

## Executive Summary

*For*

**Proposed Siruvalai Black Granite Quarry  
over an Extent of 20.28.0 Ha**

*At*

**Survey No.: 170/1 (Part)**

**Siruvalai Village**

**Vikravandi Taluk**

**Villupuram District**

**Tamil Nadu**

*By*



**M/s. Tamil Nadu Minerals Limited**

**(Project termed under Schedule 1(a) Mining of minor Minerals 'B1' category as per EIA  
Notification 2006 and its Amendments & Project falls under Violation category as per  
S.O. 804 (E) dated 14<sup>th</sup> March 2017)**

**Proposal No: SIA/TN/MIN/435461/2023**

**ToR : SEIAA-TN/F.No.3888/SEAC/ToR-1533/2023 Dated: 09.08.2023**

**Baseline Period: March 2023- May 2023**






**EIA Consultant & Laboratory**

**M/s. HUBERT ENVIRO CARE SYSTEMS (P) LTD, CHENNAI**

**NABET Certificate No & Validity: NABET/EIA/24-27/RA 0335, valid up to 31.03.2027**

**NABL Certificate No: TC-12310 Dated: 25.09.2023 Valid Till 24.09.2025**

**July 2024**

<b>Name of the Client</b>		:	M/s. Tamil Nadu Minerals Limited					
<b>Name of the Project</b>		:	Proposed Siruvalai Black Granite Quarry over an extent of 20.28.0 Ha					
<b>Name of the Report</b>		:	Executive Summary					
<b>Project No:</b> H/01/2023/CON/011				<b>Document No:</b> RP004				
<b>Revision details:</b>								
R0	18.07.2024	1 <sup>st</sup> Submission	PVRS Surendra		Vamsee Krishna		Dr JR Moses	
Rev No.	Date	Details	<b>Name</b>	<b>Sign</b>	<b>Name</b>	<b>Sign</b>	<b>Name</b>	<b>Sign</b>
			<b>Prepared by</b>		<b>Checked by</b>		<b>Approved by</b>	

## 1. INTRODUCTION

The proposed “Siruvalai Black Granite Quarry over an extent of 20.28.0Ha” is located at S.F.No.170/1 (Part), Siruvalai Village, Vikravandi Taluk, Villupuram District, Tamil Nadu State. The project falls under Schedule 1(a) Mining of Minor Minerals, B1 category as per EIA Notification 2006 and its amendments thereafter.

Government of Tamil Nadu granted quarry lease to TAMIN for quarrying black granite quarry over an extent 20.28.0Ha Government poramboke land in SF No.170/1of Siruvalai Village, Vikravandi Taluk and District, for 20 years under Rule 8-C of Tamil Nadu Minor Mineral Concession Rules, 1959 vide reference G.O.Ms. No.285 Industries (MME1) Department, dated. 28.12.1995. The lease period was valid up to 24.07.2016.

Subsequently, TAMIN applied for renewal of lease on 14.05.2015 under Rule 8-C of Tamil Nadu Minor Mineral Concession Rules, 1959 vide TAMIN Letter Rc No.518/ML3/2015, dt.14.05.2015. As per the MoEF&CC Notification dated 14.09.2006, the lease was considered as ongoing project as the lease was granted before 14.09.2006. Hence, no EC is required.

Meanwhile, Hon’ble National Green Tribunal (NGT) Principle Bench, New Delhi passed an order that the existing mining lease holder would also have to comply with the requirement of obtaining Environmental Clearance from the competent authorities in accordance with law vide NGT judgement dated 13.01.2015.

In accordance with the above judgment, TAMIN applied for EC along with processing fee for an amount of Rs.1 lakh (Rupees One lakh only) by means of demand draft bearing No.195662 dated 04.09.2015 drawn at Indian Bank, Triplicane branch, Chennai in favour of the Member Secretary, SEIAA, Tamil Nadu. In meanwhile SEIAA returned the said proposal as the SEIAA/SEAC was not re-constituted in Tamil Nadu State.

Hence, TAMIN applied to MoEF & CC for obtaining the Environmental Clearance vide Proposal No: IA/TN/MIN28993/2015 as per the NGT Principal Bench Judgment on 13.01.2015. Meanwhile, SEIAA was re-constituted vide Notification S.O No. 219 dated 12.08.2015. TAMIN applied the same proposal to SEIAA vide SEIAA-TN/F.No.3888/2015 dated 09.09.2016.

While the EC proposal of the subject area was under process, at SEIAA level, it was informed by MoEF&CC that the projects without obtaining prior environmental clearance from the authority concerned shall be considered a case of violation as per MoEF&CC Notification S.O. 804(E) dated 14.03.2017.

Based on the application, SEIAA has referred the application to AD (Mines) for further clarification vide Letter No.SEIAA-TN/3888/2016. However, Mining lease was expired on 24.07.2016. Further,

SEIAA informed that TAMIN has to submit the certain details within 30 days from the date of receipt of this letter under both violation or non-violation categories and the reply is not received within the stipulated time it would be construed that you are not interested vide SEIAA –TN/F.3888/2016/NGT, dt.28.10.2020

Accordingly, TAMIN replied that as the lease renewal application of TAMIN is under active consideration at Government, we request the Member Secretary, SEIAA that EC application of TAMIN may please be kept alive and further we request not to forfeit the processing fee of Rs.1 lakh (Rupees one lakh) only vide TAMIN's Letter Rc No. 3447/ML3/2015, dt. 30.11.2020

Meanwhile, as stated by the District Collector, TAMIN has operated the quarry during 15.01.2016 to 10.01.2017 without obtaining prior Environmental Clearance and obtained transport permit of 374.016 M<sup>3</sup> of black granite. So the Collector issued demand notice for remittance of 100% cost of minerals to get NOC from Department of Geology and Mining for getting environmental clearance. Hence, TAMIN remitted Rs.78,66,679/- towards penalty at 100% cost of the mineral and obtained NoC from DGM vide Letter Rc No.18/MM4/2020 dated 03.07.2020.

Government of Tamil Nadu, Industries, Investment Promotion & Commerce (MME.1) Department, issued the precise area communication has been granted vide Letter No.3492325/MME.1/2022-1,dated:13.01.2023. Precise area communication letter is enclosed as **Annexure –2**. As directed in the precise area communication letter, Mining plan was submitted by TAMIN and the same approved by Department of Geology and Mining vide Rc.No.5480/MM4/2022, dated, 19.05.2023 is enclosed as **Annexure -3**.

TAMIN applied the proposal under violation category for obtaining Terms of Reference vide SIA/TN/MIN/435461/2023, dated 30.06.2023 in accordance with MoEF&CC Office Memorandum F. No. 22-10/2019-IA.III. Accordingly, the proposal was appraised during 395<sup>th</sup> SEAC meeting held on 27.07.2023 and 645<sup>th</sup> SEIAA meeting held on 09.08.2023 and Violation ToR was issued Lr No. SEIAA-TN/F.No.3888/SEAC/ToR-1533/2023 dated: 09.08.2023.

As per issued ToR under violation category, the Draft EIA report will be submitted to Tamil Nadu Pollution Control Board for Public Hearing. Public Hearing minutes along with compliance will be incorporated in the final EIA report and will be submitted for the appraisal of the proposed project in Tamil Nadu SEAC /SEIAA for seeking EC.

**Table- 1 Salient Features of the Project Site**

Survey No.	S.F.No.170/1(Part )
Village	Siruvalai Village
Taluk and District	Vikravandi Taluk, Villupuram District
State	Tamil Nadu
Toposheet No.	D44T8,12&C44B5,9
Latitude	12°01'36.8679" N to 12°02' 02.7900" N
Longitude	79°25'53.4838" E to 79°26'21.9508" E
Extent Area	20.28.0 Ha
Land Classification	Government Poramboke Land
Lease Period	20 years
Geological Reserves (ROM)	3,65,797m <sup>3</sup>
Mineable Reserves (ROM)	33,155m <sup>3</sup>
Production Capacity (ROM)	33,000m <sup>3</sup> (Recovery @10%-3,300m <sup>3</sup> )
Depth of Mining	24m BGL
Method of Mining	Open cast semi mechanized method
Nearest NH/SH Roads	SH-135(Villupuram-Tiruvannamalai) at ~2.39km, S NH-38 (Vellore-Thoothukudi) at ~2.39km, S
Nearest Railway station	Mundiampakkam at ~8.61km, ESE
Nearest Airport	Puducherry Airport at ~40.19km, E
Nearest Town	Villupuram at ~9.50km, SSE
Water Requirement	1.5KLD
Power Requirement	60kVA
Fuel Requirement	200 liters/day
Depth of Water Table	8.3m

## 2. PROJECT DESCRIPTION

### 2.1. Method of Mining

The quarrying operation is being carried out by open cast semi-mechanized method with development of HEMM for development and production activities under Regulation106.

### Conceptual Quarry Plan

The Geological reserve of black granite was computed based on the geological plan & sections. The estimated geological reserve was 3,65,797m<sup>3</sup>. Mineable Reserves have been computed as 33,155 m<sup>3</sup>.

The proposed production capacity is (ROM) 33,000m<sup>3</sup>. The annual peak production will be 2,000m<sup>3</sup> at 10% recovery. The total production at 10% recovery is 3,300m<sup>3</sup> and total granite waste will be 29,700m<sup>3</sup>.

**Table-2 Proposed Production Plan**

S. No	Year	ROM (m <sup>3</sup> )	Recovery@10% (m <sup>3</sup> )	Granite Waste @ 90 % (m <sup>3</sup> )
1	1 <sup>st</sup> Year	4,000	400	3,600
2	2 <sup>nd</sup> Year	20,000	2,000	18,000
3	3 <sup>rd</sup> Year	3,000	300	2,700
4	4 <sup>th</sup> Year	3,000	300	2,700
5	5 <sup>th</sup> Year	3,000	300	2,700
<b>Total</b>		<b>33,000</b>	<b>3,300</b>	<b>29,700</b>

**Table-3 Proposed Generation of Waste**

Year	ROM (m <sup>3</sup> )	Saleable Mineral (m <sup>3</sup> )	Over Burden (m <sup>3</sup> )	Side Burden (m <sup>3</sup> )	Granite Rejects (m <sup>3</sup> )
First	4,000	400	--	306	3,600
Second	20,000	2,000	--	4,572	18,000
Third	3,000	300	--	--	2,700
Fourth	3,000	300	--	--	2,700
Fifth	3,000	300	--	--	2,700
<b>Total</b>	<b>33,000</b>	<b>3,300</b>	<b>--</b>	<b>4,878</b>	<b>29,700</b>

## 2.2 Waste Management

Total waste produced during this mining period will be around 29,700m<sup>3</sup>. An area of 1.45.0Ha will be used for waste dump. The total waste material will be dump in the centre and North west portion of the mining lease area. The dump will be maintained not exceeding 5m height and the slope angle will be at 45°.

## 2.3 Greenbelt Details

The total area for the proposed green belt is 0.06.50Ha during 5 years of the proposed quarrying activity and it is proposed to plant 300 no's of trees within the 7.5m safety buffer zone mine lease area.

**Table-4 Proposed Greenbelt Details**

Year	No of trees proposed to be planted	Area to be covered in m <sup>2</sup>	Name of the species to be plant	Survival rate expected in %	No of trees expected to be grown
2023-28	300	650	Neem, pungan, vengai	80	240

### 2.3 Man power Requirement

Manpower details are given in below table.

**Table-5 Manpower Details**

S.No	Description	No of persons
<b>A</b>	<b>Technical/Mining Personnel</b>	
1	Geologist/Agent (M.sc Qualified)	1
2	Mine Manager ( Holder of Manager Certificate of Competency under MMR, 1961)	1
3	Mining Mate cum Blaster	1
4	Machinery operator	6
5	Diesel Mechanic	1
<b>B</b>	<b>Workers</b>	
1	Skilled	1
2	Semi- Skilled	9
3	Un-skilled	10
<b>Total</b>		<b>30</b>

### 2.4 List of Equipments

The list of Equipment is given in below table.

**Table-6 List of Machineries**

S. No	Machinery	Capacity	Numbers
1	Excavator	300 LC	1
2	Compressor	400 cfm	2
3	Dumpers	25 Tonnes	2
4	Diamond wire saw	30 m <sup>3</sup> /day	1
5	Jack Hammers (32mm dia.)	1.2 to 6m	6
6	Diesel Generator	125 kVA	1
7	Tractor Mounted Air Compressor		1

### 2.5 Land Use Pattern

Land Use Pattern of the Mining Lease area is given in below **Table-7**.

**Table-7 Land Use Pattern of the Mining Lease area**

S.No	Description	Present area ( Ha)	Proposed Mining Plan Period in Ha	Area at the end of the quarry (Ha)
1.	Area under quarrying	3.77.0	0.15.5	3.92.5
2.	Waste Dump	1.22.0	1.45.0	2.59.0
3.	Infrastructure	0.02.5	--	0.02.5
4.	Mine approach Road	0.32.0	--	0.32.0
5.	Village Road	0.40.0	--	0.40.0
6.	Afforestation	0.20.0	0.06.5	0.26.5
7.	Unutilized	14.34.5	12.67.5	12.75.5
<b>Total</b>		<b>20.28.0</b>	<b>14.34.5</b>	<b>20.28.0</b>

### 3. IMPACTS AND MITIGATION MEASURES

#### Impacts due to Mining Activity

Various environmental impacts which have been identified due to the mining operations are discussed in the following sections.

#### 3.1 Soil Environment

##### 3.1.1 Impacts

Potential impacts on land environment are envisaged due to hazardous and non-hazardous wastes generated in the project site like municipal waste from domestic use and waste oil from DG set and the other machineries.

##### 3.1.2 Mitigation Measures

Good housekeeping and best practices of waste handling shall be adopted to minimize the risk of soil contamination. The wastes generated will be stored in temporary storage facility and disposed through nearby municipal disposal bins. Waste oil generated from quarry machineries is disposed through TNPCB Authorized dealers.

#### 3.2 Land Environment

##### 3.2.1 Impacts

The impact on land will be due to the following:

- Land degradation due to disposal of large volume of waste materials.
- Creation of infrastructural facilities like office, rest shelter, first-aid centre and other service facilities.



### 3.2.2 Mitigation Measures

- Dust suppression using water tankers.
- Greenbelt around infrastructure within the mine lease area and along the periphery of the mine lease area by using native plants.

### 3.3 Air Environment

#### 3.3.1 Impacts on Air Environment

The major sources of air pollution due to mining operations are DG sets, Machineries and Vehicular transportation. The activities causing air pollution due to the mining operations will be excavation, drilling, blasting and transportation. The sources of air emission are given below in **Table 8**

**Table-8 Sources of air pollution**

S. No	Source of emission	Pollutant
1.	Excavation of Granite	PM
2.	DG Set	PM,NO <sub>x</sub> ,SO <sub>x</sub>
3.	Transportation of Granite	PM,NO <sub>x</sub>

#### 3.3.2 Mitigation measures

The mitigation measures for the impacts on air environment due to the proposed mining activity are given below.

**Table-9 Dust control measures in quarry**

S. No	Operation or source	Control options
1	Drilling	<ul style="list-style-type: none"> <li>➤ Liquid injection (water)</li> <li>➤ Drills should be provided with dust extractors(dry or wet system).</li> <li>➤ Providing PPE for workers.</li> </ul>
2	Blasting	<ul style="list-style-type: none"> <li>➤ Use of control blasting technique</li> <li>➤ Water spray before blasting</li> <li>➤ Water spray on blasted material prior to transportation</li> </ul>
3	Loading	<ul style="list-style-type: none"> <li>➤ Water spray</li> </ul>
4	Hauling (emissions from roads)	<ul style="list-style-type: none"> <li>➤ Water spray, treatment with surface agents, soil stabilization, Traffic control.</li> </ul>
5	Transportation of mined material	<ul style="list-style-type: none"> <li>➤ Covering of the trucks to avoid spillage</li> <li>➤ Compacted haul road</li> <li>➤ Speed control on vehicles</li> <li>➤ Development of a green belt of suitable width on both sides of road.</li> </ul>

### 3.4 Air Quality Modelling:

Total maximum GLCs from emissions as given below

**Table -10 Total maximum GLCs from emissions**

Pollutant	Max. Base Line Conc. ( $\mu\text{g}/\text{m}^3$ )	Estimated Incremental Conc. ( $\mu\text{g}/\text{m}^3$ )	Total Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQ standard
PM	53.82	0.20	54.02	100
SO <sub>2</sub>	9.29	0.03	9.32	80
NO <sub>x</sub>	18.59	0.10	18.69	80

The maximum ground level concentration observed due to mining activities for PM, SO<sub>2</sub> and NO<sub>x</sub> are 54.02 $\mu\text{g}/\text{m}^3$ , 9.32 $\mu\text{g}/\text{m}^3$ , and 18.69 $\mu\text{g}/\text{m}^3$  respectively.

### 3.5 Impacts due to Transportation

The granite will be transported through existing road by tippers and approximate number of trips required is 2 times per week. The vehicular movement for the proposed project is given in **Table-11**.

**Table-11 Traffic Volume after Implementation of the Project**

For the Road	Volume of Traffic	Volume (V)	Road Capacity (C)	V/C Ratio	LOS Category*	Traffic Classification
Existing	4003	4589	15000	0.31	"A"	Free Flow
After implementation	4007	5943	15000	0.31	"A"	Free Flow

\*LOS (Level of Service) categories are A-Free Flow, B- Reasonably Free Flow, C-Stable Flow, D- Approaching unstable flow, E- Unstable flow, F- Forced or breakdown flow

Due to propose project there will be slight increment in the vehicle movement but the level of service (LOS) anticipated will be Free Flow.

#### 3.5.1 Mitigation Measures

- Regular water sprinkling on haul and access roads.
- Greenbelt development along the haul roads, dumps and along the boundaries of the lease area.
- Covering of the trucks to avoid spillage.

### **3.6 Wastewater Generation**

There is no process effluent generation. The domestic sewage of 0.4 KLD will be disposed through septic tank followed by soak pit.

#### **3.6.1 Mitigation Measures**

##### **3.6.1.1 Surface Water Pollution Control Measures**

- Construction of garland drains of suitable size around mine area and dumps to prevent rain water entering into active mine areas.
- The dumping will be provided with slopes to prevent erosion. The dumps will be covered with grasses, shrubs, mulching, etc, to prevent erosion, till final backfilling of dumps into mined pit areas.

##### **3.6.1.2 Ground Water Pollution Control Measures**

- The domestic sewage from the toilets will be routed to Septic tanks.
- Regular monitoring of water levels and quality in the existing open wells and bore well in the vicinity will be carried out.

##### **3.6.1.3 Rain Water Harvesting**

The rainwater will be diverted by garland drains to the mining pit within the mine lease. The stored water will be used for agriculture activities.

##### **3.6.1.4 Mitigation Measures**

- Construct barriers at suitable intervals along the path of the drains.
- Provide necessary overflow arrangement to maintain the natural drainage system.

### **3.7 Impact of Noise / Vibrations & Mitigation Measures**

#### **3.7.1 Impact of Noise**

The main sources of noise in the mine are as follows:

- Transportation vehicles
- Loading & unloading of minerals
- Drilling
- Controlled Blasting

#### **3.7.2 Mitigation Measures**

Following mitigation measures should be taken to control noise pollution:

- Wherever the noise levels exceed 85 dB (A), workers should be provided with earmuffs, ear plugs etc.
- All vehicles and machinery will be properly lubricated and maintained regularly.
- Speed of the Vehicles entering and leaving the quarrying lease will be limited to 25 kmph.

- Unnecessary use of horns by the drivers of the vehicles shall be avoided.
- Controlled blasting with proper spacing, burden and stemming will be maintained
- The blasting will be carried out during favourable atmospheric condition and less human activity timings.

### **3.7.3 Impact of Vibration**

The vibration during the moment of machinery will be minimal for a short span that will be well within the prescribed limits.

### **3.7.4 Mitigation Measures**

- Proper quantity of explosive, suitable stemming materials and appropriate delay system are to be adopted for safe blasting.
- Using CaOH<sub>2</sub> rock breaking powder for splitting of rocks instead of conventional blasting
- Safe blasting zones are kept around the periphery of the quarry.
- Proposed peripheral green belt will be developed in 7.5m safety zone around the quarry.

### **3.8 Impact on Human Settlement**

- There are no monuments or places of worships in mine area. Ground vibration and noise pollution is maintained minimal and confined to the mine area. The quality of water both surface and ground water is good and all parameters of drinking water are as per IS standards. Water quality analysis will be carried out at periodical intervals during post monitoring.
- PM, NO<sub>x</sub> and SO<sub>2</sub> have been observed to be below the prescribed limit. Noise levels have also been found to be below the permissible limits at all the locations

#### **3.8.1 Mitigation Measures**

- As preventive measures, greenbelt development around the mine lease area will be further strengthening for control of air emission to environment. The noise generated in the lease area will get attenuated due to plantation all around the lease area.
- All the employees will be periodically medically examined.

### **3.9 Biological Environment**

#### **3.9.1 Mining activities and their impact on biodiversity**

Mining activity and their impacts on biodiversity is given below.

**Table -12 Impacts on Biodiversity**

S. No	Activity	Examples of aspects	Examples of biodiversity impact
1	Extraction	Land clearing	Loss of habitat, introduction of plant diseases, Siltation of water courses
2	Blasting, Digging and hauling	Dust, noise ,vibration, water pollution	Disruption of water courses, impacts on aquatic ecosystems due to changes in hydrology and water quality
3	Waste dumping	Clearing, water and soil pollution	Loss of habitat, soil and water contamination, sedimentation.
4	Air emissions	Air pollution	Loss of habitat or species
5	Waste disposal	Oil and water pollution	Encouragement of pests, disease transfer, contamination of groundwater and soil
6	Access roads	Land clearing	Habitat loss or fragmentation, water logging upslope and drainage shadows down slope
7	Water supply (potable or industrial)	Water abstraction or mine dewatering	Loss or changes in habitat or species composition

### 3.9.2 Mitigation Measures

To reduce the adverse effects on flora/fauna status that are found in project area due to deposition of dust generating from mining operations, water sprinkling / water spraying systems and development of greenbelt will be ensured in all dust prone areas to arrest dust generation. Also The proponent has proposed a sum of Rs. 5,35,000/-for the “Schedule – I species” conservation plan under the following heads for the Schedule -1 Species including Shikra (*Accipiter badius*) and Peafowl (*Pavo Cristatus*).

### 3.10 Impacts on Occupational Health due to project operations

Anticipated occupational illness sequel to mining activities involved in the project. Occupational health problems due to dust & noise and Occupational illness by quarry activities are as follows;

- Dust related pneumonia
- Tuberculosis
- Rheumatic arthritis
- Segmental vibration

#### 3.10.1 Mitigation Measures for Occupational Health

The mitigation measures of occupational health and safety is given below.

**Table-13 Mitigation for occupational health and safety**

S. No	Activity	Mitigation measures
1	Excavation	➤ Planned excavation, avoid haphazard mining
2	Drilling and blasting	➤ In addition, the operators and other workers should be provided with masks, helmets, gloves and earplugs. ➤ Wet drilling method will be adopted.
3	Safety zone	➤ Provisions for a buffer zone between the local habitation and the mine lease in the form of a green belt of suitable width. ➤ Restricted entry, use of sirens and cordoning of the lasting area are some of the good practices to avoid accidents.
4	Overburden stabilization	➤ Accidents are known to happen due to overburden collapse. ➤ Therefore, slope stabilization and dump stability are critical issues for safety and environment. Proper measures will be taken care.
5	Worker's health surveillance	➤ Health survey programmes for workers and local community. ➤ Regular training and awareness of employees to be conducted to meet health and safety objectives.

### 3.10.2 Mitigate Measures for Safety Aspects

- To reduce pollution emanation from quarry operations, carry out splitting of sheet rock by diamond wire saw which largely reduces the dust and noise generation.
- Water sprinkling on haul roads and dumping yards, etc.
- Greenbelt development wherever possible to arrest dust and reduce noise propagation.
- All staff and workers will be provided with PPE.
- To provide appropriate instruction, training, retraining, vocational training, etc.
- Organization of safety contests and safety campaigns regularly to update knowledge of safe operational procedures, etc.

## 4. PROJECT COST & ESTIMATED TIME OF COMPLETION

### 4.1 Project Cost

The estimated project cost is given below

**Table-14 Project cost**

S. No	Description of the Cost	Amount in Rs.
<b>A. Fixed Cost</b>		
1	Land Cost	Nil. Because Govt. land
2	Labour shed	50,000/-
3	Sanitary facilities	50,000/-
4	Fencing Cost	1,25,000/-
<b>Total</b>		<b>2,25,000/-</b>
<b>B. Operational Cost</b>		
1	Jack Hammers	1,98,000/-

2	Compressor	19,82,000/-
3	Diamond wire saw	4,87,000/-
4	Diesel General	4,00,000/-
5	Excavators	6,00,000/-
6	Tippers	58,00,000/-
7	Drinking water facilities for the labours	50,000/-
8	Safety kits	50,000/-
<b>Total Operational Cost</b>		<b>95,67,000/-</b>
<b>C. EMP Cost</b>		
1	Afforestation	30,000/-
2	Water Sprinkling	50,000/-
3	Water Quality test	25,000/-
4	Air Quality test	25,000/-
5	Noise/Vibration test	25,000/-
6	CSR activities	50,000/-
<b>Total EMP Cost</b>		<b>2,05,000/-</b>
<b>Total Cost of the Project (A+B+C)</b>		<b>99,97,000/- (Say 1 Crore)</b>

#### 4.2. Proposed schedule for approval and implementation

The time schedule for the completion of the proposed mining project is given in the below as,

**Table-15 Project schedule**

Particulars	Time Schedule
Submission of Draft EIA/EMP to TNPCB for Public Hearing	July 2024
Conduction of Public Hearing and submitting final EIA/EMP	September 2024
Presentation to SEAC and Obtaining EC	November 2024

The project will be implemented after Obtaining EC from SEIAA and CTO from PCB.

#### 4.3 CER Activity:

TAMIN is proposing for following list of activities for the Siruvalai Government Higher Secondary School for Rs.4.0 Lakhs. Based on O.M F.No. 22-65/2017-IA.III 2.0% of the Project Cost need to be spent for CER activities i.e., Rs. 2.0 Lakhs need to be spent for the CER activity. However TAMIN proposing for Rs. 4.0Lakhs which is 4.0% of Project cost.

### 5. MINING CLOSURE PLAN

#### 5.1 Progressive Mine Closure Plan

As a petro genetic character, the depth persistence of the Black Granite body in the mine lease area is beyond the workable limits. Based on the statutory provisions of mine safety rules and regulations the workable depth is proposed for 24m BGL. However in course of time there is a possibility of up

gradation of technology for safe mining beyond 24m. Hence it is proposed not to backfill the ultimate pit. The Pit boundaries shall be safely fenced with 7.5m buffer safety zone and rain water or seepage water stored in the pit will be used for agriculture purpose. Green belt development will be maintained in the 7.5m buffer safety zone. Garland drain will be constructed around the quarry area to prevent surface run off rain water entering to the pit. When the reserves will be completely exhausted, the mine closure plan will be prepared and submitted to the competent authority to obtain approval and the same will be implemented.

## 6. REHANILITATION AND RESETTLEMENT

There will be no Rehabilitation and Resettlement in this proposed project.

## 7. SITE ANALYSIS

Environmental sensitive such as water bodies, reserved forest, wildlife sanctuary, national park, human settlements and other ecological features are given below.

### 7.1 Environmentally/Ecologically Sensitive areas

The environmental sensitive areas covering an aerial distance of 15 km from the project boundary is given in below table.

**Table-16 Lists of Water Bodies**

S.No	Water bodies	Distance(~km)	Direction
1.	Stream	Within the Site	
2.	Pond near Kunnatturtangal	0.39	N
3.	Pond near Dharmapuri	0.40	E
4.	Siruvalai Lake	0.73	W
5.	Adanur Lake	1.12	SE
6.	Viramur Lake	1.54	W
7.	Vengandur Lake	2.40	S
8.	Anniyur Lake	4.85	NW
9.	Pambai Ar	6.10	SW
10.	Puttimedu Lake	6.56	SE
11.	Pappanappattu Eri	6.77	E
12.	Pambai Vaykkal	9.45	SW
13.	Panamalai Eri	9.45	NW
14.	Varaha Nadi	9.78	E
15.	Ponnaiyar River	13.2	SSW
16.	Nandan Kava	13.22	NW
17.	Panambattu Lake	13.28	SSE
18.	Pillaiyarkovil Odai	13.98	W
19.	Vidur Dam	14.90	ENE

**Table-17 Lists of Monuments**

S.No	Monuments	Distance(~km)	Direction
1.	Rock cut Pallava Temple	8.41km	NNE



2.	Talagiriswara Temple and a Cave containing an image of Durga and Pallava inscriptions together with adjacent-land	9.76km	NW
3.	Sri Brahmapuniswara Temple	10.51km	NNE
4.	Sri Pataleswara Temple	10.57km	NNE
5.	Melvalai Blood Art Stone	10.75km	W
6.	Sri Azhagiya Narasimma Perumal Temple	11.75km	NNE

**Table-18 Lists of Reserved Forests**

S.No	Reserved Forests	Distance(~km)	Direction
1	Odayanattam RF	9.96	WNW
2	Melkondai RF	11.21	E
3	Tandavasamudram RF	11.36	NW
4	Gengavaram RF	11.95	WNW
5	Karai RF	14.02	N

**Table-19 Lists of Nearby Habitations**

S.No	Reserved Forests	Distance(~km)	Direction	Population
1.	Kunnatturtangal	0.16	NE	225
2.	Dharmapuri	0.21	E	750
3.	Siruvalai	0.33	W	2,414
4.	Arumpuri	1.01	S	492
5.	Kundalappuliyur	1.15	NE	1,850

## 8 BASELINE STUDY

### 8.1 Study Period:

The baseline environmental surveys were carried out during March 2023 – May 2023 within the study area.

### 8.2 Ambient Air Quality

The ambient air quality has been monitored at 8 locations for 13 parameters as per NAAQS, 2009 within the study area.

**Table-20 Summary of Ambient Air Quality Monitoring**

S.No	Parameters ( $\mu\text{g}/\text{m}^3$ )	Minimum of Average	Maximum of Average	NAAQ Standards
1.	PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	28.27	53.82	100
2.	PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	16.80	32.29	60
3.	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	5.44	9.29	80
4.	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	10.87	18.59	80

### 8.3 Noise Environment

Ambient noise levels were monitored using precision noise level meter in and around the project site at 10 km radius at 8 locations during study period.

**Table-21 Summary of Noise Monitoring**

S.No	Noise level in dB(A) Leq		CPCB Standards	Environmental Setting
	Minimum	Maximum		
1.	57.7		75 dB(A) Day	Industrial
3.	49.3		70 dB(A) Night	
4.	51.9	53.8	55 dB(A) Day	Residential
5.	41.4	43.8	45 dB(A) Night	

#### 8.4 Water Quality

The prevailing status of water quality at 8 locations for surface water and 8 locations for ground water have been assessed during the study period. The standard methods prescribed in IS were followed for sample collection, preservation and analysis in the laboratory for various physiochemical parameters.

##### 8.4.1 Surface water quality

**Table-22 Summary of Surface Water Quality Monitoring**

S.No	Parameters	Minimum	Maximum	IS 2296:1992 Standards
1.	pH	7.23	8.21	6.5 – 8.5
2.	TDS (mg/l)	269	449	500
3.	COD (mg/l)	16	24	-
4.	BOD (mg/l)	2	4	2
5.	Total Hardness	156	237	-

##### 8.4.2 Ground Water Quality

**Table-23 Summary of Ground Water Quality Monitoring**

S.NO	Parameters	Minimum	Maximum	IS 10500: 2012 Standards	
				Acceptable Limit	Permissible Limit
1.	pH	6.94	7.78	6.5 – 8.5	NR
2.	Total Dissolved Solids (mg/l)	491	692	500	2000
3.	Total Hardness (mg/l)	232	479	200	600

## 8.5 Soil Quality

Soil sampling was carried out at eight locations in the study area. The summary of the soil quality is given below

**Table-24 Summary of Soil Quality Monitoring**

S.No	Parameters ( $\mu\text{g}/\text{m}^3$ )	Minimum	Maximum
1.	pH	6.84	7.74
2.	Electrical conductivity ( $\mu\text{mho}/\text{cm}$ )	249	378
3.	Nitrogen (mg/kg)	91.8`	112.5
4.	Phosphorus (mg/kg)	12. 5	19.9

## 9. WASTE HANDLING

### 9.1 Solid Waste Management

The municipal solid waste generation and disposal details are given in **Table-25**.

**Table-25 Municipal Solid Waste generation & Disposal**

S. No	Type	Quantity Kg/day	Disposal method
1	Organic	8.1	Municipal bin
2	Inorganic	5.4	TNPCB authorized recyclers
<b>Total</b>		<b>13.5</b>	

As per CPHEEO guidelines: MSW per capita/day =0.45

### 9.2 Hazardous waste Management

The hazardous waste details and mode of disposals are given in **Table-26**

**Table-26 Hazardous Waste Management**

Waste Category No	Description	Quantity (L/Year)	Mode of Disposal
5.1	Waste Oil	3.0	Will be Collected in leak proof containers and disposed to TNPCB Authorized Agencies

## 10 POST PROJECT MONITORING

### 10.1 Post Project Environmental Monitoring

The Project proponent set up regular monitoring stations to assess the quality of the environment.

**Table-27 Post Project Environmental Monitoring Program**

S. No	Area of Monitoring	Number of Sampling Stations	Frequency of Sampling	Parameters to be Analyzed
1.	Meteorology	One	Hourly and Daily basis.	Wind speed and direction, Temperature, Relative Humidity, Atmospheric pressure, Rainfall.
2.	Ambient Air Quality	2 Stations (In downwind)	Twice a week:24 hourly period	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , and NO <sub>2</sub>
3.	Noise	2 (two within core area and two in buffer area)	Once every season	Ambient Equivalent continuous Sound Pressure Levels (Leq) at day and Night time.
4	Exhaust from DG set	Stack of DG set	Quarterly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , and NO <sub>2</sub>
5	Vehicular Emissions	Parking area	Periodic monitoring of vehicles	Air emission and noise, PCU
6	Soil	Two Locations within the Project Site	Yearly Once	Physico chemical properties, Nutrients, Heavy metals
7	Terrestrial Ecology	Within 10km around the project	Once in three years	Symptoms of injuries on plants
8	Surface/ Ground water quality	Two Locations(within core area)	Yearly Once	As per ISO 10500 2012 & IS 2296 -1992 Standard parameters

## 11. DAMAGE ASSESSMENT REPORT

The TAMIN has operated this Siruvalai Black Granite quarry (over an area of 28.20.5 Ha) without prior Environment clearance from the period of 15.01.2016-10.01.2017 for a depth of 10m in North East Pit and 4m in North West Pit for an excavated quantity of 347.016 m<sup>3</sup>, as per the letter given by Director of Department of Geology and Mining, vide Rc.No. 18/MM4/2020 dated: 03.07.2020 and remitted Rs.78,66,679/- towards penalty at 100% cost of the mineral. Hence the damage assessment for the violation period has been calculated for the period from 15.01.2016-10.01.2017 for 320days as per MOEF&CC SOP O.M F.No. 19-125/2019-IA.III Dated 5<sup>th</sup> March 2020. Based on the above said notification guidelines the Damage Assessment has been calculated on six following aspects.

1. Air Environment
2. Water Environment

3. Green Belt
4. Noise and Vibration Environment
5. Solid Waste Management
6. Land Environment

Also the economic benefits based on the turnover of the quarried quantity and the arrived Damage Cost. The penalty provision has been calculated based on the O.M F.No. 22-21/2020-IA.III Dated 07.07.2021. A maximum of 3.0% of the net profit as computed will be added to the total damage cost and will be used for community resource augmentation. TAMIN remitted Rs.78,66,679/- towards penalty at 100% cost of the mineral and obtained NoC from DGM vide Letter Rc No. 18/MM4/2020 dated 03.07.2020. Hence the turnover is Nil. The Damage Assessment cost, Penalty need to be paid to TNPCB for the violation were summarized in below **Table -28**.

**Table -28 Summary of Damage Assessment**

S. No	Damage Assessment Cost (Rs)	Remediation Plan, Natural Resource & Community Resource Augmentation Plan Cost (Rs)	Penalty for violation cost (Rs)
1.	15,98,305	15,98,305	99,970

## 12. CONCLUSION

The “Proposed Siruvalai Black Granite Quarry over an extent of 20.28.0Ha” will be beneficial for the development of the nearby villages. Due to this proposed quarry, 30 no’s of employment potential will be deployed which increase the social benefits of nearby villages. Environmental aspects like dust emission, noise, siltation due to surface run-off, etc. will have to be controlled within the permissible limit to avoid impacts on the surrounding environment. Necessary pollution control equipment, water sprinkling, plantation, personal protective equipment, etc., will form regular practice in the project. Additional pollution control measures and environmental conservation measures will be adopted to control/minimize impacts on the environment and socio-economic environment of the area. Measures like development of greenbelt along with haul road and periphery of the lease boundary will be created. The CER measures proposed to be adopted by the proponent will improve the social and economic status of the nearby villages.