EXECUTIVE SUMMARY FOR
PROPOSED ROUGH STONE QUARRY
CATEGORY – B1 (CLUSTER)

ToR Lr.No. SEIAA-TN/F.No.10478/SEAC/ToR-1624/2023, dated 12.12.2023

PROPOSED QUARRY LEASE DETAILS	
SURVEY NOS	110/3, 110/4, 110/5, 127/1 and 127/2
VILLAGE	KODANGIPATTI
TALUK	BODINAICKANUR
DISTRICT	THENI
EXTENT	3.78.0 Ha
PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS	3,61,855 m^3 OF ROUGH STONE, 74,232 m^3 OF GRAVEL
LAND	PATTA LAND

(Sector No. 1(a) (Sector no.1 as per NABET)
Category of the Project: B1 Cluster Mining, Total Cluster Area – 6.51 Ha

APPLICANT

Thiru.R.Seenivasan,
S/o.V.Ramasubbu,
No.2-5-16, Rajaji Street, Lakshmipuram,
Periyakulam Taluk, Theni District.

ORGANIZATION

M/S. GLOBAL MINING SOLUTIONS
(NABET ACCREDITED & ISO 9001 CERTIFIED CONSULTANT)
PLOT NO. 6, SF NO. 13/2, A2, VS CITY, RC CHETTYPATTY,
KOTTAMETTUPATTY, OMALUR, SALEM, TAMIL NADU – 636 455
NABET ACCREDITATION NO – NABET/EIA/2326/IA 0110

May -2024

EXECUTIVE SUMMARY

1.0 Introduction

Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

This proposal is towards obtaining environmental clearance for Rough Stone & Gravel Quarry located at survey nos. 110/3, 110/4, 110/5, 127/1 and 127/2 located in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu, for production capacity of 3,61,855 m3 of Rough Stone and 74,232 m3 of Gravel for 5 years. The mining plan has prepared and same was approved by Assistant Director, Dept. of Geology & Mining, Theni vide 818/Kanimam/2021, dated 25.01.2023.

As per EIA notification, 2006 and its subsequent amendments the proposed **"**Rough Stone Quarry of Thiru.R.Seenivasan**"** is falls under Schedule 1(a) Mining of Minerals. It is further classified under Category B1 due to the overall extent of cluster area is 3.78.0 Ha which is >5 Ha. The ToR for preparation of EIA/EMP was approved vide letter Lr.No.SEIAA-TN/F.No. 10478/SEAC/ToR-1624/2023, dated 12.12.2023. This report has been prepared in line with the approved TOR for production of maximum excavation 3,61,855 m3 of Rough Stone and 74,232 m3 of Gravel for 5 years.

1.1 Details of Project Proponent

Name of the Proponent	:	Thiru. R. Seenivasan
Status of the Proponent	:	Individual
Address		Thiru.R.Seenivasan, S/o.V.Ramasubbu, No.2-5-16, Rajaji Street, Lakshmipuram, Periyakulam Taluk, Theni District.

1.2 Size and Location of the Project

S. No.	Feature	Description
1	Co-ordinates of the project	Latitude: 10° 00' 52.68"N to 10° 01' 02.39"N Longitude 77° 24' 44.43"E to 77° 24' 52.74"E
2	Type of land	Patta land
3	Extent of lease area	3.78.0 Ha
4	Type of lease	Fresh Lease
5	Toposheet No.	58-F/08,58 -G/05
6	Geological Resource	1322860 Cu.m of Rough stone, 113388 Cu.m of Gravel (Depth 38m BGL)
7	Mineable Resource	3,61,855 Cu.m of Rough Stone, 74,232 Cu.m of Gravel
8	Proposed production quantity for five years	3,61,855 Cu.m of Rough Stone, 74,232 Cu.m of Gravel
9	Proposed depth of mining	38m Below ground level

1.3 Statutory Details:

This is a fresh Rough Stone & Gravel Quarry project. There are no litigation/court cases pending against this project.

a) Precise Area Communication:

The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Theni, Rc.No. 818/Kanimam/2022, dated 06.01.2023.

b) Mining Plan Approval Letter:

The project proponent has prepared mining plan under rule L9(l),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Department of Geology and Mining, Theni, Rc.No. 818/Kanimam/2021, dated 25.01.2023.

c) 500m radius quarry features:

The project proponent has obtained an official letter from Assistant Director, Dept. of Geology & Mining, Theni vide Rc.No.818/Kanimam/2021, dated 09.02.2023.

d) Project Proponent undertaking affidavit.

The project proponent has issued an affidavit under MoEF & CC O.M. No. 3-50/2017-IA.III (Pt.) dated 30.05.2018 to comply with the direction of the Hon'ble SC made on 2.08.2017 in W.P. (C) 114 of 2014 in matter of Common Cause vs Union of India & Others

e) Blasting Agreement:

The Project Proponent have agreement with T.M.K. Explosives to carry out the blasting operation for the proposed quarry.

f) Land document of the proposed lease area:

The proposed land is Patta land registered in the name of applicant vide Patta no.5370.

Salient Features of the Project

Description	Salient Feature
Name of the Project	Thiru.R.Seenivasan Rough Stone Quarry
Location of the Project	S.F.No: 110/3, 110/4, 110/5, 127/1 and 127/2 located in Kodangipatti Village, Bodinaickanur Taluk, Theni District
Latitude & Longitude	Latitude: 10° 00' 52.68"N to 10° 01' 02.39"N Longitude 77° 24' 44.43"E to 77° 24' 52.74"E
Toposheet No.	58-F/08,58 -G/05
ML Area	3.78.0 Ha
Type of Land	Patta Land
Geological Resource	1322860 Cu.m of Rough stone, 113388 Cu.m of Gravel

Mineable Reserves	3,61,855 Cu.m of Rough Stone, 74,232 Cu.m of Gravel
Life of the mine	5 years
Proposed depth of mining	38 m bgl
Method of Mining	Opencast mechanized mining involving drilling and blasting
Proposed bench height and width	Bench Height & Width – 5m.
Total Waste	NIL
Top Soil / Overburden	The overburden in the form of topsoil, after excavation topsoil will be preserved along the boundary barrier and utilized for afforestation purpose.
Water Requirement & source	Total – 4.1 KLD. The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.
Proposed Manpower Deployment	29 Nos
Total Project Cost	Rs. 93,18,000/-
Nearest Highway	The National Highway (NH-85) Theni – Madurai about 2.1km on southern side of the area. The State Highway (SH-100) Bodinaickanur - Uthamapalayam is about 7.2Km on the southwestern side of the area.
Nearest Railway Station	The nearest railway station is Bodinaickanur - Madurai line, which is about 1.3Km on southern side of the area.
Nearest Airport	Madurai – 76.72 Km (SE)
Nearest Major Water bodies	There is a seasonal Odai passing on Western side of the area and is 50m Safety distance is provided. And there is a seasonal Odai passing on Western and Northeastern side of the area and is 70m and 360m away from the area.

	There is a Kulam situated on the Southeastern side of the area and is 290m away from the area.
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	NIL within 10 km radius
Reserved / Protected Forests	Koduvilarpatty RF within 500m from North side of the project Boundary
Nearest Village	Kodangipatti – 3.36 km (SE)
Seismic Zone	Zone II (Least active)

1.4 Project Description

The type of the project is opencast mechanized mining method to excavate Rough Stone within the proposed Mine Lease area with drilling, blasting, loading and transportation.

1.5 Location details

This project site is in Kodangipatti Village, Bodinaickanur Taluk, Theni District. There is an existing road from the area leads to Durairajapuram - Boothipuram village road on Eastern side of the area. The National Highway (NH-85) Theni – Madurai about 2.1km on southern side of the area. The State Highway (SH-100) Bodinaickanur - Uthamapalayam is about 7.2Km on the southwestern side of the area. The nearest railway station is Bodinaickanur - Madurai line, which is about 1.3Km on southern side of the area. The nearest airport is Madurai Airport, which is located at a distance of 76.72km, SE

1.6 Geological resources

The quarrying is restricted up to a depth of 38m Below ground level only. Availability of Resources is given below.

Available Geological Resources

Geological resources in the lease area						
Section	**Length in (m)**	**Width in (m)**	**Depth in (m)**	**Volume in m^3**	**Gravel formation in m^3**	**Geological Resources of Rough stone in m^3**
XY-AB	88	164	3	43296	43296	
	88	164	35	505120		505120
	Total				**43296**	**505120**
XY-CD	198	118	3	70092	70092	
	198	118	35	817740		817740
	Total				**70092**	**817740**
Grand Total					**113388**	**1322860**

Gravel Formation : 1,13,388m^3

The Geological Resources of Rough stone : 13,22,860m^3

1.7 Mineable resources

The mineable reserves are calculated by considering bench formation and leaving 7.5 m (Safety Barrier all around the applied area) and 10 m safety distance in applied lease areas.

Mineable Resources in the Lease Area							
Section	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Volume in m^3**	**Gravel in m^3**	**Mineable Reserves of Rough stone in m^3**
XY-AB	I	78	98	3	22932	22932	

	II	73	90	5	32850		32850
	III	67	77	5	25795		25795
	IV	60	64	5	19200		19200
	V	54	51	5	13770		13770
	VI	47	38	5	8930		8930
	VII	41	25	5	5125		5125
	VIII	34	12	5	2040		2040
	Total					**22932**	**107710**
XY-CD	I	190	90	3	51300	51300	
	II	186	81	5	75330		75330
	III	179	68	5	60860		60860
	IV	173	55	5	47575		47575
	V	166	42	5	34860		34860
	VI	160	29	5	23200		23200
	VII	154	16	5	12320		12320
	Total					**51300**	**254145**
Grand Total						**74232**	**361855**

The available mineable reserve is computed as 3,61,855 m3 of Rough stone and 74,232 m3 of Topsoil formation upto a depth of 38m below ground level only.

1.8 Yearwise production resources

The project proponent has proposed to carry out 3,61,855 m3 of Rough stone and 74,232 m3 of Topsoil formation upto a depth of 38m below ground level for the period of five years.

Summary of production For 5 Years								
Year	**Section**	**Bench**	**Length in (m)**	**Width in (m)**	**Depth in (m)**	**Volume in m^3**	**Gravel In m^3**	**Mineable reserve of Rough stone in m^3**
I	XY-AB	I	78	98	3	22932	22932	
		II	73	90	5	32850		32850
		III	67	77	5	25795		25795
	XY-CD	I	31	90	3	8370	8370	
		II	31	81	5	12555		12555

	Total						**31302**	**71200**
II	XY-CD	I	159	90	3	42930	42930	
		II	155	81	5	62775		62775
		III	25	68	5	8500		8500
	Total						**42930**	**71275**
III	XY-CD	III	154	68	5	52360		52360
	XY-AB	IV	60	64	5	19200		19200
	Total							**71560**
IV	XY-AB	V	54	51	5	13770		13770
	XY-CD	IV	173	55	5	47575		47575
		V	60	42	5	12600		12600
	Total							**73945**
V	XY-CD	V	106	42	5	22260		22260
		VI	160	29	5	23200		23200
		VII	154	16	5	12320		12320
	XY-AB	VI	47	38	5	8930		8930
		VII	41	25	5	5125		5125
		VIII	34	12	5	2040		2040
	Total							**73875**
Grand Total							**74232**	**361855**

1.9 Land use of the project area

The proposed Mine Lease area is dry patta land and the Land use pattern of the project site is given below.

Land Use		
S. No.	**Land Use**	**Area in use during the quarrying period (Ha)**
1	Area left for water body	2.41.0
2	Green Belt	0.30.0
3	Remaining area	1.07.0
Total		**3.78.0**

The ultimate pit dimension at the end of conceptual period is given below.

Ultimate Pit Dimension			
Pit No.	**Length (max) (m)**	**Width (Avg) (m)**	**Depth (max) (m)**
I	268	90	38 BGL

1.10 Method of mining

Opencast mechanized mining with a bench height of 5m and bench width of 5m and 80^0 Slope is proposed. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, loading and transportation of Rough Stone to the needy customers. Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting.

1.11 Greenbelt Development

Green belt development plan is proposed for the 5 year period.

S.No.	Year	Species	No. of trees	Spacing	Survival
1	I	Pongamia pinnata, Syzigium cumini, Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca	250	3m x 3m	80%
2	II		250		
3	III		250		
4	IV		250		
5	V		250		
Total			**1250**		

2.0 Description of the Environment

The project area is located in Kondangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu State over an extent of 3.78.0 Ha. The project area is considered

as Core zone and the area in the surrounding 10km radius is considered as Buffer Zone. The baseline data collected in the study area from October to December 2023.

METEOROLOGY

The district receives rainfall under the influence of both the southwest and northeast monsoons. The rainfall data from 3 stations viz. Periyakulam, Bodinaikanur and Uthanapalayam for the period 99 years (1901-1999) have been considered for the analysis. Normal annual rainfall is of the order of 791.2 mm out of which 47% (375.5) received during NE Monsoon and 22% (172.7) is received during SW monsoon. (Source: cgwb 2008)

2.1 Ambient Air monitoring Data

Ambient air quality monitoring has been carried out in 5 locations. One in the core zone and remaining five locations are in the buffer zone areas. The concentrations of the monitoring value well within the prescribed government norms. For all the components in the table, the unit are in $\mu g/m^3$

Ambient Air Quality Analysis Results

		Ambient Air Quality									All Value in µg/m3		
	Parameters	PM10			PM2.5			SO2			NO2		
S.NO	Locations	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
1	A1- Mine Lease Area	49.2	56.5	64.9	24.8	27.3	29.9	3.8	4.4	4.9	7.9	10.5	13.3
2	A2- Boothipuram	40.7	45.5	50.9	18.7	20.9	23.4	3.0	5.5	4.8	5.9	7.0	7.9
3	A3- Meenakshipuram Bodi	44.4	51.1	57.2	20.8	23.5	26.5	3.3	3.6	4.3	7.5	9.2	11.1
4	A4- Theni Alinagaram	49.9	54.1	61.4	22.6	25.0	28.9	3.5	3.9	4.6	8.1	9.3	12.5
5	A5- Kodangeepatti	39.4	48.3	55.7	17.5	22.82	26.5	3.1	3.6	4.2	6.7	8.28	10.4
6	**CPCB NAAQS 2009**	**100**			**60**			**80**			**80**		

2.2 Water Environment

Water samples (bore wells) from 5 and 3 surface water samples different locations were collected and the results are given below.

Surface Water Analysis Results

Sl. No.	Parameter	Unit	SW1	SW2	SW3	Surface water standard s (IS 2296 Class-A)
1.	Odour	-	agreeable	Agreeable	Agreeable	-
2.	Turbidity	NTU	<1.0	<1.0	<1.0	1
3.	pH at 25 °C	-	8.25	7.49	8.20	6.5-8.5
4.	Electrical Conductivity	µS/cm	350.2	151.5	174.2	-
5.	Total Dissolved Solids	mg/l	212	92.0	105	500
6.	Total Suspended Solids	mg/l	BDL (DL-2.0)	BDL (DL-2.0)	BDL (DL-2.0)	-
7.	Total hardness as $CaCO_3$	mg/l	92.4	43.2	54.6	300
8.	Calcium as Ca	mg/l	19.9	9.36	12.4	-
9.	Magnesium as Mg	mg/l	10.2	4.75	5.64	-
10.	Calcium as $CaCO_3$	mg/l	49.8	23.4	31.1	-
11.	Total alkalinity as $CaCO_3$	mg/l	67.5	35.5	44.2	-
12.	Chloride as Cl^-	mg/l	80.2	28.9	35.6	250
13.	Sulphates as SO_4^{2-}	mg/l	40.6	8.74	12.4	400
14.	Iron as Fe	mg/l	0.32	0.15	0.09	1.0
15.	Nitrate as NO_3	mg/l	1.94	BDL (DL-1.0)	BDL (DL-1.0)	20
16.	Fluoride as F	mg/l	0.32	0.15	0.17	1.5
17.	Manganese as Mn	mg/l	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	0.5

Ground Water Analysis Results

Ground Water Analysis Results									
S. No.	Test Parameter	Unit	GW1	GW2	GW3	GW4	GW5	Specification/Limit (As per IS:10500: 2012)	
								Desirable	Permissible
1	Odour	…	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH	…	7.32	7.17	7.73	7.12	7.28	6.5 - 8.5	No Relaxation
4	Turbidity	NTU	<1	<1	<1	<1.0	<1	1	5
5	TDS	mg/L	660	580	610	802	856	500	2000
6	Fluoride,(F)	mg/L	0.32	0.32	0.19	0.49	0.33	1	1.5
7	Total Alkalinity, (CaCO3)	mg/L	447	225	176	378	254	200	600
8	Total Hardness, (CaCO3)	mg/L	333	349	172	580	478	200	600
9	Calcium,(Ca)	mg/L	81.5	86.2	40.8	132	108	75	200
10	Calcium as CaCO3		204	216	102	329	270		
11	Free Residual chlorine as Cl-		BDL(D.L-0.2)	BDL(D.L-0.2)	BDL (D.L -0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)		
12	Chloride,(Cl)	mg/L	124	109	380	245	212	250	1000
13	Magnesium,(Mg)	mg/L	129	133	70.6	251	208	30	100
14	Nitrate, (NO3)	mg/L	3.26	BDL(D.L-1.0)	1.89	2.5	2.32	45	No Relaxation

15	Sulphate, (SO4)	mg/ L	142	84.3	74.1	99.6	154	200	400
17	Iron,(Fe)	mg/ L	BDL(D.L-0.01)	0.32	0.08	0.04	0.07	1	No Relaxation
18	Manganese, (Mn)	mg/ L	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL (D.L -0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	0.1	0.3
19	Conductivity	µs/cm	1092	961.3	1006	1325	1416	Not Specified	Not Specified

2.3 Noise Monitoring

Noise Monitoring were done at 5 different locations and the results are given below.

Noise monitoring results					
S. No	**Location**	**Day equivalent**	**Night equivalent**	**Day equivalent limits by CPCB**	**Night equivalent limits by CPCB**
1	N1-Within Lease area	46.3	40.2	55	45
2	N2-Boothipuram	49.0	37.3		
3	N3-Meenakshipuram Bodi	48.3	41.6		
4	N4-Theni Alinagaram	49.2	43.1		
5	N5-Kodangipatti	50.6	39		
Day equivalent - 55 dB (A); Night equivalent - 45 dB (A); Work zone Exposure in 8 hr - 90 dB (A)					

2.4 Soil Sampling

Soil samples have been collected from the mine lease area and 3 other locations from mine location and Meenakshipuram bodi village and kondangipatti the results are given below.

Results of Soil Sample Analysis				
S.No.	**Parameter**	**S1 Mine lease area**	**S2 Meenakshipuram Bodi**	**S3 Kodangipatti**
1	pH	7.28	7.62	7.78
2	Electrical Conductivity	38.57	45.82	80.59
3	Dry Content	98.54	97.66	96.82
4	Water Content	1.46	2.34	3.18
5	Organic Mater	0.65	1.32	0.86
6	Sulphur	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
7	Phosphorus	1.54	2.13	1.65

8	Texture	Silty Clay loam	Clay Loam	silt loam
9	Sand	18.36	25.67	22.69
10	Clay	39.49	34.01	24.17
11	Loam	42.15	40.32	53.14
12	Total Nitrogen	204	285	452
13	Sodium	456	548	362
14	Potassium	1210	920	670
15	Water Holding Capacity	3.4	3.7	3.5
16	Porosity	18.7	17.6	18.2

3.0 Anticipated Environmental Impacts and Mitigation Measures

In order to maintain the existing environmental scenario of the proposed mine lease area it is mandatorily required to assess the present ecology and environment of the proposed mine lease area and buffer area of the project before starting mining operations.

3.1 Land Environment

This is a proposed Rough Stone & Gravel Quarry of Thiru.R.Seenivasan at S.F.No. 110/3, 110/4, 110/5, 127/1 and 127/2, over an extend of 3.78.0 Ha, in Kodangipatti Village, Bodinaickanur Taluk, Theni District, Tamil Nadu. The method of mining is Opencast mechanized with a bench width and height of 5m. It is proposed to excavate to 3,61,855 m3 of Rough Stone and 74,232 m3 of gravel upto a depth of 38 m Below ground level for the period of five years.

Anticipated Impacts and Mitigation Measures

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out only up to 38m BGL. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during monsoon season, garland drain will be constructed with silt traps. At the mine closure stage, 2.41.0 Ha of lease area will be left as rain water harvesting pond. 0.30.0 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini,

Albizia lebbeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta indiaca are selected. A total of 1250 trees are planned to be planted. Spacing will be 3m x 3m.

3.2 Solid Waste Management

The waste generation in the form of Solid waste (Municipal Waste) is very negligible. A detailed solid waste management system for the project area is given below and the same will be executed by proper awareness and sign boards. The sign boards will be in two language i.e., Vernacular language (Tamil) and common language (English). The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.

3.3 Water Environment

Impacts on Surface Water Resources

There is a seasonal odai passing on Western side of the area and is 50m Safety distance is provided. And there is a seasonal odai passing on Westem and Northeastern side of the area and is 70m and 360m away from the area. There is a Kulam situated on Southeastern side of the area and is 290m away from the area

Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the mining lease.

Impacts due to water use in Mines

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 8.5 KLD which will be sourced from outside agencies. Negligible sewage of 0.3 KLD will be generated, for which a septic tank with soak pit will be set up.

Impacts on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at 58 m BGL in the summer season and in the rainy season at 55 m BGL. The mining will go up to the maximum depth of 38 m BGL. So there will be no chance of intersecting the ground water table by the mining activity. So the impact of mining on the ground water is not envisaged.

Mitigation Measures

Entire lease area will be provided with proper garland drains. Check wears will be provided to prevent solids from wash off. Construction of garland drains around freshly excavated so that flow of water with loose material is prevented. The mine water will be passed through the natural slopes and valleys and gets accumulated in the settling tank (Bottom pit).

3.4 Air Environment

Impacts due to mining operation

Mining activities in the proposed lease area not only pollutes the air in the core zone but also the nearby areas. The major air pollutants due to mining operations are fugitive emissions like PM_{10}, $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Furthermore loading, unloading and transportation of rough stone as well as wind erosion of the exposed area and movement of light vehicles will cause pollution within a 500-meter radius of the project area due to quarrying activities. This has a cumulative impact on the ambient air environment around the project area.

The anticipated data is calculated using AERMOD software and the projected values are found to be within limits.

Mitigation measures for various impacts

S. No.	Impact	Mitigation measures
1	Dust emission due to drilling	• Using Wet drilling methods • Allowing drilling only with PPE
2	Dust emission due to Blasting	• Carrying out blasting only during specified times • Avoiding blasting during unfavourable weather conditions • Using explosives of good quality
3	Transportation	• Using mist sprayers • Regular wetting of transport roads • Covering the materials carried in tippers with tarpaulin • Proper maintenance of vehicles used for transportation • Conducting regular emission tests for vehicles used for transport • Development of greenbelt is proposed in the safety zone of 10m and 7.5m barriers in the lease area.

3.5 Noise Environment

The main noise generating source during mining operation and related activities are drilling, excavation, loading and transportation. Intermittent noise is generated due to operation of diesel generator.

Impacts

Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area. As per DGMS (Directorate General of Mines Safety) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours. Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife. Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing.

Mitigation Measures

As the distance between the source and receptor increases, the noise level decreases. Hence, there will be a natural attenuation. The proponent has planned to develop green belt in the periphery of the lease area which diminishes sound volume by dampening them. All the equipment/machinery/tippers involved will be properly maintained to control noise generation. Conducting regular health checkups for employees involved. Employees will be made to work on shifts to reduce their exposure time. Providing earplugs to all employees. Providing green walls/nets wherever possible.

3.6 Socio Economic Impact

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 5,00,000 for CER activities. This amount will be subjected to change after public hearing.

3.7 Occupational Health

Impacts

The occupational risk due to proposed mining may be due to drilling, blasting, excavation and transportation. A total of 29 workers will be engaged in the mining activity. Mining activity may cause various health problems to the mines workers as follows:

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lungs disorders.
- Heavy weight lifting by the workers may cause injuries to arms, legs and back.
- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

Mitigation Measures

- The mines worker will be provided with dust mask to minimize the inhalation of the dust.

- Water sprinkling twice in a day is in practice on the haul roads, near excavation and roads to reduce the fugitive dust emission.
- Wet drilling and drilling with dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area
- The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.
- The mines workers will be well trained about the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor disease in the nearby rural population.
- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

4.0 Analysis of Alternatives (Technology & Sites)

The mining technology is semi mechanized Opencast in single-shift operation without any change in technology. The operation will be carried out as per DGMS norms. No alternate technology will be used.

5.0 Environmental Monitoring Programme

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and

soil environments is needed to assess the status of environment during the project operation.

A schedule is framed with timeline to monitor various parameters during the operation of the project. The schedule is framed based on MoEF & CC and Tamil Nadu State Pollution Control Board. In case the SEIAA/TNPCB/MoEF & CC or other statutory bodies demand monitoring of any additional parameter/factor, the same will also be done.

The proposed quarry is a small quarry. Hence the Mines-in-charge will be responsible for environmental related activities. After obtaining EC, the conditions mentioned in EC will be strictly followed. The Mines-in-charge will be responsible for implementing the conditions. EC compliance report will also be submitted periodically.

6.0 Additional Studies

6.1 Risk Assessment & Management

Risk assessment is a method in method in which possible threats/hazards which may arise during mining operations are identified so that adequate machinery/equipment are made available in precaution.

6.2 Rehabilitation and Resettlement (R&R) Plan

No land is acquired from people dwelling in the area. The lease area is an uninhabited land. No R & R plan is proposed.

6.3 Hydrogeological Study

There is a seasonal Odai passing on the western side of the area and a 50m safety distance is provided. And there are seasonal Odai passing on the Western and Northeastern side of the area at 70m and 360m away from the area.

6.4 Slope Stability Study

The proposed quarry is a very small quarry and the production is also less. Opencast mechanized mining with a bench height of 5m and bench width of 5m and 80° Slope

is proposed. The depth of mining is proposed as 38m below ground level , which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

6.5 Disaster Management Plan

Precautionary measures are well explained to all staff by the mines in-charge. PPE necessary for all staff are available in the quarry. No person is allowed to enter inside without PPE. Avoiding quarrying during unfavorable environmental conditions. Carrying out safe blasting by following DGMS norms. Safety equipment like fire extinguisher, first aid kit, etc are present in the mine. Proper maintenance of machinery used for mining. In case of any emergency, the contact numbers of mines in-charge, mines manager, Management contact are available in the mines office.

6.6 Mine Closure Plan

The quarrying operation is proposed up to a depth of 38m BGL only, which will be achieved in 5 years. The ultimate pit dimension will be 268m x 90m x 38m BGL. After completion of the quarrying operation, the mined out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

7.0 Project Benefits

Financial benefits

- This project will contribute financially through payment of taxes like royalty, GST, etc
- The project will also contribute via CSR.

Social benefits

- This project provides employment to 30 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 5,00,000 is allocated.

8.0 Environmental Management Plan

The Environmental Management Plan is developed to ensure that a project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during the project's life cycle.

The effective implementation of EMP is not only reduce pollution load and comply the regulatory requirement but also increase productivity and improve marketability of product. Total EMP Cost for 5 years is 205.64 lakhs i.e., Rs. 33.22 Lakhs of Capital + Recurring cost Rs. 172.42 lakhs. The breakup of EMP cost is given in Table 10.2 of Chapter 10.

9.0 Conclusion

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and EMP funds has been allocated.

The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

ANNEXURE-1

ந.க.எண்.818/கனிமம்/ 2022

புவியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலகம்,
தேனி.
நாள்: 06.01.2023.

MINING PLAN APPROVED
ASST. DIRECTOR GEOLOGY & MINING, THENI
ASST. DIRECTOR (G&M), THENI

குறிப்பாணை:

பொருள் : கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - தேனி மாவட்டம் - போடிநாயக்கனூர் வட்டம் - கோடாங்கிபட்டி கிராமம் - பட்டா புல எண்.110/3 (0.77.0), 110/4 (0.78.5), 110/5 (0.36.5), 127/1 (1.15.5), 127/2 (0.70.5)-ல் 3.78.0 ஹெக்டேர் பரப்புள்ள நிலத்திலுள்ள சாதாரண கற்கள் / கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவர் அளித்த விண்ணப்பம் செய்தது - ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் பெற்று சமர்பிக்கக் கோருதல் - தொடர்பாக.

பார்வை:
1. திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு, எண்.2-5-16, ராஜாஜி தெரு, இலட்சுமிபுரம், பெரியகுளம் வட்டம், தேனி மாவட்டம் விண்ணப்பம் நாள்: 09.09.2021 மற்றும் 19.12.2022.
2. வருவாய் கோட்டாட்சியர், உத்தமபாளையம், கடிதம் ந.க.எண்.2595/2021/அ.4, நாள்:12.04.2022.
3. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி புலத்தணிக்கை அறிக்கை நாள்:04.01.2023.

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1. தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பட்டா நிலத்தில் இருந்து 10 (பத்து) ஆண்டுகளுக்கு உடைகல் மற்றம் கிராவல் வெட்டியெடுக்க திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவர் பார்வை 1-ல் கண்டுள்ளபடி உரிய ஆவணங்களுடன் விண்ணப்பம் அளித்துள்ளார்.

2. மேற்படி விண்ணப்பங்கள் தொடர்பாக உத்தமபாளையம் வருவாய் கோட்டாட்சியர் மற்றும் உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி ஆகியோர் புலத்தணிக்கை மேற்கொண்டு தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பட்டா பரப்பில் திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி உரிமம் வழங்க கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

நிபந்தனைகள்:

1. விண்ணப்ப புலங்களில் புல எண்.127/1-ற்கு மேற்கு பகுதியில் வடக்கு தெற்காக செல்லும் பட்டா ஓடை மற்றும் தென்மேற்கு பகுதியில் புல எண்.110/2-ல் செல்லும் அரசு புறம்போக்கு ஓடை ஆகியவற்றிற்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.

2. விண்ணப்ப புல எண்.110/3, 110/4, 110/5 கிழக்கு பகுதியில் புல எண். 110/6 மற்றும் விண்ணப்ப புல எண்.127/1, 127/2-ல் வடக்கு பகுதியில் புல எண்.127/3-ல் அமைந்துள்ள அரசு புறம்போக்கு வண்டிப்பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.

3. அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.

4. 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண் 41-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தை 90 நாட்களுக்குள்ளும் அதனைத் தொடர்ந்து 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண் 42-ன் படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவு பெற்று சமர்ப்பிக்கப்படவேண்டும்.

3. எனவே, உத்தமபாளையம் வருவாய் கோட்டாட்சியர் மற்றும் உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, தேனி ஆகியோரின் பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், தேனி மாவட்டம், போடிநாயக்கனூர் வட்டம், கோடாங்கிபட்டி கிராமம், புல எண். 110/3 (077.0), 110/4 (0.78.5), 110/5 (0.36.5.), 127/1 (1.15.5), 127/2 (0.70.5)-இல் 3.78.0 ஹெக்டேர் பரப்பில் 1959ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன் படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு திரு.ரா.சீனிவாசன், த/பெ.ராமசுப்பு என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

4. தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண். 41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக்கொள்ளப்படுகிறது. 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன் படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்பிக்கும் பட்சத்தில் குவாரி உரிமம் வழங்குவது தொடர்பான நடவடிக்கைகள் எடுக்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

06.01.2021

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
தேனி.

பெறுநர்:
திரு.ரா.சீனிவாசன்,
த/பெ.வெ.ராமசுப்பு,
எண்.2-5-16, ராஜாஜி தெரு, இலட்சுமிபுரம்,
பெரியகுளம் வட்டம், தேனி மாவட்டம்

ANNEXURE-2

From
Thiru.S.Krishna Mohan,
Assistant Director,
Geology and Mining,
Theni.

To,
Thiru R.Seenivasan,
S/o.Ramasubbu,
No.2-5-6,Rajaji Street,
Lakshmipuram,
Periyakulam Taluk,
Theni District.

Roc. No.818/2021/Mines, dated.25.01.2023

Sub: Mines and Minerals - Minor Mineral - Gravel & Rough stone - Theni District - Bodinayakkanur Taluk - Kodangipatti Village - Patta land - in S.F. No.110/3,110/4,110/5,127/1 & 127/2 - Over an extent of 3.78.0 Hects - Quarry lease application preferred by Thiru R.Seenivasan – Precise area communicated - Draft Mining Plan submitted - Approval accorded -Regarding.

Ref:
1. Quarry lease application preferred by Thiru R.Seenivasan, dated. Nil received by this office on 09.09.2021 and 19.12.2022.
2. Revenue Divisional Officer, Uthamapalayam letter Roc.No.2595/2021/அ4,dated.12.04.2022.
3. The Assistant Director, Theni memo Roc. No.818/Mines/2021, dated.06.01.2023.
4. Letter dated.Nil received from Thiru R.Seenivasan 12.01.2023

*****

Thiru R.Seenivasan has preferred and submitted an application dated. 09.09.2021 and 19.12.2022 for the grant of quarry lease to quarry Gravel and Rough stone in SF.Nos. 110/3,110/4,110/5,127/1 & 127/2, over a total extent of 3.78.0 Hects of Kodangipatti Village, Bodinayakkanur Taluk under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Based on reports and recommendations of the Revenue Divisional Officer, Uthamapalaym and Assistant Director, Department

of Geology and Mining, Theni precise area was communicated by Assistant Director to Thiru R.Seenivasan n with a direction to submit the draft mining plan as stipulated in rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Thiru R.Seenivasan has submitted the draft Mining Plan and the same has been examined in detail and observed that the applicant has proposed to quarry 3,61,855 cbm of Rough stone and 74,232cbm of Gravel up to a depth of 38 meters from the surface level for a period of 5 years and it is found to be in accordance with the guidelines issued by the Commissioner of Geology and Mining, Chennai vide letter Roc.No.3868/LC/2012 dated 19.11.2012. Therefore, the mining plan submitted by Thiru R.Seenivasan in respect of the subject area is here by approved subject to the following conditions:

I. Safety distance of 50 meters should be provided to the Government poramboke odai situated in lease applied S.F.No.127/1 and 50 meters for the Government poramboke odai situated in S.F.No.110/2 which is located on South western side of the lease applied area.

II. Safety distance of 10 meters should be provided to the Government Poramboke Vandi Pathai situated in S.F.No.110/6 and 127/3 which is located on the East and Northern side of the lease applied area

III. Safety distance of 7.5 meters should be provided to the adjoining patta lands.

IV. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central

Government, State Government or any other authority.

V. This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.

VI. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

VII. Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

VIII. If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

IX. Safety distances mentioned in the precise area has to be maintained for the entire duration of the lease period.

X. Waste material should be dumped within the lease granted area as earmarked in the Mining Plan.

XI. Quarrying operations and production shall be carried out as per the approved Mining Plan and the applicant shall be liable to pay the cost of mineral if there is any deviation in the quantum indicated in the approved year wise quantum of production and any such cases as on date are to be dealt with as per Court direction.

XII. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules 1959 and other rules and act in force will attract.

XIII. The applicant shall strictly adhere to the statutory and safety requirements.

Encl: Approved Mining Plan.

25-01-2023

Assistant Director,
Dept. of Geology and Mining,
Theni.

ANNEXURE-3

From

Thiru.S.Krishna Mohan,
Assistant Director,
Geology and Mining,
Theni.

To

Thiru R.Seenivasan,
S/o.Ramasubbu,
No.2-5-6,Rajaji Street,
Lakshmipuram,
Periyakulam Taluk,
Theni District.

Roc. No.818/2021/Mines, dated.09.02.2023

Sub: Mines and Minerals - Minor Mineral - Gravel & Rough stone - Theni District - Bodinayakkanur Taluk - Kodangipatti Village - Patta land - in S.F. No.110/3,110/4,110/5,127/1 & 127/2 - Over an extent of 3.78.0 Hects - Quarry lease application preferred by Thiru R.Seenivasan – Precise area communicated - Draft Mining Plan submitted - Approval accorded – 500 meter radius quarry details – Requested - Regarding.

Ref:
1. Quarry lease application preferred by Thiru R.Seenivasan, dated. Nil received by this office on 09.09.2021 and 19.12.2022.
2. The Assistant Director, Theni memo Roc. No.818/Mines/2021, dated.06.01.2023
3. Mining Plan approved Roc No.818/Mines/2021,dated.25.01.2021
4. Requestation letter received from applicant on 06.02.2023

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Thiru R.Seenivasan has preferred and submitted an application dated. 09.09.2021 and 19.12.2022 for the grant of quarry lease to quarry Gravel and Rough stone in SF.Nos. 110/3,110/4,110/5,127/1 & 127/2, over a total extent of 3.78.0 Hects of Kodangipatti Village, Bodinayakkanur Taluk under Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Based on reports and recommendations of the Revenue Divisional Officer, Uthamapalaym and Assistant Director, Department of Geology and Mining, Theni precise area was communicated by Assistant Director to Thiru R.Seenivasan with a direction to submit the draft mining plan as stipulated in rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Thiru R.Seenivasan has submitted the draft Mining Plan and the same have been approved on.25.01.2023. In this connection the applicant has requested to furnish the details of quarry lease situated within 500 mts radius from the subject quarry for obtaining Environmental Clearance from the state level Environment Impact Assessment Authority.

In this connection it is stated that the following existing and abandoned quarries are located within 500 radius distance from the proposed area for clearance.

A. Existing Quarries

S. No.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)	Collector's Proc No.& Date.	Lease Period
1.	Thiru M.Thiyagarajan	Kodangipatti Village & Bodinayakkanur	156/1, 156/2A,& 156/3A	2.73.0	Roc No.158/Mines/2018,dated.08.02.2023	10.02.2023 to 09.02.2033

B. Abandoned/Expired Quarries

S.No.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)	Collector's Proc No.& Date.	Lease Period
1.	NIL					

C.Present Proposed Quarries

S.No.	Name of the owner	Village and Taluk	S.F.No.	Extent (in Hects)	Collector's Proc No.& Date.	Lease Period
1.	Thiru R.Seenivasan	Kodangipatti Village & Bodinayakkanur	110/3,110/4,110/5,127/1 & 127/2	3.78.0	-	-

Assistant Director,
Dept. of Geology and Mining,
Theni.

Copy to,
The Chairman,
State level Environment
Impact Assessment Authority,
3rd floor,Panagal Maligai,
No.1,Jeenis Road,
Saidapet,Chennai.