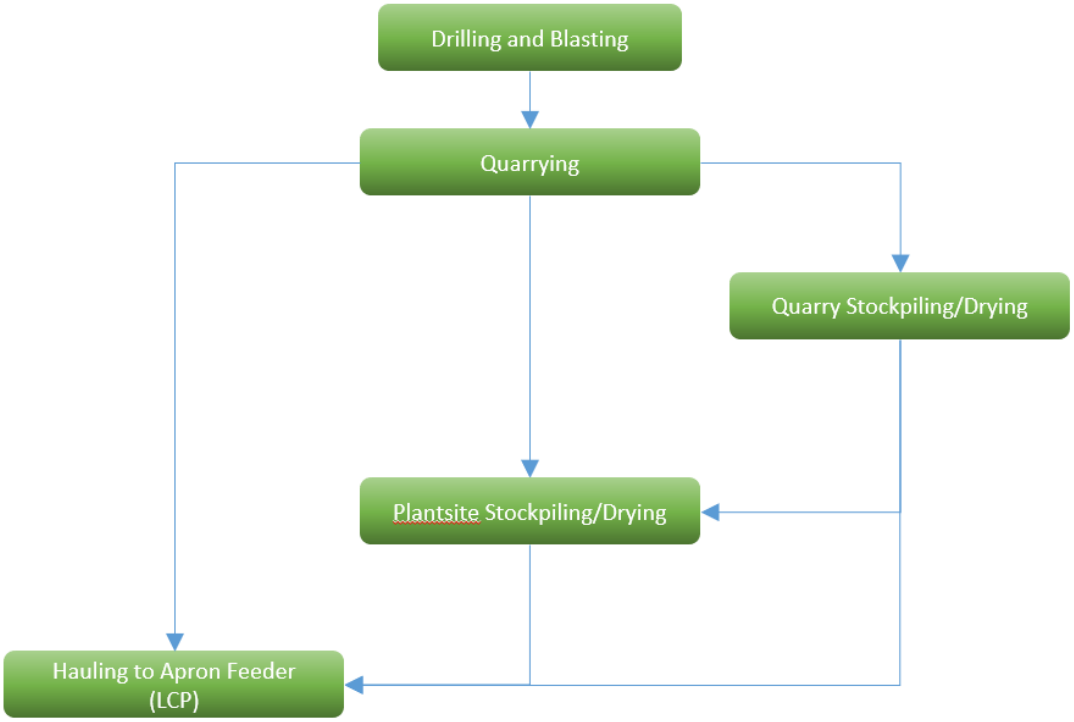


Figure 9. Gotok Limestone Quarry Project Flowchart (Source: Feasibility Study)

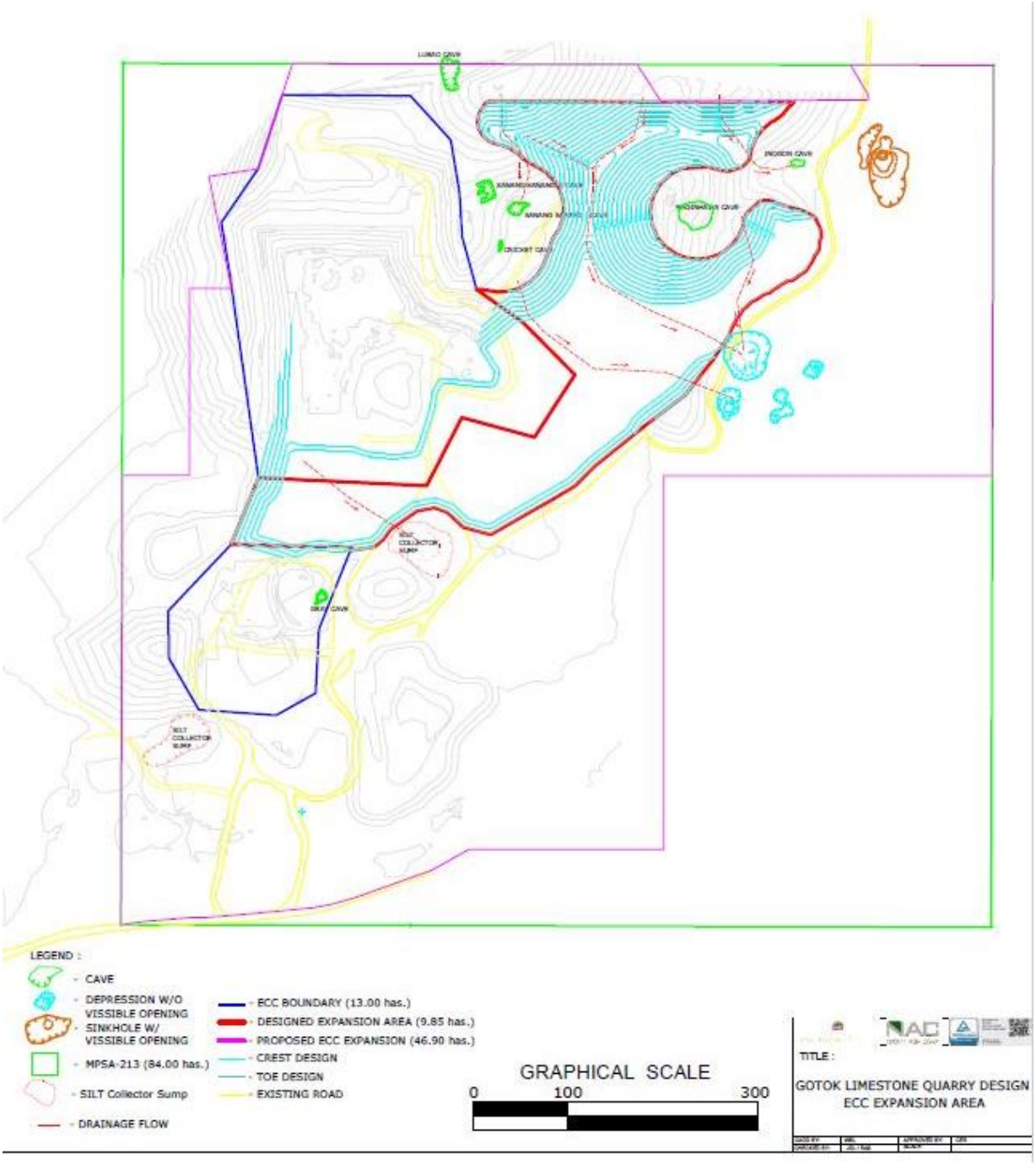


Figure 10. Proposed Gotok Limestone Quarry Expansion Project final pit design

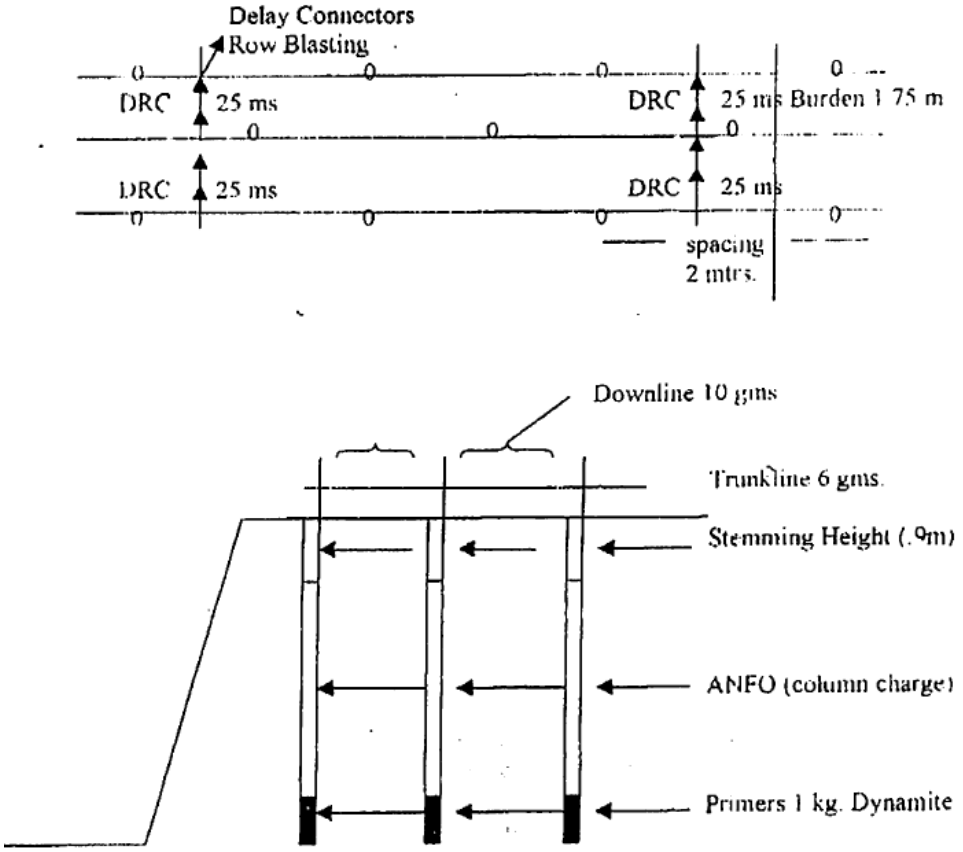


Figure 11. Cross-sectional details of the drilling and blasting patterns. (Source: Feasibility Study)

6.1.3 Stockpiling/Drying

The broken materials from blasting will be collected using backhoe excavator and loaded into dump trucks. As seen in **Figure 12**, the dump trucks will haul the limestone onto steep slopes and dump the ore over the edge with the assistance of a safety spotter. By doing this, the resulting stockpile will have a rougher, coarser particle size near the bottom, and finer materials near the top.

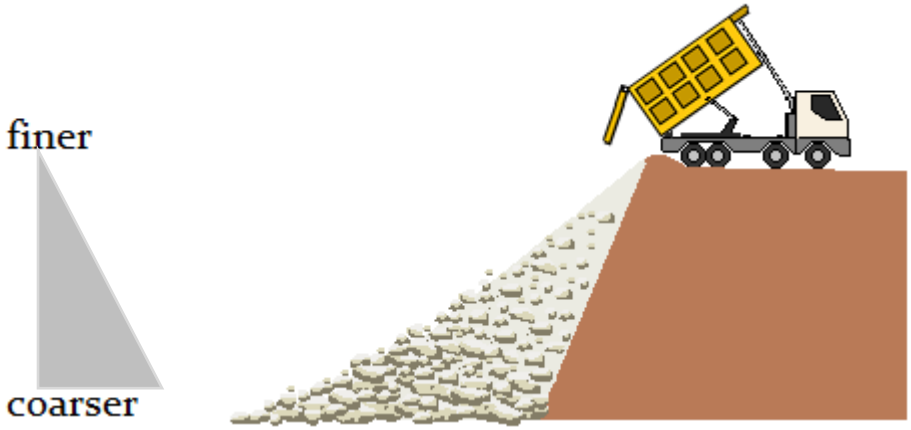


Figure 12. Size distribution due to gravity separation. (Source: Feasibility Study)

6.1.4 Loading and Transportation

As mentioned, broken materials will be loaded to a 10-MT dump truck using a wheel loader. From the quarry area, it will be hauled and dumped to the stockpile area located at the RTNMC Mine Site and adjacent to the Crushing Plant.

6.2 Crushing Plant Operation

6.2.1 Crushing

Once the material is fed into a receiving hopper/apron feeder of the Crushing Plant using a wheel loader or thru direct dumping by dump trucks, it will undergo the process presented in **Figure 13**. Afterwards, the crushed limestone will be temporarily stockpiled at a designated area prior to hauling to CBNC and GPI plant site.

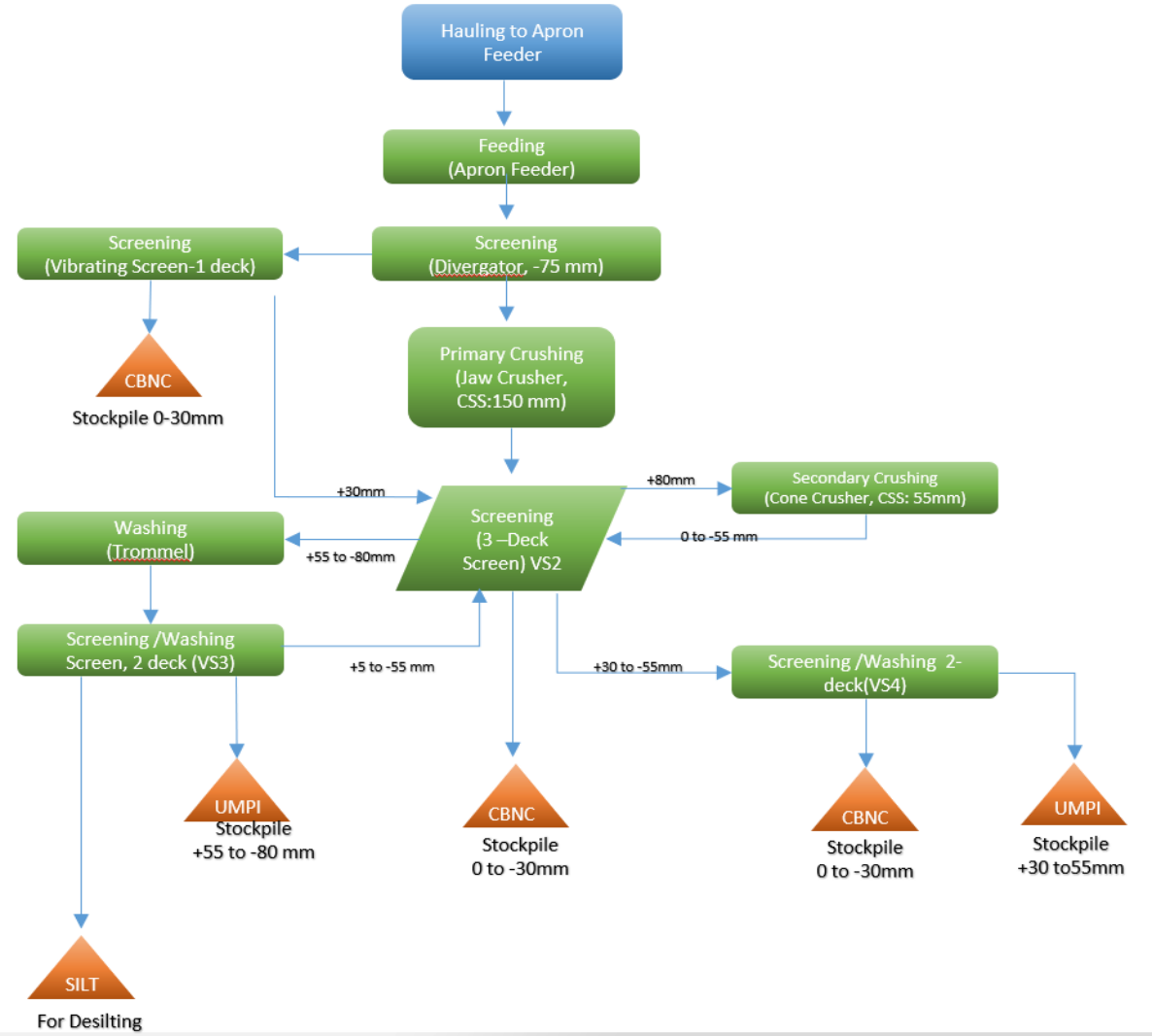


Figure 13. Limestone Crushing Plant material flow diagram

6.3 Power Supply and Requirements

Currently, RTNMC utilizes one (1) unit of 700 kW and two (2) units of 350 kW diesel generator sets as its source of power. Majority of its power requirement comes from the operation of its crushing plant. With the proposed expansion of area in the Gotok quarry, RTNMC will not require additional electric power as seen in **Table 10**.

Table 10. Crushing plant power requirement

Particulars	Power Requirement (kW-hr)	
	Existing Operation	After Amendment
Crushing Plant Requirement	1,670,438	same
Total	**1,670,438**	

6.4 Fuel Requirements

As presented in **Table 9**, the operation will require the use of several vehicles and heavy equipment to perform activities such as drilling, loading, hauling and stockpiling. **Table 11** show RTNMC's fuel requirement.

Table 11. Fuel requirements for the current and proposed operation

Equipment	Existing		Proposed	
	Quantity (No. of units)	Annual Fuel Requirement (Liters)	Quantity (No. of units)	Annual Fuel Requirement (Liters)*
Production Equipment				
Dump truck	21	530,000	21	590,000
Wheel Loader	10	569,000	8	450,000
Bulldozer	2	58,600	2	70,000
TX-Loader	2	239,200	2	160,000
Drills				
Air Track Drill Machine	4	96,000	4	96,000
Other Equipment				
Fuel Lorry	1	2,000	1	2,000
Maintenance Truck	1	3,000	1	3,000
Road Grader	1	17,400	1	18,000
Truck Trailer	1	500	1	500
Air Compressor	2	48,000	2	48,000
Service Vehicle				
Service Jeep	1	2,400	1	2,500
Total	**46**	**1,566,100**	**44**	**1,440,000**

*Note: *Proposed Annual Fuel requirement based on estimated engine hours of equipment*

6.5 Water Supply and Requirements

The current operation of the Gotok Limestone quarry only requires the use of water for its crushing plant operation, road watering/spraying activities and domestic needs.

Table 12 provides the current water consumption and the estimated increase in volume once the proposed project is implemented.

Table 12. Daily water supply and requirement

Use of water	Source of water		Capacity	Current water requirement	Proposed Water requirement	Issued Permits from NWRB
Manpower domestic water requirement (quarry area and crushing plant)	Water well no. 2*		2,059.2 m^3/day	106.5 m^3/day	Same	Water Permit Application 8617; 7.26 L/s
	Water well no. 3		1,944.0 m^3/day			Water Permit Application 8618; 16.11 L/s
Road Watering	Inside Quarry Area (Water truck)	Ocayan River		14 m^3/day (for 20 days per month during dry months and for 10 days per month during wet months)	Same	WP no. 159: 500 L/s
		Mine pit and Siltation ponds				WP no. 159: 500lps
		Water well no. 2 *	2,059.2 m^3/day			Water Permit Application 8617; 7.26 L/s
		Water well no. 3*	1,944.0 m^3/day			Water Permit Application 8618; 16.11 L/s
	Barangay road (3 improvised water tractor)	Oning spring and Barangay Water System***	3 m^3/day	28 m^3/day for (for 25 days per month)	Same	
Modified Crushing Plant	Water well no. 2 *		2,059.2 m^3/day	1,044 m^3/day	Same	Water Permit Application 8617; 7.26 L/s
	Water well no. 3*		1,944.0 m^3/day			Water Permit Application 8618; 16.11 L/s
	Tagpisa siltation pond **		203,588 m^3			WP no. 159: 500 L/s

*Notes: * Existing water well source of domestic water for RTN plant site*
*** Siltation pond will serve as back-up source*
****Currently, the Contractor of RTNMC for road watering is sourcing water from the Barangay Water System. RTNMC shall coordinate with the Contractor regarding the other source of water to allow the exclusive use of the Barangay Water System for domestic purposes of local residents.*

6.6 Waste and Wastewater Generated

The current operation of the Gotok Limestone Quarry and crushing plant generates solid waste amounting to 9 m^3 per quarter[1]. The operation also generates the hazardous wastes such as used oil, used batteries, and busted fluorescent lamps as seem in **Table 13**.

[1] Based on 2020 Self-Monitoring Reports

Table 13. Hazardous wastes generation[2]

HW No.	HW nature	Quantity per quarter (tons)
I101	Used Oil	0.2
I104	Oil Contaminated	0.025
D406	Used Batteries	0.04125
D407	Busted Fluorescent Lamps/Bulbs	0.0015

In terms of wastewater, RTNMC generates 1,044 m^3/day from the operation of its crushing plant. The wastewater is contained in a settling/recycling pond wherein, clear water will be recycled and only the overflow will be discharged into the upper Kinurong.

7.0 PROJECT SIZE

7.1 Mineral Resource Estimate

Table 14 shows the estimated limestone resources within the MPSA of RTNMC which was lifted from the Feasibility Study conducted for this proposed expansion project. The table presents resource classified as measured, indicated, and inferred resource following the PMRC standard. Based on the table, the Gotok Limestone Quarry has a total resource of 24.3 WMT with an average grade of 94.49 % $CaCO_3$ for the measured and indicated category.

Table 14. Gotok limestone quarry resource estimates as of end 2019

Resource Categories	Volume (m^3)	Tonnage (WMT)	Grade (%$CaCO_3$)
Measured	4,087,789	9,729,000	94.45
Indicated	6,133,390	14,597,000	94.51
TOTAL	**10,221,179**	**24,326,000**	**94.49**
Inferred	5,215,260	12,413,000	94.31

Note: The estimated limestone resources has been rounded off to the nearest 1,000 tons.

7.2 Material Balance

Figure 14 shows that for the proposed operation, a 725,000 WMT annual limestone extraction will produce a topsoil/overburden of 6,000 WMT. The maximum projected annual production rate is at 725,000WMT.

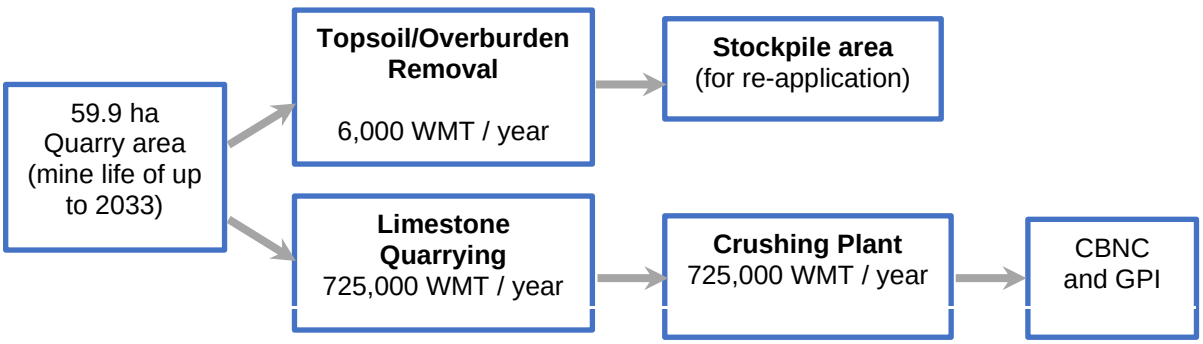


Figure 14. Material balance of the Proposed Expansion of the Gotok Limestone Quarry Project

Table 15 describes the components of current quarry operations and the proposed expansion.

Table 15. Comparative components of quarry and crushing plant operations

Component	Existing Operation	Proposed Expansion
MPSA	213-2005-IVB	SAME

[2] Based on 2020 Self-Monitoring Reports

Component	Existing Operation	Proposed Expansion
ECC	ECC-CO-1801-0001	Amended ECC
Area covered in the MPSA	**84.5 hectares**	**84.5 hectares**
Total project area for the quarry operation (within the MPSA)	**14.05 hectares**	**69.85 hectares**
ECC Approved quarry area within the MPSA	13.0 hectares	59.9 hectares
Ancillary facilities within the MPSA	0.9 hectares	7.35 hectares
Access roads	0.15 hectares	2.6 hectares
Total project area for the crushing plant operation (within MPSA-114-98-IV Amended 1)	**3.796 hectares**	**SAME**
Infrastructures	1.895 hectares	SAME
Stockpile area	0.631 hectares	SAME
Access road	0.770 hectares	SAME
Storage area of explosives	0.500	SAME
Total project area outside any MPSA (hauling road)	**6.80**	**SAME**
Common facilities with RTNMC Nickel Operations	26.45	SAME
Annual Extraction Rate	725,000 WMT per year	725,000 WMT per year
Projected annual production rate	725,000 WMT per year	725,000 WMT per year
Mine life	Up to 2021	Up to 2033
Method of ore extraction	conventional drilling and blasting technique	SAME
Hauling road	10 km	SAME
Crushing plant		
Components	● Jaw Crusher - One (1) unit, Terex Jacques, JW 42, 1070mm x 760mm ● 125mm CSS/ discharge ● Roll Crusher- One (1) unit Cone Crusher, Terex- Jaques, TC100 ● Vibrating Screen - One (1) unit, Triple Deck, 6' x 16", 80mm top, 55mm middle and 30mm bottom; One (1) unit, NFS 1230, 1200 mm X 3000mm w/ 30mm opening, single Deck; One (1) unit Double Deck Horizontal Screen, 5' x 15', 55mm top and 3mm bottom deck ● Feeder - One (1) unit Apron Feeder 10-420, 1200mm width x 6.meters length ● Belt conveyor - Eight (8) units, 900 mm Conveyor Belt Width; Sixteen (16) units, 600 mm Conveyor Belt Width ● Cone crusher ● Trommel ● Desander Unit ● Water System ● Sumps	SAME
Size Out put	● 0-30mm ● 30-55 mm ● 55- 80mm	SAME
Maximum Capacity	250 TPH	SAME
Water Source	● Water wells 2 and 3 ● Umawi Stream ● Mine pit and siltation ponds Tagpisa Siltation pond (back-up source)	SAME
Water requirement	1,044 m^3/day (washing plant) 16.5 m^3/day (road watering)	SAME

Component	Existing Operation	Proposed Expansion
	106.5 m^3/day (domestic water requirement)	
Power Source	One (1) 700 kW Diesel Generator Two (2) 350 kW Diesel Generator	SAME
Power requirement	1,670,438 kW-hr	SAME
Fuel requirement	1,566,100 liters	1,440,000
Manpower requirement	213 (supervisor, operator, driver, utilities and security guards)	170 (RTNMC and its contractors)
Project Cost	PhP 376,906,207	Php 410,000,000

8.0 DEVELOPMENT PLAN, DESCRIPTION OF PROJECT PHASES AND CORRESPONDING TIMEFRAMES

RTNMC shall employ the same type of operation for its new proposed quarry areas as its current operation which involves an open pit bench mining and which utilizes conventional drilling and blasting techniques. **Figure 13** depicts the development plan/schedule of the expansion process. The following sections outline the project phases.

8.1 Pre-construction Phase

This phase shall include finalization of the mining plans and acquisition of necessary permits from concerned government agencies including the ECC. RTNMC has already secured its SEP Clearance from PCSD and per its conditions, the company shall secure a Tree Cutting Permit prior to construction at the quarry area.

8.2 Construction Phase

The construction phase shall include clearing and grubbing activities as well as tree and wildlife conservation activities. In compliance with one of the conditions of the SEP Clearance, RTNMC shall conduct balling/replanting, cloning, gene banking and other means of conservation of endemically rare or ecologically endangered wildlife species within the proposed project area which include among others: Molave, Antipolo, Amugis, Malamanga, Malacafe, Binunga and Bago tree. In addition, the caves within the MPSA shall be protected and excluded from any cutting and quarry activities.

8.3 Operation Phase

As mentioned, the proposed Gotok Limestone Quarry project shall include operations of the quarry area and crushing plant. In the quarry area, activities will include preparation, drilling, blasting, stockpiling, loading, and hauling.

With the proposed new area, environmental impacts such as increase in the waste and dust generation and siltation/sedimentation. Current pollution control measures being implemented by RTNMC which will also be utilized for the proposed new area are presented in *Section 5.*

RTNMC projects that by year 2022, only stockpiles from the current operations will remain, which allows the Company to totally start the rehabilitation of the existing quarry operation areas by then.

For the proposed new quarry areas, the development plan/schedule is presented as **Figure 15**.

Activities	2021												2022 (Year 1)												2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D											
A. Permitting																																			
PCSD SEP Clearance																																			
ECC Amendment																																			
Tree Cutting Permit																																			
B. Development																																			
1. Tree Cutting/Clearing																																			
2. Road Construction/Quarry Development																																			
C. Production																																			
3. Quarrying/Production																																			
4. Crushing/Production																																			

Figure 15. Development plan/schedule of the proposed expansion of the Gotok limestone quarry project

8.4 Abandonment/ Rehabilitation Phase

Once RTNMC has secured its ECC, the company will proceed with the creation of the Environmental Protection and Enhancement Program (EPEP) and the Final Mine Rehabilitation and Decommissioning Plan (FMR/DP) that will be submitted to MGB.

9.0 MANPOWER

RTNMC and its contractors currently employ 170 for the current operation. The number of personnel remain the same.

Table 16. Existing and proposed manpower requirements of the Gotok quarry

Manpower	Number
RTNMC Regular	
Staff	3
Supervisor	9
Technical	4
RF	6
RTNMC Non Regular (Project Based)	
Skilled	33
Semi-skilled	3
Unskilled	48
Sub-total (RTNMC)	**106**
Contractions	
Consolidated Explosives Group Corp.	12
Batarasa Consolidated, Inc. (BCI)	52
Sub-total	**64**
Total (RTNMC & Contractors)	**170**

10.0 PROJECT INVESTMENT

RTNMC estimates the total project cost to be around Php 410 million which covers existing facilities, planned acquisitions and development. a

Attachment 5 – Aerial photo of the project site

Aerial Photo of the Gotok Limestone Quarry Project Site

Photo of the Gotok Limestone Quarry taken on May 30, 2022.