# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT 8

# ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

**Environmental Clearance under EIA Notification – 2006** Schedule Sl. No. 1 (a) (i): Mining Project

"B1" CATEGORY (Cluster) - MINOR MINERAL - CLUSTER -

PATTA LAND - FRESH QUARRY

TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD., ROUGH STONE AND GRAVEL QUARRY

Extent – 4.54.0 Ha

Lease Period: 10 Years

Cluster Extent – 9.39.70 Ha

**Project Proponent** 

Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran (Auhtorized Person)

No.14, Jaffer Street, Chennai - 600 001 Tamil Nadu State

PROJECT LOCATION	PROPOSED PRODUCTION
S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3	Reserves: 9,93,285 m <sup>3</sup> of Rough Stone,
Netrampakkam Village,	& 69,228 m <sup>3</sup> of Gravel
Maduranthangam Taluk	Peak Production = 1,29,890m <sup>3</sup> of Rough Stone,
Chengalpattu District, Tamil Nadu	23,634 m <sup>3</sup> of Gravel
	Proposed Depth = 47m bgl

ToR Identification: TO24B0108TN5754505N Dated: 22/04/2024

#### **Environmental Consultant**

GEO EXPLORATION AND MINING SOLUTIONS

Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram,

Salem - 636 004, Tamil Nadu, India Accredited for sector 1 Cat 'A', sector 31 & 38 Cat 'B'

Certificate No: NABET/EIA/2225/RA 0276

Phone: 0427-2431989,

Email: infogeoexploration@gmail.com Web: www.gemssalem.com



#### Laboratory

EHS 360 LABS PRIVATE LIMITED.

10/2 Ground floor, 50th street, 7th Avenue, Ashok Nagar, Chennai – 600 083.



**MARCH TO MAY 2024** 

**JULY 2024** 



# **UNDERTAKING**

I A. Manimaran given undertaking that this EIA & EMP report prepared for our Rough Stone and Gravel quarry situated in S.F. No 14/1A, 14/1B, 14/2 & 15/3 over an extent of 4.54.0Ha in Netrampakkam Village, Maduranthangam Taluk, Chengalpattu District based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide ToR Identification: T024B0108TN5754505N Dated: 22/04/2024. I hereby assured that the Data's submitted and information given by me is true and correct to the best of my knowledge.

Signature of the Project Proponent

A. Manimaran

Place: Chengalpattu

Dated:

# **DECLARATION**

I Dr. M.Ifthikhar Ahmed – EIA Co Ordinator declare that the EIA & EMP report for the Rough stone and Gravel quarry in S.F. 14/1A, 14/1B, 14/2 & 15/3 of 4.54.0Ha in Netrampakkam Village, Maduranthangam Taluk, Chengalpattu District has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

The Data's provided in the EIA report are true and correct to the best of my knowledge.

Signature of the EIA Co Ordinator

Dr. M. Ifthikhar Ahmed

Dr. M. Blemmann Mar

**Managing Partner** 

M/s. Geo Exploration and Mining Solutions

Place: Salem

Dated:

For easy representation of Proposed and Existing, Expired and Abandoned Quarries in the Cluster are given unique codes and identifies and studied in this EIA/ EMP Report.

	PROPOSED QUARRIES				
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
P1	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran (Auhtorized Person) No.14, Jaffer Street, Chennai – 600 001 Tamil Nadu State	Netrampakkam	14/1A, 14/1B, 14/2 & 15/3	4.54.0	ToR Identification: T024B0108TN5754505 N Dated: 22/04/2024.
		TOTA	L EXTENT	4.54.00	
		EXISTING Q	UARRIES		
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
E-1	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran (Auhtorized Person) No.14, Jaffer Street, Chennai – 600 001 Tamil Nadu State	Netrampakkam	13/2	2.02.50 На	03.10.2019 - 02.10.2024
E-2	M/s. Naveen Enterprises, P. Somasekar Reddy, (Administrative Partner), Side Portion, No.2/141-4, Udaiyar Strret, Minnampalli, Namakkal Taluk & Distict – 637 019.	Nallamur	37/1, 37/23(P), 37/24 (P), 37/25 (P), 37/6 (P)	2.83.20	09.05.2023 - 08.05.2033
		TOTA	L EXTENT	4.85.70	
	TOTAL CLUSTER EXTENT		9.39.70		

Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016

# TERMS OF REFERENCE (ToR) COMPLIANCE

Tvl. Triway Warehouse & Holdings Pvt. Ltd – TO24B0108TN5754505N Dated:22.04.2024

	Consider Towns of Defenses of the	(Mining of Minauala)
	Specific Terms of Reference for ( SEIAA Specific Co	
1	The Authority accepted the recommendation of SEAC	Noted & Agreed
-	and decided to grant Terns of Reference (ToR) with	110000001181000
	Public Hearing based on the studies, assessments and	
	records to be produced as sought by the SEAC and	
	SEIAA, for undertaking Environmental Impact	
	Assessment study and preparation of Environment	
	Management Plan subject to the conditions as	
	recommended by SEAC for the production quantity of	
	9,93,285 m <sup>3</sup> of Gravel for a depth of upto 47m bgl for	
	the project life of 10 years as per the approved mining	
	1 0 1 11 0	
	SEAC Standard Co.	l nditions
1	In the case of existing/operating mines, a letter	Not Applicable. It is Fresh Quarry
_	obtained from the concerned AD (Mines) shall be	The supplication to the first Commity
	submitted and it shall include the following:	
	(i) Original pit dimension	
	(ii) Quantity achieved Vs EC Approved Quantity	
	(iii) Balance Quantity as per Mineable Reserve	
	calculated.	
	(iv) Mined out Depth as on date Vs EC Permitted	
	depth	
	(v) Details of illegal/illicit mining	
	(vi) Violation in the quarry during the past working.	
	(vii) Quantity of material mined out outside the mine	
	lease area	
	(viii) Condition of Safety zone/benches	
	(ix) Revised/Modified Mining Plan showing the	
	benches of not exceeding 6 m height and ultimate	
	depth of not exceeding 50m	
2	Details of habitations around the proposed mining area	Detailed in Chapter No.3
	and latest VAO certificate regarding the location of	
	habitations within 300m radius from the periphery of the	
	site.	
3	The PP shall submit a detailed hydrological report	The details of hydrological report in chapter-3
	indicating the impact of proposed quarrying operations	
	on the waterbodies like lake, water tanks, etc located	
	within 1 km of the proposed quarry.	
4	The Proponent shall carry out Bio diversity study	Detailed in Chapter No.3
	through reputed Institution and the same shall be	
	included in EIA Report.	
5	The PP shall furnish DFO letter stating that the	Palavur R.F – 3.65 Km South West
	proximity distance of Reserve Forests, Protected Areas,	DFO letter has been obtained and attached in the
	Sanctuaries, Tiger reserve etc., up to a radius of 25 km	Draft EIA/EMP report annexure
	from the proposed site.	•
6	In the case of proposed lease in an existing (or old)	Not Applicable. It is Fresh Quarry
	quarry where the benches are not formed (or) partially	
	formed as per the approved Mining Plan, the Project	
	Proponent (PP) shall the PP shall carry out the scientific	
	studies to assess the slope stability of the working	
	benches to be constructed and existing quarry wall, by	
	involving any one of the reputed Research and	
	Academic Institutions - CSIR-Central Institute of	
	Mining & Fuel Research / Dhanbad, NIRM/Bangalore,	
	Division of Geotechnical Engineering-IIT-Madras,	
	NIT-Dept of Mining Engg, Surathkal, and Anna	
	University Chennai-CEG Campus. The PP shall submit	
	Oniversity Chemiai-CEO Campus. The PP shall submit	

		*
	a copy of the aforesaid report indicating the stability	
	status of the quarry wall and possible mitigation	
	measures during the time of appraisal for obtaining the	
	EC.	
7	However, in case of the fresh/virgin quarries, the	The PP will submit the Slope Stability Plan when
	Proponent shall submit a conceptual 'Slope Stability	the depth reaches 30m.
	Plan' for the proposed quarry during the appraisal while	
	obtaining the EC, when the depth of the working is	
	extended beyond 30 m below ground level.	
8	The PP shall furnish the affidavit stating that the blasting	Affidavit will be submitted in the Final
	operation in the proposed quarry is carried out by the	EIA/EMP report
	statutory competent person as per the MMR 1961 such	
	as blaster, mining mate, mine foreman, II/I Class mines	
	manager appointed by the proponent.	
9	The PP shall present a conceptual design for carrying out	The PP will submit the conceptual design for
	only controlled blasting operation involving line drilling	carrying out only controlled blasting in the Final
	and muffle blasting in the proposed quarry such that the	EIA Appraisal.
	blast-induced ground vibrations are controlled as well as	
	no fly rock travel beyond 30 m from the blast site.	
10	The EIA Coordinators shall obtain and furnish the	There is no other quarry is operated by the
	details of quarry/quarries operated by the proponent in	proponent
	the past, either in the same location or elsewhere in the	
	State with video and photographic evidences.	
11	If the proponent has already carried out the mining	Not Applicable
	activity in the proposed mining lease area after	
	15.01.2016, then the proponent shall furnish the	
	following details from AD/DD, mines	
12	If the proponent has already carried out the mining	It is a fresh quarry
	activity in the proposed mining lease area after	• •
	15.01.2016, then the proponent shall furnish the	
	following details from AD/DD, mines.	
	a. What was the period of the operation and stoppage of	
	the earlier mines with last work permit issued by the	
	AD/DD mines?	
	b. Quantity of minerals mined out.	
	c. Highest production achieved in any one year	
	d. Detail of approved depth of mining.	
	e. Actual depth of the mining achieved earlier.	
	f. Name of the person already mined in that leases area.	
	g. If EC and CTO already obtained, the copy of the same	
	shall be submitted.	
	h. Whether the mining was carried out as per the	
	approved mine plan (or EC if issued) with stipulated	
	benches.	
13	All corner coordinates of the mine lease area,	Satellite imagery of the project area along with
	superimposed on a High-Resolution Imagery/Topo	boundary coordinates is given in the Chapter No
	sheet, topographic sheet, geomorphology, lithology and	2, Figure No.2.7, Table no. 2.2.
	geology of the mining lease area should be provided.	Geomorphology of the area is given in Chapter
	Such an Imagery of the proposed area should clearly	No 2, Figure No.2.8
	show the land use and other ecological features of the	Land use pattern of the project area is tabulated
	study area (core and buffer zone).	in the Chapter No.2. Table no 2.3
	,	Land use pattern of the Study area is tabulated in
		the Chapter No.3, Table no 3.3 Page no.52
14	The PP shall carry out Drone video survey covering the	Drone video for this cluster will be taken and it
	cluster, Green belt, fencing etc.,	will be submitted in the Final EIA/EMP report.
15	The proponent shall furnish photographs of adequate	The Barbed Wire fencing has been erected all
15	fencing, green belt along the periphery including	around the boundary. The Photographs is
	replantation of existing trees & safety distance between	attached in chapter-2
	the adjacent quarries & water bodies nearby provided as	amenou in onapor 2
	per the approved mining plan.	
		D. H. H. Ol M. A.
16	The Project Proponent shall provide the details of	LDetailed in Chapter No 2
16	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned	Detailed in Chapter No.2

	production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	
17	The Project Proponent shall provide the Organization chart indicating the appoint sent of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Discussed about Organization chart in Chapter-6
18	The Project Proponent shall conduct the hydrogeological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No.3.
19	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	Baseline Data were collected for One Season (Pre Monsoon) Mar 2024 to May 2024 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
20	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Cumulative impact study has been carried out covering proposed and existing quarries in the cluster and results related to air pollution, water pollution, & health impacts have been given in chapter No. 7, Pg. No 121, Based on the results, environmental management plan has been prepared and given in Chapter No. 10.
21	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Discussed in Chapter No3
22	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3.  Land use plan of the project area showing preoperational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3.
23	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable
24	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Not applicable
25	Description of water conservation measures proposed to be adopted in the Project should be given. Details of	Not Applicable.

	rainwater harvesting proposed in the Project, if any, should be provided.	Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
26	Impact on local transport infrastructure due to the Project should be indicated.	Detailed in Chapter No.3
27	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	There are no trees present in the target mining area and few trees present in the safety barrier. It is proposed to plant 2270 trees along boundary and nearby village roads.  There are few trees in buffer zone of 300 m from the proposed lease area and it shall not be cut down or have any impact due to the mining activities and project proponent ensures to carrying out activities like watering for preserving the green cover around 300 m from proposed project site.
28	A detailed mine closure plan for the proposed project shall be included in E1A/EMP report which should be site-specific.	Mine closure plan is detailed in Chapter:4.
29	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible	The Flora and Fauna Study will be carried out along with educating local School students by the Functional Area Experts in Ecology and Biodiversity
30	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Species are proposed to plant in the safety barrier as mentioned in the ToR appendix.  Proposed species are given in the Chapter No 4
31	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	The plantation activities carried out in the project site as per the ToR condition It is a fresh lease. Around 2270 trees are proposed to plant
32	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Disaster management Plan details in Chapter-7
33	A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A Risk Assessment and management Plan Chapter- 7
34	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health impacts chapter- 10
35	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial	No Public Health Implications anticipated due to this project.  Details of CER and CSR are discussed under Chapter 8.

	measures should be detailed along with budgetary allocations.	
36	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	No Negative Impact on Socio Economic Environment on the Study Area is anticipated and this project shall benefit the Socio-Economic Environment by ways of employment for 51 people directly and 100 people indirectly.
37	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No Litigation is pending against the Project Proponent
38	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Project benefit is given in the Chapter No.8
39	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF & CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	It is a Fresh lease
40	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	The EMP has been prepared for the 5 years and the details are given in the Chapter No. 10
41	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted and agreed
	Annexure 'I	
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Cluster Management Committee has been constituted initially with 2 quarries.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc	The information will be shared to the cluster management committee during the monthly meeting.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	All the information has been discussed in Chapter No.2.
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	The risk management plan and disaster management plan will be followed as per the EIA report.
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Environmental policy is described in the EIA report Chapter No. 6 and the same will be followed.

7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Proper action plan regarding the restoration will be followed by the committee.
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.
11	The committee shall furnish the tire safety and evacuation plan in the case of fire accidents.	The fire safety and evacuation plan will be carried out by as per the respective quarry mines managers.
Imp	act study of mining	5
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following  a) Soil health & soil biological, physical land chemical features.  b) Climate change leading to Droughts, Floods etc. c) Pollution leading to release of Greenhouse gases	Details of Soil health is given in Chapter No 3 and biodiversity is given in Chapter No 3.  The project will not cause any significant changes in the climate Climatic changes and GHG are described in Chapter No 4.  Details of water contamination and impact on aquatic ecosystem is given in Chapter No 4.  Hydrothermal/ Geothermal effects due to
	(GHG), rise in Temperature, & Livelihood of the local people. d) Possibilities of water contamination and impact on aquatic ecosystem health. e) Agriculture, Forestry & Traditional practices. f) Hydrothermal/Geothermal effect due to destruction in the Environment. g) Bio-geochemical processes and its foot prints including environmental stress. h) Sediment geochemistry in the surface streams.	destruction in the environment, Bio geochemical process and sediment geo chemistry given in the Chapter No 7.
Agr	iculture & Agro-Biodiversity	L
Agi	iculture & Agro-Diodiversity	
13	Impact on surrounding agricultural fields around the proposed mining Area.	As the proposed lease area is dominantly surrounded by mining land, barren land, and fallow land, the impact on the surrounding agricultural fields if present will be low. With proper mitigation measures, the project will be carried out to reduce the impact further to the level of negligence.
14	Impact on soil flora & vegetation around the project site.	The vegetation details have been provided in chapter III. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	The vegetation details have been provided in chapter III. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Details are discussed in Chapter No.3

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17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The Eco System of the area will be retained during the mining operation by the way of planting trees in the boundary barrier and un utilized areas.  After completion of mining operation, the quarried-out pit will be facilitated to collect the rainwater to pit act as temporary reservoir
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The project area is bounded by Existing quarries on the South side and North side barren land.  Budgetary allocation given in the Chapter No. 10.
Fore	ests	
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	There is no Reserve Forest within 1km radius from the project area. The mining operation will not cause any significant impact to the Reserve Forest and Wild life Sanctuaries
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna	There is no forest/wildlife within 10km radius, chapter 3 details of Ecology and Biodiversity, and 4 endemic vulnerable and endangered indigenous flora and fauna.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Details are discussed in the Chapter No.3
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
Wa	ter Environment	
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, Ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	There are 7 open wells and 8 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method
24	Erosion Control measures.	Details discussed in the chapter No.4
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/Rivers, & any ecological fragile areas.	Details in Chapter 3
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Food webs describe who eats whom in an ecological community. Made of interconnected food chains, food webs help us understand how changes to ecosystems — say, removing a top predator or adding nutrients — affect many different species, both directly and indirectly. Whereas in this proposed project is for quarrying of Rough Stone and Gravel and is on a hard batholith formation where no diversion of any water bodies is proposed of there is no intersection of ground water table anticipated.
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Details are given in the Chapter No 4.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and	Details in Chapter 4 impact of bio diversity.

	possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible		
	land form changes visual and aesthetic impacts.		
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical chemical components and microbial components.	Details of impact on soil environment is detailed in Chapter No.4	
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Palavur Reserve Forest – 3.65 km SW There is, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10km. An ecological survey of the study area was conducted particularly with reference to the listing of species and assessment of the existing baseline ecological (terrestrial) condition in the study area. Ecological Environment is discussed under Chapter 3	
En	ergy		
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Detailed discussed in chapter 4	
Clin	nate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	A greenhouse gas (GHG) is a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are carbon dioxide (CO <sub>2</sub> ), methane	
		(CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O), and ozone (O <sub>3</sub> ) Carbon dioxide (CO <sub>2</sub> ): Carbon dioxide enters the	
		atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.  Methane (CH <sub>4</sub> ): Methane is emitted during the	
		production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills.  Nitrous oxide (N <sub>2</sub> O): Nitrous oxide is emitted during agricultural, land use, and industrial	
		activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater	
33	The Environmental impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Detailed discussed in chapter 3.	
Mi	ne Closure Plan		
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Progressive Mine closure plan has been prepared considering the entire lease period in the mining plan and the same has been approved.	
EMP			
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering	Detailed discussed in chapter 10.	

	the entire mine lease period as per precise area	
	communication order issued.	
36	The Environmental Impact Assessment should hold	Detailed discussed in chapter 10.
	detailed study on EMP with budget for Green belt	
	development and mine closure plan including disaster	
	management plan.	
	Risk Assessment	
37	To furnish risk assessment and management plan	A Risk Assessment and management Plan
	including anticipated vulnerabilities during operational	Chapter- 7
	and post operational phases of Mining.	-
	Disaster Management Plan	
38	To furnish disaster management plan and disaster	Disaster management Plan details in Chapter-7
	mitigation measures in regard to all aspects to	
	avoid/reduce vulnerability to hazards & to cope with	
	disaster/untoward accidents in & around the proposed	
	mine lease area due to the proposed method of mining	
	activity & its related activities covering the entire mine	
	lease period as per precise area communication order	
	issued.	
Oth		
39	The project proponent shall furnish VAC) certificate	
	with reference to 300m radius regard to approved	Letter obtained from the VAO regarding surface
	habitations, schools, Archaeological sites, Structures,	features within 300m radius and attached in
	railway lines, roads, water bodies such as streams, odai,	Annexure
	vaari, canal, channel, river, lake pond, tank etc.	
40	As per the MoEF& CC office memorandum F.No.22-	
	65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the	The issues reised during mublic bearing is!!!!-
	proponent shall address the concerns raised during the	The issues raised during public hearing is will be
	public consultation and all the activities proposed shall	addressed in the Final EIA/EMP Report
	be part of the Environment Management Plan.	
41	The project proponent shall study and furnish the	
1	possible pollution due to plastic and microplastic on the	
	environment. The ecological risks and impacts of plastic	Plastic waste management in the project area
	& microplastics on aquatic environment and fresh water	detailed in Chapter No.7.
	systems due to activities, contemplated during mining	detailed in Chapter 100.7.
	may be investigated and reported.	

	STANDARD TERMS OF REFERENCE				
S. No	Terms of Reference	Reply			
1.1	An EIA-EMP Report shall be prepared for peak capacity (.MTPA) operation in an ML/project area ofha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Peak Production = 1,29,890m³ of Rough Stone Proposed Depth = 47m bgl Project area of 4.54.0Ha.			
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through	Peak capacity of 1,29,890m³operation to cover the impacts and environment management plan in chapter- IV and Chapter-10 covered in project specific activities.			
	collection of data and information, generation of data on impacts including prediction modeling for MTPA of mineral production based on approved project/Mining Plan for MTPA.	Baseline Data were collected for Summer Season March – May 2024 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III			

1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Noted, Google earth image showing lease area with Coordinates of pillars in chapter-
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also.	Land use and land cover of the 10km Radius of study area is discussed in Chapter No. III.  Geology map of the project area covering 10km radius Figure No. 2.5, Page No. 20. Geomorphology of the area is given in Chapter No 2 Figure No 2.6, Page No. 20  There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Land use and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc.,
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted.	Drainage pattern around 10km radius showing streams and lakes etc., is discussed in Chapter No. 3.
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	Details in chapter-2 showing the land features. And also enclosed Approved mining plan in annexure

1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The Rough Stone quarry formation is a hard, compact and homogeneous body.
		The height and width of the bench will be maintained as 5m with 90° bench angles.  Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate.
		Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., approach	Not Applicable. The details of waste dump management are given in the Chapter No. 4
	roads, major haul roads, etc should be indicated.	

			idiligs Fvt. Ltd.	, 8					Z EWIF Report
	Origina		land	use	` •	icultural		nd land cover of	•
			nd/grazing		d/wastelar		is discussed	in Chapter No.	3.
			he area sho	-		-	I and use n	an of the projec	t area showing
	tables given below. Impacts of project, if any on					-	onal, operation	-	
	the l	and	use, in	particul	lar, agr	icultural		phases are	
	land/for	restla	nd/grazing	land/wate	r bodies	falling			
	within the lease/project and acquired for mining					Chapter No	. 2, Table No 2.5	).	
		operations should be analyzed. Extent of area under						1	1
	surface rights and under mining rights should be							Present area	Area at the end
		_	ea under Su	_	_	iouiu ot	Description	(Ha)	of lease period
	specific	1	eu under bu	Area	Area		<u> </u>		(Ha)
				under	Under	Area	Area	NI:1	2 47 40
		МІ	. project	Surfac	Minin	under	under	Nil	3.47.40
1 10	Sno		nd use	e	g	Both	quarrying		
1.12				Rights	Right	(ha)	Infrastruc	NI:1	0.02.00
				(ha	s(ha)	()	ture	Nil	0.02.00
		Agı	riculture				D 1-	Nil	0.04.00
	1	Lan					Roads	NII	0.04.00
	2	For	est Land				Green	Nil	0.87.78
	3	Gra	zing Land				Belt	INII	0.87.78
	4	Sett	tlements				Unutilize		
		Oth					d Area	4.54.0	0.12.82
	5	(Sp	ecify)				u Alca		
							Grand	4.54.0	4.54.0
	S.No		De	<b>Details</b> Area		a (Ha)	Total	7.57.0	4.54.0
	1		Buil	dings					
	2		Infrast	tructure					
	3		Ro	ads					
	4			(Specify)					
				otal					
			1	<i>-</i>					
	Study o	n the	existing flor	a and faun	a in the st	udy area	Detailed bio	logical study of	the study area
1.13	•		ıld be carrie			•		-	10 km radius of
			ipline. The	-			the periphery of the mine lease)] was carried		
			d separately			•		ssed under Cha	· -
			ent clearly s			•			
			a part of the					-	cies of animals
			fauna should					•	as per Wildlife
	_		red flora ar	_		•			as no species is
		_					in vulnerab	le, endangered	or threatened
		•	visited or us		•		category as	per IUCN.	There is no
	_		if the projec				endangered r	ed list species fo	und in the study
	_	-	sensitive ar				area.	-	•
	corrido	r the	n a Compre	hensive C	onservati	on Plan			
	One-se	ason	(other than	monsoon)	primary	baseline	Baseline Data	a were collecte	ed for Summer
			ronmental q	,	-		season Marc	h–May 2024	as per CPCB
			and heavy n				Notification	and MoE	•
1.14			oise, water		_			etails in Chapter	
			with one-s		_		S SIGOIIIIOS.DC	in Chapter	
		_	me season			_			
						_			
	should be provided. The detail of NABL/								
	MoEF&	ecc.	certificati	on of	the re	spective			

1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air) / downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-	Details in chapter-3 showing the various sampling stations As per CPCB guidelines.
	impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10km buffer zone i.e., dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided.	Air Quality Modelling and windrose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model.  Details in Chapter No. 4.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/EMP report.	Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter-II.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of	Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area.  The study should also include the status of infrastructural facilities and amenities present in the study area  CSR are discussed under Chapter 8.
	assessment with census data to be provided and to	

	The Ecology and biodiversity study should also	Detailed Ecology and biodiversity study in
	indicate the likely impact of change in forest area	chapter-3
1.19	for surface infrastructural development or mining	
	activity in relation to the climate change of that area	
	and what will be the compensatory measure to be	
	adopted by PP to minimize the impact of forest	
	diversion.	
	Baseline data on the health of the population in	Detailed in chapter-4 population in the
1.20	the impact zone and measures for occupational	impact zone and measures for
	health and safety of the personnel and manpower for	occupational health and safety and
	the mine should be submitted.	proposed occupational health in chapter-X
	Impact of proposed project/activity on hydrological	Noted and agreed
1.21	regime of the area shall be assessed and report be	Tvoted and agreed
1,21	submitted. Hydrological studies as per GEC 2015	
	guidelines to be prepared and submitted.	
	Impact of mining and water abstraction from the	The enough victor table is at 62m below
		The ground water table is at 62m below ground level.
	mine on the hydrogeology and groundwater regime	In these projects, ultimate depth is 52m Bgl
1.22	within the core zone and 10 km buffer zone	Billion
1.22	including long-term monitoring measures should be	It is inferred the quarrying activities in the
	provided. Details of rainwater harvesting and	Cumulative EIA project (Quarry) will not
	measures for recharge of groundwater should be	intersect the Ground water table.
	reflected in case there is a declining trend of	
	groundwater availability and/or if the area falls	
	within dark/grey zone.	
1 22	Study on land subsidence including modeling for	Detailed in Chapter-IV Anticipated and
1.23	prediction, mitigation/prevention of subsidence,	mitigation measures of in the study area.
	continuous monitoring measures, and safety issues	
	should be carried out.	T - 1W - P
	Detailed water balance should be provided. The	Total Water Requirement: 2.0 KLD
104	breakup of water requirement as per different	Discussed under Chapter 2, Table No 2.15,
1.24	activities in the mining operations, including use of	The required water will be met from
	water for sand stowing should be given separately.	rainwater accumulated in mine pit (when
	Source of water for use in mine, sanction of the	available) and from the approved water
	Competent Authority in the State Govt. and impacts	vendors.
	vis-à-vis the competing users should be provided.	
	PP shall submit design details of all Air Pollution	Methodology And Instrument Used For Air
	control equipment (APCEs) to be implemented as	Quality Analysis in chapter-3and Air
1.25	part of Environment Management Plan vis-à-vis	Pollution control equipment (APCEs) in
	reduction in concentration of emission for each	chapter-10 sub 10.2 Environmental policy.
	APCEs	
	PP shall propose to use LNG/CNG based mining	Details in Machinery and equipment details
	machineries and trucks for mining operation and	in Chapter-2 Table No 2.10
1.26	transportation of mineral. The measures adopted to	
	conserve energy or use of renewable sources shall	
	be explored.	
	PP to evaluate the green house emission gases	Noted and agreed
1.27	from the mine operation/ washery plant and	1101cd and agreed
1.4/	* * *	
	corresponding carbon absorption plan.	
	Site specific Impact assessment with its mitigation	A Risk Assessment and Disaster
1.28	measures, Risk Assessment and Disaster	Preparedness and management Plan
	Preparedness and Management Plan should be	Chapter- 7

1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Detailed in Machinery and technology used Chapter-3 Table 3.17 – Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2.  Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	Detailed in chapter-2 for mineral transportation route with approach roads etc., and impacting air quality detailed given chapter-4
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	Discussed under Chapter 2.  Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Greenbelt Development Plan is discussed under Chapter 4,
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	The total cost and the details are given in the Chapter No. 10

	D-4-:1f D0D D-4-:1-1:f- D0D	N-4 A1:1-1-
	Details of R&R. Detailed project specific R&R	Not Applicable.
	Plan with data on the existing socio- economic	There are no approved habitations within a
	status of the population (including tribals, SC/ST,	radius of 300 meters.
1.36	BPL families) found in the study area and broad plan	
	for resettlement of the displaced population, site for	Therefore, R&R Plan / Compensation
	the resettlement colony, alternate livelihood	details for the Project Affected People
	concerns/employment for the displaced people, civic	(PAP) is not anticipated and Not
	and housing amenities being offered, etc. and costs	Applicable for this project.
	along with the schedule of the implementation of	
	the R&R Plan should be given.	
	CSR Plan along with details of villages and specific	CSR are discussed under Chapter 8. And
1.37	budgetary provisions (capital and recurring) for	specific budgetary provisions (capital and
1.57	specific activities over the life of the project should	recurring) for specific activities over the
		life of the project in chapter-10
1 20	be given.	
1.38	Corporate Environment Responsibility:	CER are discussed under Chapter 8.
1.20	a) The Company must have a well laid down	Detailed in chapter-10 The Environment
1.39	Environment Policy approved by the Board of	Policy
	Directors.	
	b) The Environment Policy must prescribe for	
1.40	standard operating process/procedures to bring into	
	focus any infringements/deviation/violation of the	
	environmental or forest norms/conditions.	
	c) The hierarchical system or Administrative Order	The Environment Monitoring Cell
1.41	of the company to deal with environmental issues	discussed under Chapter 6
	and for ensuring compliance with the environmental	
	clearance conditions must be furnished.	
	d) To have proper checks and balances, the company	The Environment Monitoring Cell
	should have a well laid down system of reporting of	discussed under Chapter 6
1.42	non-compliances/violations of environmental norms	
	to the Board of Directors of the company and/or	
	shareholders or stakeholders at large.	
	e) Environment Management Cell and its	The Environment Monitoring Cell
1.43	responsibilities to be clearly spell out in EIA/	discussed under Chapter 6
1.43	EMP report	discussed under Chapter 0
		TI D C C C C C C C C C C C C C C C C C C
	f) In built mechanism of self-monitoring of	The Environment Monitoring Cell
1.44	compliance of environmental regulations should be	discussed under Chapter 6
	indicated.	
1.45	Status of any litigations/ court cases filed/pending on	No litigation is pending in any court against
	the project should be provided.	this project
	PP shall submit clarification from DFO that mine	Vedanthangal Bird Sanctuary 15.58km
1.46	does not falls under corridors of any National Park	- NW
	and Wildlife Sanctuary with certified map showing	
	distance of nearest sanctuary.	Karikili Bird Sanctuary – 21.37 Km -
1 47		NW It will submit final EIA/EMD non out
1.47	Copy of clearances/approvals such as Forestry	It will submit final EIA/EMP report
	clearances, Mining Plan Approval, mine closer plan	
	approval. NOC from Flood and Irrigation Dept. (if	
	req.), etc. wherever applicable	

	Details on the Forest Clearance should be given as per	
	the format given:	Palavur R.F - 3.65 Km SW
	Total Mine lease area (ha):	
	Total Forest Land (Ha) :	Total Mine Lease area 4.54.0ha
	Date of FC :	The DFO letter has been obtained and
1.48	Extent of Forest Land :	attached in the Annexure
	Balance area for which FC is yet to be obtained:	
	Status of application for diversion of forest Land:	
	In case of expansion of the proposal, the status of	Enclosed Approved mining plan in Annexure
1.49	the work done as per mining plan and approved	volume-I
	mine closure plan shall be detailed in EIA/ EMP	
	report.	
	Details on Public Hearing should cover the	The outcome of public hearing will be
	information relating to notices issued in the	updated in the final EIA/AMP report.
	newspaper, proceedings/minutes of Public Hearing,	
1.50	the points raised by the general public and	
	commitments made by the proponent and the time	
	bound action proposed with budgets in suitable time	
	frame. These details should be presented in a	
	tabular form. If the Public Hearing is in the	
	regional language, an authenticated English	
	Translation of the same. should be provided.	
1.51	PP shall carry out survey through drone highlighting	Noted and agreed
	the ground reality for at least 10 minutes.	
	Detailed Chronology of the project starting from the	Noted and agreed
	first lease deed allotted/Block allotment/ Land	
	acquired to its No. of renewals, CTO /CTE with	
1.52	details of no. renewals, previous EC(s) granted	
	details and its compliance details, NOC details	
	from various Govt bodies like Forest NOC(s),	
	CGWA permissions, Power permissions, etc as per	
	the requisites respectively to be furnished in tabular	
	form.	
	The first page of the EIA/ EMP report must	As per detailed in front page of Draft
1.53	mention the peak capacity production, area, detail	EIA/EMP, NABET, NABL certification
	of PP, Consultant (NABET accreditation) and	detailed given in the report.
	Laboratory (NABL / MoEF & CC certification)	
	The compliances of Tor must be properly cited	As per Tor compliance each chapter wise
	with respective chapter section and page no in	page and table, figure no given in the
1.54	tabular form and also mention sequence of the	EIA/EMP report.
	respective ToR complied within the EIA-EMP	
	report in all the chapters section.	

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### 1.INTRODUCTION

# 1.0 PREAMBLE

## **Project History: -**

The project proponent Tvl. Triway Warehouse & Holdings Pvt.Ltd., applied for Rough Stone and Gravel Quarry over an extent of 4.54.0 Ha in S.F.No 14/1A, 14/1B, 14/2 & 15/3 Netrampakkam Village, Maduranthangam Taluk, Chengalpattu District.

- Proponent applied for Rough Stone and Gravel quarry lease on 07.02.2022 & 11.08.2023
- Precise area communication letter was issued by the District Collector vide RC. No. 1944/Kanimam/2022
   Dated 18.10.2023
- The Mining plan has been prepared by the Qualified person and got approval vide Letter RC. No. 1944/Mines/2023 Dated 06.11.2023
- The Mining plan has been approved for the quantity of 9,93,285 m<sup>3</sup> of Rough Stone and 69,228m<sup>3</sup> of Gravel up to the depth of 47m bgl for the period of ten years.

As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries - 1 proposal, 2Exiting quarries forming Cluster Category {Total Extent of the Cluster is 9.37.90 Ha}-Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Proponent applied for Terms of Reference Identification: T024B0108TN5754505N Dated 22.04.2024

Based on the ToR Baseline Monitoring study has been carried out for one season ie., **March to May 2024** and this EIA/EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

## 1.1 PURPOSE OF THE REPORT

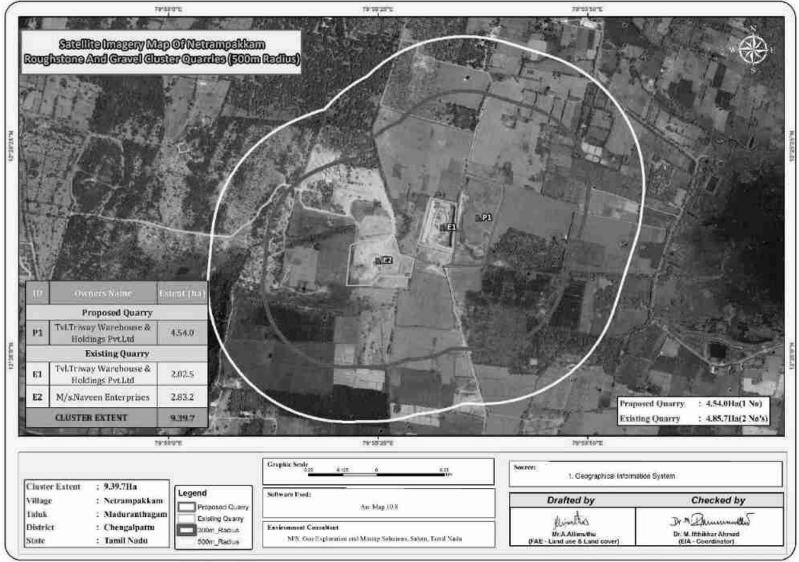
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14<sup>th</sup> September 2006 and its subsequent amendments as per Gazette Notification S.O. 1889 of 20<sup>th</sup>April 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B (≤ 250 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed projects are categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

"Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

# FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES



# 1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENTS

# 1.2.1 Identification of Project Proponent

TABLE 1.1: DETAILS OF PROJECT PROPONENT

Name of the Project Proponent	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Rough Stone and Gravel Quarry	
Address	Thiru. A. Manimaran (Auhtorized Person)	
	No.14, Jaffer Street,	
	Chennai – 600 001	
	Tamil Nadu State	
Mobile	+91 98407 17088	
Email	manimaran@triway.in	
Status	Individual	

# 1.2.2 Identification of Project

TABLE 1.2: SALIENT FEATURES OF THE PROPOSED PROJECT

	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Rough Stone and Gravel Quarry		
Name of the Project			
S.F. No.	14/	14/1A, 14/1B, 14/2 & 15/3	
Extent		4.54.0 ha	
Village, Taluk and District	Netrampakkam Village, N	Iaduranthangam Taluk, Chengalpattu District.	
	It is a patta lands. S.F.Nos. 14/1A & 15/3 is registered in the name of Sankar's		
	Farn Prop. Of Thiru. N. Ravisankar, vide Patta No 301 and other S.F.Nos		
Land Type	14/1B & 14/2 are registered in the name of Thiru. N. Ravisankar, S vide Patta		
	Nos44. The applicant has registered lease deed from the Pattadhar.		
Toposheet No	11	57 P/15	
Latitude between	12° 25'	12° 25' 10.58"N to 12° 25' 21.84"N	
Longitude between		79° 55' 32.75"N to 79° 55' 40.17"E	
Elevation of the area	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	100m AMSL	
Lease period	10 Years		
Mining Plan period	10 years		
Proposed Depth of Mining	47m bgl		
Troposed Depth of Mining	(2m Gravel + 45m Rough stone)		
	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>	
Geological Resources	20,43,000	90,800	
Mineable Reserves	9,93,285	69,228	
Year wise Production for First		· · · · · · · · · · · · · · · · · · ·	
Five years	6,31,510	69,228	
Year wise Production for	2 (1 555		
Second Five years	3,61,775	-	
Peak Production	1,29,890	23,634	
First Five Years Proposed Pit	267m (L	) x 135m (W) x 47m(D) bgl	
Dimension Ultimate Pit Dimension			
	267m (L) x 135m (W) x 47m(D) bgl		
Water Level in the region	0 11 110	63 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and Controlled		
	blasting using Slurry Explosives		
	The lease applied area is exhibiting plain terrain. The area has gentle sloping towards Southern side and altitude of the area is 100m above from Mean Sea		
Topography	level. The area is covered by 2m thickness of Gravel followed by Massive		
	Charnockite which is clearly inferred from the nearby open well		
	Jack Hammer	12 Nos	
Machinery proposed		3 Nos	
	Compressor	3 INOS	

3

	Excavator with Bucket and	3 Nos
	Rock Breaker	
	Tippers	6 Nos
	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry	
Blasting Method	explosive are proposed to be used for shattering and heaving effect for removal	
	and winning of Rough Stone.	
Proposed Manpower	51 Nos	
Deployment		31 1105
Project Cost	Rs. 3,35,90,000/-	
EMP Cost	Rs. 7,60,000/-	
Total Project cost	Rs. 3,43,50,000/-	
CER Cost	Rs. 5,00,000/-	
	Kaalvaai	Inside Lease Area
	Canal	280m_SW
NIII W-4 DII	Canal	420m_SW
Nearby Water Bodies	Tank	700M_E
	Tank	800m_SW
	Ozhavetti Lake	1.7Km_NE
	Proposed to plant 2,270 Nos of trees considering 500 Nos of trees/ Ha criteria	
Greenbelt Development Plan	The plantation will be developed around the project site and nearby village	
	roads	
Proposed Water Requirement	2.0 KLD	
Nearest Habitation	960m – South West	
Nearest Reserve Forest	Palavur R.F – 3.99 Km – SW (Source - TNGIS)	
Nearest Wild Life Sanctuary	Lease applied area to Vedanthangal Bird Sanctuary Lake S.F.No Boundary=15.5km–NW Lease applied area to Vedanthangal Bird Sanctuary Lake Boundary + 5 kms Surrounds = 10.5 km – NW Lease applied area to Karikili Bird Sanctuary Lake S.F.No Boundary =21.5km – NW Lease applied area to to Karikili Bird Sanctuary Lake Boundary + 5 kms Surrounds = 16.5 km – North West	

Source: Approved Mining & Land Documents.

# 1.3 BRIEF DESCRIPTION OF THE PROJECT

## 1.3.1 Nature and Size of the Project

The quarrying operation is proposed to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

The peak production of Rough Stone is 1,29,890m<sup>3</sup> maximum in a year (433m<sup>3</sup> per day/ 37 Tippers per day considering 12m<sup>3</sup> per load). The depth of the mining is 47m bgl.

# 1.3.2 Location of the Project

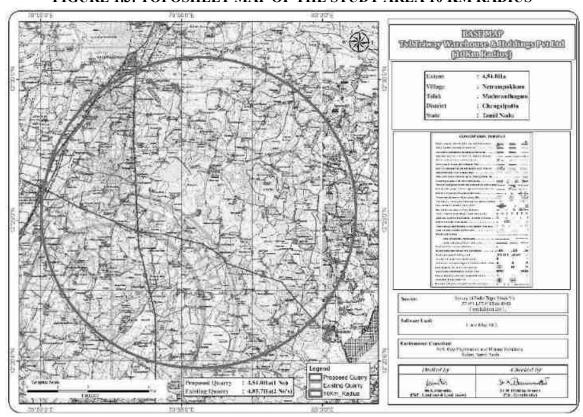
- The project site is located in Netrampakkam Village, Maduranthangam Taluk, Chegalpattu District.
- 29km Southwest of Chegalpattu town, 10km South East of Maduranthangam and lease applied area located along Netrampakkam Village.

# Map Of India Tamiluadu State Chengalpattu District Su Ta solu Maduranthagam Taluk Netrampakkam Village

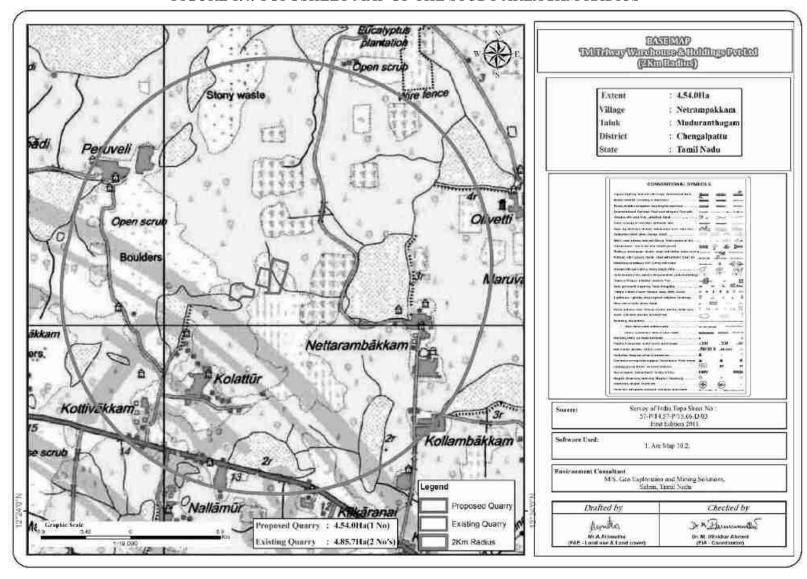
FIGURE 1.2 LOCATION MAP OF THE PROJECT SITE

Source: Survey of India Toposheet 58-H/15

FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS



## FIGURE 1.4: TOPOSHEET MAP OF THE STUDY AREA 2KM RADIUS



#### 1.4 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below: -

- Screening,
- Scoping
- Public consultation &
- Appraisal

#### SCREENING -

- Proponent applied for Rough Stone and Gravel quarry lease on 07.02.2022 & 11.08.2023
- Precise area communication letter was issued by the District Collector vide RC. No. 1944/Kanimam/2022
   Dated 18.10.2023.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Chengalpattu District, vide vide RC. No. 1944/Mines/2023 Dated 06.11.2023
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/459298/2024. dated: 19.01.2024.

#### **SCOPING:**

- The proposal was placed in 451st SEAC meeting held on 13.03.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 709th SEIAA meeting held on 05.04.2024 & 08.04.2024 and issued Terms of Reference Identification: T024B0108TN5754505N Dated 22.04.2024

#### **PUBLIC CONSULTATION**

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

#### APPRAISAL -

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.

## 1.5 TERMS OF REFERENCE (ToR)

The ToR was issued by the SEIAA vide Terms of Reference Identification: T024B0108TN5754505N Dated 22.04.2024. The Details of the ToR Compliance is given in the Page No. a -q.

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### 1.6 POST ENVIRONMENT CLEARANCE MONITORING

The proponent shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1<sup>st</sup> June and 1<sup>st</sup> December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

### 1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the "Environmental Impact Assessment Guidance Manual for Mining of Minerals" published by MoEF & CC.

### 1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the summer season (March to May 2024) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

**TABLE 1.3: ENVIRONMENT ATTRIBUTES** 

Sl.No.	Attributes	Parameters	Source and Frequency		
			Continuous 24-hourly samples twice a		
1	Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub>	week for three months at 7 locations		
			(2 Core & 5 Buffer)		
		Wind speed and direction,	Near project site continuous for three		
2	Meteorology	temperature, relative humidity and	months with hourly recording and		
		rainfall	from secondary sources of IMD station		
			Grab samples were collected at 6		
3	Water quality	Physical, Chemical and	locations – 2 Surface water and 4		
3	water quanty	Bacteriological parameters	Ground water samples; once during		
			study period.		
		Existing terrestrial and aquatic	Limited primary survey and secondary		
4	Ecology	flora and fauna within 10 km	data was collected from the Forest		
		radius circle.	department.		
5	Noise levels	Noise levels in dB(A)	7 locations – data monitored once for		
3	Noise levels	Noise levels iii $dD(A)$	24 hours during EIA study		
6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study		
U	Son Characteristics	i hysical and Chemical I arameters	period		
		Existing land use for different	Based on Survey of India		
7	Land use	categories	topographical sheet and satellite		
		_	imagery and primary survey.		
	Socio-Economic	Socio-economic and demographic	Based on primary survey and		
8	Aspects	characteristics, worker	secondary sources data like census of		
	Aspects	characteristics	India 2011.		

9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydrogeology study report prepared.
	Risk assessment and	Identify areas where disaster can	Based on the findings of Risk analysis
10	Disaster	occur by fires and explosions and	done for the risk associated with
	Management Plan	release of toxic substances	mining.

Source: Field Monitoring Data

# 1.8.1 Regulatory Compliance & Applicable Laws/Regulations for all Proposed Quarries

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance.
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959.
- Terms of Reference Identification: T024B0108TN5754505N Dated 22.04.2024

\*\*\*\*\*\*\*

# 2. PROJECT DESCRIPTION

#### 2.0 GENERAL

The Proposed Rough Stone Quarries requires Environmental Clearance. There are 1 proposed and 2 existing quarries forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016 and the total extent of cluster is 9.39.70 ha.

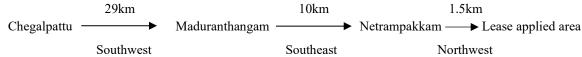
As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

#### 2.1 DESCRIPTION OF THE PROJECT

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from this project. Method of mining is opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.2 LOCATION OF THE PROJECT

- 3 The project site is located in Netrampakkam Village, Maduranthangam Taluk, Chegalpattu District.
- 4 29km Southwest of Chegalpattu town, 10km South East of Maduranthangam and lease applied area located along Netrampakkam Village.



**TABLE 2.1: SITE CONNECTIVITY** 

Nooraat Pandyyay	NH – 179B – Chengalpattu to Tindivanam -9.6 km – North West	
Nearest Roadway	SH – 92 – Tiruchendur – Kanyakumari -5.3km - SE	
Nearest Village	Nallamur Keelakaranai – 960m – South West	
Nearest Town	Melmaruvathur – 10.4 km – West	
Nearest Railway Station	Maduranthangam –10.5Km – NW	
Nearest Airport	Chennai – 82.0km – NE	
Seaport	Chennai – 82.0km – NE	

Source: Survey of India Toposheet

TABLE 2.2: CO-ORDINATES – PROJECT BOUNDARY

Corner Nos.	Latitude	Longitude
1	12º25'20.37" N	79 <sup>0</sup> 55'40.17" E
2	12º25'18.72" N	79 <sup>0</sup> 55'39.97" E
3	12º25'16.65" N	79 <sup>0</sup> 55'39.29" E
4	12º25'10.58" N	79 <sup>0</sup> 55'37.38" E
5	12º25'10.70" N	79 <sup>0</sup> 55'32.75" E

6	12º25'11.06" N	79 <sup>0</sup> 55'33.95" E				
7	12º25'18.02" N	79 <sup>0</sup> 55'34.45" E				
8	12 <sup>0</sup> 25'20.43" N	79 <sup>0</sup> 55'35.12" E				
9	12º25'21.30" N	79 <sup>0</sup> 55'35.21" E				
10	12º25'21.84" N	79 <sup>0</sup> 55'35.38" E				
Datum: UTM-WGS84, Zone 44 North						

Source: Approved Mining Plan

FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA





Project Site Photographs



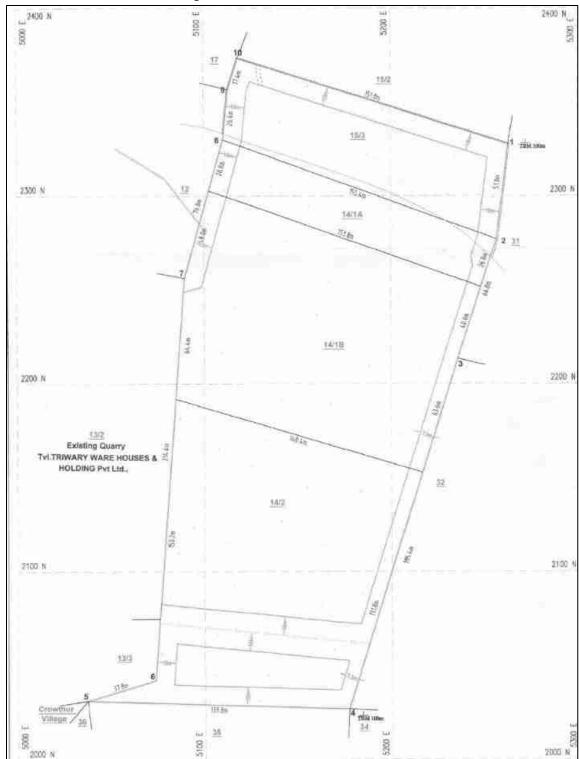
Fencing & Greenbelt at Project site

THE PARTY. 17/Pathiland 17, 26, 20, 17 % 02925/2010-UTI) 70/65/25/50/10 17 W 38575 of the most a ST 15" HERE'S TREAD TO SEC. W 95' JF36'S or on needs 12:25" (6:10") 10 10 10 20 7 12 Patialand THE HARM THE DEDICATES 3 16 10 10 10 16 28' 39' 30 12'S 20:30,3521,8 T 20 21 21 21 11 19" 55" 35 36"1 II Greathard Pattaland 92 Partitud ApproachRoad 13.3 Pattaland SE Number Lesse Applied Ares Irowthur Village 0 (2)7550070FN - VIF6552275FH (II) Greytland) (PERSONAL) Mine Safety 3S@ovtimil E8 Line 23 Gestland Waterbodies Coordinates

FIGURE 2.2: GOOGLE IMAGE OF THE PROJECT AREA

Source: Google Earth Imagery

FIGURE 2.3: QUARRY LEASE PLAN / SURFACE PLANN



Source: Approved Mining Plan

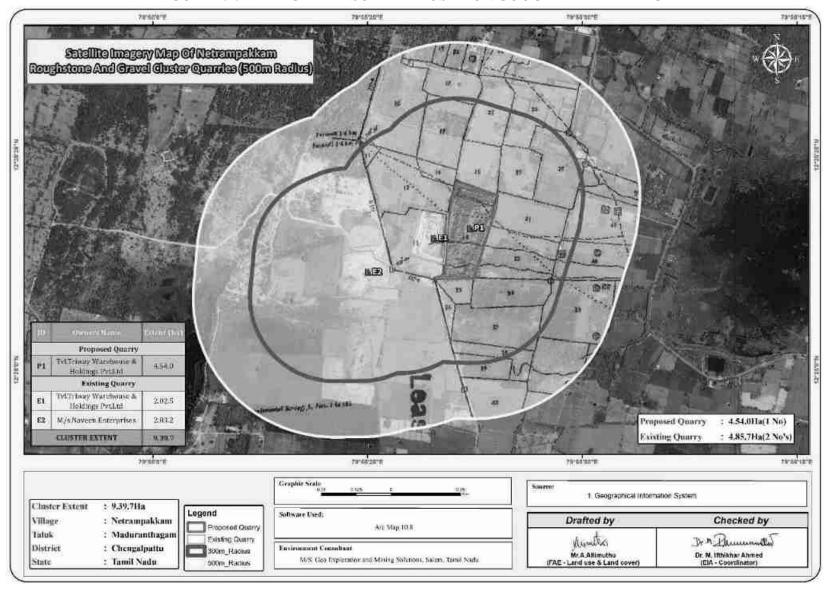
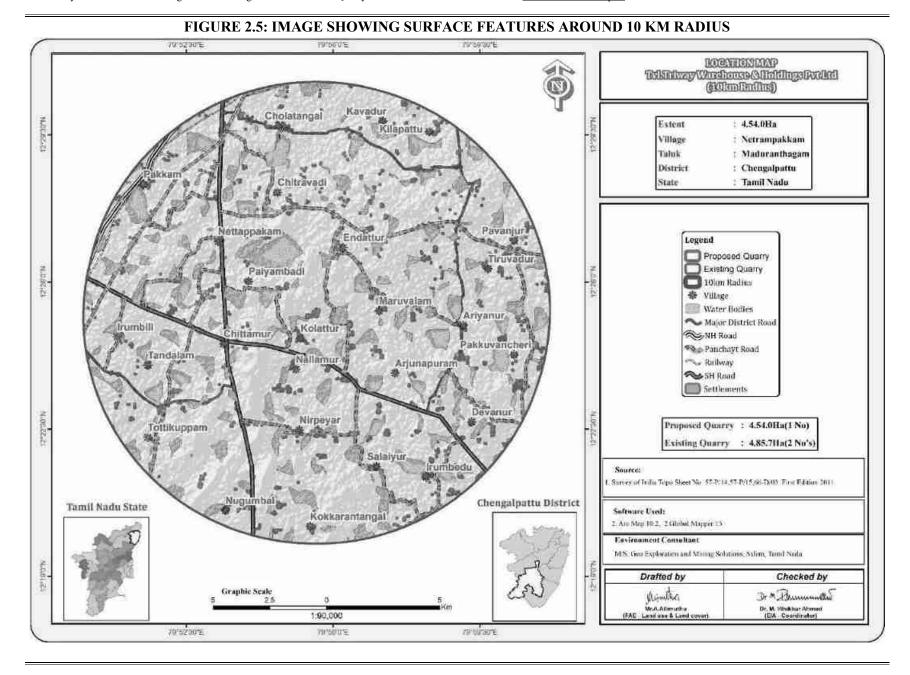


FIGURE 2.4: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE



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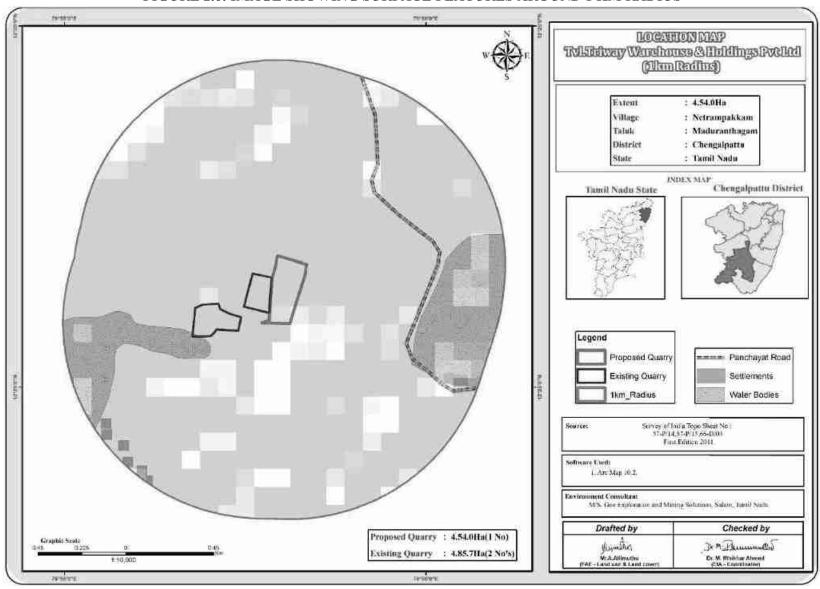


FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS

# 2.2.1 Project Area

- The project is site specific & no beneficiation or processing in the project site.
- There is no forest land involved in the proposed projects and is devoid of major vegetation and trees.

TABLE 2.3: LAND USE PATTERN

Description	Present area (Ha)	first five years of plan	
Area under quarrying	Nil	3.47.40	3.47.40
Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.04.00
Green Belt	Nil	0.50.78	0.87.78
Unutilized Area	4.54.00	0.51.82	0.12.82
Grand Total	4.54.00	4.54.00	4.54.00

Source: Approved Mining

# 2.2.2 Size or Magnitude of Operation

TABLE 2.4: RESOURCES AND RESERVES

TADLI	2.7. RESOURCES AND RESE	K V ED				
DADTICIH ADS	DETAILS					
PARTICULARS	Rough Stone in m <sup>3</sup>	Gravel in m <sup>3</sup>				
Geological Resources	20,43,000	90,800				
Mineable Reserves	9,93,285	69,228				
Production for First five-year plan period	6,31,510	69,228				
Production for Second five-year plan period	3,61,775	-				
Peak Production	1,29,890	23,634				
Mining Plan Period / Lease Applied Period	10 Ye	ears				
Number of Working Days	300 D	ays				
Production per day	433	79				
No of Lorry loads (12m³ per load)	37	7				
Total Depth of Mining	47m (2m Gravel +45m Rough stone) below ground level.					

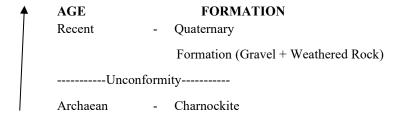
Source: Approved mining plan.

### 2.3 GEOLOGY

# 2.3.1 Regional Geology

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale of the Charnockite body is  $N45^{\circ}E - S45^{\circ}W$  with dipping towards  $SE70^{\circ}$ .

The general geological sequences of the rocks in this area are given below:



### Peninsular Gneiss complex

The Kanchipuram area is endowed with a complex geological set up with crystalline rocks occurring in the southern part of the area and the northern part of the area the crystalline rocks occur at depths covered by sedimentary formations ranging from Gondwana to Recent. The depth at which the crystalline rocks occur progressively increase towards north. The sedimentary cover sequence is named as Palar basin and the thickness of the sediments is as high as 300 m in the northern part. The eastern part comprises unconsolidated sediments of fluvio-marine and marine origin.

Source: District Survey Report for Minor Minerals Kancheepuram District - March 2019

https://kancheepuram.nic.in/document/kancheepuram-district-mineral-survey-report/

## 2.3.2. Geology of the lease area

The area exposes crystalline rocks of Archaean age and sedimentary rocks of Gondwana Supergroup and the Cuddalore Formation belonging to Mio-Pliocene age. A gravel and shingle bed locally known as Kanchipuram Gravels belong to the Pliocene to lower Pleistocene age. The laterite and alluvium are related to Quatemary age. The Archaean rocks are represented by Khondalite Group, Charnockite Group and Migmatite complex. Garnet Sillimanite Gneiss is well exposed in the Northeastern part of the district in Pachchamalai hill at Chrompet, Parangimalai and Southeast of Pallavaram. Charnockite in the predominant country rock and the type area for Charnockite is St. Thomas Mount at Pallavaram Taluk. The lower Gondwana sediments (Talchirs) overlie the Archaean rocks unconformably and are seen to the northeast and south of Palar river preserved in the trough faults and comprise boulder beds, dirty white to light green, greyish yellow fine sandstone, siltstone with clasts of rock fragments and khaki green to greenish grey shales. Source: <a href="https://tnmines.tn.gov.in/pdf/dsr/15.pdf">https://tnmines.tn.gov.in/pdf/dsr/15.pdf</a>.

### 2.3.3 Hydrogeology

The Kancheepuram district is principally made up of hardrocks and sedimentary formations. These are overlained by laterites and alluvium. The study area is underlain by formations of Quarternary, Tertiary and Mesozoic ages followed by the basement complex of crystalline rocks of Archaean age. The general trend of the gneiss is NE-SW direction and the regional trend observed is NNE-SSW to NW-SE direction. The deposition of Gondwana raocks, the sedimentary rocks, in faulted troughs and in the rugges topography of crystalline rocks took place during Jurasic period. The insitu soils laterites and alluvial deposits were deposited along the Palar and Cheyyar rivers during the quarternary period.

#### **Aquifer Systems:**

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Chengalpattu District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

#### **Alluvial Formations**

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12m. These formations are porous and permeable which have good water bearing zones.

#### Charnockite

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

### **Aquifer Parameters**

The Transmissivity values in weathered, partly weathered and jointed rocks vary from 10.-  $125 \text{ m}^2$  /day and specific yield in these formations is 1.5%. The specific yield of the porus formation varied from 1.4 – 10.6%. The transmissivity in the semi-consolidated and unconsolidated are varies from 23 to  $52 \text{ m}^2$  /day and  $200 - 300 \text{ m}^2$  /day respectively.

**TABLE 2.5: RANGE OF AQUIFER PARAMETERS** 

Parameters	Range
Specific yield in %	1.4-10.6%
Transmissivity (T) m <sup>2</sup> /day	$10-125 \text{ m}^2/\text{day}$
semi-consolidated and	$23-52 \text{ m}^2/\text{day}$ and $200 - 300 \text{ m}^2$
unconsolidated	/day

Source: <a href="http://cgwb.gov.in/district">http://cgwb.gov.in/district</a> profile/tamilnadu/kancheepuram.pdf

TABLE 2.6: GROUND WATER LEVEL VARIATION OF CHENGALPATTU DISTRICT

Jan 2013	May 2013	Jan 2014	May 2014	Jan 2015	May 2015	Jan 2016	May 2016	Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	5 Years Pre Monsoon Average	5Years Post Monsoon Average
6.1	9.4	4.2	7.4	5.6	8.3	5.8	8.3	7.4	12.4	9.16	5.81	6.1	9.4	4.2	7.4

Source: https://www.twadboard.tn.gov.in/content/chengalpattu

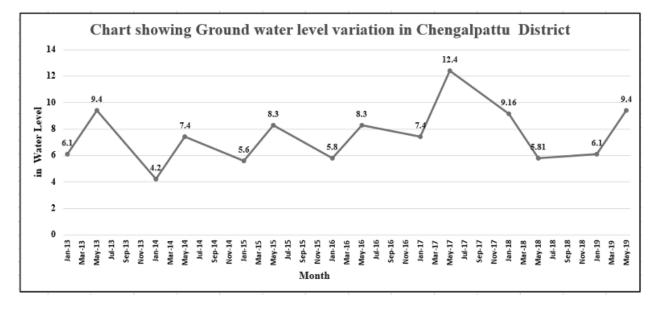
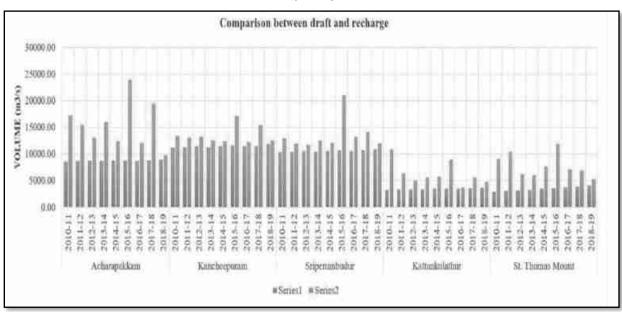
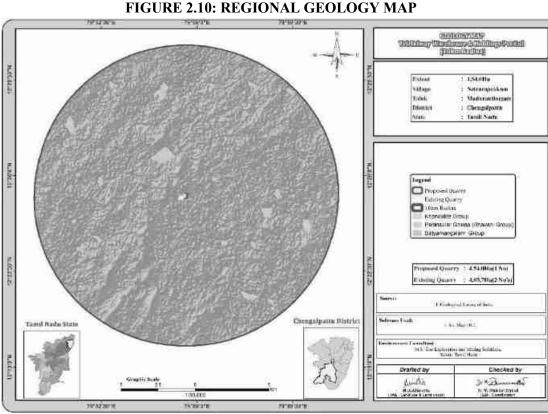


FIGURE 2.8: Chart Showing Ground water level Variation

FIGURE 2.9: COMPARISON BETWEEN DRAFT AND RECHARGE OF KANCHEEPURAM DISTRICT



Source: https://aip.scitation.org/doi/pdf/10.1063/5.0025968



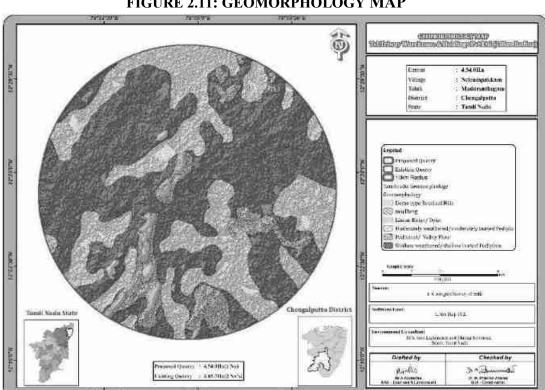


FIGURE 2.11: GEOMORPHOLOGY MAP

### 2.4 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone and Gravel were calculated based on Cross-Section Method by plotting sections to cover the maximum lease area. Based on the availability of Geological Resources the Mineable Reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m (Safety Barrier all around the applied area) and safety distance as per precise area communication letter and deducting the locked up reserves during bench formation (Also called as Bench Loss) and the Mineable Reserves is calculated considering there is no waste / overburden / side burden (100% Recovery Anticipated).

**TABLE 2.7: RESOURCES AND RESERVES** 

Description	Rough Stone m <sup>3</sup>	Gravel m3
Geological Resource in m <sup>3</sup>	20,43,000	90,800
Mineable Resource in m <sup>3</sup>	9,93,285	69,228
Year wise production for First five- year plan period	6,31,510	69,228
Year wise production for Second five-year plan period	3,61,775	-

Source: Approved Mining Plan

TABLE 2.8: YEAR-WISE PRODUCTION PLAN FIRST FIVE YEARS

YEAR	ROUGH STONE (m³)	GRAVEL (m <sup>3</sup> )
I	1,28,300	23,184
II	1,27,050	23,634
III	1,28,460	22,410
IV	1,29,890	-
V	1,17,810	-
TOTAL	6,31,510	69,228

Source: Approved Mining Plan

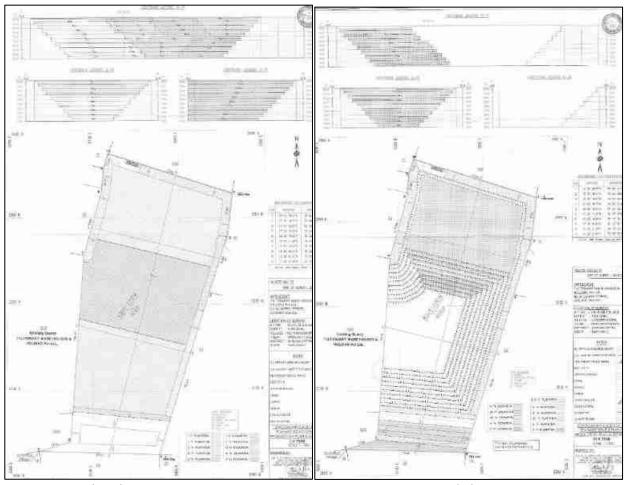
TABLE 2.8A: YEAR-WISE PRODUCTION PLAN SECOND FIVE YEARS

YEAR	ROUGH STONE (m <sup>3</sup> )	GRAVEL (m <sup>3</sup> )
VI	75,650	-
VII	76,075	-
VIII	73,825	-
IX	73,500	-
X	62,725	-
TOTAL	3,61,775	-

# **Disposal of Waste**

The overburden in the form of Gravel formation is about 69,228m<sup>3</sup> up to depth 2m for during this period. the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

FIGURE 2.12: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS



First Five Year

Second Five Year

Source: Approved Mining Plan

# Conceptual Mining Plan/Final Mine Closure Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.

**TABLE 2.9: ULTIMATE PIT DIMENSION** 

Length (Max) (m)	Width (Max) (m)	Depth (Max)
267	135	47m bgl

Source: Approved Mining Plan

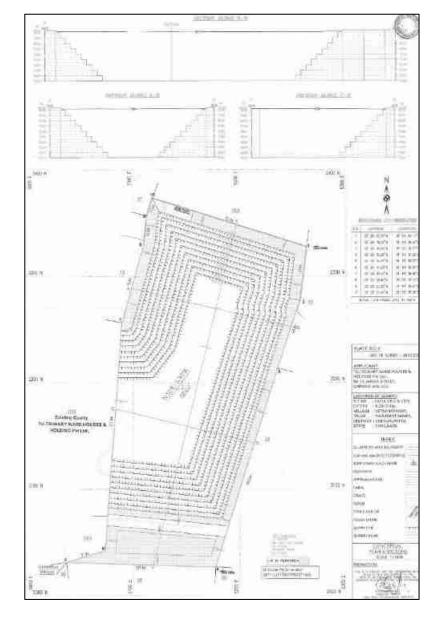
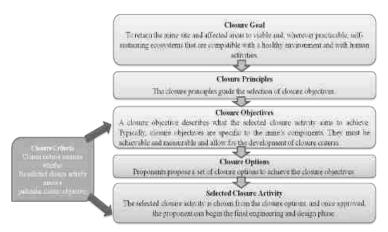


FIGURE 2.13: CLOSURE PLAN AND SECTIONS

Source: Approved Mining Plan

- At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- The principal closure objectives are for rehabilitated mines to be physically safe to humans and animals, geotechnically stable, geo-chemically non-polluting/non-contaminating, and capable of sustaining an agreed post-mining land use.

#### **Closure Objectives –**



- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in flooded pits is safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.
- Original or desired new surface drainage patterns have been established.
- For flooded pits, in-pit aquatic habitat has been established where practical and feasible.
- Emergency access and escape routes from flooded pits for humans and wildlife are in place.
- Dust levels are safe for people, vegetation, aquatic life, and wildlife.

### Closure Planning & Options Considerations in Mine Design –

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of
  garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side
- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1<sup>st</sup> bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure
- The layout design shall be prepared and get approved from Department of Geology and Mining.
- The proponent is instructed to construct as per the layout approved
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure

### 2.5 METHOD OF MINING

Opencast Mechanized Mining Method is proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. Bench slope will be maintained as  $60^{\circ}$ .

The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavator attached with rock breaker/ bucket with tipper combination will be involved for the excavation/breaking of Rough stone after blasting. Hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

It is recommended to obtain necessary statutory permission from the Department of Geology and Mining for Using Heavy Earth Moving Machineries, Blasting and appointment of Mines Manager etc.,

### 2.5.1 Drilling & Blasting Parameters

Drilling will be carried out using Jack hammer and compressor, the depth of the hole will be maximum 1.5m Drilling & Blasting will be carried out as per parameters given below: -

Spacing - 1.2m
Burden - 1.0 m

Depth of hole - 1.5 m

Charge per hole - 0.5kg

Powder factor - 6.0 tonnes/kg

Diameter of hole - 30-32 mm

Peak production Capacity =  $433\text{m}^3$  of Rough Stone per day Spacing X Burden X Depth =  $1.2\text{m X } 1.0\text{m X } 1.5\text{m} = 1.8\text{m}^3$ 

= 1.8m<sup>3</sup> X 2.6 (Bulk Density) = 4.7Ts per hole

hence for the peak production of 433m<sup>3</sup> (1,126Ts) = 239 Nos of holes to be drilled per day

Explosives per hole = ½ kg hence 120 kg of Explosives will be utilized maximum considering the peak production

#### Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator & Detonating Fuse.

### Storage of Explosives -

No proposal for storage of explosives within the project area, the project proponent will made agreement with authorized explosives agencies for carrying out blasting activities and competent person as per DGMS guidelines will be employed for safety and supervision of overall quarrying activities.

The explosives will be sourced from the blasting agency on daily basis and the blasting will be carried out under the supervision of competent qualified Blaster and it will be ensured that there shall be no balance of explosive stock; any balance stock will be taken back by the supplier.

#### 2.5.2 Extent of Mechanization

TABLE 2.10 PROPOSED MACHINERY DEPLOYMENT

S.NO.	ТҮРЕ	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	12	1.2m to 2.0m	Compressed air
2	Compressor	3	400psi	Diesel Drive
3	Excavator with Bucket and Rock Breaker	3	300 HP	Diesel Drive
4	Tippers	6	20 Tonnes	Diesel Drive

Source: Approved Mining Plan

### 2.6 GENERAL FEATURES

# 2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities will be constructed as per the Mine Rule after the grant of quarry lease in all the proposed quarries.

### 2.6.2 Drainage Pattern

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

# 2.6.3 Traffic Density

The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through

Traffic density measurements were performed at two locations

- 1. Approach Road
- 2. Cheyyur to Vandavasi (State Highway Road)

Traffic density measurement was made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

**TABLE.2.11: TRAFFIC SURVEY LOCATIONS** 

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Approach Road	1.4km – South East	Approach Road
TS2	Cheyyur to Vandavasi SH Road	1.7km - South West	State Highway

Source: On-site monitoring by GEMS FAE & TM

**TABLE 2.12: EXISTING TRAFFIC VOLUME** 

Station code	Н	MV	LMV		MV 2/3 Wheelers		Total PCU	
Station code	No	PCU	No	PCU	No	PCU	Total FCU	
TS1	50	150	15	15	54	27	192	
TS2	110	330	85	85	138	69	484	

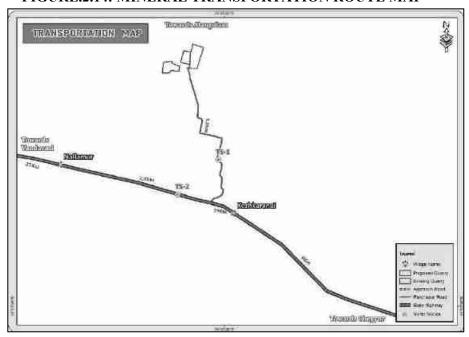
Source: On-site monitoring by GEMS FAE & TM

<sup>\*</sup> PCU conversion factor: HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 2/3 Wheelers = 0.5

TABLE 2.13: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone & Gravel per day					
Capacity of trucks No. of Trips per day Volume in PCU					
20 tonnes	37	111			

FIGURE.2.14: MINERAL TRANSPORTATION ROUTE MAP



# **Proposed Transportation Route:**

1. No Major Habitation, Schools in the proposed transportation route.

**TABLE 2.14: SUMMARY OF TRAFFIC VOLUME** 

Route	Existing Traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960guidelines
Approach Road	192	111	303	900
Cheyyur to Vandavasi SH Road	484	111	595	1500

Source: On-site monitoring analysis summary by GEMS FAE & TM

- Due to these projects the existing traffic volume will not exceed
- As per the IRC 1960 this existing Panchayat Road can handle 900 PCU in hour and State Highway Road can handle 1500 PCU in hour hence there will not be any conjunction due to this proposed transportation.

# 2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in any of the proposed project.

# 2.7 PROJECT REQUIREMENT

### 2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.15: WATER REQUIREMENT FOR THE PROJECT

Purpose	Quantity	Source
Dust Suppression	1.0KLD	From the existing pit or from the water vendors
Green Belt	0.5KLD	From the existing pit or from the water vendors
Sanitation & Drinking	0.5KLD	From the existing pit or from the water vendors.
Total	2.0 KLD	

Source: Prefeasibility report

# 2.7.2 Power and Other Infrastructure Requirement

Power is not required for the mining operation; the mining operation will be carried out using Diesel Generator and Earth moving machineries using diesel. The quarrying activity is proposed during day time only (General Shift 8 AM - 5 PM, Lunch Break 1 PM - 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB by project proponent.

No workshops are proposed inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment plant.

#### 2.7.3 Fuel Requirement

One Excavator will excavate  $25\text{m}^3$  of Broken up Rough Stone per hour and  $60\text{m}^3$  of Gravel per hour. Peak production of Rough Stone =  $433\text{m}^3$ Peak production of Gravel =  $79\text{m}^3$ 

Type of machinery	Working hours	Average Diesel	Quantity of
		consumption/ Hour	Diesel in Ltrs
Working hours of	$433 \text{m}^3 / 25  \text{m}^3 =$	18 Ltrs	324
Excavator (Aprx)	18 Hrs		
	(Rough stone)		
	$79/60 \text{m}^3 = 1 \text{Hrs}$	18 Ltrs	18
Compressor	Working hours per	8 Ltrs	24
	day 3 Hrs		
Tippers, Motor	Occasionally		20
pumps to drain water			
<b>Total Diesel Consump</b>	otion		386

The Maximum diesel consumption is around 386 Ltrs per day considering the peak production.

#### 2.7.4 Project Cost

The Environmental Management plan has been prepared considering the mode of working, Safety of the employees and Monitoring periods the total Cost is 344 Lakhs.

# **2.8 EMPLOYMENT REQUIREMENT:**

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mine's regulations, 1961.

**TABLE 2.16: PROPOSED MANPOWER DEPLOYMENT** 

Designation	No of persons
Mines Manager/Mines Foreman	1
Mate/Blaster	1
Jack hammer operator	24
Excavator Operators	3
Tipper Drivers	6
Labour & Helper	5
Cleaner & Co-operator	9
Security	2
Total	51

Source: Approved Mining Plan & Pre-Feasibility report.

### 2.9 PROJECT IMPLEMENTATION SCHEDULE

The mining operation will commence after the grant of Environmental Clearance, Consent to operate (CTO), Execution of Lease Deed and Obtaining permission from the DGMS (Notice of Opening).

**TABLE 2.17: EXPECTED TIME SCHEDULE** 

Sl.No.	Particulars	Time Schedule (In Month)					Domowks if any
S1.1NO.	1 at ticular s	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	Remarks if any
1	Environmental Clearance						
2	Consent to Operate						
3	Execution of Lease deed						
4	Permission from DGMS						
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines.

# 3. DESCRIPTION OF ENVIRONMENT

#### 3.0 GENERAL

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March to May 2024 with CPCB guidelines for the following attributes –

- Land
- Water
- o Air
- Noise
- Biological
- Socio-economic status

Environmental data has been collected with reference to cluster quarries by EHS 360 Labs Private Limited,

– An accredited by ISO/IEC 17025:2017 (NABL) Laboratory.

### Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The study area has been divided into two zones viz **core zone** and **buffer zone**.

- Core zone is considered as cluster area
- Buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

#### **Study Period**

The baseline study was conducted during the Winter season i.e., March to May 2024.

#### Study Methodology

- The project area was surveyed in detail with the help of Total Station Survey instruments and pillars were marked. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO)
- Soil samples were collected and analysed for relevant physio-chemical characteristics in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
- Ground water samples were collected from the existing bore wells, Surface water was collected from water bodies in the buffer zone and analysed as per CPCB Guidelines.
- An onsite meteorological station was setup in cluster area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
- Air quality Data's were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM<sub>10</sub> and SO<sub>2</sub>, NO<sub>X</sub> with gaseous attachments & Fine Dust Samplers (FDS) for PM<sub>2.5</sub> and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
- The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.

• Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	*Soil Physio-Chemical Characteristics		6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	eteorology  Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall		1	Site specific primary data& Secondary Data from IMD Station
*Ambient Air Quality	1 802		7 (2 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels			7 (2 core & 5 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio Economic Characteristics, Population Statistics and Existing		Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by EHS 360 Labs in association with GEMS

<sup>\*</sup> All monitoring and testing have been carried out as per the Guidelines of CPCB and MoEF & CC.

### 3.1 LAND ENVIRONMENT

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

#### 3.1.1 Land Use/ Land Cover

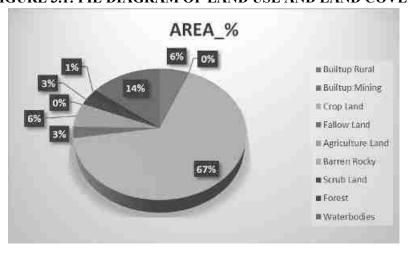
A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

TABLE 3.2: LAND USE / LAND COVER TABLE 10 Km RADIUS

S.No	CLASSIFICATION	AREA_HA	AREA_%			
BUILTUP						
1	Built-up Rural	1916.95	5.92			
2	Built-up Mining	38.58	0.12			
	AGRICULTURAL LAND					
3	Crop Land	21518.36	66.50			
4	Fallow Land	903.18	2.79			
5	Agriculture Land	1818.00	5.62			
	BARREN/W	ASTE LANDS				
6	Barren Rocky	88.38	0.27			
7	Scrub Land	924.48	2.86			
	FOREST					
8	Forest	464.80	1.44			
WETLANDS/ WATER BODIES						
9	Waterbodies	4686.39	14.48			
	TOTAL	32359.12	100.00			

Source: Survey of India Toposheet and Landsat Satellite Imagery

FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND COVER



From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture and fallow land (includes crop land) 74.91% followed by Built-up Lands – 6.04%, Scrub land – 2.86%, and Water bodies 14.48%.

The total mining area within the study area is 38.58 ha i.e., 0.12%. The cluster area of 9.94.46 ha contributes about 24.35 % of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

# 3.1.2 Topography

The project area is almost plain terrain having gentle slope towards Southeast side. The altitude of the area is 100m AMSL The area is covered by 2m thickness of gravel followed by massive charnockite which is clearly inferred from the nearby existing quarry

## 3.1.3 Drainage Pattern of the Area

The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land. There are no streams, canals or water bodies crossing within the project area.

#### 3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

### 3.1.5 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within project area. No Protected and Reserved Forest area is involved in the project area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e. 10 km radius, are given in the below Table 3.3.

### FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS

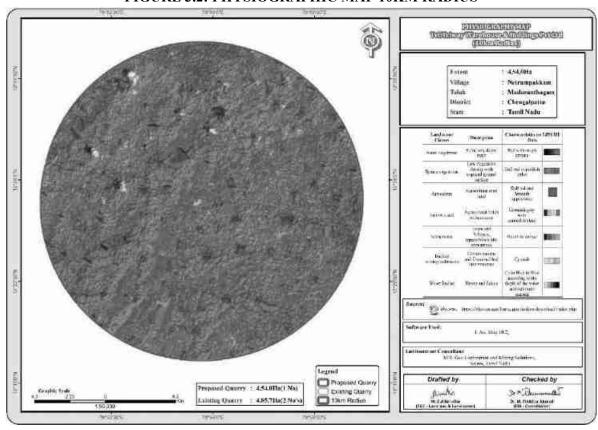


FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS

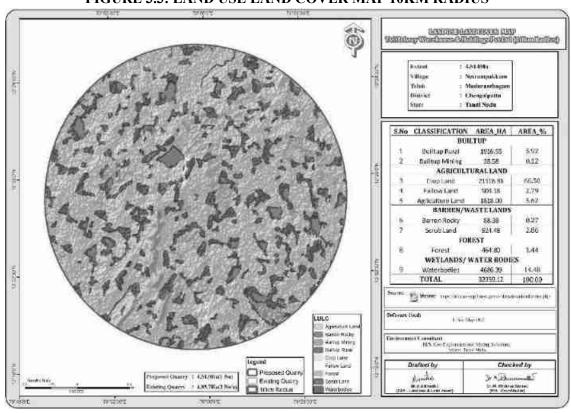


TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	Vedanthangal Brids Samctuary	15.5 Km – North West
	Ita ilio Saliotatilos	Karikili Bird Sanctuary	20 Km – North West
2	Reserve Forest	Palavur R.F	3.99 Km - SW (Source - TNGIS)
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10Km Radius
4	Critically Polluted Areas	None	Nil within 10km Radius
5	Mangroves	None	Nil within 10km Radius
6	Mountains/Hills	None	Nil within 10km Radius
7	Notified Archaeological Sites	None	Nil within 10km Radius
8	Industries/ Thermal Power Plants	None	Nil within 10km Radius
9	Defence Installation	None	Nil within 10km Radius

Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No	NAME	DISTANCE & DIRECTION
1	Kaalvaai	Inside Lease Area
2	Canal	280m_SW
3	Canal	420m_SW
4	Tank	700M_E
5	Tank	800m_SW
6	Ozhavetti Lake	1.7Km_NE

Source: Village Cadastral Map and Field Survey

#### 3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.5 and Figure 3.5.

### The objective of the soil sampling is -

To determine the baseline soil characteristics of the study area; study the impact of proposed activity on soil characteristics and study the impact on soil more importantly agriculture production point of view.

Coordinates S. No **Location Code Monitoring Locations Distance & Direction** 12°25'19.82"N 79°55'35.92"E 1 S1Project Area Core Zone 12°23'2.16"N 79°53'45.70"E S2 Pazhuvur 4.8km SW 2 3 S3 Vellikadu 5.5km NE 12°26'48.21"N 79°58'17.58"E 4 12°23'5.32"N 79°57'56.03"E S4 Onampakkam 5.8km SE 5 S5 Puliyurankottai 5.8km NW 12°28'28.05"N 79°55'19.01"E S6 Polambakkam 4.8km West 12°25'38.32"N 79°52'59.29"E 6

**TABLE 3.5: SOIL SAMPLING LOCATIONS** 

Source: On-site monitoring/sampling by EHS 360 lab in association with GEMS.

#### Methodology -

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Six (6) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.6.

TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION

Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a
	representative sample for analysis. They were stored in airtight Polythene bags and analysed at
	the laboratory.

Source: On-site monitoring/sampling by EHS 360 Lab in association with GEMS

#### Soil Testing Result -

The samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India". The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classifications of soil are presented below in Figure 3.4 and the physico-chemical characteristics of the soil & Test Results in Table 3.7.

FIGURE 3.5: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

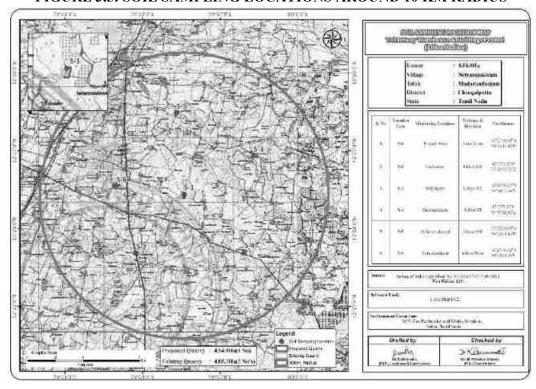


FIGURE 3.6: SOIL MAP

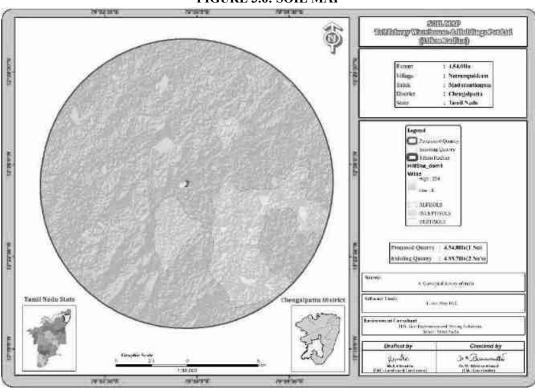


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

S.	Test Parameters	Protocols	S-1	S-2	S-3	S-4	S-5	S-6	
No			Core Zone	Pazhuvur	Vellaikadu	Onampakkam	Puliyurankottai	Polambakkam	
01	pH @ 25°С	IS 2720 Part 26 - 1987 (Reaff:2016)	8.25	8.88	8.03	8.75	8.59	8.16	
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	405 μmhos/cm	325 µmhos/cm	499 µmhos/cm	345 µmhos/cm	412 µmhos/cm	387µmhos/cm	
03	Texture:								
	Clay		32.2 %	32.3%	27.6 %	30.2%	29.7 %	33.8 %	
	Sand	Gravimetric method	30.0 %	28.4 %	33.5 %	31.9 %	32.6 %	30.9 %	
	Silt		33.09%	39.3%	38.9 %	37.9 %	37.7 %	35.3 %	
04	Water Holding Capacity	By Gravimetric method	47.9 %	47.2 %	48.5 %	46.8 %	47.8 %	49.0 %	
05	Bulk Density	By Cylindrical method	1.01 g/cm <sup>3</sup>	1.05 g/cm <sup>3</sup>	$0.99 \text{ g/cm}^3$	1.05g/cm <sup>3</sup>	1.12 g/cm <sup>3</sup>	1.06 g/cm <sup>3</sup>	
06	Calcium as Ca		45 mg/kg	66.8 mg/kg	45.5 mg/kg	66mg/kg	58.5mg/kg	51.4 mg/kg	
07	Magnesium as Mg	USEPA 3050 B – 1996 &	31.6 mg/kg	41 mg/kg	31 mg/kg	53.1 mg/kg	32.1 mg/kg	27 mg/kg	
08	Manganese as Mn	USEPA 6010 C - 2000	11mg/kg	22.5 mg/kg	26 mg/kg	7.05 mg/kg	11.2 mg/kg	18 mg/kg	
09	Zinc as Zn	USEFA 0010 C - 2000	3.09mg/kg	9.54 mg/kg	2.06 mg/kg	6.5 mg/kg	3.15 mg/kg	4.26 mg/kg	
10	Boron as B		3.15 mg/kg	6.21	6.15	3.15 mg/kg	3.12mg/kg	1.01 mg/kg	
11	Chloride as Cl	APHA 23rd Edn 2019 4500 C1 B	50.7 mg/kg	30.5 mg/kg	22.5 mg/kg	43 mg/kg	21mg/kg	47 mg/kg	
12	Total Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27: 1977 (Reaff:2015)	0.0012 %	0.0017 %	0.0032 %	0.0025 %	0.0015 %	0.0015 %	
13	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	20 mg/kg	36.5mg/kg	7.02 mg/kg	27 mg/kg	19 mg/kg	22 mg/kg	
14	Total Phosphorus as P	IS 10158: 1982 (Reaff: 2019)	6.54 mg/kg	2.41 mg/kg	3.16 mg/kg	4.23 mg/kg	3.02 mg/kg	7.01 mg/kg	
15	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	380.2 mg/kg	450 mg/kg	615 mg/kg	470.5 mg/kg	400 mg/kg	409 mg/kg	
16	Cadmium as Cd		BDL (DL : 1.0 mg/kg)						
17	Total Chromium as Cr	USEPA 3050 B – 1996 &	BDL (DL : 1.0 mg/kg)						
18	Copper as Cu	USEPA 5030 B = 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)						
19	Lead as Pb	USEFA 0010 C - 2000	2.19 mg/kg	1.01 mg/kg	1.19 mg/kg	2.17 mg/kg	2.16 mg/kg	1.05 mg/kg	
20	Iron as Fe		3.44 mg/kg	4.4 mg/kg	1.01 mg/kg	5.1 mg/kg	5.43 mg/kg	4.01 mg/kg	
21	Organic Matter	IS: 2720 Part 22: 1972 (Reaff: 2015)	1.71 %	2.12 %	1.24 %	1.81 %	1.99 %	2.51 %	
22	Organic Carbon	IS: 2720 Part 22: 1972 (Reaff: 2015)	0.99%	1.23%	0.72 %	1.05%	1.16 %	1.46 %	
23	Cation Exchange Capacity	USEPA 9080 – 1986	40.8 meq/100g of soil	37.1 meq/100g of soil	45.5 meq/100g of soil	35.5 meq/100g of soil	40meq/100g of soil	37.6 meq/100g of soil	

Source: Sampling Results by EHS360 Lab Private Limited.

#### FIGURE 3.7: SOIL SAMPLE COLLECTION





## **Interpretation & Conclusion**

### Physical Characteristics -

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay (27.6 % to 33.8 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 0.99 - 1.12 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e., ranging from 46.8 - 49.0 %.

#### **Chemical Characteristics –**

- The nature of soil is slightly alkaline to strongly alkaline with pH range 8.03 to 8.88
- The available Nitrogen content range between 380.2 to 615 mg/kg
- The available Phosphorus content range between 2.41 to 7.01 mg/kg
- The available Potassium range between 19 mg/kg to 36.5 mg/kg

# **Observation:**

The pH of the Soil indicates that the soil is Neutral and arid region and ideal for plant growth.

#### 3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

### 3.2.1 Surface Water Resources:

Thottavilai River is the major surface water body in the study area and the rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of drinking water for few months after rainy season.

#### 3.2.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc., The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.2 to 13 m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

### 3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

Two (2) surface water and Four (4) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

**TABLE 3.8: WATER SAMPLING LOCATIONS** 

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	CO-ORDINATES				
	SURFACE WATER							
1	SW-1	NetrambakkamTank	1.2km East	12°25'7.75"N 79°56'18.59"E				
2	SW-2	Mambakkam Lake	8.2km NW	12°29'17.97"N 79°53'10.58"E				
			GROUND WATER					
3	WW-1	Near Project Area	440m NE	12°25'28.63"N 79°55'52.50"E				
4	WW-2	Pazhuvur	4.8km SW	12°23'13.32"N 79°53'46.76"E				
5	BW-1	Near Project Area	460m West	12°25'20.41"N 79°55'19.40"E				
6	BW-2	Vellikadu	5.5km NE	12°26'52.40"N 79°58'15.83"E				

Source: On-site monitoring/sampling by EHS 360 in association with GEMS

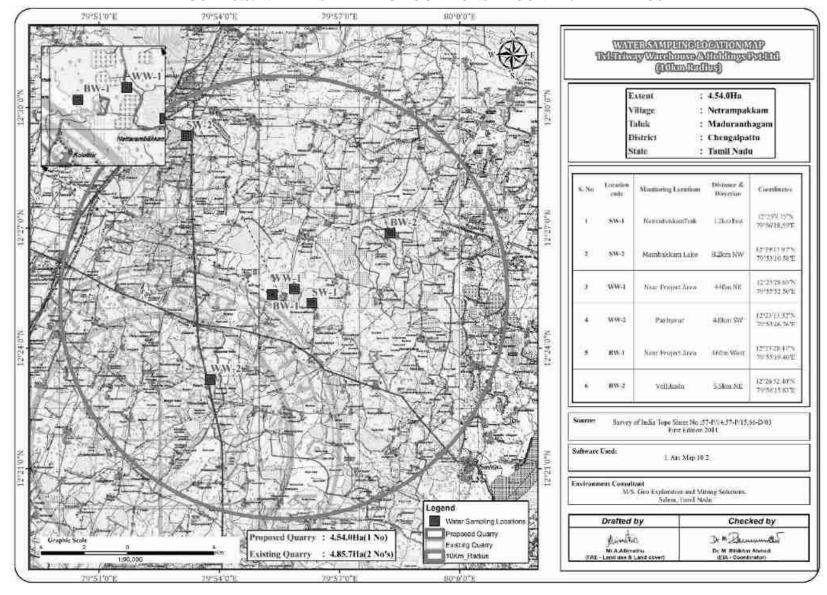


FIGURE 3.8: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

TABLE 3.9: GROUND WATER SAMPLING RESULTS

C NO	D	WW-1	WW-2	BW-1	BW-2	
S.NO	Parameter	Near Project Area	Pazhuvur	Near Project Area	Vellaikadu	
1	Color	5 Hazen	5 Hazen	5 Hazen	5 Hazen	
2	Odour	Agreeable	Agreeable	Agreeable	Agreeable	
3	pH@ 25°C	7.51	7.02	7.67	7.37	
4	Electrical Conductivity @ 25°C	927 μmhos/cm	797 μmhos/cm	806 μmhos/cm	1019 μmhos/cm	
5	Turbidity	1.1 NTU	1.2 NTU	1.0 NTU	1.0 NTU	
6	Total Dissolved Solids	547 mg/l	470 mg/l	475 mg/l	601 mg/l	
7	Total Hardness as CaCO <sub>3</sub>	197.47 mg/l	187.18 mg/l	194.22 mg/l	235.37 mg/l	
8	Calcium as Ca	39.1 mg/l	33.0 mg/l	31.7 mg/l	41.6 mg/l	
9	Magnesium as Mg	24.3 mg/l	25.5 mg/l	28 mg/l	32 mg/l	
10	Total Alkalinity	200 mg/l	172 mg/l	148 mg/l	209 mg/l	
11	Chloride as Cl	122 mg/l	100 mg/l	82.2 mg/l	123 mg/l	
12	Sulphate as SO <sub>4</sub> -	52 mg/l	55.3 mg/l	61 mg/l	65.5 mg/l	
13	Iron as Fe	0.33 mg/l	0.21 mg/l	0.22 mg/l	0.24 mg/l	
14	Free Residual Chlorine	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	
15	Fluoride as F	0.21 mg/l	0.15 mg/l	0.24 mg/l	0.16 mg/l	
16	Nitrates as NO <sub>3</sub>	6.44	5.01	5.05	7.2	
17	Copper as Cu	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	
18	Manganese as Mn	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	
19	Mercury as Hg	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	
20	Cadmium as Cd	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	
21	Selenium as Se	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	
22	Aluminium as Al	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	
23	Lead as Pb	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	
24	Zinc as Zn	BDL(DL : 0.05 mg/l)				
25	Total Chromium	BDL(DL : 0.02 mg/l)				
26	Boron as B	BDL(DL : 0.05 mg/l)				
27	Mineral Oil	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL: 0.01 mg/l)	BDL(DL : 0.01 mg/l)	
28	Phenolic Compunds as C <sub>6</sub> H <sub>5</sub> OH	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	
29	Anionic Detergents as	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	
30	Cynaide as CN	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	
31	Total Coliform	150	181	110	200	
32	E-Coli	<1.8	<1.8	<1.8	<1.8	
33	Barium as Ba	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	
34	Ammonia (as Total	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	
35	Sulphide as H <sub>2</sub> S	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	
36	Molybdenum as Mo	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	
37	Total Arsenic as As	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	
38	Total Suspended Solids	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	

<sup>\*</sup> IS: 10500:2012-Drinking Water Standards; # within the permissible limit as per the WHO Standard. The water can be used for drinking purpose in the absence of alternate sources. Note: SW- Surface water, GW – Ground water

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

		_	III. SCRINCE WATER	RESULT	
Sl. No.	Parameter	Unit	SW1- Tank Near Project Area	SW2- Mambakkam Lake	CPCB Designated Best Use
1	Colour	Hazen	10	5	300
2	Odour	-	Agreeable	Agreeable	Not specified
3	pH@ 25°C	-	7.15	7.88	6.5 – 8.5
4	Electrical Conductivity @ 25°C	μs/cm	790	776	
5	Turbidity	NTU	4.3	6.2	Not specified
6	Total Dissolved Solids	mg /l	466	458	1500
7	Total Hardness as CaCO <sub>3</sub>	mg/l	162.93	202.12	Not specified
8	Calcium as Ca	mg/l	30.2	35.2	Not specified
9	Magnesium as Mg	mg/l	21.3	27.8	Not specified
10	Total Alkalinity as CaCO <sub>3</sub>	mg/l	160	170	Not specified
11	Chloride as Cl	mg/l	91.1	71	600
12	Sulphate as SO <sub>4</sub> -	mg/l	48	35.5	400
13	Iron as Fe	mg/l	0.23	0.11	50
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)	BDL (DL:0.1)	400
15	Fluoride as F	mg/l	0.15	0.22	1.5
16	Nitrates as NO <sub>3</sub>	mg/l	10.2	BDL(DL:2.0)	50
17	Copper as Cu	mg/l	BDL (DL:0.01)		1.5
18	Manganese as Mn	mg/l	BDL (DL:0.02)		Not specified
19	Mercury as Hg	mg/l	BDI	BDL (DL:0.0005)	
20	Cadmium as Cd	mg/l	BD:	L (DL:0.001)	0.01
21	Selenium as Se	mg/l		L (DL:0.005)	Not specified
22	Aluminium as Al	mg/l		L (DL:0.005)	Not specified
23	Lead as Pb	mg/l		L (DL:0.005)	0.1
24	Zinc as Zn	mg/l		L(DL: 0.05)	15
25	Total Chromium	mg/l		L(DL: 0.02)	0.05
26	Boron as B	mg/l		L(DL: 0.05)	Not specified
27	Mineral Oil	mg/l		L(DL: 0.01)	Not specified
28	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/l		L (DL:0.0005)	0.005
29	Anionic Detergents as MBAS	mg/l		DL (DL:0.01)	Not specified
30	Cyanide as CN	mg/l	BD	DL (DL:0.01)	0.05
31	Biological Oxygen Demand, 3 days @ 27°C		9.8	7.4	3
32	Chemical Oxygen Demand		50	30	Not specified
33	Dissolved Oxygen		5.5	5.3	4
34	Total Coliform	MPN/ 100ml	510 MPN/100ml	455MPN/100ml	5000
35	E-Coli	1411 14/ 100HH	140MPN/100ml 100MPN/100ml		Not specified
36	Barium as Ba	mg/l		L (DL:0.05)	300
37	Ammonia (as Total Ammonia-N)	mg/l	BDL(DL:1.0)	BDL(DL:1.0)	Not specified
38	Sulphide as H <sub>2</sub> S	mg/l		L (DL:0.01)	Not specified
39	Molybdenum as Mo	mg/l	BD	L (DL:0.02)	Not specified
40	Total Arsenic as As	mg/l		L (DL:0.005)	0.2
41	Total Suspended Solids	mg/l	18	9.45	-

Note: APHA - American Public Health Association, BDL - Below Detection Limit, DL - Detection Limit, MPN - Most Probable Number.

#### 3.2.4 Interpretation& Conclusion

#### **Surface Water**

The pH varied from 5 to 10 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

#### **Total Dissolved Solids:**

Total Dissolved Solids varied from 458 to 466mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

#### Other parameters:

Chloride content is 71 to 91.1mg/l and sulphates varied from 35.5 to 48 mg/l.

#### **Ground Water**

The pH of the water samples collected ranged from 7.02 to 7.67 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 470 to 601mg/l in all samples. Total hardness varied between 187.18 to 235.37mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

## 3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 63m bgl. The maximum depth proposed out of proposed projects is 47m (2m Gravel + 45m Rough stone) below ground level.

## Ground water levels and Flow Direction based on the Bore well and open well Data's

In general the ground water movement is based on the gradient ie., water moves from the highest static ground water elevation to lowest static ground water elevation point. The ground water movement is important aspect to locating the recharge and discharge areas. Therefore the data has been collected in the study area. Water level measured in the seven open well and six borewells.

The average water level in the open well is varies from = 11m to 12.7m bgl

The water level in the bore well is varies from = 56 to 57.9m bgl

Based on the water level contour map of the open well and bore well the water flow direction in the particular region is towards North side.

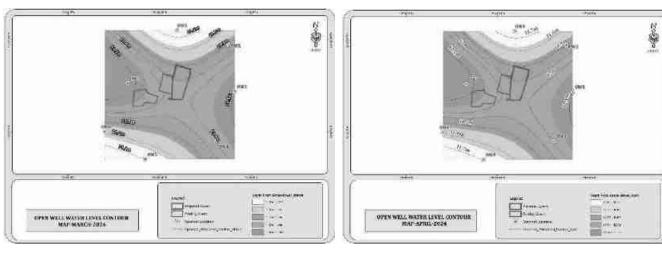
The water level in the area is above 52m hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

TABLE 3.11: WINTER SEASON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S.NO	LABEL	LONGITUDE	LATITUDE	Mar-24	Apr-24	May-24
1	OW-1	12° 25' 33.18"N	79° 55' 35.65"E	11	11.6	12.2
2	OW-2	12° 25' 28.56"N	79° 55' 52.46"E	11.3	11.9	12.5
3	OW-3	12° 25' 13.27"N	79° 55' 54.55"E	11.5	12.1	12.7
4	OW-4	12° 24' 57.20"N	79° 55' 48.55"E	11.4	12	12.6
5	OW-5	12° 24' 51.08"N	79° 55' 25.26"E	11.1	11.7	12.3
6	OW-6	12° 25' 00.11"N	79° 55' 12.11"E	11.2	11.8	12.4

Source: Onsite monitoring data

FIGURE 3.9: OPEN WELL CONTOUR MAP- Mar 2024 - May 2024



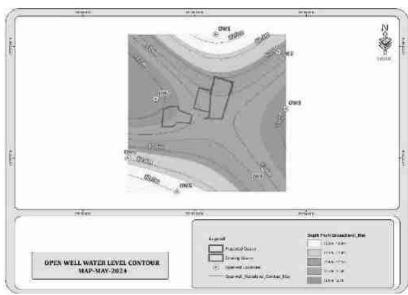
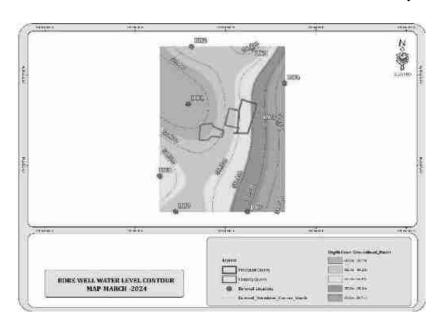


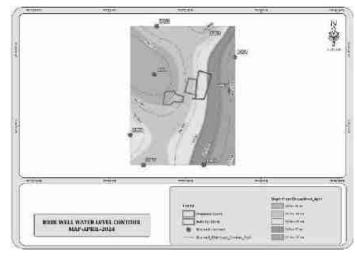
TABLE 3.12: WINTER SEASON WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.NO	LABEL	LONGITUDE	LATITUDE	Mar-24	Apr-24	May-24
1	BW1	12° 25' 20.35"N	79° 55' 17.69"E	56	56.6	57.2
2	BW2	12° 25' 39.43"N	79° 55' 18.74"E	56.3	56.9	57.5
3	BW3	12° 25' 38.76"N	79° 55' 38.88"E	56.1	56.7	57.3
4	BW4	12° 25' 27.24"N	79° 55' 49.59"E	56.7	57.3	57.9
5	BW5	12° 25' 14.02"N	79° 55' 47.49"E	56.6	57.2	57.8
6	BW6	12° 24' 44.65"N	79° 55' 37.31"E	56.5	57.1	57.7
7	BW7	12° 24' 44.62"N	79° 55' 13.40"E	56.2	56.8	57.4

Source: Onsite monitoring data

FIGURE 3.10: BOREWELL CONTOUR MAP – Mar 2024 to May 2024





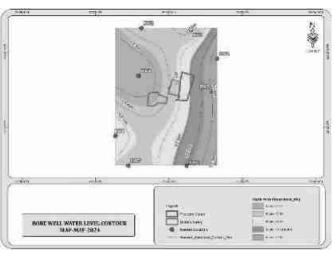
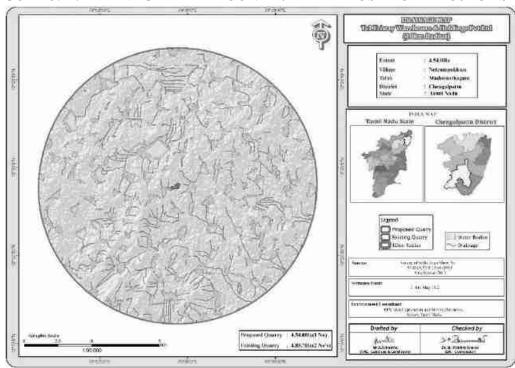


FIGURE 3.11: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE



Remarks: it is inferred that the area is dendritic to sub dendritic pattern

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FIGURE 3.12: GROUND WATER PROSPECT MAP

Remarks: Water table in the area is 30-80m as per the Bhuvan Data

#### **Geophysical Resistivity Survey**

### 3.2.5.1 Methodology and Data Acquisition

The Geophysical Electrical Resistivity survey conducted in the area Schlumberger configuration, Vertical Electrical Sounding (VES) method. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation AB/2. The data from this survey are commonly arranged and contoured in the farm of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical in homogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows.

$$\rho_a = G\Delta V$$

 $\Delta V$  = potential difference between receiving electrodes

G = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10+14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors. 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law,

#### $\rho_r = F \rho_w = a \mathcal{O}^m \rho_w$

ρr = Resistivity of Rocks

ρw = Resistivity of water in pores of rock

F = Formation Factor

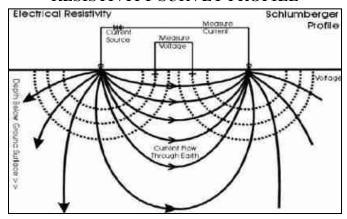
Ø = Fractional pore volume

A = Constants with values ranging from 0.5 to 2.5

#### 3.2.5.2 Survey Layout

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises the signal to nose ration can be enhanced by  $\sqrt{N}$  where N is the number of stacked readings. This SSR meter in which running averages of measurements  $[1, (1+2)/2, (1+2+3)/3 \dots (1+2\dots+16/16)]$  up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.

#### RESISTIVITY SURVEY PROFILE



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes ( $C_1$ &  $C_2$ ) and measuring the resulting potential by two other electrodes called potential electrode ( $P_1$ &  $P_2$ ). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

#### 3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 62m. The maximum depth proposed out of proposed projects 47m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

#### 3.2.5.4 Geophysical Data Interpretation

The geophysical data was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

It is inferred that the existing quarries in the surrounding area reaches maximum of 45m and the water table is not intersected, only the seepage water during rainy season encountered from the upper layer and it will be used for the Greenbelt development, Dust suppression and quarrying operation.

#### 3.3 AIR ENVIRONMENT

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality.

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed projects in cluster.

### 3.3.1 Meteorology & Climate

Meteorology is the key to understand the Air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

#### Climate

- In Chengalpattu the climate is tropical. In winter, there is much less rainfall than in summer. The climate here is classified as Aw by the Köppen-Geiger. The mean yearly temperature recorded in Chengalpattu is 27.8 °C | 82.0 °F, as per the available data. The precipitation level on a yearly basis amount to 995 mm | 39.2 inch as per the meteorological records.
- Chengalpattu experiences a moderate climate, and the summers are not easy to define. The best time to visit is January, February, March, December.
- In February, the precipitation level plummets to a mere 9 mm | 0.4 inch. This month holds the title for being exceptionally arid. Most precipitation falls in October, with an average of 205 mm | 8.1 inch.
- The month of highest temperature is May during which the average temperature reaches up to 31.2 °C | 88.2 °F. In January, the average temperature is 24.2 °C | 75.5 °F. It is the lowest average temperature of the whole year.

https://en.climate-data.org/asia/india/tamil-nadu/chengalpattu-767200/

### Rainfall

**TABLE 3.13: RAINFALL DATA** 

Actual Rainfall in mm				Normal Rainfall in mm	
2017	2018	2019	2020	2021	Normai Kamian in iiiii
2256.6	990.5	1191.7	833.0	1051.17	1263.8

Source: https://www.twadboard.tn.gov.in/content/chengalpattu

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Mar-2024	Apr-2024	May-2024
		Max	30.05	32.14	33.21
1	Temperature ( <sup>0</sup> C)	Min	27.31	30.31	28.74
		Avg	28.68	31.22	30.97
2	Relative Humidity (%)	Avg	65.06	66.59	72.88
		Max	4.9	5.84	6.3
3	Wind Speed (m/s)	Min	2.84	3.28	1.72
	1 ( )		3.87	4.56	4.01
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		ESE,SSE	SSE,E	SSE,S

Source: On-site monitoring/sampling by EHS 360 in association with GEMS

#### Correlation between Secondary and Primary Data

The average rain fall over the period of five years is 1263.8mm. The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Chengalpattu. A comparison of site data generated during the three months with that of IMD, Chengalpattu. Wind rose diagram of the study site is depicted in Figure. 3.13 Predominant downwind direction of the area during study season is South – South East.

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FIGURE 3.13: WINDROSE DIAGRAM

In the abstract of collected data wind rose were drawn on presented in figure No.3.13 during the monitoring period in the study area

- 1. Predominant winds were from E, SE, S, SW
- 2. Wind velocity readings were recorded between 1.72 to 6.3m/s
- 3. Calm conditions prevail of about 0 % of the monitoring period
- 4. Temperature readings ranging from 27.31 to 33.21 °C
- 5. Relative humidity ranging from 65.06 to 72.88 %
- 6. The monitoring was carried out continuously for three months.

## 3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability; etc.,

## 3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS

Parameter	Method	Instrument
PM2.5	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler  Make – Thermo Environmental Instruments – TEI 121
PM10	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO2	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NOx	IS-5182 Part II (Jacob & Hochheiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by EHS 360 & CPCB Notification

TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl.No.	Pollutant	Time	Concentration in ambient air		
		Weighted	Industrial, Residential,	<b>Ecologically Sensitive</b>	
		Average	Rural & other areas	area (Notified by Central	
				Govt.)	
1	Sulphur Dioxide (µg/m3)	Annual Avg.*	50.0	20.0	
		24 hours**	80.0	80.0	
2	Nitrogen Dioxide (µg/m3)	Annual Avg.	40.0	30.0	
		24 hours	80.0	80.0	
3	Particulate matter (size less	Annual Avg.	60.0	60.0	
	than 10µm) PM10 (µg/m3)	24 hours	100.0	100.0	
4	Particulate matter (size less	Annual Avg.	40.0	40.0	
	than 2.5 μm PM2.5 (μg/m3)	24 hours	60.0	60.0	

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18th Nov 2009

### 3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at Seven (7) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period Mar 2024 – May 2024. The baseline data of ambient air has been generated for  $PM_{10}$ ,  $PM_{2.5}$ , Sulphur Dioxide (SO<sub>2</sub>) & Nitrogen Dioxide (NO<sub>2</sub>) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

The equipment was placed preferably at a height of at least  $3 \pm 0.5$ m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

#### 3.3.5 Ambient Air Quality Monitoring Stations

Seven (7) monitoring stations were set up in the study area as depicted in Figure 3.15 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	<b>Location Code</b>	<b>Monitoring Locations</b>	Distance & Direction	Coordinates
1	AAQ-1	Project Area	Core Zone	12°25'11.00"N 79°55'34.14"E
2	AAQ-2	Near Project Area	500m NE	12°25'33.11"N 79°55'50.81"E
3	AAQ-3	Pazhuvur	4.8km SW	12°23'3.54"N 79°53'45.63"E
4	AAQ-4	Vellikadu	5.5km NE	12°26'49.42"N 79°58'18.90"E
5	AAQ-5	Onampakkam	5.8km SE	12°23'2.68"N 79°57'56.73"E
6	AAQ-6	Puliyurankottai	5.8km NW	12°28'28.50"N 79°55'18.88"E
7	AAQ-7	Polambakkam	4.8km West	12°25'39.71"N 79°52'59.57"E

Source: On-site monitoring/sampling by EHS 360 in association with GEMS.

<sup>\*</sup>Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval,

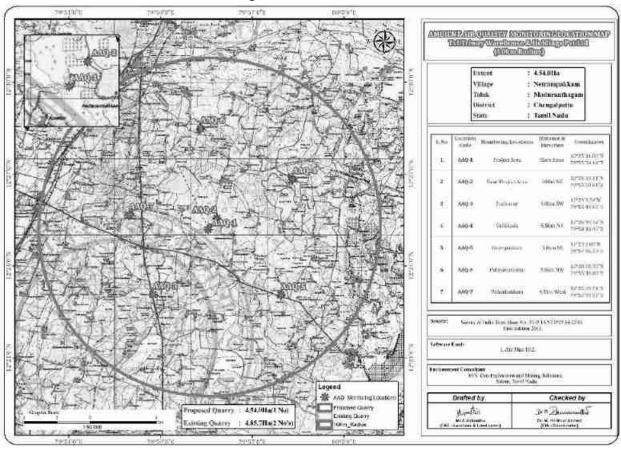
<sup>\*\* 24</sup> hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

## FIGURE 3.14: AIR QUALITY MONITORING PHOTOGRAPHS





FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS



# TABLE 3.18: SUMMARY OF AAQ 1 to AAQ 7

PM10	AAQ1 Core zone	AAQ2 Near project area	AAQ3 Pazhuvur	AAQ4 Vellaikadu	AAQ5 Onampakkam	AAQ6 Puliyurankottai	AAQ7 Polambakkam
Arithmetic Mean	43.4	44.5	44.3	44.1	44.0	43.2	43.2
Minimum	41.4	42.1	40.1	42.5	41.1	40.5	40.5
Maximum	45.1	48.1	48.7	45.9	46.8	45.6	45.6
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	22.5	23.3	23.0	22.9	23.4	23.0	23.0
Minimum	21.2	21.1	20.4	0.0	22.2	20.5	20.5
Maximum	23.9	25.2	25.6	0.0	24.8	25.6	25.6
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	7.4	6.9	6.4	7.1	6.9	7.4	7.4
Minimum	6.2	6.3	5.1	6.2	5.2	6.3	6.3
Maximum	8.9	7.8	7.9	8.4	8.6	8.9	8.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	22.2	21.8	21.7	23.2	21.8	20.1	20.1
Minimum	19.7	19.3	19.5	20.4	19.5	19.4	19.4
Maximum	25.6	25.3	24.3	25.6	23.4	20.8	20.8
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

TABLE 3.19: ABSTRACT OF AMBIENT AIR QUALITY DATA

1	Parameter	PM10	PM2.5	SO <sub>2</sub>	NO <sub>2</sub>
2	No. of Observations	48.2	25.6	8.9	25.5
3	98 <sup>th</sup> Percentile Value	44.5	23.5	7.4	22.2
4	Arithmetic Mean	44.5	23.5	7.4	22.1
5	Geometric Mean	1.9	1.3	1.0	2.0
6	Standard Deviation	41.8	21.5	6.2	19.7
7	Minimum	48.2	25.6	8.9	25.5
8	Maximum	48.2	25.6	8.9	25.5
9	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ7

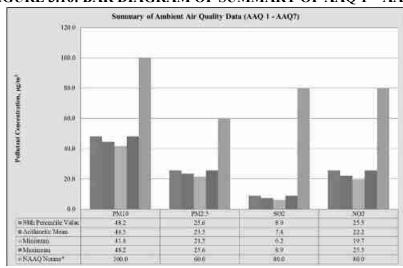


FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER PM<sub>2.5</sub>

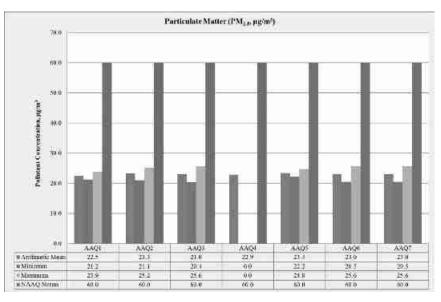


FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER PM<sub>10</sub>

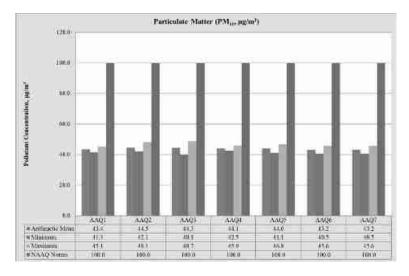


FIGURE 3.19: BAR DIAGRAM OF GASEOUS POLLUTANT SO<sub>2</sub>

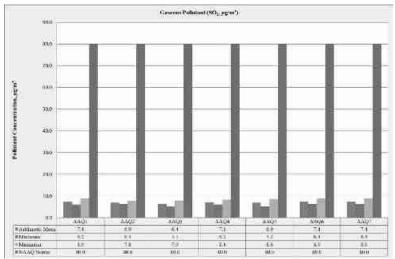
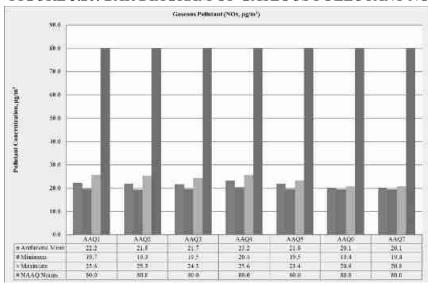


FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT NO<sub>x</sub>



#### 3.3.6 Interpretations & Conclusion

As per monitoring data,  $PM_{10}$  ranges from 41.8  $\mu g/m^3$  to 48.2  $\mu g/m^3$ ,  $PM_{2.5}$  data ranges from 21.5  $\mu g/m^3$  to 25.6  $\mu g/m^3$ ,  $SO_2$  ranges from 6.2  $\mu g/m^3$  to 8.9  $\mu g/m^3$  and  $NO_2$  data ranges from 19.7  $\mu g/m^3$  to 25.5  $\mu g/m^3$ . The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

#### 3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses. The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

#### 3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Seven (7) locations. The noise level measurement was carried out at each ambient air quality station. The main aim of the noise level monitoring is

- To assess the ambient Noise level in the study area
- Type of noise pollution generated in the core zone
- To predict the temporal changes in the ambient noise level in the area

The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

S. No **Location Code Distance & Direction Monitoring Locations** Coordinates 12°25'19.91"N 79°55'39.40"E N1Project Area Core Zone 2 N2 500m NE 12°25'31.39"N 79°55'52.65"E Near Project Area 12°23'1.49"N 79°53'45.78"E 3 N3 Pazhuvur 4.8km SW 4 N4 Vellikadu 5.5km NE 12°26'50.47"N 79°58'18.86"E 5 N5 Onampakkam 5.8km SE 12°23'2.27"N 79°57'56.67"E 5.8km NW 12°28'30.09"N 79°55'18.22"E 6 N6 Puliyurankottai Polambakkam 4.8km West 12°25'39.40"N 79°52'59.61"E

TABLE 3.21: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

Source: On-site monitoring/sampling by EHS 360 in association with GEMS.

# 3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by Leq, is used. Equivalent sound level, 'Leq', can

be obtained from variable sound pressure level, 'L', over a time period by using following equation. The equivalent noise level is defined mathematically as,

 $Leq = 10 Log L / T \sum (10Ln/10)$ 

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

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FIGURE 3.23: NOISE MONITORING STATIONS AROUND 10 KM RADIUS

## 3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352)

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.32.

Day time: 6:00 hours to 22.00 hours. Night time: 22:00 hours to 6.00 hours.

**TABLE 3.22: AMBIENT NOISE QUALITY RESULT** 

S. No	Locations	Noise level (dB (A) Leq)		- Ambient Noise Standards
5. 110	Locations	Day Time	Night Time	Ambient Noise Standards
1	Project Area	43.1	37.1	Industrial
2	Near Project Area	42.1	38.3	Day Time- 75 dB (A) Night Time- 70 dB (A)
3	Pazhuvur	40.2	35.4	
4	Vellikadu	39.5	34.6	Residential
5	Onampakkam	37.1	36.2	Day Time- 55 dB (A)
6	Puliyurankottai	38.5	35.5	Night Time- 45 dB (A)
7	Polambakkam	38.1	35.6	

Source: On-site monitoring/sampling by EHS 360 in association with GEMS

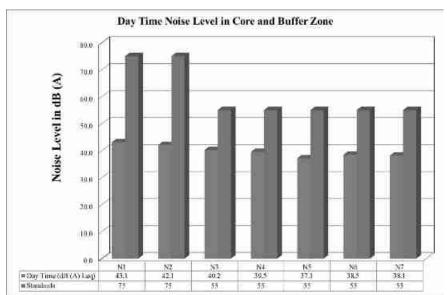
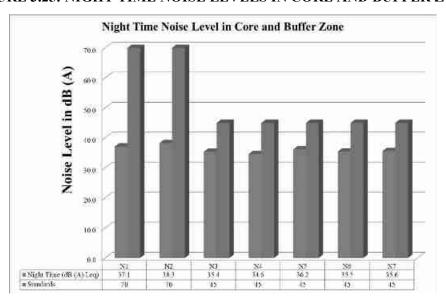


FIGURE 3.24: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE

FIGURE 3.25: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE



#### 3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 42.1 – 43.1 dB (A) Leq and during night time were from 37.1 – 38.3 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.1 to 47.9 dB (A) Leq and during night time were from 34.6 to 37.0 dB (A) Leq. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

#### 3.5. BIOLOGICAL ENVIRONMENT

## 3.5.1. Study area Ecology

Ecology is a branch of science that dealing the relations and interactions between organisms and their environment. An ecological survey of the study area was conducted, particularly with reference to the listing of species and assessment of the existing baseline ecological conditions in the study area. The main objective of the biological study is to collect the baseline data regarding flora and fauna in the study area. Data has been collected through extensive surveys of the area with reference to flora and fauna. Information is also collected from different sources i.e., government departments such as the District Forest Office, Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared.

The main objective of the present study is to assess the current ecology & and biodiversity scenario during primary field survey carried out within 10 km radius impact zone in and around the Netrampakkam Rough stone and gravel quarry (ML Area: 4.54.0 ha) to understand the presence and behaviour of the floral and faunal diversity of the study area with respect to terrestrial flora and fauna with special emphasis on Rare, Endangered and Threatened species & carry out Environmental Management Plan. The plan will identify and address the impacts, where these are adverse in nature, and thereafter design mitigation measures to manage such impacts in a manner as to conserve the environment and ecology of the area.

The present study was carried out in two separate headings for floral and faunal community. The aspects to be covered in the study for the project are given in Table No 3.53.

Aspect of Environment	Impacts
A. Terrestrial Ecology	Impacts on terrestrial flora and fauna
	Impacts on Rare-Endangered-Threatened (RET) wildlife
B. Aquatic Ecology	Impacts on aquatic fauna/flora
- <del>-</del>	Impacts on spawning and breeding grounds for aquatic species

Table No: 3.53: Aspect to be covered in the study area

## 3.5.2. Objectives of Biological Studies

- a) Undertake an intensive field survey to assess the status of floral & faunal component in different habitats in the core and buffer areas of the project site.
- b) Identification and listing of flora and fauna which are important as per the Wildlife (Protection) Act 1972.
- c) Suggest Wildlife conservation (species specific/habitat specific) and management plan for the threatened (critically endangered & endangered species - schedule I) faunal species if any reported within the study area.
- d) To identify the impacts of mining on agricultural lands and how it affects.
- e) Proper collection of information about wildlife Sanctuaries/ national parks/ biosphere reserves of the project area.
- f) Devise management & conservation measures for biodiversity.

### 3.5.2.1. Field surveys

The field visit was carried out to understand and assess the impacts of mining activities on flora & and fauna and natural habitats and prediction after the enhancement of the production capacity of the mine. We evaluated the distribution and abundance of flora and fauna in the study area through primary and secondary data sources.

### **3.5.2.2. Floral Study**

• The floral survey of the project area is based on field survey of the area.

- The local flora was identified by their morphological observation, such as the size, age and shape of the leaf, flowers, fruits, and their bark features of the stem, and also documented their habitat viz. Trees, Shrubs, Herbs, Grasses, Climbers etc.
- After surveying the core and the buffer areas, a detailed floral inventory has been compiled. A list of all plants from the study area was prepared and their habitats were recorded.
- Selection of sampling locations was made with reference to topography, land use, vegetation pattern, wind pattern, etc. The observations were taken on natural vegetation, roadside plantations, and non-forest areas (agricultural fields, in plain areas, village wasteland, etc.) for quantitative representation of different species.

# 3.5.3. Methodology of Sampling

Primary survey was conducted with established and accepted ecological methods in different habitats of study area. The field data collection mainly included biodiversity status assessment of different life forms habit of flora elements such as Trees, Shrubs, Climbers Herbs and Grass. Faunal diversity was assessed by inventorying the taxonomical groups like Mammals, Herpetofauna, birds and butterflies.

Nocturnal faunal species were searched by locating their calls during night time and by searching along the forest shrubs areas, dense dry bushes, below the stones, water bodies. During the study, to know more about the seasonal presence of flora and faunal species, information was obtained from local people and forest department.

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was done based on the reference materials and also by examining the morphological characteristics and reproductive materials i.e. flowers, fruits and seeds. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers.

Plot method is used in the floral documentation in the core and buffer zone. For trees (10x10-m), shrubs (5x5-m) and herbs (1x1-m) plots were taken. Birds and butterflies were mainly focused during faunal assessment, transect method was employed for birds and butterflies. Transect is a path along which one counts and records the occurrence of an individual for study. A straight-line walk covering desired distance, within a time span of one hour to 30 minutes was carried out in the proposed region. Bird species were recorded during the hours of peak activity. 0700 to 1100 Hrs and 1430 to 1730 Hrs (Bibby et al. 2000).

Direct observations and bird calls were used for bird documentation. Same transects were used for counting butterflies. Opportunistic observations were made for Amphibians, reptiles and ordinates. Presence of mammals was recorded by direct and indirect signs. All possible transects were taken for birds and butterflies. Birds and butterflies were classified into species level. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

# The secondary baseline data of flora and fauna has been complied through the following data sources:

- 1. Forest working plan
- 2. Schedule I to V: Indian Wildlife (Protection) Act, 1972
- 3. Vivek Menon, Indian Mammals: A Field Guide. Hachette Book publishing India Pvt.Ltd., India.
- 4. Daniel J.C. The Book of Indian Reptiles and Amphibians, Bombay Natural History Society., India.
- 5. Ali, S and Ripley. handbook of the Birds of India and Pakistan together with those of Nepal, Sikkim and Bhutan, Oxford University Press, Bombay.
- 6. ENVIS Centre on Wildlife and Protected Area.
- 7. Birds Life Data Zone
- 8. Ebird.org
- 9. Global Biodiversity Information Facility

## 1.5.5. Field Equipment's/ References

Following tools/equipment were used for conducting phytosociological study.

- Ballpoint pen, Field bags, Field notebooks, field shoes, gloves, GPS, Measuring tapes and scales, Plant cutters, packet lens, ropes etc.
- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8x 20) to spot/identify species
- IUCN Red Data Book https://www.iucnredlist.org/species

Ornithological/Entomological/Herpetological/Mammalian catalogues and pictorial descriptions from various authors and websites are followed for species identification.

## 1.5.6. Part I Field Sampling Techniques (Fauna Sampling)

## 1.5.6.1. Transect walk – Birds

Six no transect lines with varying length (100m-300m) and fixed width (2m) were laid which cuts through the core and buffer areas of proposed site. The transect surveys were conducted from 0700 to 1100Hrs and 1430 to 1730Hrs (Bibby et al. 2000). All avifauna found along these transects were recorded for analysing the data. Counts were conducted while there is no heavy rain, mist or strong wind.

#### 1.5.6.2. Modified Pollard Walk – for Butterflies

The Modified Pollard Walk (Pollard 1977, 1993, Walpole 1999) using fixed width transect walk method were employed to investigate butterfly spatial distribution, diversity and abundance at the different survey sites.

# 1.5.6.3. Visual Encounter Survey (VES) - reptiles and Amphibians

VES is a time-constrained sampling technique (Campbell and Christman, 1982; Corn and Bury, 1990). It needs a systematic search through an area or habitat for a prescribed time period (Campbell and Christman, 1982). The result of VES is measured against the time spent on search. VES technique is one of the simplest methods, and an appropriate technique for both inventory and monitoring Herpetofauna (Heyer et al. 1994).

# 1.5.6.4. Observational methods- Mammals

For the purpose of recording mammals, we used two different observational techniques: (1) direct observations, and (2) recording of occurrences like holes, markings, scats, hairs, and spines (Menon 2003). For identification confirmations, photographs with a scale reference were used, and locations were recorded using a portable GPS device. Indigenous knowledge particularly that of the locals, was occasionally employed to compile a preliminary list of species and/or aid in the recognition of indicators.

## 3.5.4.5. Multiple Stage Quadrats – Vegetation

A variety of habitat or vegetation structure variables were measured using the Multiple Stage Quadrat sampling protocol (Sykes and Horrill 1977). All of those areas were sampled, and the major corners were temporarily delineated with colored ribbons. Each site was identified in the field using a compass and clinometer, and the plot's latitude, longitude, and elevation were recorded using a handheld Global Positioning System (Garmin 12XL).

#### 3.5.5. Flora

## 3.5.5.1. Quadrat Sampling Method

The quadrat sampling technique was used for sampling vegetation. Sampling quadrats of the regular shape of dimensions  $10 \times 10$  m,  $5 \times 5$  m, and  $1 \times 1$  m, were nested within each other and were defined as the units for sampling the area and measuring the diversity for trees, Shrubs, and herbs respectively.

## 3.5.5.1. Flora Composition in the Core Zone (Primary data)

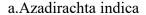
Core zone flora samplings were conducted between 8.30 am to 10.30 am in three locations. The applied area is an exhibiting plain terrain, so we used quadrat sampling methods. Taxonomically a total of 13 species belonging to 7 families have been recorded from the core mining lease area based on habitat classification of the enumerated plants the majority of species were Herbs 5, followed by Trees 4, Shrubs 2 and Grasses 2. Details of flora with the scientific name were mentioned in Table No. 3.53. The result of the core zone of flora studies shows that Fabaceae and Lamiaceae are the main dominating species in the study area mentioned in Table No.3.53. No species were found as a threatened category Table No.3.53. The percentage distribution of floral life forms in Core Zone is given in Fig No.3.35.

Table No: 3.53. Flora in the Core zone of Netrampakkam Village, Rough stone and Gravel quarry, Maduranthagam Taluk, Chengalpattu District (Primary data)

SI. No	English Name	Vernacular Name	Scientific Name	Family Name
Trees	•		1	
1.	Neem	Vibe	Azadirachta indica	Meliaceae
2.	Mesquite	Mullu maram	Prosopis juliflora	Fabaceae
3.	Acacia Nilotica	Karuvelam maram	Vachellia nilotica	Fabaceae
Shrubs				
1.	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
2.	Avaram	Avaram	Senna auriculata	Fabaceae
Herbs				
1.	Common leucas	Thumbai	Leucas aspera	Lamiaceae
2.	Fish poison	Kolinchi	Tephrosia purpurea	Fabaceae
3.	Pignut	Nattapoochedi	Hyptis suaveolens	Lamiaceae
4.	Holy basil	Thulasi	Ocimum tenuiflorum	Lamiaceae
5.	Coat buttons	Thatha poo	Tridax procumbens	Asteraceae
Grasses	3			
1.	Great brome	Thodappam	Bromus diandrus	Poaceae
2.	Nut grass	Korai	Cyperus rotandus	Poaceae

Sources: Species observation in the field study







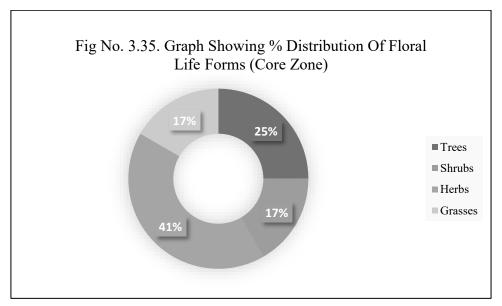
b. Calotropis gigantea



c. Prosopis juliflora

d. Anisomeles malabarica

Fig No: 3.34. Flora species observation in the Core zone area



The trees surveys were conducted around 300m radius from the proposed project site of Netrampakkam village. This is the standard scientific method followed by various workers in respect of phytosociological studies (Cottom and Curtis 1956; Ralhan et al. 1982; Saxena and Sing 1982; Nayak et al. 2000; Lu et al. 2004; Nautiyal 2008). Diameter at breast height (DBH) of 130 cm was consistently used during the present study. In no case, the thicker part near branching position was considered. Instead diameter of the tree having a branch at about 130 cm was measured either below 30 cm from the branch or in case of all the stems above 30 cm from the branch and averaged. In each unit, presence or absence of the species, number of individuals of each species, GBH (only for tree species) to estimate basal area of the tree species were recorded. surveying areas, a detailed trees inventory has been compiled. A list of all plants from the study area was prepared and their habitats were recorded. The species of trees were documented during this base line survey. The dominant plant species growing in this area were Cocos nucifera, Prosopis juliflora, etc. Please refer the Table No.3.54.

Table No: 3.54. Tree survey around 300m radius from the proposed project site (Primary data)

S.No	English Name	Vernacular Name	Scientific Name	No of trees
Trees				
1.	Acacia Nilotica	Karuvelammaram	Vachellianilotica	9
2.	Mesquite	Mullumaram	Prosopis juliflora	34
3.	Neem	Vembu	Azadirachta indica	15
4.	Coconut	Thennai maram	Cocos nucifera	50
5.	Eucalyptus	Thailam maram	Eucalyptus globules	11

(Sources: Species observation in the field study)

Table No: 3.55. Flora in the Buffer zone Netrampakkam Village, Rough stone and Gravel quarry, Maduranthagam Taluk, Chengalpattu District (Primary data and Secondary data)

Sl.No.	English Name	Vernacular Name	Scientific Name	Resource use type *(E,M,EM)
Trees				
1.	Acacia-tree	Pencil maram	Acacia auriculiformis	Е
2.	Kassod Tree	Manjal Konnai	Cassia siamea	EM
3.	Coconut	Thennai maram	Cocos nucifera	EM
4.	Asian Palmyra palm	Panai maram	Borassus flabellifer	Е
5.	Neem or Indian lilac	Vembu	Azadirachta indica	M
6.	Creamy peacock flower	Perungondrai	Delonix elata	M
7.	Lemon	Ezhumuchaipalam	Citrus lemon	EM
8.	Mango	Manga	Mangifera indica	Е
9.	Horsetail Tree	Savukku	Casuarina	Е
10.	Banyan tree	Alamaram	Ficus benghalensis	Е
11.	Monoon longifolium	Asoka maram	Polyalthia longifolia	M
12.	Java Plum	Naval pazham	Syzygium cumini	EM
13.	Peepal	Arasanmaram	Ficus religiosa	M
14.	Kapok Tree	Elavam Panji	Ceiba pentandra	Е
15.	Tamarind	Puliyamaram	Tamarindus indica	EM
16.	False ashoka	Asoka maram	Polyalthia longifolia	Е
17.	Flame Tree	Neruppu Kondrai	Delanix regia	Е
18.	Giant thorny bamboo	Perumungil	Bambusa bambos	M
19.	Yellow elder	Manjarali	Tecoma stans	Е
20.	Eucalyptus	Eucalyptus	Eucalyptus globules	EM
21.	Custard apple	Seethapazham	Annona reticulata	Е
22.	Black plum	Navalmaram	Sygygium cumini	EM
23.	Indian-almond	Naatu Vaadhumai	Terminalia catappa	EM
24.	Indian gooseberry	Nelli	Emblica officinalis	EM
25.	Henna	Marudaani	Lawsonia inermis	EM
26.	Indian cork tree	Maramalli	Millingtonia hortensis	Е
27.	Sacred fig	Arasan	Ficus religiosa	Е
28.	Tahitian gooseberry tree	Nelli	Phyllanthus acidus	M
29.	Indian mulberry	Nuna	Morinda tinctoria	Е
30.	Banyan	Alamaram	Ficus bengalensis	M
31.	Teak	Thekku	Tectona grandis	Е
32.	Banana Tress	Vazhaimaram	Musa paradisiaca	EM
33.	Chinese chaste tree	Nocchi	Vitex negundo	EM

34.	Cashew Nut	Munthiri	Anacardium	Е
35.	Millettia pinnata	Pongam oiltree	Pongamia pinnata	Е
36.	Guava	Koyya	Psidium guajava	EM
37.	Curry tree	Karuveppilai	Murraya koenigii	EM
38.	Bamboo	Moonghil	Bambusa bambo	Е
39.	Madras Thorn	Kodukapuli	Pithocelopium dulce	Е
40.	Drumstick tree	Murunga maram	Moringa oleifera	EM
41.	Gliricidia	Seemai Agathi	Gliricidia sepium	M
42.	Indian almond	Padam maram	Terminalia catappa	EM
43.	Mesquite	Velikathan maram	Prosopis juliflora	M
Shrubs				
1.	Indian jujube	Elanthai	Ziziphus mauritiana	M
2.	Night shade plan	Sundaika	Solanum torvum	EM
3.	Castor oil plant	Amanakku	Ricinus communis	M
4.	Thorn apple	Oomathai	Datura stramonium	Е
5.	White Frangipani	Perungalli	Plumeria alba	M
6.	Rough cocklebu	Ottarachedi	Xanthium strumarium	M
7.	Triangular spruge	Chaturakalli	Euphorbia antiquorum	NE
8.	Lantana	Unnichedi	Lantana camara	M
9.	Coffee senna	Kattuttakarai	Senna occidentalis	M
10.	Rosy Periwinkle	Nithyakalyani	Cathranthus roseus	M
11.	Milk Weed	Erukku	Calotropis gigantea	M
12.	Avaram	Avarai	Senna auriculata	M
13.	Indian mallow	Thuthi	Abutilon indicum	M
14.	Indian Oleander	Arali	Nerium indicum	M
15.	Shoe flower	Chemparuthi	Hibiscu rosa-sinensis	EM
16.	Puriging nut	Kattamanakku	Jatropha curcas	EM
17.	Columnar Cactus	Sappathikalli	Cereus pterogonus	M
18.	Bush Morning Glory	Neyvelik Kattamanakku	Ipomoea carnea	Е
19.	Century plant	Anaikathalai	Agave americana	M
20.	Jackal jujube	Soorai pazham	Ziziphus oenopolia	M
21.	Tiger nail	Eli verandi	Martynia annua	M
22.	Flame of the Woods	Idlipoo	Xoracoc cinea	M
23.	Peacock Flower	Mayil Kontai	Caesalpinia pulcherrima	M
24.	Water spinach	Nalikam	Ipomoea aquatica	E
25.	Cassava	Maravalli kizhangu	Manihot esculenta	EM
26.	Hopbush	Virali	Dodonaea viscosa	Е
27.	Paper flower	Kahitha poo	Bougainvillea glabra	M
Herbs				

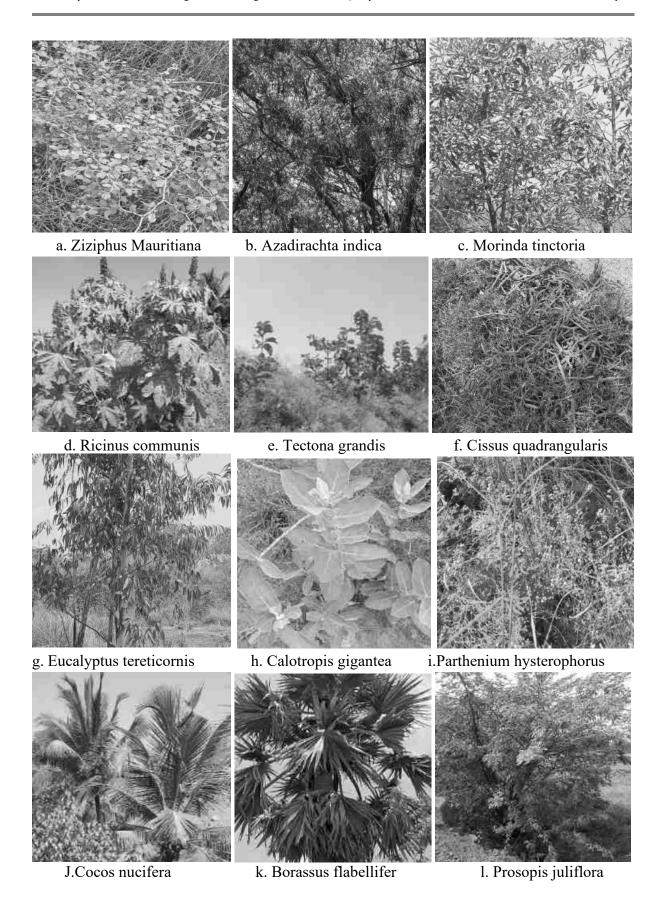
-	I I' C I I'	D : ::	1 1 1 1 .	3.6				
1.	Indian Catmint Plant	Pei viratti	Anisomeles malabarica	M				
2.	Bara Gokhru	Yanai Nerunchi	Pedalium murex	M				
3.	Tridax daisy	Veetukaayapoondu	Tridax procumbens	M				
4.	Holy basil	Thulasi	Ocimum tenuiflorum	M				
5.	Indian Copperleaf	Kuppaimeni	Acalypha indica	M				
6.	Fish poison	Kolinchi	Tephrosia purpurea	M				
7.	Indian doab	Arugampul	Cynodon dactylon	Е				
8.	Asthma-plant	Ammanpacharisi	Euphorbia hirta	M				
9.	Common Wireweed	Arivalmanai poondu	Sida acuta	M				
10.	Carrot grass	Parttiniyam	Parthenium hysterophorus	NE				
11.	Mexican prickly poppy	Kudiyotti	Argemone mexicana	M				
12.	Common leucas	Thumbai	Leucas aspera	M				
13.	Prickly chaff flower	Nayuruv	Achyranthes aspera	M				
14.	Spiny amaranth	Mullu keerai	Amaranthus spinosus	M				
15.	Flannel Weed	Sida mutti	Sida cordifolia	M				
16.	Green amaranth	Mulai keerai	Amaranthus viridis	M				
17.	Marsh barbel	Neermulli	Hygrophila auriculata	M				
18.	Yellow-fruit nightshade	Kandakathirika	Solanum surattense	M				
19.	Common Purslane	Paruppu keerai	Portulaca oleracea	M				
20.	Water willow	Kodakasalai	Justicia procumbens	M				
21.	Threadstem carpetweed	Parpatakam	Mollugo cerviana	M				
22.	Node Flower	Kumattikkirai	Allmania nodiflora	M				
23.	Sessile Joyweed	Ponnankanni	Alternanthera sessilis	M				
24.	Fish poison	Kolinchi	Tephrosia purpurea	M				
25.	Pignut	Nattapoochedi	Hyptis suaveolens	M				
26.	Aloe barbadensis	Katrazhai	Aloe vera	EM				
27.	Madagascar Periwinkle	Nithykalyani Podi	Catharanthus roseus	Е				
28.	Asian spiderflower	Naaikaduku	Cleome viscosa L	M				
29.	Coat buttons	Thatha poo	Tridax procumbens	M				
30.	Mountain knotgrass	Thengaipoo kirai	Aerva lanata	M				
31.	Bindii	Nerunchi	Tribulus terrestris	M				
32.	Shameplant	Thottachenunki	Mimosa pudica	M				
33.	Tomato	Thakkali	Solanum lycopersicum	EM				
34.	False daisy	Karisalankanni	Eclipta alba	M				
35.	Chilli	Milakai	Capsicum annuum	EM				
36.	Red Spiderling	Mukirattai	Boerhavia diffusa	M				
37.	Eggplant	Kathrikkai	Solanum melongena	EM				
38.	Indian mint	Karpura valli	Coleus amboinicus	EM				
Climber	Creepers			Climber/ Creepers				

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1.	Stemmed vine	Perandai	Cissus quadrangularis	M
2.	Wild bitter	Pavarkai	Momordica charantia	EM
3.	Pointed gourd	Kovakkai	Trichosanthes dioica	EM
4.	Ivy gourd	Kovai	Coccinia grandis	M
5.	Butterfly pea	Sangu poo	Clitoria ternatea	M
6.	Wild jasmine	Malli	Jasminum augustifolium	EM
7.	Rosary Pea	Gundumani	Abrus precatorius	M
8.	Bottle Guard	Sorakkai	Lagenaria siceraria	EM
Grass				
1.	Jungle rice	Kozhikalpul	Echinochloa colona	NE
2.	Mauritian Grass	Moongil pul	Apluda mutica	NE
3.	Swollen Windmill Grass	Kondai Pul	Chloris barbata	NE
4.	Needle Grass	Thodappam	Aristida adscensionis	Е
5.	Eragrostis	Pullu	Eragrostis ferruginea	Е
6.	Windmill grass	Chevvarakupul	Chloris barbata	NE

Sources: Species observation in the field study and secondary data

Floristic Study On Angiosperms Surrounding the Medavakkam Lake, Chengalpattu District, Tamil Nadu, India



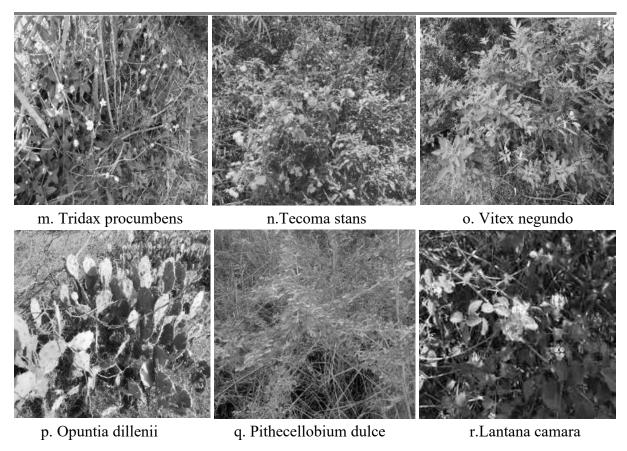


Fig No: 3.36. Flora species observation in the Buffer zone area

## 3.5.6. Flora Composition in the Buffer Zone (Primary data & Secondary data)

Buffer zone flora sampling was conducted between 10.30 am to 1.00 pm in eight different locations in 10 km radius as per the ToR. The most important and widely used methods for a general assessment is belt transect/quadrate methods. The study area was divided according to habitat types followed the random sampling methods in the selected area. For plant biodiversity study in the ecosystems, the quadrate methods were followed. The proposed project site there are 122 species in the buffer zone study area in total, based on records. The floral (122) varieties among them Trees 43, Herbs 38, Shrubs 27, Climbers/ Creepers 8 and Grasses 6 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Cucurbitaceous, Euphorbiaceae is the main dominating species in the study area mentioned in Table No.3.55. There are no impacts due to this mining activity. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. A list of floral species has been prepared based on primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table No 3.56 and their % distribution is shown in Figure No 3.37.

Table 3.56: Number of floral life forms in the Study Area

S. No	Plant Life Form	Number of Species
1	Trees	43
2	Shrubs	27
3	Herbs	38
4	Climber/ Creeper	8
6	Grasses	6
	Total No. of Species	122

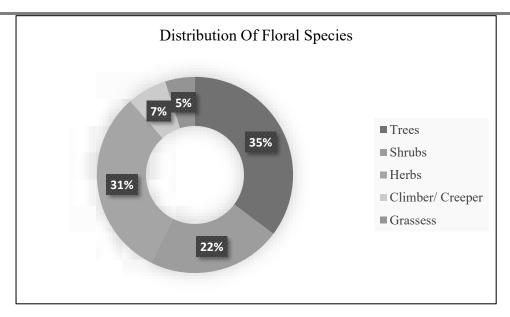


Fig No. 3.37: Diagram showing % distribution of floral life forms

## 3.5.7. The vegetation in the RF / PF areas, ecologically sensitive areas

There are neither reserved (RF) nor protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner. Hence, no certificate from the Forest department is required. There are no impacts due to this mining activity.

There are no protected or ecologically sensitive areas such as National parks or Important Bird Areas (IBAs), or Wetlands or migratory routes of fauna or water bodies or human settlements within the proposed mine lease area. There are no Biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thus, the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive. It is away from the proposed project site. There are neither forests nor forest dwellers nor forest-dependent communities in the mine lease area. There shall be no forest-impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.

#### 3.6. Fauna

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians, and Butterflies. All the listed species were compared with the Red Data Book and the Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET), and endemic species present in the core area.

## 3.6.1. Fauna Composition in the Core Zone (Primary Data)

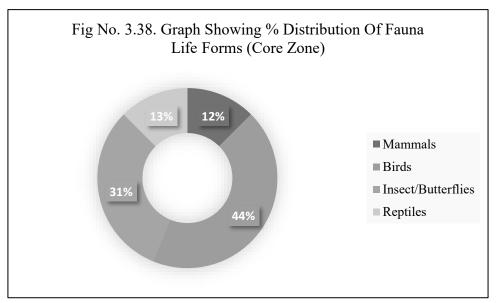
Core zone fauna samplings were conducted between 12.30 pm to 1.30 pm in two locations. A total of 17 varieties of species were observed in the Core zone of Netrampakkam Village, Rough stone and gravel quarry (Table No.3.60) among them numbers of Insects 5, Reptiles 2, Mammals 2 and Avian 7. A total of 16 species belonging to 12 families have been recorded from the core mining lease area. The percentage of distribution of fauna life forms in Core Zone is given in Fig No.3.38. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and six species are under schedule IV according to the Indian wild life Act 1972. A total of 8 species of bird were sighted in the mining lease area.

There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table No. 3.60.

Table No: 3.60. Fauna in the Core zone of Netrampakkam Village, Rough stone and Gravel quarry, Maduranthagam Taluk, Chengalpattu District (Primary data)

SI. No	Common name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
Insects/B	Butterflies	•	
1.	Common Tiger	Danaus genutia	Schedule IV
2.	Mottled emigrant	Catopsilia pyranthe	NL
3.	Striped tiger	Danaus plexippus	Schedule IV
4.	Danaid egg fly	Hypolimnasmisippus	Schedule IV
5.	Red-veined darter	Sympetrum fonscolombii	NL
Reptiles			
1.	Garden lizard	Calotes versicolor	Schedule IV
2.	Common skink	Mabuya carinatus	Schedule IV
Mamma	ls		
1.	Indian Field Mouse	Mus booduga	Schedule IV
2.	Common rat	Rattus rattus	Schedule IV
Aves			
1.	Common myna	Acridotheres tristis	Schedule IV
2.	Asian green bee-eater	Meropsorientalis	Schedule IV
3.	Black drongo	Dicrurus macrocercus	Schedule IV
4.	Koel	Eudynamys	Schedule IV
5.	House crow	Corvussplendens	Schedule IV
6.	Cattle egret	Bubulcus ibis	Schedule IV
7.	Common quail	Coturnix coturnix	Schedule IV

(Sources: Species observation in the field study)



### 3.6.2. Fauna Composition in the Buffer Zone

The Buffer zone fauna samplings were conducted between 3.00 pm to 6.00 pm in different locations. As animals, especially vertebrates move from place to place in search of food, shelter, mate or other biological needs, separate lists for core and buffer areas are not feasible however, a separate list of fauna pertaining to core and buffer zone are listed separately. Though there are no reserved forests in the buffer zone. As such there are no chances of occurrence of any rare or endangered or endemic or threatened (REET) species within the core or buffer area.

There are no Sanctuaries, National Parks, Tiger Reserve or Biosphere reserves or Elephant Corridor or other protected areas within 10 km radius of from the core area. It is evident from the available records, reports, and circumstantial evidence that the entire study area including the core and buffer areas were free from any endangered animals. There were no resident birds other than common bird species such as Bee-eaters, Mynas, Reed Kites and Drongos etc.

The list of Mammals (\*directly sighted animals & Secondary data) is given in table No.3.61. The list of bird species recorded during the field survey and literature from the study area are given in Table No 3.62. The

list of reptilian species recorded during the field survey and literature from the study area is given in Table No 3.63. The list of insect species recorded during the field survey and literature from the study area are given in Table No 3.64. The list of Butterflies species recorded during the field survey and literature from the study area are given in Table No 3.65. It is apparent from the list that none of the species either spotted or reported is included in Schedule I of the Wildlife Protection Act. Similarly, none of them comes under the REET category.

Taxonomically a total of 70 species recorded were from the buffer zone area. Based on habitat classification the majority of species were birds 32, followed by Butterflies 22, Reptiles 6, Insects 5, Mammals 5, and Amphibians 4. There are two Schedule II species, two species are under the schedule III and sixty-one species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 33 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species.

Dominant species are mostly birds, butterflies, and insects, and four amphibians was observed during the extensive field visit Sphaerotheca breviceps, Euphlyctis hexadactylus, Bufomelanostictus, etc. There is no Schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No: 3.61. List of Fauna & Their Conservation Status, Mammals: (\*directly sighted animals & Secondary data)

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian palm squirrel	Funambulus palmarum	Schedule IV
2.	Indian Field Mouse	Mus booduga	Schedule IV
3.	Asian Small Mongoose	Herpestes javanicus	Schedule (Part II)
4.	Indian hare	Lepus nigricollis	Schedule (Part II)
5.	Brown rat	Rattus norwegicus	Schedule IV

Table No: 3.62. Listed birds (Primary & Secondary data)

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian robin	Saxicoloides fulicatus	Schedule IV
2.	Asian Koel	Eudynamys	Schedule IV
3.	Cattle egret	Bubulcus ibis	Schedule IV
4.	Black Kite	Milvus migrans	Schedule IV
5.	Rock pigeon	Columbidae	Schedule IV
6.	Common myna	Acridotheres tristis	Schedule IV
7.	House crow	Corvussplendens	Schedule V
8.	Brown headed Barbet	Megalaima zeylanica	Schedule IV
9.	Red Vented Bulbul	Pycnonotus cafer	Schedule IV
10.	Ashy Drongo	Dicrurus leucophaeus	Schedule IV
11.	Small Bee Eater	Merops orientalis	Schedule IV
12.	Purple sunbird	Cinnyris asiaticus	Schedule IV
13.	Large Wood shrike	Tephrodornis gularis	Schedule IV
14.	House sparrow	Passer domesticus	Schedule IV
15.	Brahman myna	Temenuchus pagodarum	Schedule IV
16.	Small blue Kingfisher	Alcedo atthis	Schedule IV
17.	Little Cormorant	Phalacrocorax niger	Schedule IV
18.	Rose-ringed parkeet	Psittacula krameri	Schedule IV
19.	Common quail	Coturnix coturnix	Schedule IV
20.	Pond herons	Ardeola grayii	Schedule IV
21.	Black drongo	Dicrurus macrocercus	Schedule IV
22.	Woodpecker bird	Picidae	Schedule IV
23.	Weaver bird	Ploceus philippines	Schedule IV
24.	Two-tailed Sparrow	Dicrurus macrocercus	Schedule IV
25.	Grey drongo	Dicrurus longicaudatus	Schedule IV

26.	Bush Quail	Perdicula asiatica	Schedule IV
27.	Wood Sandpiper	Tringa glareola	Schedule IV
28.	Blue-Tailed Bee Eater	Merops philippinus	Schedule IV
29.	Indian Roller	Coracias benghalensis	Schedule IV
30.	Common Swallow	Hirundo rustica	Schedule IV
31.	Purple Rumped Sunbird	Leptocoma zeylonica	Schedule IV
32.	Purple Sunbird	Cinnyris asiaticus	NL

Reference: Ali, S. (2002). The Book of Indian Birds (13th revised edition). Oxford University Press, New Delhi. 326pp. https://ebird.org/region/IN-TN-CP

Table No: 3.63. List of Reptiles either spotted or reported from the study area (\*indicates direct observations & Secondary data)

SI. No	Common Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Oriental garden lizard	Calotes versicolor	III
2.	House lizards	Hemidactylus flaviviridis	Schedule IV
3.	Green vine snake	Ahaetulla nasuta	Schedule IV
4.	Rat snake	Ptyas mucosa	III
5.	Common krait	Bungarus caeruleus	Schedule IV
6.	Common skink	Mabuya carinatus	NL

Table No: 3.64. List of insects either spotted or reported from the study area

SI. No	Common Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian honey bee	Apis cerana	-
2.	Termite	Hamitermes silvestri	NE
3.	Grasshopper	Hieroglyphus sp	NL
4.	Ant	Camponotus Vicinus	NL
5.	Dragonfly	Ceratogomphus pictus	-

Table No: 3.65. List of Butterflies reported from the study area and Secondary data

SI. No	Common Name	Scientific Name	Schedule
1.	Indian palm bob	Suastusgremius	Schedule IV
2.	Common Mormon	Papilio polytes	Schedule IV
3.	Lemon Pansy	Junonia lemonias	Schedule IV
4.	Common Crow	Euploea core	Schedule IV
5.	Common rose	Pachlioptaaristolochiaee	Schedule IV
6.	Spotless grass yellow	Eurema laeta	Schedule IV
7.	Common Evening Brown	Melanitis leda	Schedule IV
8.	Peacock Royal	Tajuria cippus	Schedule IV
9.	Common Tiger	Danaus genutia	Schedule IV
10.	Lime Butterfly	Papilio demoleus	Schedule IV
11.	Blue Mormon	Papilio polymnestor	Schedule IV
12.	Danaid Eggfly	Hypolimnas misippus	Schedule IV
13.	Great Eggfly	Hypolimnas bolina	Schedule IV
14.	Common emigrant	Catopsiliapomona	Schedule IV
15.	Tiny Grass Blue	Zizula hylax	Schedule IV
16.	Blue Tiger	Tirumala limniace	Schedule IV
17.	Crimson tip	Colotisdanae	Schedule IV
18.	Common Indian crow	Euploea core	Schedule IV
19.	Lime Butterfly	Papilio demoleus	Schedule IV
20.	Yellow Pansy	Junonia hierta	Schedule IV
21.	Chocolate Pansy	Junonia iphita	Schedule IV

22.	Double-branded Black Crow	Euploea sylvester	Schedule IV	

**Sources:** Butterfly diversity of Chengalpattu and Thiruvallur districts in Tamil Nadu, India by Vikas Madhav Nagarajan and Hari Theivaprakasham

https://doi.org/10.22271/j.ento.2020.v8.i6j.7933

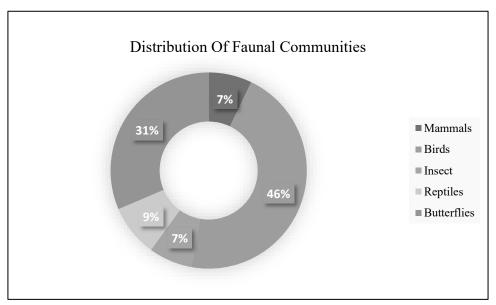


Fig No. 3.39: Diagram showing % distribution of faunal life forms

Livestock like cattle, buffalo, goat, poultry, duck and pig are reared for dairy products, meat, and egg and for agriculture purpose. Majority of cattle and buffalo are of local variety. Backyard poultry farms are mostly common in this area; however, some commercial poultry farms are also recorded in the study area. The study area is marked with moderate population of flora and fauna. With reference to the Wildlife Protection Act 1972 total number of wildlife tabulated in this study can be characterized as given in the Table No 3.66.

Table No: 3.66. Characterization of Fauna in the Study Area (As Per W.P Act, 1972)

S.No	Schedule of Wildlife Protection Act 1972	No. of species	Remark
1.	Schedule I	0	-
2.	Schedule II	2	-
3.	Schedule III	2	-
4.	Schedule IV	61	-
5.	Schedule V	1	-
6.	Schedule VI	0	-

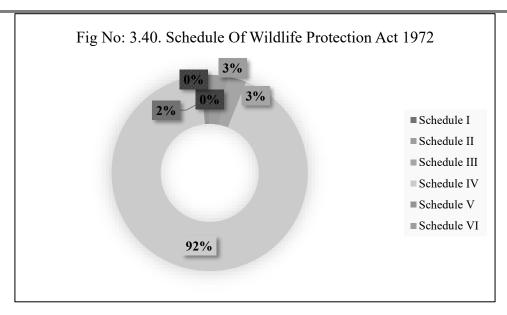


Table No: 3.67. Description of Flora & Fauna

S.No	Type of Species	Name	<b>Local Name</b>
Flora			
1.	Endangered species	None	None
2.	Threatened species	None	None
3.	Near Threatened species	None	None
4.	Vulnerable species	None	None
Fauna			
5.	Endangered species	None	None
6.	Threatened species	None	None
7.	Near Threatened species	None	None
8.	Vulnerable species	None	None
9.	Migratory Corridors & Flight Paths	No corridors & flight paths	-
10.	Breeding & Spawning grounds	None	-

A comprehensive Central Legislation namely Wild Life (Protection) Act was enforced in 1972 to provide protection to wild animals. Schedule-I of this act contains the list of rare and endangered species, which are completely protected throughout the country. The list of wild animals and their conservation status as per Wild Life Act (1972) presented in Table 3.67 are the species recorded/reported from the study area, out of which 2 species belongs to schedule-II, 2 species belong to schedule-III, 1 species belongs to Schedule-V and rest of the species belongs to schedule-IV of Wildlife Protection Act, 1972.

## 3.6.3. Aquatic Ecology

The study area has seasonal water bodies is located away from the proposed project site. Mining activities will not have an impact on aquatic ecosystems because no effluent discharge from the Rough stone and gravel quarry is planned. There are no natural perennial surface water bodies, such as marshes, rivers, streams, lakes, or agricultural sites, inside the mining lease area. There is no aquatic flora and, aquatic fauna. Hence, it does not harbour any significant aquatic life. Therefore, the project is not likely to affect the aquatic ecology. Aquatic weeds are found to be growing everywhere in 10 km radius area, in every water bog, pond, etc. Typha angustata can be found growing all along the drains of villages, small water-logged depressions, and agricultural fields lacking water but containing enough moisture to support its growth. And where water is present, Eichhornia crassipes has taken its roots and covers the entire water surface by its sprawl and invasion.

# 3.6.3.1. Objectives of Aquatic Studies

Generating data through actual field collection in these locations over the study period.

- Impacts on aquatic fauna/flora
- Consulted with locals to obtain knowledge about aquatic flora and animals.

## 3.6.3.2. Macrophytes

The macrophytes observed within the study area are tabulated in Table 3.68

Table No.3.68 Description of Macrophytes (Primary data & Secondary data)

Sl.No	Common Name	Scientific name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1.	Water hyacinth	Eichornia crassipe	Agayatamarai	NA
2.	Floating lace plant	Aponogetonnatans	Kottikizhnagu	NA
3.	Blue water lily	Nymphaea nouchali	Nellambal	LC
4.	Sambu	Typha angustifolia	Narrowleaf cattail	LC
5.	Cross Grass	Carex cruciata	Koraipullu	NA
6.	Tall Flat Sedge	Cyperus exaltatus	Koraikizhangu	LC

Sources: Species observation in the field study

# 3.6.3.3. Aquatic Faunal Diversity

Amphibian species like the common Indian Burrowing frog, and Green pond frog, and etc. were sighted near the water bodies located in the study area.

Table No. 3.69. Amphibians Observed/Recorded from the Study Area& Secondary data

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
1.	Indian Burrowing frog	Sphaerotheca breviceps	Schedule IV
2.	Green pond frog	Euphlyctis hexadactylus	Schedule IV
3.	Indian Toad	Bufomelanostictus	Schedule IV
4.	Skipper	Euphlyctiscynophlyctis	Schedule IV

## 3.6.3.4. Other Aquatic Fauna

## 3.6.3.5. Fishes

The study area has low aquatic diversity, with few types of fish living. The species of fish reported during the primary visit are Rohu, Catla, Catfish, etc. Species of fish reported in the study area are given in Table No 3.70.

Table No 3.70. Based on Actual Sighting, based on inputs from locals and Perused from Secondary Data

S.No	Common name	Scientific name	Family
1.	Ponthia	Puntius sophore	Cyprinidae
2.	Catla	Catla Catla	Cyprinidae
3.	Catfish	Siluriformes	-
4.	Rohu	Labeo rohita	Cyprinidae

## a. Findings/Results

The assessment was carried out during the summer season. The inspection day was quite alright with respectable weather. The details of the flora and fauna observed are given below.

S.No	Ecological sensitive habitat	Direction and Distance from the project site
1.	National Parks/ Wildlife Sanctuary/	Nil.
	Biosphere reserves/ Elephant Reserve/ Any	
	Other Reserve	
2.	Reserved Forests	Nil

3.	Wildlife Corridors & Routes	No notified wildlife corridors are present in 10 km vicinity.
4.	Wetlands / Water bodies	-
5.	Ramsar Site	Nil
6.	Important Bird Habitats	Nil
7.	Breeding/nesting areas of endangered species	Not present
8.	Mangroves	None

There are no critically endangered, endangered, vulnerable and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET species. There are no ecologically sensitive areas or protected areas within the 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged. There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the mine lease area. There are no protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise.

There is no endangered, endemic and RET Species. There is no Schedule I species in study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] The proposed project is not going to have any direct or indirect adverse impact on the species mentioned above.

## 3.9. Conclusion

The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types and land cover, distances from natural habitats, vegetation/forest types, and sensitive ecological habitats such as Wetlands sites, Important Bird areas, migration corridors of important wildlife etc. Such baseline information provides better understanding of the situation and overall ecological importance of the area. This baseline information viewed against proposed project activities help in predicting their impacts on the wildlife and their habitats in the region. Data collected and information gathered from secondary literature on flora, fauna, protected area, natural habitats, and wildlife species etc., and consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

## **Sources:**

Invasive Alien Species | IUCN

https://ebird.org/region/IN-TN-CP

https://commons.wikimedia.org/wiki/Category:Animals\_of\_Chengalpattu\_district

Ali, S. (2002). The Book of Indian Birds (13th revised edition). Oxford University Press, New Delhi. 326pp.

Ali, S and Ripley, S.D. 1969. Handbook of the Birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon, 3. Stone Curlews to Owls. Oxford University Press, Bombay, 327pp.

Bird Life International 2012. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012..

## 3.6 SOCIO ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

#### STRUCTURE STUDY IN 300m RADIUS

There is one structure within the radius of 300m from the project site.

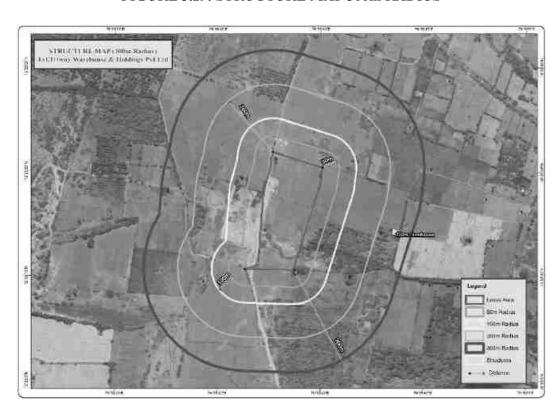


FIGURE 3.29: STRUCTURE MAP 300m RADIUS

	Enumeration of Structures from 0 - 300m Radius								
Structure Numbers	Distance & Direction from the project site	Structure Details and Usage Purpose	Type of Structure Structures (Kutcha/ Brick/ Cement/ RCC/ Framed Structures)	No.of Occupants	Structure belongs to owner (Yes/No)	Remarks			
1	250m – East	Farmhouse	Brick Structure	3	No	Storage Purpose and occasional Stay			

### 3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area.
- To assess the impact of the project on Quality of life of the people in the study area.
- To recommend Community Development measures needs to be taken up in the study Area.

#### 3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

#### 3.6.3 District Profile

Chengalpattu district is situated on the north east coast of Tamil nadu with a total geographical area of 2945 Sq.Kms. The district is bounded on the north by the Chennai district, West by the Kancheepuram district and Thiruvanamalai districts and on the south by the Vilupuram district. With a coastal length of 57 Kms, the district is bounded in the east by the Bay of Bengal. Chengalpattu features a tropical wet and dry climate. The fact that the district is close to the thermal equator and is also coastal prevents extreme variations in the seasonal temperature. The month of January with 25°C average temperature is the coldest month of the year. Average annual rainfall of the district is about 1400 mm. The district gets most of its annual seasonal rainfall from the north-east monsoon winds during the months of October and November.

## 3.6.4 Study area:

#### NETRAMPAKKAM VILLAGE

Netrambakkam village is situated in Teshil Maduranthakam, District Chengalpattu and in State of Tamil Nadu India. Village has population of 1666 as per census data of 2011, in which male population is 831 and female population is 835. Total geographical area of Netrambakkam village is 353.87 Hectares. Population density of Netrambakkam is 5 persons per Hectares. Total number of house hold in village is 424..

#### Sex Ratio of Netrampakkam Village -Census 2011

As per the Census Data 2011 there are 1005 Femals per 1000 males out of 1666 total population of village. There are 1256 girls per 1000 boys under 6 years of age in the village.

#### Literacy of Netrampakkam Village

Out of total population total 1120 people in Netrambakkam Village are literate, among them 617 are male and 503 are female in the village. Total literacy rate of Netrambakkam is 75.62%, for male literacy is 82.38% and for female literacy rate is 68.72%

#### Worker's profile of Netrampakkam Village

Total working population of Netrambakkam is 982 which are either main or marginal workers. Total workers in the village are 982 out of which 543 are male and 439 are female. Total main workers are 191 out of which female main workers are 179 and male main workers are 12. Total marginal workers of village are 791.

TABLE 3.32: NETRAMPAKKAM VILLAGE CENSUS 2011 DATA

Description	Census 2011 Data
Village Name	Netrambakkam
Teshil Name	Maduranthakam
District Name	Chengalpattu
State Name	Tamil Nadu
Total Population	1666
Total Area	354(Hectares)
Total No of House Holds	424
Total Male Population	831
Total Female Population	835
0-6 Age group Total Population	185
0-6 Age group Male Population	82
0-6 Age group Female Population	103
Total Person Literates	1120
Total Male Literates	617
Total Female Literates	503
Total Person Illiterates	546
Total Male Illiterates	214
Total Female Illiterates	332
Scheduled Cast Persons	846
Scheduled Cast Males	415
Scheduled Cast Females	431
Scheduled Tribe Persons	0
Scheduled Tribe Males	0
Scheduled Tribe Females	0

TABLE 3.33 NETRAMPAKKAM WORKING POPULATION --- CENSUS 2011

	Total	Male	Female
Total Workers	982	543	439
Main Workers	191	179	12
Main Workers Cultivators	20	19	1
Agriculture Labourer	106	104	2
Household Industries	3	2	1
Other Workers	62	54	8
Marginal Workers	791	364	427
Non-Working Persons	684	288	396

Source: https://etrace.in/census/village/netrambakkam-maduranthakam-district-kancheepuram-tamil-nadu-630091/

TABLE 3.34: POPULATION DATA OF STUDY AREA

SI.No.	Village Name	No of House Holds	Total Population	Male	Female	Total Literate Population	Male Literate	Female Literate	Total Illiterate Population	Male Illiterate	Female Illiterate
1	Karaichuthupudur	1765	7184	3476	3708	5680	2826	2854	1504	650	854
2	Kasthurirangapuram	834	3081	1475	1606	1976	1035	941	1105	440	665
3	Koondankulam	2996	12957	6483	6474	9992	5248	4744	2965	1235	1730
4	Kottaikarungulam	865	3160	1538	1622	2460	1280	1180	700	258	442
5	Kumarapuram	1002	3993	1951	2042	3069	1565	1504	924	386	538
6	Kumbikulam	811	3148	1556	1592	2321	1231	1090	827	325	502
7	Muthumuthamozhi	1201	4786	2340	2446	3927	1978	1949	859	362	497
8	Parameswarapuram	594	2324	1150	1174	1773	940	833	551	210	341
9	Radhapuram	2043	7469	3644	3825	5797	2961	2836	1672	683	989
10	Samugarengapuram	1442	5522	2681	2841	3841	1966	1875	1681	715	966
11	Tiruvambalapuram (Part)	890	3438	1659	1779	2439	1250	1189	999	409	590
12	Udayathoor	1240	4550	2224	2326	3196	1714	1482	1354	510	844
13	Urumankulam	1190	4868	2343	2525	3808	1934	1874	1060	409	651
14	Vijayapathi	2651	10854	5456	5398	8588	4390	4198	2266	1066	1200

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

TABLE 3.35: WORKERS PROFILE OF STUDY AREA

SI.No.	Village Name	Total Workers Population	Male Workers	Female Workers	Total Main Workers	Main Workers Male	Main Workers Female	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Non- Worker Population
1	Karaichuthupudur	2894	1877	1017	2598	1716	882	214	385	1448	4290
2	Kasthurirangapuram	1563	860	703	1413	819	594	145	875	341	1518
3	Koondankulam	6173	3561	2612	4714	2787	1927	223	268	2896	6784
4	Kottaikarungulam	1408	838	570	829	577	252	89	153	516	1752
5	Kumarapuram	1792	1154	638	1413	954	459	84	375	771	2201
6	Kumbikulam	1492	860	632	1147	673	474	159	362	452	1656
7	Muthumuthamozhi	2069	1398	671	1735	1198	537	92	195	1228	2717
8	Parameswarapuram	1015	636	379	438	353	85	28	32	342	1309
9	Radhapuram	3057	1989	1068	2748	1854	894	306	682	1615	4412
10	Samugarengapuram	2380	1450	930	2058	1251	807	228	712	1076	3142
11	Tiruvambalapuram (Part)	1404	920	484	1235	862	373	149	495	446	2034
12	Udayathoor	2056	1269	787	1850	1217	633	255	621	802	2494
13	Urumankulam	1794	1285	509	1358	1024	334	159	565	548	3074
14	Vijayapathi	4290	3052	1238	3884	2863	1021	112	430	2912	6564

Source: www.censusindia.gov.in – Tamil Nadu Census of India – 2011

TABLE 3.36: EDUCATIONAL FACILITIES IN THE STUDY AREA

SI	Village Name	PI	PS	P	S	M	S	S	S	SS	SS	D	C	E	C	M	C	M	II	P	T	V	ΓS	SS	SD
51	v mage Ivame	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P
1	Karaichuthupudur	1	2	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	Kasthurirangapuram	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	Koondankulam	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	Kottaikarungulam	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	Kumarapuram	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Kumbikulam	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	Muthumuthamozhi	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	Parameswarapuram	1	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	Radhapuram	1	1	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	Samugarengapuram	1	2	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
11	Tiruvambalapuram (Part)	1	2	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12	Udayathoor	1	2	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
13	Urumankulam	1	2	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14	Vijayapathi	1	2	1	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Abbreviations: PPS-Pre Primary School; SSS-Senior Secondary School; DC-Degree School; PT-Polytechnic; PS-Primary School; G-Government; EC-Engineering College; VTS-Vocational School /ITI; MS-Middle School; P-Private; MC-Medical College; SSD-Special School For Disabled; SS-Secondary School; MI-Management College/Institute;

Note – 1 - Available within the village; 2 - Not available

TABLE 3.37: MEDICAL FACILITIES IN THE STUDY AREA

SI. No.	Village Name	CHC	PHC	PHSC	MCW	TBC	HA	HAM	D	VH	MHC	FWC	NGM-I/O
1	Karaichuthupudur	0	1	2	1	1	0	0	1	0	0	1	
2	Kasthurirangapuram	0	0	1	0	0	0	0	0	0	0	0	b
3	Koondankulam	0	1	2	2	1	0	0	1	2	0	1	
4	Kottaikarungulam	0	0	1	0	0	0	0	0	0	0	0	b
5	Kumarapuram	0	0	1	0	0	0	0	0	0	0	0	a
6	Kumbikulam	0	0	1	0	0	0	0	0	0	0	0	b
7	Muthumuthamozhi	0	0	1	0	0	0	0	0	0	0	0	a
8	Parameswarapuram	0	0	0	0	0	0	0	0	0	0	0	b
9	Radhapuram	0	0	1	1	1	0	0	0	1	0	0	c
10	Samugarengapuram	0	0	1	0	0	0	0	0	0	0	0	b
11	Tiruvambalapuram (Part)	0	0	1	0	0	0	0	0	1	0	0	b
12	Udayathoor	0	0	1	0	0	0	0	0	0	0	0	a
13	Urumankulam	0	0	1	0	0	0	0	0	0	0	0	b
14	Vijayapathi	0	2	1	2	2	0	0	2	0	0	2	

Abbreviations: CHC-Community Health Centre; TBC-TB Clinic; VH- Veternity Hospital; PHC-Primary Health Centre; HA-Aallopathic Hospital; FWC-Family Welfare Centre; PHSC-Primary Health Sub Centre; HAM-Alternative Medicine Hospital; MH-Mobile Health Clinic; MCW-Maternity and Child Welfare Centre; D-Dispensary; NGM-I/O-Non Government Medical Facilities In & Out Patient

Note – 1 - Available within the village; 2 - Not available

a-facility available at <5kms

b-facility available at>10kms

Source: www.censusindia.gov.in - Tamilnadu Census of India – 2011

#### 3.6.6 Recommendation and Suggestion

- The main activities in the area are agriculture, quarry operation and 2 Nos are already in the Operation. Hence starting up of new mine in this region is necessary at current scenario
- Due to the project about 51 Nos of people will benefitted directly due to employment and more than 100
   Nos of people and Crushers will benefitted through this project
- As part of CER activities proponent intends to spend Rs 5 Lakhs for the improvement of School sanitation facilities, Greenbelt development and other needs.
- At the end of the life of the mine the mined-out pit will act as temporary reservoir, the collected rain water in the mine pit may utilized for the nearby agriculture lands.

## Apart from the following general activities will be conducted

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.
- While developing an Action Plan, it is very important to identify the population who falls under the
  marginalized and vulnerable groups. So that special attention can be given to these groups with special
  provisions while making action plans.

#### 3.6.7 Summary & Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

### 4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post–operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

Several scientific techniques and methodologies are available to predict impacts of physical environment. Mathematical models are the best tools to quantitatively describe the cause-and-effect relationships between sources of pollution and different components of environment. In cases where it is not possible to identify and validate a model for a particular situation, predictions have been arrived at based on logical reasoning / consultation / extrapolation.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail

- Land environment
- Soil environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

### 4.1 LAND ENVIRONMENT:

## 4.1.2 Anticipated Impact

- 3.47.40 Ha of the land will be under mining since the Permanent or temporary change on land use and land cover will occur
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.

If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

## **4.1.2** Mitigation Measures

- The 3.47.40 Ha of the land will be converted into temporary reservoir which will full fill the water scarcity in the drought season and the nearby agriculture land will benefitted by the supply of water
- About 2270 Nos of trees will be planted in the lease area and approach road will retain the eco system
- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development in the production
- Construction of garland drains all around the quarry pits and construction of silt trap at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- Green belt development along the boundary within safety zone. The small quantity of water stored in the minedout pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- Fencing will be constructed before starting the mining operation and it will be maintained in the conceptual stage Security will be posted round the clock, to prevent inherent entry of the public and cattle.

#### 4.1.3 Soil Environment

#### 4.1.4 Impact on Soil Environment

- Removal of vegetation cover
- Soil Erosion in the project site during rainy season due to quarry operation

## 4.1.5 Mitigation Measures

- Garland drains will be constructed all around the project boundary to prevent surface flows from entering the
  quarry. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area
  stabilised against erosion.
- Sedimentation ponds Run-off from working areas will be routed towards sedimentation ponds (Silt pond). These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

#### 4.1.6 Waste Dump Management

There is no waste anticipated in this Rough Stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%).

### 4.2 WATER ENVIRONMENT

### 4.2.1 Anticipated Impact

- The major sources of water pollution normally associated due to mining and allied operations are:
  - Generation of waste water from vehicle washing.
  - O Washouts from surface exposure or working areas
  - o Domestic sewage
  - o Disturbance to drainage course in the project area
  - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.

- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table
- 2.0 KLD water will be utilized for the quarrying operation

#### 4.2.2 Mitigation Measures

- Water for the quarrying operation such as sprinkling on haul roads, Greenbelt development will be sourced from the lower part of the mine pit which is specifically allotted to collect the rain water.
- Garland drain, settling tank will be constructed along the proposed mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judicially utilize the rainwater as part of rainwater harvesting system.
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak
  pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree
  plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.

### 4.3 AIR ENVIRONMENT

## 4.3.1. Anticipated Impact

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of
  materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust
  are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

### 4.3.1.1. Modelling of Incremental Concentration from all Proposed Projects

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly  $PM_{10}$  &  $PM_{2.5}$  and emissions of Sulphur dioxide (SO<sub>2</sub>) & Oxides of Nitrogen (NOx) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using

#### **AERMOD Software.**

Prediction of impacts on air environment has been carried out taking into consideration cumulative production all the quarries fall in the Cluster. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software AERMOD 9.61.

#### 4.3.2.1 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER =overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of Rough Stone. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

## 4.3.2 Frame work of Computation & Model details

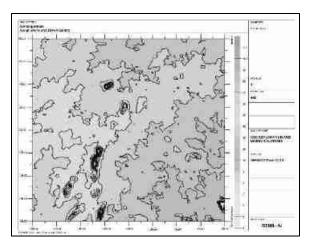
Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of  $PM_{10}$  was observed close to the source due to low to moderate wind speeds. Incremental value of  $PM_{10}$  was superimposed on the base line data monitored at the proposed site to predict total GLC of  $PM_{10}$  due to combined impacts

PM<sub>10</sub> Activity Source type Value Unit Drilling Point Source 0.111760132 g/sBlasting Point Source 0.004217441 g/sMineral Loading Point Source 0.046329116 g/sHaul Road Line Source 0.002505986 g/s/mOverall Mine Area Source 0.076147044 g/s $SO_2$ Activity Source type Value Unit Overall Mine Area Source 0.001689388 g/s $NO_X$ Overall Mine Area Source 0.000166290 g/s

**TABLE 4.1: ESTIMATED EMISSION RATE** 

# FIGURE 4.1: AERMOD TERRAIN MAP



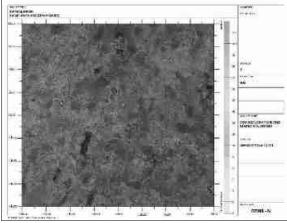
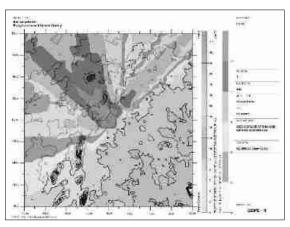


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM<sub>10</sub>



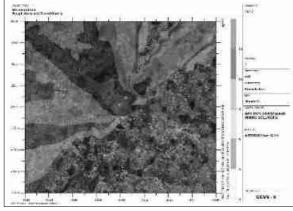
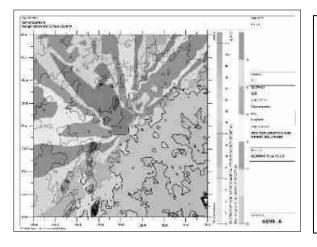


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM<sub>2.5</sub>



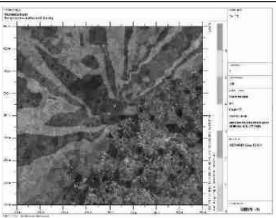


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO<sub>X</sub>

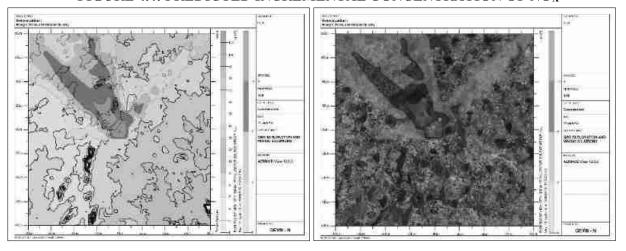


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF SO<sub>2</sub>

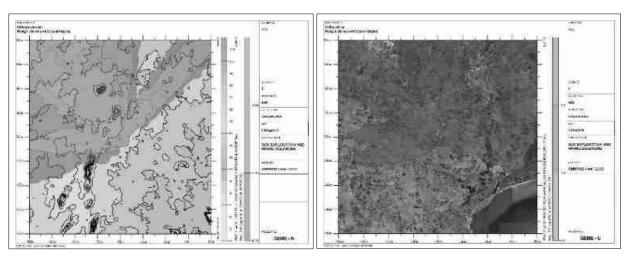
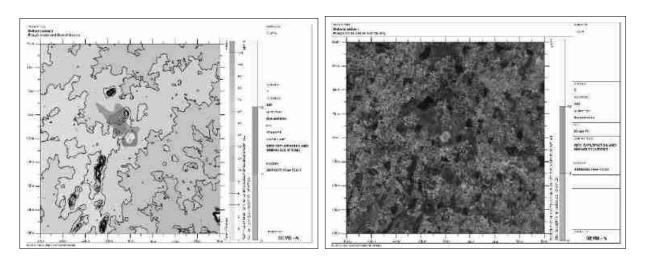


FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST



## 4.3.2.1 Model Results

The post project Resultant Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> & NO<sub>X</sub> (GLC) is given in Table below:

TABLE 4.2: INCREMENTAL & RESULTANT GLC OF PM<sub>10</sub>

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m³)	Total PM <sub>10</sub> (μg/m³)
AAQ1	12°25'11.00"N 79°55'34.14"E	-73	-150	43.4	16.84	60.24
AAQ2	12°25'33.11"N 79°55'50.81"E	436	528	44.5	16.19	60.69
AAQ3	12°23'3.79"N 79°53'45.14"E	-3366	-4073	44.3	0	44.30
AAQ4	12°26'57.22"N 79°58'12.08"E	4705	3119	44.1	0.40	44.50
AAQ5	12°23'2.68"N 79°57'56.73"E	4241	-4105	44.0	0	44.00
AAQ6	12°28'28.50"N 79°55'18.88"E	-531	5934	43.2	11.00	54.20
AAQ7	12°25'39.71"N 79°52'59.57"E	-4750	732	43.2	8.00	51.20

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM2.5

Station Code	Location	X Coordinate (m)	Y Coordinat e (m)	Average Baseline PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Incremental value of PM2.5 due to mining (µg/m³)	Total PM <sub>2.5</sub> (μg/m³)
AAQ1	12°25'11.00"N 79°55'34.14"E	-73	-150	22.5	8.92	31.42
AAQ2	12°25'33.11"N 79°55'50.81"E	436	528	23.3	8.29	31.59
AAQ3	12°23'3.79"N 79°53'45.14"E	-3366	-4073	23.0	0.22	23.22
AAQ4	12°26'57.22"N 79°58'12.08"E	4705	3119	22.9	2.36	25.26
AAQ5	12°23'2.68"N 79°57'56.73"E	4241	-4105	23.4	0	23.40
AAQ6	12°28'28.50"N 79°55'18.88"E	-531	5934	23.0	5.00	28.00
AAQ7	12°25'39.71"N 79°52'59.57"E	-4750	732	23.0	3.50	26.50

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF SO2

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO <sub>2</sub> (µg/m <sup>3</sup> )	Incremental value due to mining (µg/m³)	Total SO <sub>2</sub> (μg/m <sup>3</sup> )
AAQ1	12°25'11.00"N 79°55'34.14"E	-73	-150	7.4	2.89	10.29
AAQ2	12°25'33.11"N 79°55'50.81"E	436	528	6.9	2.80	9.70
AAQ3	12°23'3.79"N 79°53'45.14"E	-3366	-4073	6.4	0	6.40
AAQ4	12°26'57.22"N 79°58'12.08"E	4705	3119	7.1	0	7.10
AAQ5	12°23'2.68"N 79°57'56.73"E	4241	-4105	6.9	0	6.90
AAQ6	12°28'28.50"N 79°55'18.88"E	-531	5934	7.4	2.31	9.71
AAQ7	12°25'39.71"N 79°52'59.57"E	-4750	732	7.4	1.20	8.60

Incremental Average Y X Total Station **Baseline** value due to Coordinate Location Coordinate **NOx** Code **NO**x mining (m) (m)  $(\mu g/m^3)$  $(\mu g/m^3)$  $(\mu g/m^3)$ -73 -150 33.89 AAQ1 12°25'11.00"N 79°55'34.14"E 22.2 11.69 AAQ2 12°25'33.11"N 79°55'50.81"E 436 528 21.8 11.15 32.95 AAQ3 12°23'3.79"N 79°53'45.14"E -3366 -4073 21.7 21.70 12°26'57.22"N 79°58'12.08"E 4705 23.2 AAQ4 3119 0 23.20 AAQ5 12°23'2.68"N 79°57'56.73"E 4241 -4105 21.8 0 21.80 12°28'28.50"N 79°55'18.88"E 5934 20.1 1.60 AAQ6 -531 21.70 12°25'39.71"N 79°52'59.57"E AAQ7 -4750 732 20.1 0 20.10

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF NOX

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80  $\mu$ g/m3 for PM10, SO2 & NOX respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

## 4.3.4. Mitigation Measures

**Drilling** – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

### Advantages of Wet Drilling: -

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

## Blasting -

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential
  areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

### Haul Road & Transportation -

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with taurpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metaled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.

- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

#### Green Belt -

- 2270 Nos of trees will be planted through this project in the lease area and village roads (Approach Road) to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

#### Occupational Health -

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

#### 4.4 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement within 300m radius from the project site. Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities.

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels.

Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 log (r_2/r_1) - Ae_{1,2}$$
 Where:

 $Lp_1\& Lp_2$  are sound levels at points located at distances  $r_1\& r_2$  from the source.

Ae<sub>1, 2</sub> is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots \}$$

#### **4.4.1** Anticipated Impact

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
	Total Noise P	roduced	95.8

TABLE 4.7: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

**Source:** U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining machineries 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for nose prediction modelling.

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	47.1	46.8	45.2	45.2	41.5	42.7	60.2
Incremental Value dB(A)	60.1	46.1	26.5	25.3	24.8	24.8	26.5
Total Predicted Noise level dB(A)	60.3	49.5	45.3	45.2	41.6	42.8	43.4

TABLE 4.8: PREDICTED NOISE INCREMENTAL VALUES

The incremental noise level is found within the range of 60.3 dB (A) in Core Zone and 41.6 – 49.5 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

## 4.4.2 Mitigation Measures

The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

#### 4.4.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

 $V = K [R/Q^{0.5}]^{-B}$ 

Where -

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

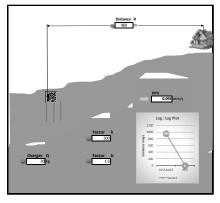
B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.9: PREDICTED PPV VALUES DUE TO BLASTING

	<b>Location ID</b>	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
Ī	P1	20	960-SW	0.093

FIGURE 4.6: GROUND VIBRATION PREDICTION



From the above graph, the charge per blast 20 kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the all the project proponents ensure that the charge per blast shall be less than 20kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

#### 4.4.3.1 Mitigation Measures

- It is proposed to carry out blasting operation 20kg per round so that the vibration will be minimal
- The mining operation will be carried out without deep hole drilling, 25mm small dia cartridge will be utilized for the blasting
- The blasting operations in the project site without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2<sup>nd</sup> Class Mines Manager/ 1<sup>st</sup> Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 mm/s.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

### 4.5. Impact on the Biological Environment

#### 4.5.1. Anticipated Impact on agricultural land associated with flora

- 1. Dust particle settle on neighbouring agricultural land it is located about 150m on the west side. During operation and minerals are transported in approach roads.
- 2. There shall be negligible air emissions or effluents from the project site. During the loading of the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.

#### 4.5.2 Mitigation Measures

#### 4.5.2.1. General Guidelines for Green Belt Development

Drone survey was covered the green belt and fencing as per the terms of references. The green belt and plantation purposes in and around the proposed mine lease area native species, fruit-bearing trees, medicinal plants, and dense canopy trees should be selected. These species should be tolerant to pollution levels as per Bio-Geography zones of India.

After the operation of mining production capacity, Green belt and Plantation species should be in accordance with the Terms and Conditions of the Environmental Clearance Green belt is created not only for the purpose of protecting sensitive areas or maintaining the ecological balance but because they also act as efficient biological filters or sinks for particulate and gaseous emissions, generated by vehicular movements and various industrial and mining activities. Optimally designed green belts can be effective in reducing the impact of fugitive emissions and pollutants accidentally or otherwise released at ground levels.

#### 4.5.3.2. Proposed Green Belt

Extensive green belt development will be started during the construction phase, which will continue till the operation of the plant. About 450-500 trees will be planted per hectare all around the plant, approach roads, and township premises. Locally available types of trees that are resistant to pollutants will be planted. In addition to the above, all open spaces available within the premises will be developed as nurseries, parks, gardens, and other forms of greenery. 5 m wide greenbelt will be developed along the plant premises, as per land available.

#### 4.5.3.3. Development of Green Belt

The plantation matrix adopted for the green belt development includes pit of 0.3 m x 0.3 m in size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration. Multi-layered plantations comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt.

#### 4.5.3.4. Selection of Plant Species for Green Belt Development

It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration. Multi-layered plantations comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt. Green belt is plantation of trees for reducing the air pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belts have been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution. Regional tree saplings in eco-friendly bags like Pterocarpus marsupium, Pongamia pinnata, Limonia acidissima, and Cassia roxburghii will be planted along the Lease boundary and avenues as well as over Nonactive dumps with intervals 3m in between with the GPS Coordinates. The greenbelt development plan aims to overall improvement in the environmental conditions of the region Native plant species will be preferred.

- The species should be wind-firm and deep-rooted.
- The species should form a dense canopy.
- Fast-growing plants will be planted
- Species tolerance to air pollution like SO2 and NO2 should be preferred.
- Plants having large leaf area index will be considered
- Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter).
- Attractive appearance with good flowering and fruit-bearing.
- Birds and insects attract tree species.
- Roadsides will be planted with local vegetation.

Table No 4.1. List of plant species proposed for Greenbelt development

S. No	Scientific name	Tamil Name
1	Aegle marmelos	Vilva maram
2	Albizia lebbeck	Vaagai maram
3	Cassia fistula	Konrai tree
4	Lannea coromandelica	Othiyam
5	Limonia acidissima	Vila maram
6	Syzygium cumini	Naval maram
7	Toona ciliata	Santhana Vembu
8	Ficus hispida	Aththi maram
9	Borassus flabellifer	Panai-maram
10	Madhuca longifolia	Illupai maram

(\*Source: Term of Reference-ToR)

Table No 4.2. Species suitable for abatement of noise and dust pollution

S. No	Botanical name	Common name
1	Azadirachta indica	Vembhu maram
2	Ficus religiosa	Arasan maram
3	Ficus hispida	Aththi maram
4	Bombax ceiba	Mul Elavu
5	Syzygium cumini	Naval maram
6	Tamarindus indica	Puliyamaram
7	Mangifera indica	Manga maram
8	Harwickia binata	Anjan maram
9	Delonix regia	Neruppu Kondrai
10	Cassia Fistula	Sara Kondrai

(\*Source: Guidance for Developing Green belts Manual, CPCB 2000)

The above-suggested list covers species with thick canopy cover, perennial green nature, native origin, and a large leaf area index. The proposed species will help in forming an effective barrier between the mine site area and the surroundings.

These species need to be planted along the periphery of the lease area for absorb fugitive emissions and noise levels which is generated during mining activities. All the open spaces, where tree plantation may not be possible, should be covered with shrubs and grass to prevent erosion of topsoil.

## 4.5.4. Anticipated Impact on Fauna

- Noise generation due to vehicle may affect avifauna.
- The lease area is not inhabited by any wild life, as there is no forest cover, hence there will not be any effect on migration or extinction of wildlife.
- There is no National Park, Biosphere Reserve, Wildlife corridors, and Tiger/Elephant Reserve found within 10 km radius of the project site.

#### 4.5.4.1. Measures for protection and conservation of wildlife species

- Topsoil has a large number of seeds of native plant species in the mining area.
- Topsoil will be used for restoration and suitable surfaces for planted seedlings.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment to the flora and fauna in consultation with Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.
- Plantation around the mine area will help in creating habitats for small faunal species and create a better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

### 4.5.3. Impact on Aquatic Biodiversity

- The major lake along the project sites doesn't have a rich biodiversity and almost all the species of both fauna and flora listed are either least concerned or not evaluated.
- There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.

Table No. 4.3. Overall Ecological impact assessments of Netrampakkam Village, Rough stone Quarry, Maduranthangam Taluk, Chengalpattu District and Tamil Nadu.

S.No	Attributes	Assessment
	Activities of the project affect the	No breeding and nesting site was identified in the
	breeding/nesting sites of birds and animals	mining lease site. The fauna sighted mostly migrated from the buffer area.
2	Located near an area populated by rare or	No Endangered, Critically Endangered, or vulnerable
	endangered species	species were sighted in the core mining lease area.
3	Proximity to national park/wildlife	Nil
	sanctuary/reserve forest /mangroves/ coastline/estuary/sea	
4	The proposed project restricts access to waterholes for wildlife	'No '
5	Proposed mining project impact surface water quality that also provides water to wildlife	'No 'scheduled or threatened wildlife animals are sighted regularly core in the core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity areas.	Surface runoff management such as drains is constructed properly so there will be no siltation effect in the nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities.	'No'
8	The project release effluents into a water body that also supplies water to a wildlife.	No water body near to core zone so the chances of water becoming polluted is low.
9	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
10	The project likely to affect migration routes.	'No 'migration route was observed during the monitoring period.
11	The project is likely to affect the flora of an area, which have medicinal value	'No'
12	Forestland is to be diverted, has carbon high sequestration.	'No 'There was no forest land diverted.
13	The project is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

(\*Source: EIA Guidance Manual-Mining and Minerals, 2010)

TABLE 4.12: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

SI.No	Name of the plant (Botanical)	Common Name	Habit
1	Aegle marmelos	Vilvam	Tree
2	Bauhinia racemose	Aathi	Tree
3	Thespesia populnea	Puvarasu	Tree
4	Pongamia pinnata	Pungam	Tree

The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Athi, Pongamia, Pinnata will be planted along the Lease boundary and avenue plantation will be carried out in the project site. The rate of survival expected to be 80% in this area. Greenbelt development Plan is given in

#### TABLE 4.13: GREENBELT DEVELOPMENT PLAN

Year	No. of tress proposed to be planted	Area to be covered in m <sup>2</sup>	Name of the species
I	2270	The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development and along village roads.	Vilvam, Aathi, Puvarasu & Pungam

#### 4.6 SOCIO ECONOMIC

## 4.6.1 Anticipated Impact

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region

### 4.6.2 Mitigation Measures

- Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc.., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area

### 4.7 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- Respiratory hazards
- Noise
- Physical hazards
- Explosive storage and handling

#### 4.7.1 Respiratory Hazards

Long-term exposure to silica dust may cause silicosis the following measures are proposed:

- Cabins of excavators and tippers will be enclosed with AC and sound proof
- Use of personal dust masks will be made compulsory

#### **4.7.2** Noise

Workers are likely to get exposed to excessive noise levels during mining activities. The following measures are proposed for implementation

- No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)

- Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- Periodic medical hearing checks will be performed on workers exposed to high noise levels

#### 4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

## 4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination yearly
- Lung function test yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

### 4.8 MINE WASTE MANAGEMENT

No waste is anticipated, the entire mined out material will be sold to needy crushers and customers.

#### 4.9 MINE CLOSURE

The ultimate depth of the mine is 47m bgl and the life of the mine is 5 years, after completion of mining operation the following action will be taken in the project site as a part of Mine closure plan

- The total Mined out land would be around 3.47.40 Ha this land will be converted into temporary water reservoir which will facilitate to collect the rain water
- The stagnant water will be supplied to the nearby agriculture land during drought seasons
- Fencing will be re constructed around the pit after closure, the warning/ danger display board will be placed on all the sides of the project site
- The un utilized area and haul roads will be converted as plantation area, fruit bearing trees will be planted to retain the eco system of the area
- Final Mine closure plan will be prepared and submitted to the concerned authority

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project.

As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

#### 4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

#### 4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

#### 4.9.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharge likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

## 4.9.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For revegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

- Where the nutrient level of spread topsoil is lower than material in-situ e.g., for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g., planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g., development of green barriers

The Mine closure plan should be as per the approved mine plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

## 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

#### 5.0 INTRODUCTION

Consideration of alternatives to a project proposal is a requirement of EIA process. During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost-effective options.

### 5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

The surrounding areas already undergone quarrying operation. Most of the quarries in the regions are abandoned and lease expired quarries. Hence this quarry will feed the Rough Stone material to the crushing units.

The Rough Stone and Gravel Quarry Project for excavation of Rough Stone, which is site specific. The proposed mining lease areas have following advantages: -

- The mineral deposit occurs in a non-forest area.
- There is no habitation within the project area; hence no R & R issues exist.
- There is no river, stream, nallah and water bodies in the applied mine lease areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are well connected and accessible.
- The mining operations will not intersect the ground water level. Hence, no impact on ground water environment.
- Study area falls in seismic zone II, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

#### 5.2 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as all the mine sites are mineral specific

### 5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

The existing quarries in the area operated by Opencast Mechanised Mining operation with drilling and blasting method will be used to extract Rough Stone in the area. All the applied mining lease areas have following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working is preferred over underground method
- The material will be loaded with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so
  that the mineral is handled safely and used without secondary blasting.
- Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

## 5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

Open cast mechanized method has been selected for this project. This technology is having least gestation period, economically viable, safest and less labour intensive. The method has inbuilt flexibility for increasing or decreasing the production as per market condition.

## 6. ENVIRONMENTAL MONITORING PROGRAMME

#### 6.0 GENERAL

The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

#### 6.1 METHODOLOGY OF MONITORING MECHANISM

Implementation of EMP and periodic monitoring will be carried out by the project proponent. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to this project; Environmental protection measures like dust suppression, control of noise and blast vibrations, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of Environmental Management Plan and environmental clearance conditions will be monitored by Mine Management. On the other hand, implementation of area level protection measures like green belt development, environmental quality monitoring etc., are taken up by a senior executive who reports to their Mine Management.

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in all the proposed quarries.

The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies as compliance status reports. The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by each proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well.

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

HEAD OF ORGANIZATION

Project proponent

Mine Manager

Empanelled Consultant / External Laboratory Approved by NABL / MoEF

Mine Foreman

Mining Mate

Site Supervisor

AREA LEVEL

Environment Officer

Water Sprinkler Operator

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL

## 6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

SI No.	Recommendations	Time Period	Schedule
1	Land Environment Control	D-f	Immediately after the
1	Measures	Before commissioning of the project	commencement of project
2	Soil Quality Control	Defens commissioning of the musicat	Immediately after the
2	Measures	Before commissioning of the project	commencement of project
2	Water Pollution Control	Before commissioning of the project and	Immediately and as project
3	Measures	along with mining operation	progress
4	Air Pollution Control	Before commissioning of the project and	Immediately and as project
4	Measures	along with mining operation	progress
-	Noise Pollution Control	Before commissioning of the project and	Immediately and as project
5	Measures	along with mining operation	progress
6	Ecological Environment	Phase wise implementation every year	Immediately and as project
6	Ecological Environment	along with mine operations	progress

TABLE 6.1 IMPLEMENTATION SCHEDULE

## 6.3 MONITORING SCHEDULE AND FREQUENCY

The environmental monitoring will be conducted in the mine operations as follows:

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC FOR P1

S.No.	Environment	Location	Mo	onitoring	Parameters	
5.110.	Attributes	Location	Duration	Frequency	Farameters	
1	Ain Ovality	2 Locations	24 hours	Once in 6 months	Fugitive Dust, PM <sub>2.5</sub> ,	
1	Air Quality	(1 Core & 1 Buffer)	24 nours	Once in 6 months	$PM_{10}$ , $SO_2$ and $NO_x$ .	
		At mine site before start of			Wind speed, Wind	
2	Meteorology	Air Quality Monitoring &	Hourly /	Continuous	direction, Temperature,	
2	Wieleorology		Daily	online monitoring	Relative humidity and	
		IMD Secondary Data			Rainfall	
	Water Quality	2 Locations			Parameters specified	
3	Monitoring	(1SW & 1 GW)	-	Once in 6 months	under IS:10500, 1993 &	
	Monitoring				CPCB Norms	
		Water level in open wells				
4	Hydrology	in buffer zone around 1 km	-	Once in 6 months	Depth in bgl	
		at specific wells				
5	Noise	2 Locations	Hourly – 1	Once in 6 months	Leq, Lmax, Lmin, Leq	
3	Noise	(1 Core & 1 Buffer)	Day	Office in 6 months	Day & Leq Night	
6	77'1 4'	At the nearest habitation		During blasting	Peak Particle Velocity	
0	Vibration	(in case of reporting)	Π	Operation	reak raiticle velocity	
7	2 Locations		Once in six	Physical and Chemical		
	Soil	(1 Core & 1 Buffer)	_	months	Characteristics	
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance	

Source: Guidance of manual for mining of minerals, February 2010

### 6.4 BUDGETARY PROVISION FOR EMP

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed capital cost for Environmental Monitoring Programme is Rs 76,000/- and the recurring cost is Rs 76,000 per annum for each Proposed Project.

TABLE 6.3 ENVIRONMENT MONITORING PROGRAM BUDGET

S.No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality		
2	Meteorology	D = 76 000/	D = 76 000/
3	Water Quality	Rs. 76,000/-	
4	Hydrology		

5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
	Total	Rs 76,000/-	Rs 76,000/-

Source: Approved Mining Plan

## 6.5 REPORTING SCHEDULES OF MONITORED DATA

The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the Cluster Mine Management Coordinator and Respective Head of Organization for taking necessary corrective measures. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

- MoEF & CC Half yearly status report
- TNPCB Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports

Besides the Mines Manager/Agent of respective project will submit the periodical reports to -

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

### 7. ADDITIONAL STUDIES

#### 7.0 GENERAL

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

### 7.1. PUBLIC CONSULTATION

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

#### 7.2 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for all proposed projects. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due	Improper handling	All safety precautions and provisions of Mine Act, 1952,
	to explosives	and unsafe working	Metalliferous Mines Regulation, 1961 and Mines Rules, 1955
	and heavy	practice	will be strictly followed during all mining operations;
	mining		Workers will be sent to the Training in the nearby Group
	machineries		Vocational Training Centre
			Entry of unauthorized persons will be prohibited;
			Fire-fighting and first-aid provisions in the mine office
			complex and mining area;
			Provisions of all the safety appliances such as safety boot,
			helmets, goggles etc. will be made available to the employees
			and regular check for their use

			Working of guarry of man ammayord alana and and a
			Working of quarry, as per approved plans and regularly
			updating the mine plans; Cleaning of mine faces on daily basis shall be daily done in
			order to avoid any overhang or undercut;
			Handling of explosives, charging and firing shall be carried
			out by competent persons only under the supervision of a
			Mine Manager;
			Maintenance and testing of all mining equipment as per
	D .11.	T 1 C	manufacturer 's guidelines.
2	Drilling	Improper and unsafe	Safe operating procedure established for drilling (SOP) will
		practices	be strictly followed.
			Only trained operators will be deployed.
		Due to high pressure	No drilling shall be commenced in an area where shots have
		of compressed air,	been fired until the blaster/blasting foreman has made a
		hoses may burst	thorough Examination of all places,
			Drilling shall not be carried on simultaneously on the benches
		Drill Rod may break	at places directly one above the other.
			Periodical preventive maintenance and replacement of worn-
			out accessories in the compressor and drill equipment as per
			operator manual.
			All drills unit shall be provided with wet drilling shall be
			maintained in efficient working in condition.
			Operator shall regularly use all the personal protective
			equipment.
4	Blasting	Fly rock, ground	Restrict maximum charge per delay as per regulations and by
		vibration, Noise and	optimum blast hole pattern, vibrations will be controlled
		dust.	within the permissible limit and blasting can be conducted
			safely.
		Improper charging,	SOP for Charging, Stemming & Blasting/Firing of Blast
		stemming & Blasting/	Holes will be followed by blasting crew during initial stage
		fining of blast holes	of operation
			Shots are fired during daytime only.
		Vibration due to	All holes charged on any one day shall be fired on the same
		movement of vehicles	day.
			The danger zone will be distinctly demarcated (by means of
			red flags)
5	Transportation	Potential hazards and	Before commencing work, drivers personally check the
		unsafe workings	dumper/truck/tipper for oil(s), fuel and water levels, tyre
		contributing to	inflation, general cleanliness and inspect the brakes, steering
		accident and injuries	system, warning devices including automatically operated
			audio-visual reversing alarm, rear view mirrors, side indicator
		Overloading of	lights etc., are in good condition.
		material	Not allow any unauthorized person to ride on the vehicle nor
			allow any unauthorized person to operate the vehicle.
		While reversal &	Concave mirrors should be kept at all corners
		overtaking of vehicle	All vehicles should be fitted with reverse horn with one
		S. Graning or vomole	spotter at every tipping point
			Loading according to the vehicle capacity
			Periodical maintenance of vehicles as per operator manual
			i criodicai mamenance or venicies as per operator manuar

		Operator of truck	
		leaving his cabin	
		when it is loaded.	
6	Natural	Unexpected	Escape Routes will be provided to prevent inundation of
	calamities	happenings	storm water
			Fire Extinguishers & Sand Buckets
7	Failure of	Slope geometry,	Ultimate or over all pit slope shall be below 60° and each
	Mine Benches	Geological structure	bench height shall be 5m height.
	and Pit Slope		

Source: Analysed and Proposed by FAE & EC

#### 7.3 DISASTER MANAGEMENT PLAN

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated

The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. In his absence senior most people available at the mine shall be emergency coordinator till arrival of mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

DESIGNATION	QUALIFICATION				
FIRE-FIGHTING TEAM					
Team Leader/ Emergency Coordinator (EC)	Mines Manager				
Team Member	Mines Foreman				
Team Member	Mining Mate				
RESCUE TEAM					
Team Leader/ Emergency Coordinator (EC)	Mines Manager				
Team Member/ Incident Controller (IC)	Environment Officer				
Team Member	Mining Foreman				
SUPPORT TEAM					
Team Leader/ Emergency Coordinator (EC)	Mines Manager				
Assistant Team Leader	Environment Officer				
Team Member	Mining Mate				
Security Team Leader/ Emergency Security Controller	Mines Foreman				

Once the mine becomes operational, the above table along with names of personnel will be prepared and made easily available to workers. A mobile communication network and wireless shall connect Mine Emergency Control Room (MECR) to control various departments of the mine, fire station and neighbouring industrial units/mines.

## Roles and responsibilities of emergency team -

## (a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site and shall be located at MECR.

## (b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

#### (c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

#### (d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

#### (e) Search and rescue team

There shall be a group of people trained and equipped to carryout rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team.

## (f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g. fire brigade, police, doctor and media men etc.,

#### Emergency control procedure -

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
- He will receive information continuously from incident controller and give decisions and directions to:
  - Incident controller
  - Mine control rooms
  - Emergency security controller

#### Proposed fire extinguishers at different locations –

The following type of fire extinguishers has been proposed at strategic locations within the mine.

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS

LOCATION	TYPE OF FIRE EXTINGUISHERS		
Electrical Equipment's	CO <sub>2</sub> type, foam type, dry chemical powder type		
Fuel Storage Area	CO <sub>2</sub> type, foam type, dry chemical powder type, Sand bucket		
Office Area	Dry chemical type, foam type		

#### Alarm system to be followed during disaster -

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

#### 7.4 CUMULATIVE IMPACT STUDY

For easy representation of Proposed and Existing Quarries in the Cluster are given unique codes and identifies and studied in this EIA /EMP Report.

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

	PROPOSED QUARRIES				
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
P1	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran (Auhtorized Person) No.14, Jaffer Street, Chennai – 600 001 Tamil Nadu State	Netrampakkam	14/1A, 14/1B, 14/2 & 15/3	4.54.0	ToR Identification: T024B0108TN5754505 N Dated: 22/04/2024.
		TOTA	L EXTENT	4.54.00	
		<b>EXISTING Q</b>	UARRIES		
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
E-1	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran (Auhtorized Person) No.14, Jaffer Street, Chennai – 600 001 Tamil Nadu State	Netrampakkam	13/2	2.02.50 Ha	03.10.2019 - 02.10.2024
E-2	M/s. Naveen Enterprises, P. Somasekar Reddy, (Administrative Partner), Side Portion, No.2/141-4, Udaiyar Strret, Minnampalli, Namakkal Taluk & Distict – 637 019.	Nallamur	37/1, 37/23(P), 37/24 (P), 37/25 (P), 37/6 (P)	2.83.20	09.05.2023 - 08.05.2033
		TOTA	L EXTENT	4.85.70	
	TOTAL CLUSTER EXTENT			9.39.70	

• Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016

TABLE 7.5: SALIENT FEATURES OF PROPOSAL "P1"

Name of the Project	Tvl. Triway Warehouses & Holdings Pvt. Ltd., Rough Stone and Gravel	
Tvame of the Froject	Quarry	
S.F. No.	14/1A, 14/1B, 14/2 & 15/3	
Extent	4.54.0 ha	
Village, Taluk and District	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu District.	
	It is a patta lands. S.F.Nos. 14/1A & 15/3 is registered in the name of Sankar's	
Land Type	Farn Prop. Of Thiru. N. Ravisankar, vide Patta No 301 and other S.F.Nos	
Land Type	14/1B & 14/2 are registered in the name of Thiru. N. Ravisankar, S vide Patta	
	Nos44. The applicant has registered lease deed from the Pattadhar.	
Toposheet No	57 P/15	
Latitude between	12° 25' 10.58"N to 12° 25' 21.84"N	

Longitude between	70° 55' 3	2.75"N to 79° 55' 40.17"E		
Elevation of the area	100m AMSL			
	10 Years			
Lease period				
Mining Plan period	10 years			
Proposed Depth of Mining	47m bgl			
		evel + 45m Rough stone)		
Geological Resources	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>		
•	20,43,000	90,800		
Mineable Reserves	9,93,285	69,228		
Year wise Production for First	6,31,510	69,228		
Five years	0,31,310	09,228		
Year wise Production for	2 61 775			
Second Five years	3,61,775	-		
Peak Production	1,29,890	23,634		
First Five Years Proposed Pit Dimension	267m (L)	x 135m (W) x 47m(D) bgl		
Ultimate Pit Dimension	267m (L)	x 135m (W) x 47m(D) bgl		
Water Level in the region		63 m bgl		
,	Opencast Mechanized Minis	ng Method involving drilling and Controlled		
Method of Mining	-	using Slurry Explosives		
	_	piting plain terrain. The area has gentle sloping		
		tude of the area is 100m above from Mean Sea		
Topography				
	- I	level. The area is covered by 2m thickness of Gravel followed by Massive Charnockite which is clearly inferred from the nearby open well		
	Jack Hammer	12 Nos		
N. 1.	Compressor	3 Nos		
Machinery proposed	Excavator with Bucket and	3 Nos		
	Rock Breaker			
	Tippers 6 Nos			
	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry			
Blasting Method		ed for shattering and heaving effect for removal		
	and winning of Rough Stone.			
Proposed Manpower		51 Nos		
Deployment				
Project Cost		Rs. 3,35,90,000/-		
EMP Cost		Rs. 7,60,000/-		
Total Project cost	]	Rs. 3,43,50,000/-		
CER Cost		Rs. 5,00,000/-		
	Kaalvaai	Inside Lease Area		
	Canal	280m SW		
	Canal	420m SW		
Nearby Water Bodies	Tank	700M E		
	Tank	800m SW		
	Ozhavetti Lake	1.7Km NE		
		<u> </u>		
Caranhalt David	Proposed to plant 2,270 Nos of trees considering 500 Nos of trees/ Ha criteria			
Greenbelt Development Plan	The plantation will be developed around the project site and nearby village			
D 1W/ D	roads			
Proposed Water Requirement	2.0 KLD			
Nearest Habitation	960m – South West			

Nearest Reserve Forest	Palavur R.F – 3.99 Km – SW (Source - TNGIS)		
Nearest Wild Life Sanctuary	Lease applied area to Vedanthangal Bird Sanctuary Lake S.F.No Boundary=15.5km–NW Lease applied area to Vedanthangal Bird Sanctuary Lake Boundary + 5 kms Surrounds = 10.5 km – NW Lease applied area to Karikili Bird Sanctuary Lake S.F.No Boundary =21.5km – NW Lease applied area to to Karikili Bird Sanctuary Lake Boundary + 5 kms Surrounds = 16.5 km – North West		

Source: Approved Mining Plan

TABLE 7.7: SALIENT FEATURES OF PROPOSAL "E1"

Name of the Quarry	Tvl. Triway Warehouses & Holdings Pvt. Ltd Rough Stone & Gravel			
Traine of the Quarry	Quarry			
S.F.No.		13/2		
Toposheet No		57-P H/15		
Mining Period		5 years		
Latitude between	12°25'12.10"N to 12°25'18.90"N			
Longitude between	79°55'29.80"E to 79°55'34.30"E			
Year-wise production	Rough Stone in m <sup>3</sup>	Topsoil in m <sup>3</sup>	Gravel m <sup>3</sup>	
rear-wise production	3,61,084	9,184	36,736	
Depth of Mining		53m		
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting			
Proposed Manpower Deployment	18			
Project Cost	73.50 lakhs			
CER Cost @ 2% of Project Cost		Rs.1,47,000/-		

Source: Approved Mining Plan

TABLE 7.7A: SALIENT FEATURES OF PROPOSAL "E2"

Name of the Quarry	M/s Naveen Enterprises Rough Stone & Gravel Quarry		
S.F.No.	37/1,37/23(P),37/24(P),37/25(P),37/6(P)		
Toposheet No	57	7-P H/15	
Mining Period		5 years	
Latitude between	12°25'8.44"ĭ	N to 12°25'13.88"N	
Longitude between	79°55'21.25"E to 79°55'29.34"E		
N . 1	Rough Stone in m <sup>3</sup>	Gravel m <sup>3</sup>	
Year-wise production	3,28,324	46,736	
Depth of Mining		20m	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting		
Proposed Manpower Deployment	18		
Project Cost	121.55 lakhs		
CER Cost	Rs.6	5,00,000 /-	

Source: Approved Mining Plan

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

#### Air Environment -

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.16 & 7.17.

TABLE 7.11: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

Quarry	Production for Ten- year plan period	Per Year Production in m <sup>3</sup>	Per Day Production in m <sup>3</sup>	Number of Lorry Load Per Day
P1	9,93,285	1,29,890	433	37
Total	9,93,285	1,29,890	433	37
E1	3,61,084	72,216	241	21
E2	3,28,324	65,664	219	18
Total	6,89,408	1,37,880	460	39
Grand Total	16,82,693	2,67,770	893	76

TABLE 7.12: CUMULATIVE PRODUCTION LOAD OF GRAVEL

O	Production for five-	Per Year	Per Day	Number of Lorry
Quarry	year plan period	Production in m <sup>3</sup>	Production in m <sup>3</sup>	<b>Load Per Day</b>
P1	69,228	23,634	79	7
Total	69,228	23,634	79	7
E1	36,736	36,736	123	11
E2	46736	15,578	52	4
Total	83,472	52,314	175	15
Grand Total	1,52,700	75,948	254	26

On a cumulative basis considering the proposed quarries, it can be seen that the overall production of Rough Stone is 893m³ per dayand overall production of Gravel is 254m³ per day with a capacity of 76trips of Rough Stone per day, 26 trips of Weathered Rock per day and 16 Trips per day of Gravel from the cluster.

**Note:** Per day production of Rough Stone is calculated for 5 Years Lease Period and for Gravel production with 3 years production period. And the load of existing quarries is covered under existing environment of the cluster.

Based on the above production quantities the emissions due to various activities in all the 3 mines includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.18.

TABLE 7.14: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

EMISSION	EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	Source type	Value	Unit	
	Drilling	Point Source	0.111760132	g/s	
Estimated Emission Rate for PM <sub>10</sub>	Blasting	Point Source	0.004217441	g/s	
Estimated Emission Rate for PW10	Mineral Loading	Point Source	0.046329116	g/s	
	Haul Road	Line Source	0.002505986	g/s/m	
	Overall Mine	Area Source	0.076147044	g/s	
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.001689388	g/s	
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000166290	g/s	
EMISSION	ESTIMATION FOR (	QUARRY "E1"			
	Activity	Source type	Value	Unit	
	Drilling	Point Source	0.093713945	g/s	
Estimated Emission Rate for PM <sub>10</sub>	Blasting	Point Source	0.001748379	g/s	
Estimated Emission Rate for PW10	Mineral Loading	Point Source	0.044767197	g/s	
	Haul Road	Line Source	0.002499068	g/s/m	
	Overall Mine	Area Source	0.053643854	g/s	

Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.001083598	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000050647	g/s
EMISSION	ESTIMATION FOR (	QUARRY "E2"		
	Activity	Source type	Value	Unit
	Drilling	Point Source	0.093713945	g/s
	Blasting	Point Source	0.001748379	g/s
Estimated Emission Rate for PM <sub>10</sub>	Mineral Loading	Point Source	0.044767197	g/s
	Haul Road	Line Source	0.002499068	g/s/m
	Overall Mine	Area Source	0.053643854	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.001083598	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000050647	g/s

Source: Emission Calculation

TABLE 7.15: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM <sub>10</sub> in	PM <sub>10</sub> in μg/m <sup>3</sup>		
Background	43.4		
Incremental	16.84		
Resultant	60.24		
NAAQ Norms	100 μg/m <sup>3</sup>		
PM <sub>2.5</sub> in	μg/m <sup>3</sup>		
Background	22.5		
Incremental	8.92		
Resultant	31.42		
NAAQ Norms	60 μg/ m <sup>3</sup>		
So2 in	μg/m³		
Background	7.4		
Incremental	2.89		
Resultant	10.29		
NAAQ Norms	80 μg/ m <sup>3</sup>		
No2 in	$\mu g/m^3$		
Background	22.2		
Incremental	11.69		
Resultant	33.89		
NAAQ Norms	80 μg/ m <sup>3</sup>		

#### Noise Environment -

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

 $Lp_1\& Lp_2$  are sound levels at points located at distances  $r_1\& r_2$  from the source.

 $Ae_{1,2}$  is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

 $Lp_{total} = 10 log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots \}$ 

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are: Source data has been computed taking into account of all the machinery and activities used in the mining process.

TABLE 7.16: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	47.1	40.5	48.0	
Habitation Near E1	46.8	40.6	47.7	55
Habitation Near E1	46.9	43.1	48.4	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 47.7 – 48.4 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A)the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000(The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986).

#### **Ground Vibrations**

Ground vibrations due to mining activities in the all the 2 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from the all the 4 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from 2 mines respectively are as in below Table 7.18.

**TABLE 7.17: NEAREST HABITATION FROM EACH MINE** 

Location ID	Distance & Direction
Habitation Near P1	960m - South West
Habitation Near E1	940m - South West
Habitation Near E2	710m - South West

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

 $V = K [R/Q^{0.5}]^{-B}$ 

Where -

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

**TABLE 7.18: GROUND VIBRATIONS AT 3 MINES** 

<b>Location ID</b>	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	20	960m SW	0.093
E1	52	940m SW	0.206

Source: Blasting Calculations

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

#### Socio Economic Environment -

The 2 mines shall contribute towards CER and the community shall develop.

TABLE 7.19: SOCIO ECONOMIC BENEFITS FROM 3 MINES

<b>Location ID</b>	Project Cost	CER
P1	Rs. 3,43,50,000/-	Rs.5,00,000/-
E1	Rs.73,50,000/-	Rs. 1,47,000/-
E2	Rs. 1,50,33,000	Rs. 1,08,940/-
Total	Rs. 5,67,33,000/-	Rs.7,55,940/-

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is  $\leq 100$  crores, they shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC.

Proposed Projects shall fund towards CER – Rs 5,00,000/-

**TABLE 7.20: EMPLOYMENT BENEFITS FROM 3 MINES** 

Description	Employment
P1	51
Total	51
E1	18
E2	18
Total	36
Grand Total	87

A total of 51 people will get employment due to 1 proposed mines in cluster and 87 people are already employed at existing mines.

TABLE 7.21: GREENBELT DEVELOPMENT BENEFITS FROM 3 MINES

CODE	No of Trees proposed to be planted	Survival %	Area Covered Sq.m	Name of the Species
P1	2270			
Total	2500	80%	The safety zone along the	
E1	1,010	80%	boundary barrier has	Neem, Pinnata,
E2	1420		been identified to be	Pongamia, Ashoka etc.,
Total	2430		utilized for Greenbelt	
G.Total	4930		development	

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Pinnata et., in the Cluster at a rate of 4930 Trees Planted over a period of 5 Years with Survival Rate of 80% by proposed quarry.

#### 7.5 PLASTIC WASTE MANAGEMENT PLAN

The project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated: 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

#### Objective -

- To investigate the actual supply chain network of plastic waste.
- To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste
- Preparation of a system design layout, and necessary modalities for implementation and monitoring.

TABLE 7.22: ACTION PLAN TO MANAGE PLASTIC WASTE

Sl.No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged	Mines Manager
	from waste generators for plastic waste management, penalties/fines for littering, burning	
	plastic waste or committing any other acts of public nuisance	
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and	Mines Manager
	domestic hazardous waste	
3	Collection of plastic waste	Mines Foreman
4	Setting up of Material Recovery Facilities	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery	Mines Foreman
	Facilities	
6	Channelization of Recyclable Plastic Waste to registered recyclers	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road	Mines Foreman
	Construction	
8	Creating awareness among all the stakeholders about their responsibility	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts	Mine Owner
	of public nuisance	

Source: Proposed by FAE's and EC

#### 8.PROJECT BENEFITS

#### 8.0 GENERAL

The Proposed Project for Quarrying Rough Stone and Gravel at Netrampakkam Village aims to produce 9,93,285m<sup>3</sup> Rough Stone over a period of 10 Years and Gravel 69,228 m<sup>3</sup> for period of 3 years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits.

- Improvement in Social infrastructure

#### 8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 51 persons for carrying out mining operations and give preference to the local people in providing employment in the three proposed quarries in the cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

#### 8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

The impact of mining activity in the area will be more positive on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

#### 8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarries are located Netrampakkam Village, Maduranthangam Taluk and Chengalpattu District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

- Road Transport facilities
- Communications
- Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

#### 8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

#### 8.5 OTHER TANGIBLE BENEFITS

The proposed mine is likely to have other tangible benefits as given below.

- Indirect employment opportunities to local people in contractual works like construction of infrastructural
  facilities, transportation, sanitation, for supply of goods and services to the mine and other community
  services.
- Additional housing demand for rental accommodation will increase
- Cultural, recreation and aesthetic facilities will also improve
- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

#### CORPORATE SOCIAL RESPONSIBILITY

The Project Proponent will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

#### **CSR Cost Estimation**

 CSR activities will be taken up in the Netrampakkam village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., CSR budget is allocated as 2.5% of the profit.

#### CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

Proponent intends to spent Rs 5,00,000/- towards CER for the Government School near the project site the details are given below:

TABLE 8.1 CER - ACTION PLAN

Activity	CER
<ul> <li>Renovation/ Construction of Existing Toilet</li> </ul>	
Providing Environmental Related books to the school Library	
Carrying out plantation and maintenance in the school Ground	Rs 5,00,000/-
Any other requirements in consultation with the school Head master	

### 9. ENVIRONMENTAL COST BENEFIT ANALYSIS

Not Applicable, Since Environmental Cost Benefit Analysis not recommended at the Scoping stage.

#### 10. ENVIRONMENTAL MANAGEMENT PLAN

#### 10.0. GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

#### 10.1. ENVIRONMENTAL POLICY

The Project Proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

#### The Proponent Tvl. Triway Warehouses & Holdings Pvt. Ltd., will -

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities.
- Allocate necessary resources to ensure the implementation of the environmental policy.
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.
- Implement monitoring programmes to provide early warning of any deficiency or unanticipated performance in environmental safeguards.
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement.

#### Description of the Administration and Technical Setup –

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme

Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and
Forests and the conditions of the environmental clearance as well as the consents to establish and consents
to operate.

#### 10.2. LAND ENVIRONMENT MANAGEMENT -

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (un utilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

TABLE 10.1. PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Design vehicle wash-down areas so that all runoff water is captured and passed through oil	Mines Manager
water separators and sediment catchment devices.	
Refueling to be undertaken in a safe location, away from vehicle movement pathways&100	Mine Foreman &
m away of any watercourse	Mining Mate
Refueling activity to be under visual observation at all times.	
Drainage of refueling areas to sumps with oil/water separation	
Soil and groundwater testing as required following up a particular incident of	Mines Manager
contamination.	
At conceptual stage, the mining pits will be converted into Rain Water Harvesting.	Mines Manager
Remaining area will be converted into greenbelt area	
No external dumping i.e., outside the project area	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area	Mines Manager
to prevent run off affecting the surrounding lands.	
The periphery of Project area will be planted with thick plantation to arrest the fugitive	Mines Manager
dust, which will also act as acoustic barrier.	

Source: Proposed by FAE's & EIA Coordinator

#### 10.3. SOIL MANAGEMENT

There overburden in the form of Gravel which will directly loaded into tippers for the filling and levelling of low-lying areas.

TABLE 10.2. PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Surface run-off from the project boundary via garland drains will be diverted to the mine	Mine Foreman &
pits	Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration	Mines Manager
of flow and erosion risk	
Empty sediment from sediment traps	Mines Manager
Maintain, repair or upgrade garland drain system	
Test soils for pH, EC, chloride, size & water holding capacity	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

#### 10.4. WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mines office. The quarrying operation is proposed upto a depth of 47 m BGL, the water table in the area is 63 m below ground level, hence the proposed project will not intersect the Ground water table during entire quarry period.

TABLE 10.3. PROPOSED CONTROLS FOR WATER ENVIRONMENT

CONTROL	RESPONSIBILITY
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of	Mines Manager
the mining area and to divert runoff from undisturbed areas through the mining areas	
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any	Mines Manager
point of mining operations	
Ensure there is no process effluent generation or discharge from the project area into water	Mines Foreman
bodies	
Domestic sewage generated from the project area will be disposed in septic tank and soak	Mines Foreman
pit system	
Monthly or after rainfall, inspection for performance of water management structures and	Mines Manager
systems	
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

#### 10.5. AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements

TABLE 10.4. PROPOSED CONTROLS FOR AIR ENVIRONMENT

CONTROL	RESPONSIBILITY
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

#### 10.6. NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time.

TABLE 10.5.: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring are carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

#### 10.7. GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting.

TABLE 10.6.: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

CONTROL	RESPONSIBILITY
Controlled blasting using delay detonators will be carried out to maintain the PPV value	Mines Manager
(below 8Hz) well within the prescribed standards of DGMS	
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster	Mines Manager
under the supervision of statutory mines manager to avoid any anomalies during blasting	
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with	Mines Foreman
suitable angular material	

Source: Proposed by FAE's & EIA Coordinator

#### 10.8. BIOLOGICAL ENVIRONMENT MANAGEMENT

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

• Greenbelt development all along the safety barrier of the project area

- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- Year wise greenbelt development will be recorded and monitored
  - Based on the area of plantation.
  - Period of plantation
  - Type of plantation
  - Spacing between the plants
  - Type of manuring and fertilizers and its periods
  - Lopping period, interval of watering
  - Survival rate
  - Density of plantation
- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

#### 10.8.1. Green Belt Development Plan

About 2270 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7: PROPOSED GREENBELT ACTIVITIES

Year	No. of tress proposed to be planted	Area to be covered	Name of the species
I	2270	The plantation is along the safety distance, village road etc	Neem, Pongamia, Vilvam, Panam, etc.,

Source: Approved Mining plan

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel
  and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

#### 10.8.2. Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

#### TABLE 10.8. RECOMMENDED SPECIES FOR THE PLANTSAITON

SI.No	Name of the plant (Botanical)	Common Name	Habit
1	Aegle marmelos	Vilvam	Tree
2	Bauhinia racemose	Aathi	Tree
3	Thespesia populnea	Puvarasu	Tree
4	Pongamia pinnata	Pungam	Tree

Source: Proposed by FAE's & EIA Coordinator

#### 10.9. OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The main factors of occupational health impact in quarries are fugitive dust and noise. Safety of employees during quarrying operation and maintenance of mining equipment will be taken care as per Mines Act 1952 and Rule 29 of Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise and vibration sufficient measures have been provided.

#### 10.9.1. Medical Surveillance and Examinations –

The health status of workers in the mine will be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detailed medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure
- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

TABLE 10.9. MEDICAL EXAMINATION SCHEDULE

Sl.No	Activities	1st Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4th Year	5 <sup>th</sup> Year
1	Initial Medical Examination (Mine Workers)					
Α	Physical Check-up					
В	Psychological Test					
С	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
В	Audiometric Test					
С	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					

#### 10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.

- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

#### FIGURE 10.1.: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



#### 10.9.3: Health and Safety Training Programme

The Proponent will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner as per Metalliferous Mines Regulation, 1961.

#### 10.9.4.: Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

#### TABLE 10.10: EMP BUDGET FOR PROPOSED PROJECT

Activities	Mitigation Measure	Provision for Implementation	Capital	Recurring
	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	45400	45400
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
Air	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 12  Units	300000	30000
Environment	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governers @ Rs. 5000/- per Tipper/Dumper deployed - 6 Units	30000	1500
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	90800
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0

	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	2582541
Waste	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency Installation of dust bins	5000	20000
Management	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
	Progressive Closure Activity - Surface     Runoff managent	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	45400	5000
Mine Closure	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	908000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 2270 Trees - (830 Inside Lease Area & 1440 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per	166000	24900

		plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)		
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	432000	43200
	4. Implementation of Final Mine Closure Actity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	108750	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	8939565	0
	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
Implementation of EC, Mining Plan & DGMS	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 51 Employees	204000	51000
Condition	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	51000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	9080
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000

	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management  Installation of CCTV cameras in the mines	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost  Camera 4 Nos, DVR, Monitor with	227000 30000	10000
	Implementation as per Mining Plan and ensure safe quarry working	internet facility  Mines Manager (1 <sup>st</sup> Class / 2 <sup>nd</sup> Class / Mine Foreman) under regulation 34 / 34  (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @  40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
	3817800	3911421		

<sup>\*</sup>Marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost Total Cost for the five years.

Year	Total Cost	Year	Total Cost
1 <sup>st</sup>	₹ 77,29,221/-	6 <sup>th</sup>	₹ 69,00,975/-
2 <sup>nd</sup>	₹ 41,06,992/-	7 <sup>th</sup>	₹ 53,37,123/-
3 <sup>rd</sup>	₹ 43,12,342/-	8 <sup>th</sup>	₹ 56,03,979/-
4 <sup>th</sup>	₹ 45,27,959/-	9 <sup>th</sup>	₹ 58,84,178/-
5 <sup>th</sup>	₹ 47,54,357/-	10 <sup>th</sup>	₹ 62,87,137/-

Total Cost for 10 years - Rs.554 Lakhs

Cost inflation 5% per annum

Note: This Environmental Management plan cost will vary according to the public consultation comments

#### **10.10.: 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 fund has been allocated for the same. 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. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. 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.

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#### 11. SUMMARY AND CONCLUSION

This EIA & EMP report prepared for the proposed Rough Stone and Gravel Quarry project located in S.F. No 14/1A, 14/1B, 14/2 & 15/3, Netrampakkam Village, Maduranthangam Taluk and Chengalpattu District belongs to Tvl. Triway Warehouses & Holdings Pvt. Ltd the Project falls in the Cluster category consist of 1 Proposed and 2 Existing Quarries falls under "B" category as per MoEF & CC Notification S.O. 3977 (E).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed project is categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance. "Draft EIA report prepared on the basis of ToR issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu".

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March to May 2024 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed. Overall, the EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone as per market demand. Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 51 people directly in the proposed projects and indirectly around 100 people.

As discussed, it is safe to say that the proposed quarries are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Tvl. Triway Warehouses & Holdings Pvt. Ltd Rough Stone and Gravel Quarry (Extent -4.54.0 ha).

#### 12. DISCLOSURE OF CONSULTANT

Tvl. Triway Warehouses & Holdings Pvt. Ltd have engaged with M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued for the proposed project.

Name and address of the consultancy:

#### GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004

Tamil Nadu, India

Email:infogeoexploration@gmail.com

Web: <a href="https://www.gemssalem.com">www.gemssalem.com</a> Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below -

Sl.No.	Name of the even out	In house/Emparelled	EIA Co	oordinator	FA	AE
S1.1NO.	Name of the expert	In house/ Empanelled	Sector	Category	Sector	Category
1	Dr. M. Ifthikhar Ahmed	In-house	1	A	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	-	-	HG GEO	A A
3	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	-	SW	В
6	Mr. Govindasamy	In-house	-	-	WP	В
7	Mrs. K. Anitha	In-house	-	-	SE	A
8	Mrs. Amirtham	In-house	-	-	EB	В
9	Mr. Alagappa Moses	Empanelled	-	-	EB	A
10	Mr. A. Allimuthu	In-house	-	-	LU	В
11	Mr. S. Pavel	Empanelled	-	-	RH	В
12	Mr. J. R. Vikram Krishna	Empanelled	-	-	SHW RH	A A

	Abbrev	iations	
EC	EIA Coordinator	EB	Ecology and bio-diversity
AEC	Associate EIA Coordinator	NV	Noise and vibration
FAE	Functional Area Expert	SE	Socio economics
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation
TM	Team Member	SC	Soil conservation
GEO	Geology	RH	Risk assessment and hazard management
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes
LU	Land Use	ISW	Industrial Solid Wastes
AQ	Meteorology, air quality modeling, and prediction	HW	Hazardous Wastes

#### DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

This EIA/EMP for Tvl. Triway Warehouses & Holdings Pvt. Ltd Rough Stone & Gravel Quarry over an Extent of 4.54.0 ha in Netrampakkam Village of Maduranthangam Taluk, Chengalpattu District of Tamil Nadu is prepared as per the Generic Structure of EIA Guidelines manual. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA/EMP Report.

Name: Dr. M. Ifthikhar Ahmed

Designation: EIA Coordinator

Date & Signature:

Period of Involvement: January 2019 to till date

#### **Associated Team Member with EIA Coordinator:**

- 1. Mr.P. Viswanathan
- 2. Mr. M. Santhoshkumar
- 3. Mr. S. Ilavarasan

#### FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul> <li>Identification of different sources of air pollution due to the proposed mine activity</li> <li>Prediction of air pollution and propose mitigation measures / control measures</li> </ul>	Mr. A. Jagannathan	70, 工
		<ul><li>Suggesting water treatment systems, drainage facilities</li><li>Evaluating probable impacts of effluent/waste</li></ul>	Dr. M. Ifthikhar Ahmed	Dr. 14 Bhumanathi
2	WP	water discharges into the receiving environment/water bodies and suggesting control measures.	Mr. N. Senthilkumar	4
3	HG	<ul> <li>Interpretation of ground water table and predict impact and propose mitigation measures.</li> <li>Analysis and description of aquifer Characteristics</li> </ul>	Dr. P. Thangaraju	atul mmy
4	GEO	<ul> <li>Field Survey for assessing the regional and local geology of the area.</li> <li>Preparation of mineral and geological maps.</li> </ul>	Dr. M. Ifthikhar Ahmed	Dr. M. Blemmunita
7	GLO	<ul> <li>Geology and Geo morphological analysis/description and Stratigraphy/Lithology.</li> </ul>	Dr. P. Thangaraju	atuj mmy
5	SE	<ul> <li>Revision in secondary data as per Census of India, 2011.</li> <li>Impact Assessment &amp; Preventive Management Plan</li> <li>Corporate Environment Responsibility.</li> </ul>	Mrs. K. Anitha	Su
6	EB	<ul> <li>Collection of Baseline data of Flora and Fauna.</li> <li>Identification of species labelled as Rare, Endangered and threatened as per IUCN list.</li> </ul>	Mrs. Amirtham	d Andr

		<ul> <li>Impact of the project on flora and fauna.</li> <li>Suggesting species for greenbelt development.</li> </ul>	Mr. Alagappa Moses	- Aller
		<ul> <li>Identification of hazards and hazardous substances</li> <li>Risks and consequences analysis</li> </ul>	Mr. N. Senthilkumar	4
7	RH	<ul><li>Risks and consequences analysis</li><li>Vulnerability assessment</li></ul>	Mr. S. Pavel	M.S. IEUS.
		<ul><li>Preparation of Emergency Preparedness Plan</li><li>Management plan for safety.</li></ul>	Mr. J. R. Vikram Krishna	de
8	LU	<ul> <li>Construction of Land use Map</li> <li>Impact of project on surrounding land use</li> <li>Suggesting post closure sustainable land use and mitigative measures.</li> </ul>	Mr. A. Allimuthu	alemultons
9	NV	<ul> <li>Identify impacts due to noise and vibrations</li> <li>Suggesting appropriate mitigation measures for EMP.</li> </ul>	Mr. A. Jagannathan	10, I
10	AQ	<ul> <li>Identifying different source of emissions and propose predictions of incremental GLC using AERMOD.</li> <li>Recommending mitigations measures for EMP</li> </ul>	Mr. N. Senthilkumar	4
11	SC	<ul> <li>Assessing the impact on soil environment and proposed mitigation measures for soil conservation</li> </ul>	Dr. M. Ifthikhar Ahmed	34 M Museumatha
		<ul> <li>Identify source of generation of non-hazardous solid waste and hazardous waste.</li> </ul>	Mr. A. Jagannathan	10,
12	SHW	<ul> <li>Suggesting measures for minimization of generation of waste and how it can be reused or recycled.</li> </ul>	Mr. J. R. Vikram Krishna	Lemma.

#### LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

	LIST OF TEAM MEMBERS ENGAGED IN THIS I ROSECT			
Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	<ul> <li>Site Visit with FAE</li> <li>Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>Provide inputs on Geological Aspects</li> <li>Analyse &amp; provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures</li> </ul>	2. My.
2	Mr. Viswathanan	AP; WP; LU	<ul> <li>Site Visit with FAE</li> <li>Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>Assisting FAE on sources of water pollution, its impacts and suggest control measures</li> <li>Assisting FAE in preparation of land use maps</li> </ul>	Plenmen
3	Mr. Santhoshkumar	GEO; SC	<ul> <li>Site Visit with FAE</li> <li>Provide inputs on Geological Aspects</li> <li>Assist in Resources &amp; Reserve Calculation and preparation of Production Plan &amp; Conceptual Plan</li> <li>Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	e jak kens
4	Mr. Umamahesvaran	GEO	<ul><li>Site Visit with FAE</li><li>Provide inputs on Geological Aspects</li></ul>	S. Connectionally

			Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan	
5	Mr. A. Allimuthu	SE	<ul> <li>Site Visit with FAE</li> <li>Assist FAE with collection of data's</li> <li>Provide inputs by analysing primary and secondary data</li> </ul>	alemultan
6	Mr. S. Ilavarasan	LU; SC	<ul> <li>Site Visit with FAE</li> <li>Assisting FAE in preparation of land use maps</li> <li>Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	821-4
7	Mr. E. Vadivel	HG	<ul> <li>Site Visit with FAE</li> <li>Assist FAE &amp; provide inputs on aquifer characteristics, ground water level/table</li> <li>Assist with methods of ground water recharge and conduct pump test, flow rate</li> </ul>	E Varilyed
8	Mr. D. Dinesh	NV	<ul> <li>Site Visit with FAE</li> <li>Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures</li> <li>Assist FAE with prediction modelling</li> </ul>	68
9	Mr. Panneer Selvam	EB	<ul> <li>Site Visit with FAE</li> <li>Assist FAE with collection of baseline data</li> <li>Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	P Prosty
10	Mrs. Nathiya	EB	<ul> <li>Site Visit with FAE</li> <li>Assist FAE with collection of baseline data</li> <li>Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	T. amp

#### DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the Cluster EIA/EMP for Tvl. Triway Warehouses & Holdings Pvt. Ltd Rough Stone & Gravel Quarry over an Extent of 4.54.0 ha in Netrampakkam Village of Maduranthangam Taluk, Chengalpattu District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature & Date:

Name: Dr. M. Ifthikhar Ahmed

Designation: Managing Partner

Name of the EIA Consultant Organization: M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date: NABET/EIA/2225/RA 0276 Dated: 20-2-2023

Validity: Valid till 06.08.2025

## **ANNEXURE**

# TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD., ROUGH STONE AND GRAVEL QUARRY

S.F. Nos. 14/1A, 14/1B, 14/2 & 15/3

Netrampakkam Village, Maduranthangam Taluk, Chengalpattu District, Tamil Nadu.

EXTENT = 4.54.0 Ha

ToR obtained

ToR Identification: TO24B0108TN5754505N Dated: 22/04/2024

## **Project Proponent**

Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran (Auhtorized Person)

No.14, Jaffer Street,

Chennai – 600 001

Tamil Nadu State.

## LIST OF ANNEXURES

Annexures	DESCRIPTION	PAGE NOS
	COPY OF TERMS OF REFERENCE	1A - 14A
	COPY OF 500M RADIUS QUARRIES DETAILS LETTER	15A - 16A
	COPY OF MINING PLAN APPROVED LETTER	17A - 18A
P1- TVL. TRIWAY	COPY OF APPROVED MINING PLAN WITH PLATES	19A – 123A
WAREHOUSES & HOLDINGS PVT.	COPY OF HYDROGEOLOGICAL REPORT	124A – 133A
LTD.,	COPY OF INSPECTION REPORT	134A -148A
	COPY OF EXPLOSIVES LETTER	149A – 152A
	COPY OF 300m & VAO ATTESTATION LETTER	153A – 154A
	COPY OF FOREST LETTER	155A – 158A
E1- TVL. TRIWAY WAREHOUSES & HOLDINGS PVT. LTD.,	COPY OF ENVIRONMENTAL CLEARANCE	159A - 172A
E2 – M/S. NAVEEN ENTERPRISES	COPY OF ENVIRONMENTAL CLEARANCE	173A – 205A
	COPY OF BASE LINE MONITORING DATA	206A – 247A
	COPY OF CONSULTANT ACCREDITATION CERTIFICATE	248A



## **File No:** 10668

#### **Government of India**

## Ministry of Environment, Forest and Climate Change (Issued by the State Environment Impact Assessment Authority(SEIAA), TAMIL NADU)

\*\*\*



Dated 22/04/2024



To,

A Manimaran

TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED

No. 14, Jaffer Street, Chennai., Chennai, CHENNAI, TAMIL NADU, 600001

ammaran1973@gmail.com

**Subject:** 

Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Triway Warehouses & Holdings Pvt. Ltd Rough Stone and Gravel Quarry Extent: 4.54.0ha S.F.Nos. 14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk and Chengalpattu District submitted to Ministry vide proposal number SIA/TN/MIN/459298/2024 dated 12/03/2024.

#### Reference:

- 1. Online proposal SIA/TN/MIN/459298/2024, dt: 19/01/2024.
- 2. Your application submitted for Terms of Reference dated: 02.02.2024.
- 2. The particulars of the proposal are as below:

(i) TOR Identification No. TO24B0108TN5754505N

(ii) File No. 10668 (iii) Clearance Type TOR (iv) Category B1

(v) **Project/Activity Included Schedule No.** 1(a) Mining of minerals

Triway Warehouses & Holdings Pvt. Ltd Rough Stone and Gravel Quarry Extent: 4.54.0ha S.F.Nos. 14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam

(vii) Name of Project 14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk and Chengalpattu

District

(viii) Name of Company/Organization

TRIWAY WAREHOUSES AND HOLDINGS

PRIVATE LIMITED

(ix) Location of Project (District, State) CHENGALPATTU, TAMIL NADU

(x) Issuing Authority SEIAA

- 3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.
- 4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 05/04/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
- 5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
- 6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of Mr. A Manimaran under the provisions of EIA Notification, 2006 and as amended thereof.
- 7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
- 8. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
- 9. This issues with the approval of the Competent Authority.

#### Copy To

- 1. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai 9.
- 2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110 032.
- 3. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai 600 032.
- 4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai 34.
- 5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110 003.
- 6. The District Collector, Chengalpattu District.
- 7. Stock File.

Annexure 1

**Specific Terms of Reference for (Mining Of Minerals)** 

#### 1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	The Authority accepted the recommendation of SEAC and decided to grant Terms of Reference

S. No	Terms of Reference
	(ToR) with Public Hearing based on studies, assessments and records to be produced as sought by the SEAC and SEIAA, for undertaking the Environment Impact Assessment Study and preparation of Environment Management Plan subject to the conditions as recommended by SEAC for the production quantity of 993285 m³ of Rough stone and 69228 m³ of Gravel for a depth of upto 47m BGL for the project life of 10 years as per the approved mining plan.

#### 2. Seac Standard Conditions

S. No	Terms of Reference		
2.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:  (i) Original pit dimension  (ii) Quantity achieved Vs EC Approved Quantity  (iii) Balance Quantity as per Mineable Reserve calculated.  (iv) Mined out Depth as on date Vs EC Permitted depth  (v) Details of illegal/fillicit mining  (vii) Violation in the quarry during the past working.  (vii) Quantity of material mined out outside the mine lease area  (viii) Condition of Safety zone/benches  (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.  2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.  3. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.  4. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.  5. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.  6. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions of CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engs, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability Plan' for the propos		

S. No	Terms of Reference
S. No	photographic evidences.  11. If the proponent has already carried out the mining activity in the proposed mining lease are after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, 12. What was the period of the operation and stoppage of the earlier mines with last work permi issued by the AD/DD mines?  13. Quantity of minerals mined out.  Highest production achieved in any one year  Detail of approved depth of mining.  Actual depth of the mining achieved earlier.  Name of the person already mined in that leases area.  If EC and CTO already obtained, the copy of the same shall be submitted.  Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.  14. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).  15. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 16. The proponent shall furnish photographs of adequate fencing, green belt along the peripher including replantation of existing trees & safety distance between the adjacent quarries & wate bodies nearby provided as per the approved mining plan.  17. The Project Proponent shall provide the details of mineral reserves and mineable reserves planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.  18. The Project Proponent shall provide the Organization chart indicating the appointment o various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to en
	various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.  19. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water
	regard may be provided.  20. The proponent shall furnish the baseline data for the environmental and ecological parameter with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.  21. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health biodiversity, air pollution, water pollution, climate change and flood control & health impacts Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
	22. Rain water harvesting management with recharging details along with water balance (bot monsoon & non-monsoon) be submitted.  23. Land use of the study area delineating forest area, agricultural land, grazing land, wildlift sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

S. No	Terms of Reference
	24. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
	25. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
	26. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.  27. Impact on local transport infrastructure due to the Project should be indicated.
	28. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
	29. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
	30. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
	31. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
	32. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized
	manner
	<ul> <li>33. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</li> <li>34. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</li> </ul>
	35. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
	36. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
	37. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
	38. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
	39. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.  40. If any quarrying operations were carried out in the proposed quarrying site for which now the
	EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional

S. No	Terms of Reference
	Office, Chennai (or) the concerned DEE/TNPCB.  41. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.  42. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

# 3. Seiaa Standard Conditions:

S. No	Terms of Reference
3.1	Cluster Management Committee  1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.  2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,  3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.  4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.  5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.  6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.  7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.  8. The committee shall furnish the Emergency Management plan within the cluster.  9. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.  11. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.  12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research i

S. No	Terms of Reference
S. No	15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.  16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.  17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.  18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.  Forests  19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.  20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.  21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.  22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.  Water Environment  23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.  24. Erosion Control measures.  25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragil
	Energy 31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently
	32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.  33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.  Mine Closure Plan
	34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.  EMP

S. No	Terms of Reference
	35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.  36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.  Risk Assessment  37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
	Disaster Management Plan  38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.  Others
	39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.  40. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.  41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

#### Standard Terms of Reference for (Mining of minerals)

#### 1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (MTPA)operation in an ML/project area ofha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for MTPA of mineral production based on approved project/Mining Plan forMTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also

S. No	Terms of Reference
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights  S.N ML/Project Land use  Area under Surface Area Under Mining Rights(ha)  Rights(ha)  Area under Both (ha)  1 Agricultural land 2 Forest Land 3 Grazing Land 4 Settlements

S. No	Terms of Reference
	5 Others (specify)
	S.N. Details Area (ha)  1 Buildings 2 Infrastructure 3 Roads 4 Others (specify) Total
1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laborartory and NABET accreditation of the consultant to be provided.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.

S. No	Terms of Reference
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.

S. No	Terms of Reference
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.38	Corporate Environment Responsibility:
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the

S. No	Terms of Reference
	company and/or shareholders or stakeholders at large.
1.43	e) Environment Managament Cell and its responsibilities to be clearly spleel out in EIA/ EMP report
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.
1.48	Details on the Forest Clearance should be given as per the format given:  Total ML Total Project Area Forest (ha) land (ha)  If more than one provide details of each FC
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed alloted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET acrreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.

#### **Seac Conditions - Site Specific**

- 1. The Proponent shall provide garland drain around the boundary of the proposed quarry and the photographs indicating the same shall be shown during the EIA appraisal.
- 2. The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path.
- 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
- 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.
- 5. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
- 6. The Proponent shall carry out Bio diversity study through Department of Botany, Govt Arts & Science College, Krishnagiri (or) Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report.
- 7. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.

e-Payments

Signature Not Verified	
Digitally Signed by : A B Rahul Nadh IAS Member Secretary, SEAA	3
Date: 22/04/2024 🔲	

From
A. Arumuganainar, M.Sc.,
Assistant Director(i/c),
Dept. of Geology and Mining,
Chengalpattu.

To Tvl. Triway Warehouse & Holdings Pvt. Ltd., No.14, Jaffer Street, Chennai – 600 001.

# Rc.No.1944/Mines/2022, Dated.06.11.2023

Sir.

Sub: Mines and Quarries – Rough stone and Gravel - Chengalpattu District – Maduranthagam Taluk – Netrampakkam Village - S.F. Nos. 14/1A, 14/1B, 14/2 and 15/3 - over an extent of 4.54.00 Hectares of patta lands – Quarry lease application preferred by Tvl. Triway Warehouse & Holdings Pvt. Ltd., – Details of quarries situated within 500 meter radial distance – furnished - reg.

- Ref: 1. Precise are notice issued by the Assistant Director (i/c), Geology and Mining, Chengalpattu in Rc.No.1944/Mines/2022, dated.18.10.2023.
  - Representation of Tvl. Triway Warehouse & Holdings Pvt. Ltd., dated.30.10.2023.

With reference to your letter in the reference 2<sup>nd</sup> cited, the details of existing, proposed and abandoned quarries located within 500 meter radius from the proposed Rough Stone and Gravel quarry of patta lands in S.F.Nos.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) over an extent of 4.54.00 hectares of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District are as follows.

#### I. Existing quarries:

SI. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	Ş.F. Nos.	Extent (in hects)	Lease period	Remarks
Ţį.	Tvl, Triway Warehouse & Holdings Pvt. Lld., No.14, Jaffer Street, Chennai – 600 001.	Roughstone & Gravel	Maduranthagam, Netrampakkam	13/2	2.02.50	03.10.2019 To 02.10.2024	Operation

2.	M/s. Enterprises, Somasekar (Administrative Partner), Side No.2/141-4, Street, Mir Nammakkal District - 637 0	Portion, Udaiyar nampalli, Taluk &	Roughstone & Gravel	Maduranthagam, Nallamur	37/1, 37/23(P), 37/24(P), 37/25(P), 37/6(P)	2.83.20	09.05.2023 to 08.05.2033	Operation
----	---------------------------------------------------------------------------------------------------------------	---------------------------------------------	------------------------	----------------------------	---------------------------------------------------------	---------	--------------------------------	-----------

# II. Proposed Quarries:

SI. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hects)	Remarks
1.	Tvl. Triway Warehouse & Holdings Pvt. Ltd., No.14, Jaffer Street, Chennai – 600 001.	Roughstone & Gravel	Maduranthagam, Netrampakkam	14/1A, 14/1B, 14/2, 15/3	4.54.00	Under Processing (Present Application)

# III. Abandoned quarries:

SI. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hects)	Lease period
15	-	:=-	32	*	-	:=:

Assistant Director(i/c), Geology and Mining, Chengalpattu.

L.11.2022

From
A. Arumuganainar, M.Sc.,
Assistant Director(I/c),
Dept. of Geology and Mining,
Chengalpattu.

To Tvl. Triway Warehouse & Holdings Pvt. Ltd., No.14, Jaffer Street, Chennai – 600 001.

#### Rc.No.1944/Mines/2023, Dated.06.11.2023

Sir,

Sub: Mines and Quarries – Chengalpattu District – Maduranthagam Taluk – Netrampakkam Village = S.F. Nos. 14/1A, 14/1B, 14/2 and 15/3 - over an extent of 4.54.00 Hectares of patta lands - permission requested for Quarrying Rough stone and Gravel under rule 19(1) of Tamil Nadu Minor Mineral Concession Rules 1959 – applied by Tvl. Triway Warehouse & Holdings Pvt. Ltd., - Mining Plan submitted for approval – Mining Plan approved for First Five years – directed to obtain Environmental clearance from State Level Environment Impact Assessment Authority, Tamil Nadu -Rea.

- Ref: 1. A
- Application of Tvl. Triway Warehouse & Holdings Pvt. Ltd., No.14, Jaffer Street, Chennai – 600 01, dated.07.02.2022 and 11.08.2023.
  - Precise are notice issued by the Assistant Director (i/c), Geology and Mining, Chengalpattu in Rc.No.1944/Mines/ 2022, dated.18.10.2023.
  - Representation of Tvl. Triway Warehouse & Holdings Pvt. Ltd., dated.30.10.2023.

....

In the reference 1st cited, one Tvl. Triway Warehouse & Holdings Pvt. Ltd., No.14, Jaffer Street, Chennai – 600 01 has applied for quarrying Rough stone and gravel from \$.F.Nos.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) over an extent of 4.54.00 hectares of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

Based on the recommendations of the Revenue Divisional Officer, Maduranthagam and Inspection report submitted by the Assistant Geologist, O/o. Assistant Director, Geology and Mining, Kancheepuram the above application was considered for quarrying Rough stone and Gravel from the above area under rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959 for a period of **Ten years** subject to certain conditions and precise area has been communicated to the applicant vide reference 2<sup>nd</sup> cited.

In exercise of the power delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Tvl. Triway Warehause & Holdings Pvt. Ltd., for S.F. Nos.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) over an extent of 4.54.00 hectares of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District the mineable reserves of Rough stone & Gravel after leaving safety distance has arrived as 6.31,510 M³ of Rough stone and 69,228 M³ of Gravel for **First Five years** upto a depth of 47 meter (BGL). This approval is subject to the following conditions:-

- i) That the Mining Plan is approved without prejudice to any other Law applicable to quarrying Rough stone and Gravel from time to time whether such laws are made by the Central Government/ State Government or any other authority.
- ii) The 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.
- The Mining Plan is approved without prejudice to any other order or direction from any Court of competent jurisdiction.

Encl: Approved Mining Plan

Assistant Director(i/c), Geology and Mining, Chengalpattu.

# MINING PLAN AND PROGRESSIVE QUARR CLOSURE PLAN FOR NETRAMPAKKAM ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

Patta Land / Lease period = Ten years

IN

#### LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT

4.54.0Ha

SENOS.

14/1A, 14/1B, 14/2 & 15/3

VILLAGE

NETRAMPAKKAM

TALUK

MADURANTHAGAM

DISTRICT

CHENGALPATTU

STATE

TAMIL NADU

FOR

#### APPLICANT

# Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran, Authorized Person,

No.14, Jaffer Street.

Chennai - 600 001.

Tamil Nadu State.

#### PREPARED BY

# B. Vengadagiri, M.Sc.,

Qualified Person (As per Rule 15(1)(a) and (1)(b) of MCR, 2016)

No.105, 5th Cross.

Alagapuram, Salem - 636 010.

Cell: 98432 18053

E-Mail: vengatb6@gmail.com

# Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran, Authorized Person,

No.14, Jaffer Street,

Chennai - 600 001,

Tamil Nadu State.



# CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State has been prepared by

#### B. Vengadagiri, M.Sc.,

Qualified Person

I request to the Assistant Director(i/c), Department of Geology and Mining, Chengalpattu District, Tamil Nadu State to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

# B. Vengadagiri, M.Sc.,

No.105, 5th Cross,

Alagapuram, Salem - 636 010.

Cell: 98432 18053

I hereby undertake that all the modifications, if any made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the Applicant

For Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

(A. Manimaran)

(Authorized Person)

Place: Chennai

Date: 25.10.2023

# Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran, Authorized Person,

No.14, Jaffer Street,

Chennai - 600 001,

Tamil Nadu State.



# DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of the Applicant

For Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

(A. Manimaran)

(Authorized Person)

Place: Chennai



# CERTIFICATE

Certified that I am, B. Vengadagiri, M.Sc., residing at No.105, 5<sup>th</sup> Cross, Alagapuram, Salem – 636 010, holding a Post Graduate Degree in Geology (M.Sc., Applied Geology) from Annamalai University, Chidambaram and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Revised Mining Plans as "(I)(a) a post graduate degree in Geology granted by a university established" and (I)(b) "Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree". Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Revised Mining Plans for both Major and Minor Minerals.

Accordingly, I am preparing this Mining Plan and Progressive Quarry Closure Plan in Respect of Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State for Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran, Authorized Person, No.14, Jaffer Street, Chennai – 600 001, Tamil Nadu State. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person

(B. Vengadagiri, M.Sc.,)

Place: Salem

#### B. Vengadagiri, M.Sc.,

No.105, 5th Cross,

Alagapuram, Salem - 636 010.

Cell: 98432 18053



#### CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. The preparation of Mining Plan and Progressive Quarry Closure Plan for Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State has been prepared for

#### Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran, Authorized Person,

No.14, Jaffer Street.

Chennai - 600 001.

Tamil Nadu State.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of the Assistant Director(i/c), Department of Geology and Mining, Chengalpattu District, Tamil Nadu State for such permissions/ exemptions/ relaxations and approvals.

It is also certified that information furnished in the above Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

(B. Vengadagiri, M.Sc.,)

Place: Salem

#### B. Vengadagiri, M.Sc.,

No.105, 5th Cross,

Alagapuram, Salem - 636 010.

Cell: 98432 18053



#### CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State has been prepared for

#### Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru. A. Manimaran, Authorized Person,

No.14, Jaffer Street,

Chennai - 600 001,

Tamil Nadu State.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu State for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

(B. Vengadagiri, M.Se.,)

Place: Salem





S. No.	Description	Page No.
1.0	Introduction and Executive Summary	ĺ
2.0	General Information	4
3.0	Location	5
	PART-A	
4.0	Geology and Mineral Reserves	7
5.0	Mining	10
6.0	.0 Blasting	
7.0	Mine Drainage	16
8.0	Other Permanent Structures	17
9.0	Employment Potential & Welfare Measures	19
	PART-B	
10.0	Environment Management Plan	21
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# LIST OF ANNEXURES

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2.	Copy of FMB	п
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4.	Copy of Patta	IV
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6.	Copy of A-Register	VI
7.	Copy of Land Lease Agreement from the Pattadar	VII
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11.	Copy of ID Proof	X
12.	Copy of Educational Certificate of Qualified Person	XI
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# LIST OF PLATES

S. No.	Description					
1.	Location Plan	I				
2.	Toposketch of Quarry Lease Applied Area for 10km Radius	IA				
3.	Environmental & Landuse Plan	IB				
4.	Route Map	IC				
5.	Quarry Lease Plan & Surface Plan	П				
6.	Topography, Geological Plan, First Five Yearwise Development & Production Plan & Sections	III-A				
7.	Topography, Geological Plan, Second Five Yearwise Development & Production Plan & Sections	III-B				
8,	Progressive Quarry Closure Plan & Sections	IV				
9,	Conceptual Plan & Sections	v				

# MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLA

# FOR NETRAMPAKKAM ROUGH STONE AND GRAVEL QUARRY OVER

# AN EXTENT OF 4.54.0Ha IN NETRAMPAKKAM VILLAGE,

# MADURANTHAGAM TALUK, CHENGALPATTU DISTRICT,

#### TAMIL NADU STATE.

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

#### 1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This Mining Plan and Environmental Management plan is prepared for Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran, Authorized Person, registered office at No.14, Jaffer Street, Chennai – 600 001, Tamil Nadu State.

The applicant has applied for Rough stone and Gravel quarry over an extent of 4.54.0 Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the Assistant Director(i/c), Department of Geology and Mining, Chengalpattu District and passed a Precise area Communication letter vide Rc.No.1944/Mines/2022, Dated: 18.10.2023 to submit an approved Mining Plan and obtain Environmental Clearance from the SEIAA, Tamil Nadu State (Please refer Annexure No. I).

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12.13.2011 in Special Leave Petition SLP (C) No 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior environmental clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less then 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state notified by MoEF as prescribed procedure under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the Mining Plan, Environmental Management Plan and Progressive Quarry Closure Plan for approval and subsequent submission of Form-I, Form-IM and Pre-feasibility report to obtain environmental clearance from the SEIAA, Tamil Nadu State, Rough Stone and Gravel quarry. This mining plan is prepared by considering the Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendment and judgments till 2023.

#### Short Notes of Mining Plan:

- a. Village Panchayat Netrampakkam
- b. Panchayat Union Maduranthagam
- c. The Geological Resources are 20,43,000m³ of Rough stone and 90,800m³ of Gravel formation in the entire area.
- d. The Total Mineable Reserves are 9,93,285m³ of Rough stone and 69,228m³ of Gravel in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be mined are 9,93,285m³ of Rough stone (6,31,510m³ for first five years and 3,61,775m³ for remaining five years period) for ten years and 69,228m³ of Gravel for three years in the entire area.
- f. Total extent of the lease applied area is about 4.54.0Ha.
- g. Topography of the area = The area is exhibiting plain terrain
- h. Proposed Depth of mining = 47m below ground level for 1st five years & 10 Years
- i. Lease Period = Ten years
- j. It is a fresh lease application.
- Method of mining / level of mechanization.
   Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- Type of machineries proposed in the quarrying operation is given below.
   Excavators attached with rock breaker (Rental Basis).
   Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity) (Rental Basis).
- No trees will be uprooted due to this quarry operation.
- The approach road from the main road to quarry is will be constructed and maintained in a good condition for the haulage of quarry materials and machineries.
- There is No Export of this Rough stone and Gravel.
- p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IB.
- q. The lease applied area is about 4.54.0Ha bounded by ten corners; the corners are designated as 1-10 clock-wise from the Northeastern corner and the Co ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.
- The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III, III-A & IV.

- General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,
  - Interstate Boundary,
  - ii) Protected area under wild life protection ACT, 1972,
  - iii) Critically polluted areas as identified by CPCB,
  - iv) Notified Eco sensitive areas.
- There is no wastage anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 51 employees are deploying in the quarrying operation.
- v. Total Cost of the project is about Rs.3,50,37,000/-.
- w. Infrastructures around the quarry lease applied area:

#### TABLE-1

Particulars	Location	Approximate aerial distance from lease applied area
Nearest Post Office	Chithamoor	4.8km – SW
Nearest School	Chithamoor	4.8km - SW
Nearest Dispensary	Melmaruvathur	10.4km - West
Nearest Town	Melmaruvathur	10.4km - West
Nearest Police Station	Chithamoor	4.8km - SW
Nearest Govt. Hospital	Melmaruvathur	10.4km – West
Nearest D.S.P. Office	Maduranthagam	10.5km - NW
Nearest Railway Station	Maduranthagam	10.5km - NW
Nearest Airport	Chennai	82.0km - NE
Nearest Seaport	Chennai	82.0km - NE
District Head quarters	Chengalpattu	29.6km - NE

There is no National Monuments, Places of Worship, Places of Public Interest and Permanent structures situated around 300m radius from the lease applied area. The nearest Wildlife Sanctuary is Vedanthangal Bird Sanctuary, which is located at 15.4km on the Northwestern side of the lease applied area.

# 2.0 GENERAL INFORMATION

2.1 a) Name of the Applicant

Tvl. Triway Warehouses & Holdings Pvl &

Thiru. Ravisankar, Managing Director,

b) Address of the Applicant (With Phone No and Aadhaar No.)

Address

No.14, Jaffer Street,

Chennai,

Pin Code

600 001

Mobile No

00407.470

Aadhaar No

98407 17088

•

1

7425 1001 6096 (Annexure No. X)

E-mail

manimaran@triway.in

c) Status of the Applicant (Individual / Company / Firm):

The applicant is a private company. Thiru. A. Manimaran is the Authorized Person for this company (Refer Annexure Nos. VIII, VIII-A & IX).

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Assistant Director(i/c), Department of Geology & Mining, Chengalpattu District vide Rc.No.1944/Mines/2022, Dated: 18.10.2023.

Period of permission / lease to be granted:

Ten Years.

d) Name and address of the Qualified Person who preparing the Mining Plan:

Name

B. Vengadagiri, M.Sc.,

Qualified Person

Address

No.105, 5th Cross,

Alagapuram, Salem - 636 010.

Mobile

: 98432 18053

Email

vengatb6@gmail.com

(Please Refer Annexure Nos. XI & XI-A).

#### 3.0 LOCATION

### a) Details of the area with location map:

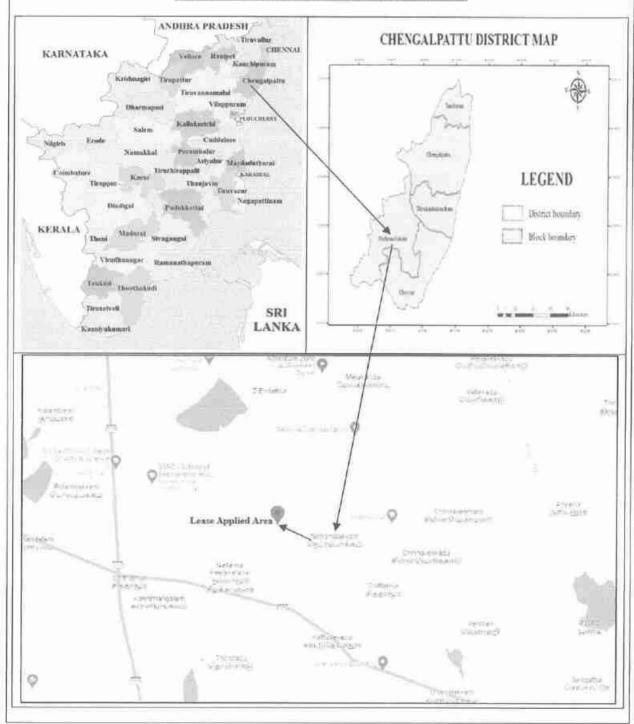
The lease applied area is located about 29.6km Southwestern of Chengalpaths Tream
Southwestern side of Maduranthagam town and 1.5km Northwestern side of Netrampakkam
Village.

22.0km 11.5km 1.5km

Chengalpattu → Maduranthagam → Netrampakkam → Lease Applied Area

Southwest Southeast Northwest

# Location Map of the Lease Applied area



#### TABLE-2

District	Taluk	Village	S.F. Nos.	Area in Ha.	Paga Nos.
			14/1A	0.40.5	30 GHB
<b>~1</b> ******** <b>1</b> *********	Note that the second of the second	NT 1	14/1B 1.62.0	44	
Chengalpattu	Maduranthagam	Netrampakkam	14/2	1.79.5	44
			15/3	0.72.0	301
	Total Ex	tent		4.54.0	

#### b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta land as classified as Punsei land (Barren land) which is not fit for vegetation/ Cultivation.

# c) Ownership / Occupancy of the applied area (surface right):

It is a Patta land. The survey file number registered in the name of the pattadar and patta number for the applied area details are given table below:

TABLE-2A

S. No.	S. F. Nos.	Patta Nos.	Pattadar Name		
1.	14/1A & 15/3 301		Sankar's Farm Prop. of Thiru. N. Ravishan		
2.	14/1B & 14/2	44	Thiru. N. Ravishankar		

The applicant has obtained consent from the pattadars. Refer Annexure Nos. IV & VII.

# d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: 57 P/15 Latitude between: 12° 25' 10.58" N to 12° 25' 21.84" N and Longitude between: 79° 55' 32.75" E to 79° 55' 40.17" E on WGS datum-1984. Please refer the Plate Nos. I to II.

# e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the Northern side of the area which is connects to the Footpath situated at 10m from the lease applied area.

Multiple road access is available from the quarry to state highways and National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough stone and Gravel.

The approach road from the quarry to main road will be constructed and the same will be maintained and utilized for haulage, besides trees will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Chengalpattu – Viluppuram which is located at 9.4km on the Northwestern side of the lease applied area.

Quar

CHENG

# PART-A

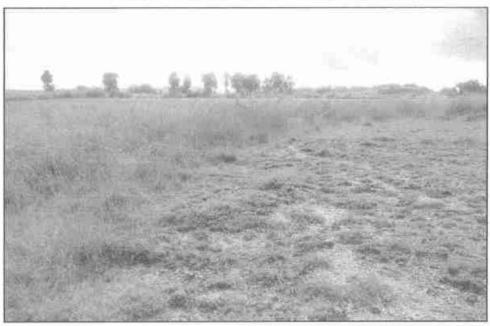
#### 4.0 GEOLOGY AND MINERAL RESERVES

# 4.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is exhibiting plain terrain. The area has gentle sloping towards Southern side and altitude of the area is 100m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby open well.

The Water level in the surrounding area is 63m below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 1264mm.







Netrampakkam Rough Stone and Grays Cuarts

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale of the Charnockite body is N30°E – S30°W with dipping towards SE60°.

The general geological sequences of the rocks in this area are given below:

AGE		FORMATION
Recent	•	Quaternary formation (Gravel)
Unc	onfor	mity
Archaean	-	Charnockite
		Peninsular Gneiss complex

# 4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Chengalpattu District.

Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the nearby open well.

#### 4.3 Estimation of Reserves:

#### a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally three sections have been drawn, one section is along the strike direction as (X-Y) Length wise and other two cross sections are drawn perpendicular to strike as (A-B) & (C-D) Width wise to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate Nos. III & III-A). As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

# Estimation of Geological Resources (Plate Nos. III & III-A):

The Geological Resources of Rough Stone and Gravel are calculated up to a maximum depth of 47m [2m Gravel + 45m Rough stone] below ground level. The total Geological Resources are calculated by area method. The total geological resources are given below:

Total Extent of the area = 4.54.0 Ha

Area in square meter = 4.54.0 X 10,000 = 45,400sq.m

Gravel Formation = 2m below ground level = 45,400sq.m X 2m Depth = 90,800m³ of Gravel

#### Rough Stone Formation

= 45m below ground level

= 45,400sq.m X 45m Depth

20,43,000m³ of Rough Stone

•

The Geological Resources of Gravel

90,800m<sup>3</sup>

The Geological Resources of Rough Stone

20,43,000m3

#### **Estimation of Mineable Reserves:**

The mineable reserves are calculated after leaving the safety distance & Bench loss to a maximum depth of 47m below ground level.

TABLE-3

		MINEA	BLE RES	ERVES		
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Rough stone (m³)	Grave (m <sup>3</sup> )
	1	108	135	2	17	29160
	11	105	129	5	67725	-
	III	100	119	5	59500	74
	IV	95	109	5	51775	18:
	V	90	99	5	44550	1960
XY-AB	VI	85	89	5	37825	283
	VII	80	79	5	31600	-
	VIII	75	69	.5	25875	14.
	IX	70	59	5	20650	-
	X	65	49	5	15925	-
		Tota	355425	29160		
	I	159	126	2	-	40068
	11	156	123	5	95940	*:
	Ш	151	118	5	89090	
	IV	146	113	5	82490	4
	V	141	108	5	76140	350
XY-CD	VI	136	103	5	70040	(#)
	VII	131	98	5	64190	
	VIII	126	93	5	58590	-
	IX	121	88	5	53240	5-1
	X	116	83	5	48140	
		Tota	I		637860	40068
	Gra	nd Total			993285	69228

Total Mineable Reserves of Gravel

69,228m3

Total Mineable Reserves of Rough stone @ 100%

9,93,285m3

The mineable reserves have been computed as 9,93,285m³ of Rough stone at the rate of 100% recovery and 69,228m³ of Gravel for a period of ten years upto a depth of 47m below ground level.

#### 5.0 MINING

# 5.1. Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

### 5.2. Mode of working (mechanized, semi mechanized, manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and slurry explosives blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

#### 5.3. Proposed Bench Height and Width:

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

# 5.4. Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of Gravel, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tippers to the needy customers. The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate Nos. III & III-A.

# Year wise Development and Production

TABLE-4

		ST FIVE YI					
Years	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Rough stone (m³)	Gravel (m³)
1	XY-CD	I	92	126	2		23184
		II	70	123	5	43050	le-
		Ш	60	118	5	35400	-
		IV	50	113	5	28250	
		V	40	108	5	21600	
		Total				128300	23184
		I	67	126	2	5	16884
		п	55	123	5	33825	/Æ
		Ш	55	118	5	32450	-
II		IV	55	113	5	31075	:23
		V	55	108	5	29700	
	XY-AB	1	25	135	2	-	6750
		Total				127050	23634
		I	83	135	2	=	22410
		II	20	129	5	12900	
		Ш	15	119	5	8925	787
		IV	10	109	5	5450	
	XY-CD	п	31	123	5	19065	-
III		III	36	118	5	21240	
		IV	41	113	5	23165	375
		V	46	108	5	24840	
		VI	25	103	5	12875	37
		Total				128460	22410
		VI	60	103	5	30900	- 20
		VII	69	98	5	33810	-
757		VIII	59	93	5	27435	120
v		IX	49	88	5	21560	
		X	39	83	5	16185	*
			Tota	1		129890	•
		VI	46	103	5	23690	2
		VII	52	98	5	25480	
		VIII	52	93	5	24180	-
		IX	52	88	5	22880	9
		X	52	83	5	21580	9
		Total				117810	
		Grand T				631510	69228

The Recoverable reserves have been computed as 6,31,510m<sup>3</sup> of Rough stone at 100% recovery for first five years and 69,228m<sup>3</sup> of Gravel for three years upto depth of 47m below ground level (R.L.100.0m to R.L.53.0m) (Please refer Plate No. III).

#### TABLE-4A

Years	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Rough stone (m³)	
VI	XY-AB	11	85	129	5	54825	
		Ш	35	119	5	20825	
			75650				
		Ш	50	119	5	29750	
VII		IV	85	109	5	46325	
			76075				
VIII		V	90	99	5	44550	
		VI	60	89	5	26700	
	XY-CD	VI	5	103	5	2575	
			73825				
		VII	10	98	5	4900	
	X VII 80 7	VI	25	89	5	11125	
IX		VII_	80	79	5	31600	
		69	5	25875			
	XY-AB		Tot	al	73500		
х			IX	7.0	59	5	20650
		X	65	49	5	15925	
	XY-CD	VIII	15	93	5	6975	
		IX	20	88	5	8800	
		X	25	83	5	10375	
		Total				62725	
		Grand T	otal			361775	

The Recoverable reserves have been computed as 3,61,775m<sup>3</sup> of Rough stone at 100% recovery upto a depth of 45m below ground level (R.L.98.0m to R.L.53.0m) for remaining five years (Please refer Plate No. III-A).

The Recoverable reserves have been computed as 9,93,285m³ of Rough stone at the rate of 100% recovery for ten years and 69,228m³ of Gravel for three years upto a depth of 47m below ground level.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of **Director of Mine Safety**, **Chennal** region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

Netrampakkam Rough Stone and Grave Chart

One lorry load  $= 6m^3$  (approx.)

Total No of Working days = 300 Days per year

Total quantity to be removed in these ten years plan period = 9,93,285m<sup>3</sup>

Hence total Lorry loads per day = 9,93,285m³/6m³

= 165548 Lorry loads

= 165548/10 years

= 16555/300 days

Rough Stone = 55 Lorry loads per day

Total quantity to be removed in these first three years plan period = 69,228m<sup>3</sup>

Hence total Lorry loads per day = 69.228m<sup>3</sup>/6m<sup>3</sup>

11538 Lorry loads

= 11538/3 years

= 3846/300 days

Gravel = 12-13 Lorry loads per day

Working hours = 8.00 am to 5.00 pm (with 12.00-1.00 P.M. lunch break)

#### 5.5. Machineries to be used:

#### For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry. The proposed and adopted machinery make may variable, if machinery making companies provide upgraded machines the same will be applied as per availability in market.

#### TABLE-5

#### I. DRILLING MACHINE:

S. No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack-Hammer	12	32	1.2m to 2.0m	Compressed air
2	Compressor	3	-	400 psi	Diesel Drive

#### II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Туре	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	3	300	Diesel Drive

#### III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Tippers	6	20 tonnes	Diesel Drive

The above machineries are adequate to meet out the development and production schedule drawn out during this mining plan period.

#### 5.6. Disposal of Overburden/Waste:

The overburden in the form of Gravel, the Gravel will be directly loaded into tipped to the filling and levelling of low-lying areas. The excavated rough stone (100%) will be directly loaded into tippers to the needy customers. There is no Waste anticipated during this plan period hence, disposal of waste does not arise.

# 5.7. Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations:

Conceptual mining plan is prepared with an object of long-term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for ten years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

TABLE-6

First Five Years Proposed Pit	Length in m (Max)	Width in m (Max)	Depth in m (Max)
Dimension	267	135	47m below ground level (R.L.100,0m to R.L.53.0m)
Ultimate Pit	Length in m (Max)	Width in m (Max)	Depth in m (Max)
Dimension	267	135	47m below ground level (R.L.100.0m to R.L.53.0m)

Greenbelt has proposed on the safety zone and Panchayat roads by planting Aathi, Iruvathi & Punnai, etc., trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate Nos. III, III-A & IV.

There is no waste anticipated during the entire life of quarry. Hence, backfilling is not possible in this quarry. After completion of quarry operation, the quarry pit will be allowed to collect the seepage and rain water and the water storage will be kept as reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, suitable soil type will be brought from outside and preserved over the quarried out top benches to facilitate the greenbelt development.

The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate No. IV).

#### 6.0 BLASTING

#### 6.1 Blasting pattern:

The quarrying operation is proposed to carried out by Mechanized Opencast Metacle in conjunction with conventional method of mining using Jack hammer drilling and slurry blasting of shattering effect for loosen the Rough stone. Besides those are noise free Eco friendly machineries.

#### Drilling and blasting parameters are as follows:

Depth of Each hole

1.5m

Diameter of hole

30-32mm

Spacing between holes

1.2m

Burden for hole

1.0m

Pattern of hole

Zigzag – Multi-rows

Inclination of holes

80<sup>0</sup> from horizontal

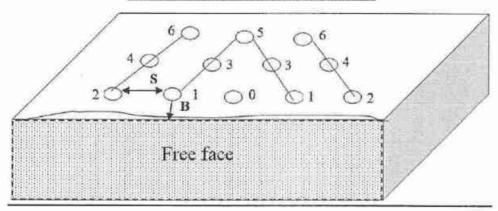
Use of delay detonators

25millisecond relays

Detonating fuse

Non-Electric Detonators

#### BLASTING PATTERN DRAWING



#### Staggered "V" Pattern of Blasting Design

Spacing

= 1.2m

Burden

= 1.0m

Depth of the hole

1.5m

No of holes proposed per day=

288 Holes

#### 6.2 Type of explosives to be used:

Small Dia. 25mm slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

#### 6.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m away from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect in rough stone for easy excavation and to control fly rock.

#### Delay detenators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charge which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

- · Reduction of ground vibration.
- · Reduction in air blast.
- Reduction in over break.
- · Improved fragmentation.
- · Better control of fly-rock.

#### Blasting program for the production per day:

No of Holes

= 288 Holes

Yield

= 864 Tons

Powder factor

= 6 Tons/Kg of explosives

Total explosive required

= 144 Kg-Slurry explosives

Charge/hole

 $= 0.5 \, \text{Kg}$ 

Blasting at day time only

= 12.00 – 12.30 P.M. (whenever required)

# 6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be having the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. The Competent Qualified Statutory personnels of the Company will maintain the records of Explosives as per the Indian Explosives Act.

#### 7.0 MINE DRAINAGE

#### 7.1 Depth of water table (based on nearby wells and water bodies):

The water table in the area is about 63m below ground level which is observed from the nearby existing private borewells with water level indicator. The lease applied area is fully covered by Massive Charnockite formation and it is revealed from the adjacent quarries. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt. Anyhow, Garland drain will be constructed all along the boundary to prevent surface run-off water entering into the quarry.

TABLE-7

Type	Distance & Direction	Location
Bore Well	640m Northeastern side	12°25'40.04"N
Bole well	040III Normeastern side	79°55'46.62"E

7.2 Arrangements and places where the mine water is finally proposed to be displarged:

The quarry operations are confined to well above the water table during the entire least period. If water is encountered at quarry due to rain water and scepage, the same will be pumped out by 5HP water pump and discharge to the Green belt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

# 8.0 OTHER PERMANENT STRUCTURES (also shown in the map)

TABLE-8

S. No.	Salient Features Present around site	Prescribed safety distance	If any present within Prescribed distance it's actual distance and direction from the area
8.1	Railways, Highways	50m	None of the above situated within 50m radius.
			Nearest National Highway - Chengalpattu to Tindivanam (NH-179B) Road - 9.6km - NW
	= -		Nearest State Highway - Vandavasi to Cheyyur (SH-115) Road - 2.0km - South side
			Nearest Major District - Padalam to Cheyyur (MD-596) Road - 7.3km - NE
8.2	Water Bodies (River, Pond, Lake, Odai, Canal)	50m	There is a Canal is passing in the South side of the lease applied area hence a 10m safety distance has been provided. There is no other River, Pond, Lake, Odai, Canal located within 50m radius of the lease applied area.
8.3	Village Road	10m	There is a Foot path is passing in the lease applied area, it will be shifted to the Northern side of the lease applied area in S.F.No.15/2 hence a 10m safety distance has been provided. No village road is passing within 10m radius on the lease applied area.
8.4	Habitation / Village Archaeological / historical monuments & Places of worships	300m	There is no approved habitation Archaeological / historical monuments & place of worships within 300m radius from the lease applied area (Refer Plate No. I-B).

8.5	Housing area, EB line (HT & LT Line)	50m	on the Nort it will be sh lease applie area, EB lin	LT power line is pass hwest side of the leas ifted more than 50m ed area. There is no ne (HT & LT Line) was much the lease applied an	e applied area away from the other Housing ithin the radius
8.6	Adjacent Patta lands / Govt. Land	7.5m/10m	Direction	Classification	Safety Distance
			North	Patta land	7.5m
			East	Govt. & Patta land	10m & 7.5m
			South	Govt. land / Canal	10m
				Govt. land	10m
			West	Existing quarry of the applicant company	70
			(Refer Plate No. II).		
8.7	Boundaries of the permitted area	7.5m/10m	follows: North - S. East - S. South - S.	F.Nos.31 & 32 F.Nos.36, 35 & 34 F.Nos.13/3, 13/2, 12	
8.8	Reserve forest	60m		reserve forest within applied area. (Refer	
8.9	Protected area / ECO sensitive area/ Wild Life Sanctuary	10km	Sanctuary/	ECO sensitive Zor Critically Polluted A ed within 10km radiu e No. IA).	Area/ HACA/

#### 9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

#### 9.1 Employment potential (skilled, semi-skilled, un skilled):

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mines regulations, 1961.

#### Skilled labour:

Mine Foreman : 1

Blaster/mate : 1

Excavator - Operator : 3

Tipper Drivers : 6

Jack-Hammer operator : 24

b. Semi-skilled:

Security : 2

c. Unskilled:

Labour & Helper : 5

Co-operator and Cleaner : 9

Total : 51

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

#### 9.2 Welfare Measures:

#### a) Drinking Water:

Packaged drinking water is available from the nearby water vendors in Chithamoor which is about 4.8km on the Southwestern side of the lease applied area.

#### b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed in the safety area as semi-permanent structure and it will be maintained periodically.

#### c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victing vill be given first aid immediately at the site by the competent and statutory foreman/permit manager will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Melmaruvathur located at a distance of 10.4km on the Western side.

#### d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

#### e) Precautionary safety measures to the labourers:



- > Helmets,
- > Mine Goggles,
- Ear plugs,
- Ear muffs,

- Dust mask,
- Reflector Jackets,
- Safety Shoes

All personnel protective devices will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

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#### PART - B

#### 10.0 ENVIRONMENT MANAGEMENT PLAN

# 10.1 Existing Land use pattern:

The quarry lease applied area is exhibiting plain terrain. The area is a dry barren land devoid of Agriculture and Habitations. The lease applied area has utilized only for quarry operation in earlier.

LAND USE TABLE-9

Description	Present area (Ha)
Area under Quarry	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Un-utilized Area	4.54.00
Grand Total	4.54.00

#### 10.2 Water Regime:

It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid surface run-off rain water entering into the pit. During rainy season the water table in the adjacent area may raise up. The subject area is a hard batholithic formation hence, the water table will not encounter from adjacent lands.

The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climate change.

# 10.3 Flora and Fauna:

TABLE-10

	List of Flora						
S. No.	Palitilly						
1.	Cocos nucifera	Arecaceae	Coconut, Thennai	Tree			
2.	Azadirachta indica	Meliaceae	Neem, Vembu	Tree			
3.	Pongamia pinnata	Fabaceae	Pungan	Tree			
4.	Borassus flabellifer	Arecaceae	Palm tree	Tree			
5.	Senna auriculata	Fabaceae	Aavarai	Shrub	*:		
6.	Prosopis juliflora	Fabaceae	Seemai karuvelam, Mesquite	Tree			

	L	List of Fauna					
5. No.	Scientific Name	Common Name	Picture				
1.	Capra aegagrus hircus	Goat	H				
2.	Funambulus palmarum	Squirrel	3				
3.	Bos taurus	Cow					
4.	Danaus plexipppus	Striped tiger	M				
5.	Corvus levaillantii	Crow	1				
6.	Gallus gallus domesticus	Hen	NO.				

#### 10.4 Climatic Conditions:

The area receives rainfall of about 1264mm/annum and the rainy season is mainly from Oct - Dec during monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 22°C.

#### 10.5 Human settlement:

There are few villages located within 5km radius of the area; the approximate distance, direction and populations are given below:

TABLE-11

S. No.	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population	
1.	Melakandai	4.0km – NE	900	
2.	Netrambakkam	1.4km – SE	1,700	
3.	Nallamur Keelakaranai	1.8km - SW	3,200	
4.	Peruveli	1.9km – NW	3,400	

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Maduranthagam located at a distance of 10.5km on the Northwestern side of the area.

#### 10.6 Plan for air, dust suppression:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the slurry blasting, Jack hammer drilling, loading and unloading during the Rough Stone quarry operation.

The following Mitigations measures will be carried out:

- Compaction, gradation and drainage on both sides for haulage road.
- Fixed water sprinkling arrangements by own water tankers.
- Muffle blasting on overburden an waste to control fly rocks during blasting.
- Enforcing speed limits of 20km/hr within quarry area.
- · Regular monitoring of exhaust fumes as per RTO norms.
- All personnel protective equipment like Nose-mask, earplug/ muffs will be provided to the Workers.
- Vegetations will be formed on the non-quarrying area.

Air quality will be monitored periodically as per Norms and Mitigative measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around Rs.52,000/year.

#### 10.7 Plan for Noise level control:

The noise level increased due to the Drilling, Blasting, Excavation and Transportation and

# **Engineering Noise control:**

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Proper maintenance at done with regular interval by the Oiling and greasing for the machineries and vehicles to control the Source of noise during operation and transportation.
- NONEL blasting will be practiced to control Noise, ground vibration and fly rocks for removal
  of Overburden and Waste rocks.
- Transporting vehicles are enforcing the speed limits of 20km/hr within quarry area to reduce Noise level.
- The drivers will be strictly instructed to running the vehicle during the transportation not exceed 40km per hour from despatch to destination.
- All personnel protective equipment like earplug/ muffs will be provided to the Workers.
- Selection of new low noise equipments for the Rough stone quarry operation.
- · Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- Sentries with flags & whistle will be posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse will be used for rough stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around Rs.2,000/Year.

# 10.8 Environmental impact assessment statement describing impact of mining on the next ten years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B2 Category mine. The estimated budget would be around Rs.7,60,000/-.

# 10.9 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. There entire quarried out materials will be utilized (100%). Hence, Waste management does not arise.

# 10.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 47m below ground level has been envisaged as workable depth for safe & economic mining during entire lease applied area. There is no waste generated hence, backfilling is not possible. Hence, the quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. The barbed wire fencing cost would be around Rs.2,37,000/-.

# 10.11 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone all along the boundary barrier has been identified to be utilized for Greenbelt development. Appropriate native species of Aathi, Iruvathi & Punnai, etc., trees will be planted in a phased manner as described below.

TABLE-12

Years	No. of tress proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown				
I	110	80	1016		88				
П	110	80	1016	A 41 . T 41 .	88				
III	110	80	1016	Aathi, Iruvathi	88				
IV	110	80	1015	& Punnai, etc.,	88				
V	110	80	1015		88				

Years	No. of tress proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown
VI	80	80	740		64
VII	80	80	740		64
VIII	80	80	740		64
IX	80	80	740		64
X	80	80	740		64

Nearly 8,778 sq.m area is proposed to use under Greenbelt by planting 950 Numbers of trees during lease period with an anticipated survival rate of 80% (Please refer Plate No. III). The estimated budget for plantation and maintenance of green belt development would be around Rs.1,90,000/- for the period of ten years.

The Greenbelt Development will be formed in around the quarried out top benches with 300 tree saplings, approach road and nearby panchayat road with 200 tree saplings during nineth and tenth years of this lease period. The cost would be around Rs.1,00,000/-.

# 10.12 Proposed financial estimate / budget for (EMP) environment managemen

Budget Provision for the Mining Plan period:

# TABLE-13

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year	
1	Ambient air quality monitoring	6500	4	26000	52000	
2	Noise level monitoring	250	4	1000	2000	
3	Ground vibration monitoring	1000	2	2000	4000	
4	Water sampling and analysis	9000	1	9000	18000	
	Total EMP Cost/ year					

The EMP cost would be around Rs.7,60,000/- for the period of ten years.

i)	Land cost	The Land value cost is about,	ie as per t	he Governm	ent Guideline lar	ıd
		S.F. Nos.	Extent	Cost/Ha	Cost	
		14/1A	0.40.5	1977000	800685	
		14/1B	1.62.0	6177500	10007550	
		14/2	1.79.5	6177500	11088612.5	
		15/3	0.72.0	6177500	4447800	
			4.54.0		26344647.5	
to be	used		ctor mou	nted compr	rith rock breake ressor with jac is)	
iii) Fenci	Refilling/		advertent		the quarry pit t	
iv) shed	Labourers	Labour sheds structure. The	1,000		s semi-permaner	Rs.3,00,000/-

		and nearby village road during nineth and tenth years of this lease period (200 sapling x Rs. 200/- per sapling)	Rs.40,000/-
		Green belt development on around the quarried out top benches during nineth and tenth years of this lease period (300 sapling x Rs. 200/- per sapling)  Green belt development on around the approach road	Rs.60,000/-
xii) etc.	Greenbelt	Green belt development under safety zone during this Plan period (950 sapling x Rs. 200/- per sapling)	Rs.1,90,000/-
xi) drain	Garland	Construction of Garland drain with check dam to prevent surface run-off rain water in to the quarry pit, the construction cost is around	Rs.1,95,000/-
x) sprink	Water ling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around	Rs.3,00,000/
ix)	Safety kit	All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around	Rs.1,00,000/-
	Sanitary	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around	Rs.1,50,000/
	Drinking facility for pourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around	Rs.4,00,000/
vi) items	Others	First aid room & accessories	Rs.1,20,000/
facilit	50.	provided at conveniently accessible places the cost would be around	Rs.1,50,000

	100		
B. EMP Cost: (Per year)	The state of the s		
Air Quality monitoring	Rs. 52,000/		
Water Quality Sampling	Rs. 18,000/		
Noise Monitoring	Rs. 2,000/		
Ground vibration test	Rs. 4,000/		
Total Cost	Rs. 76,000		
Total EMP Cost for the ten years period is Rs.7,60,000/-			
Description	Amount (Rs.)		
A. Operational Cost	Rs.3,35,90,000		
B. EMP Cost	Rs.7,60,000		
100 V 10 200 (a) 00 200 C (00 V/// 200)	D 2 42 50 000		
Total Project Cost (A+ B)	Ks.3,43,50,000/		
Total Project Cost (A+B)  The applicant indents to involve corporate environment responsibilities (CER) activity like Book to the library, Water Purifier, Plantation, Sanitary facilities and other requirements to the Chithamoor Govt. School at 2.0% from the total project cost. The Cost would be around Rs.6,87,000/	Rs.3,43,50,000/		

# Quarry E

#### 11.0 PROGRESSIVE QUARRY CLOSURE PLAN

#### 11.1 Introduction:

The Progressive Quarry Closure Plan for Netrampakkam Rough Stone and Gravel Quarry lease applied area over an extent of 4.54.0Hectares of Patta land in S.F.Nos.14/1A, 14/1B, 14/2 & 15/3 of Netrampakkam Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State has been prepared for Tvl. Triway Warehouses & Holdings Pvt. Ltd., Thiru. A. Manimaran, Authorized Person, registered office at No.14, Jaffer Street, Chennai – 600 001, Tamil Nadu State.

#### 11.2 Present Land use pattern:

LAND USE TABLE-14

Present area (Ha			
Nil			
4.54.00			
4.54.00			

#### 11.3 Method of Mining:

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height for Rough stone.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

#### 11.4 Mineral Processing Operations:

The quarried out Rough stone will be transported by the 20tons capacity Tippers to the needy crushers. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

DIREC

#### 11.5 Reasons for closure:

As the mineral is not going to be exhausted during the proposed plan period no immediate closure is planned due to sufficient reserves are available to carry on the activities. Hence, the reason for closure will be discussed in the ensuing mining plan.

#### 11.6 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations.

#### 11.7 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : B. Vengadagiri, M.Sc.,

Qualified Person

Address : No.105, 5<sup>th</sup> Cross,

Alagapuram, Salem - 636 010.

Mobile : 98432 18053

The applicant will himself implement the closure plan; no outside agency will be involved.

# 11.8 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:

Mining Plan and Progressive quarry closure plan are being submitted for the first time. It will be reviewed after ten years and review of implementation will be given with next review of mining plan.

#### 11.9 Closure Plan:

#### (i) Mined Out Land:

At the end of mining plan period, about 3.35.52ha of area will be mined out. Land use at various stages is given in the table below.

#### LAND USE TABLE-15

Description	Present area in (ha)	Area required during the first five years of plan period (ha)	Area at the end of lease period (ha)
Area under Quarry	Nil	3.47.40	3.47.40
Infrastructure	Nil	0.02.00	0.02.00
Roads	Nil	0.02.00	0.04.00
Green Belt	Nil	0.50.78	0.87.78
Unutilized Area	4.54.00	0.51.82	0.12.82
Grand Total	4.54.00	4.54.00	4.54.00

The Greenbelt Development will be formed in around the quarried out top benches of the lease applied area, approach road and nearby panchayat road from the lease applied area.

# (ii) Water quality management:

Following control measures will be adopted for controlling water pollution:

- Construction of garland drains to divert surface run-off from virgin area away from mining area.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- The quarried-out pit will be allowed to collect rain and seepage water which will act as a
  reservoir for storage. This water storage will enhance the static level and ground water
  recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture
  lands.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

# (iii) Air Quality Management:

The proposed mining method is not likely to produce much of dust and fugitive entire to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face-mask, earplug/ muffs.

For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

# (iv) Top Soil and Waste Management:

There is no topsoil and waste generated during the proposed plan period. The entire quarried out Rough stone and Gravel is utilized (100%). Hence, waste management does not arise.

# (v) Disposal of mining machinery:

Part of the Machineries will be purchased by fresh condition also part of machineries has been utilized on rental basis. After completion of quarry operation all purchased machineries will be utilized another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.

# (vi) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- > The bench height will be 5.0m.
- Width of working bench will be kept about 5.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.

- Danger signs shall be displayed near the excavations and proper signal by siren alar will be given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.
- > Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities

# (vii) Disaster Management and Risk Assessment:

This should deal with action plan for high-risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high-risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- > During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- > Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches of the lease applied area, approach road and nearby panchayat road from the lease applied area.

#### **Environmental Monitoring Cell:**

A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

#### Disaster Management Cell:

The Competent Qualified Statutory managers appointed by the lessee as per the Director of Mines Safety will be responsible for Disaster Management. It care of any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.

# (viii) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory recomment or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:

Quarry roads and approach roads,

Fencing on approach roads,

Checking and maintenance of machines and equipment,

Drinking water arrangements,

Quarry office, first aid stations etc.

- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- > Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

# (ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of ten years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

# (x) Time Scheduling for Abandonment:

The lease applied area has enormous potential for continuance of operations even the expiry of the lease period. The details of time schedule of all abandonment will be given at the time of final closure plan.

#### (xi) Abandonment Cost:

As at present mining is not going to be closed so abandonment cost could not be assessed. However, based on the progressive quarry closure activities during the plan period, cost is assessed as given below:

LAND USE TABLE-16

ACTIVITY			YEARS								20.4.7840	COST		
		I	11	Ш	IV	v	VI	VII	VIII	IX	X	RATE	(Rs./-)	
Plantation under	Nos	110	110	110	110	110	80	80	80	80	80	32		10000
safety zone	Cost	22000	22000	22000	22000	22000	16000	16000	16000	16000	16000		190000	
Plantation in the	Nos	P:	į.		-			39	v	150	150	@200 Rs Per supling	@200	60000
quarried out top benches	Cost	[+:	*	×	£	E		-	*	30000	30000		60000	
Plantation in the approach road and	Nos	F	÷		E	F	141		<b>9</b>	100	100		sapling	40000
nearby panchayat road	Cost	240	3		X 5.	•		3	78/	20000	20000			
Barbed Wire Fencing (In Mtrs) 800 Mtrs		240000	=	×	IX.	199	25.	8	*	*	¥,	@300 Rs	240000	
Garland Drain (In Mtrs) 650 Mtrs		195000	ş	IR.	I.	×	9	ia.	· ·	Ä	ž.	Per Meter	195000	
					TOT	AL					1		725000	

#### 12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining Plan for Rough Stone (Charnockite) and Gravel are under Rules 41 & 4 per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mattheway Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the applicant and is presented as the form as submitted by the applicant. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations after the grant of lease. The document may be scrutinized by the competent authority before approval.

Prepared by

B. Vengadagiri, M.Sc.,

Qualified Person

(As per Rule 15(I)(a) and (I)(b) of MCR, 2016)

Place: Salem Date: 30.10.2023

DONATE RED

SPREAD GREEN

SAVE BLUE

This Mining Plan is approved subject to the conditions / stipulations indicated in the Mining Plan approval Letter No. 1944/ Mines /2 223

Dated. 

CL-11-12-2

This Mining Plan is approved as per the powers conferred Under Rule 41 (2) of Tame Nadu Minor Mineral Concession Rule 1 (4)

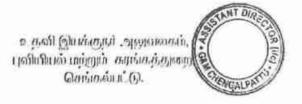
Assistant Diversity

Olrector of Deployy and Mining, Chengalpatta District

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நகள்ண், 1944/களின்/2022 நாள், 18.10.2023



#### அறிவில்கை

பொருள் : கனிமங்களும் குவாரிகளும் – சாதாரண சுற்கள் மற்றும் கிராவல் மண் – செங்கல்பட்டு மாவட்டம் – மதுருந்தகம் வட்டம் – நெட்ரம்பாக்கம் கிராமம் – பட்டா புல எண்கள், 14/1A, 14/1B, 14/2, 15/3-ல் மொற்த பரப்பு 4.54.00 ஹெக்டேர் பரப்பு பட்டா நிலத்தில் சாதாரண சுற்கள் / கிராவல் மண் வெட்டிபெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி – தி/ன்.Triway ware houses & Holdings Pvt. Ltd., என்ற நிறுவனத்தினருக்கு தமிழ்நாடு சிறுகனிம் சலுகை விதிகள் 1959 விதி எண்.19(1) - ன்கீழ் மனு செய்தது - தகுதி வாய்ந்த நிலப்பரப்பாக தெரிவித்தல் – தொடர்பாக.

பார்வை :

- தி/ள்.Triway ware houses & Holdings Pvt. Ltd., எண்.14, ஜாபர் தெரு, சென்னை – 600 001 என்ற நிறுவனத்தினரிடமிருந்து விண்ணப்பம் பெறப்பட்ட நாள் 07.02.2022 மற்றும் 11.08.2023.
- இவ்வலுவலக சுடித் ந.க.எண்.1944/கனியம்/2022, நாள்.10.02.2022 மற்றும் 11.08.2023.
- மதுராந்தகம் வருவாய் கோட்டாட்சியர்அவர்களின் அறிக்கை ந.க. எண்.442/2022/ஆ, நாள்.12.09.2023.
- திள்.Triway ware houses & Holdings PvI. Ltd., என்ற நிறுவனத்தினரின் மனு நாள்.12.09.2023.
- காஞ்சிபுரம், புவியியல் மற்றும் கரங்கத்துறை உதவி புவியியலாளர் மற்றும் தனிவருவாய் ஆய்வாளர் (கனியம்) காஞ்சிபுரம் ஆகியோரின் புலத்தணிக்கை அறிக்கை, நாள்.21.09.2023.
- 6. தொடர்புடைய இதர ஆவணங்கள்.

செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், நெட்ரம்பாக்கம் கிராமம், பட்டா புல எண்கள்.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) -ல் மொத்த பரப்பு 4.54.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல்மன் வெட்டியெடுக்க தி/ள்.Triway ware houses & Holdings Pvt. Ltd., என்ற நிறுவனத்தினர் பத்து ஆண்டுகளுக்கு - குவாரி குத்தகை உரியம் விண்ணப்பித்துள்ளார்.



பார்வை 4–ல் காணும் கடிதத்தில் மனுதாரர் தி/ன்.Triway ware houses & Holdings Pvt. Ltd., என்ற நிறுவனத்தினர் பூஸ்துதி கால்வாய் புல எண்.14/2-ன்வழியாக சென்று புல எண்.13-ல் சென்று முடிவடைகிறது. மேலும் புல எண்.13-ல் ஏற்கனவே குவாரிப்பணி மேற்கொள்ளபட்டு வருகிறது என்றும், பூஸ்துதி கால்வாய் வேறு புலங்களுக்கு செல்லவில்லை என்பதாலும் எங்களுக்கு பயன்படாது என்பதாலும், வேறு விவசாய புலங்களுக்கு எவ்வித பாதிப்பும் இல்லையென தெரிவித்து குவாரிப் பணி செய்ய அனுமதி வழங்க கோரியுள்ளார். மேலும் விண்ணப்பப்புல எண்.14/2–ற்கு அருகே புல எண்.13/2–ல் ஏற்கனவே குவாரிக்குத்தகை உரிமம் பெற்று குவாரிப்பணி மேற்கொள்ளப்பட்டு வருகிறது. இக்குவாரி புலத்திற்கு போகிய இடைவெளியின்றி குவாரிப்பணி மேற்கொள்ள அனுமதி கோரியுள்ளார். விண்ணப்பப் புல எண்.15/3--ன் வடகிழக்கு பகுதியில் செல்லும் வண்டிப்பாதை மற்றும் நடையாதை தற்போது பயன்பாட்டில் இல்லை என்பதால் இப்புலத்தில் குவாரிக்குத்தகை வழங்க ஆவண செய்யுமாறும், மேலும் பிற்காலத்தில் வண்டிப்பாதை மற்றும் நடையாதை தேவை ஏற்படின் எனது நிறுவனத்தின் பெயரிலுள்ள பட்டா புல எண்.15/2–ல் அதனை ஏற்படுத்தி தருகிறேன் என தெரிவித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக பார்வை 3 (ம) 4–ல் காணும் மதுராந்தகம் வருவாய் கோட்ட அலுவலர், காஞ்சிபுரம் மாவட்டம், புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் மற்றும் தனிவருவாய் ஆய்வாளர் (கனிமம்) ஆகியோர் தங்களது அறிக்கையில் மேற்காணும் விண்ணப்ப புலத்தில் தணிக்கை மேற்கொண்டு, செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், நெட்ரம்பாக்கம் கிராமம், பட்டா புல என்கள்.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) -ல் பொற்ற பரப்பு 4.54.00 ஹெக்டேர் பரப்பில் குவாரி அனுமதி வழங்க பின்வரும் சி நிபந்தவணகளுக்குட்டட்டு பரிநிதுளர செய்துள்ளனர்.

- விண்ணப்பட் புலங்களுக்கு அருகிலுள்ள அரசு புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் (பட்டா புல எண்கள்.13/2, 15/2 தவிர்த்து) பாதுகாப்பு இடைவெளிவிட்டு குவரிப்பணி செய்யப்படவேண்டும்.
- பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ பாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குளரிப்பணி செய்ய வேண்டும்.
- விண்ணப்ப புலத்திற்கு வடமேற்கே சுமார் 20 மீட்டர் தொலைவில் மேற்கில் இருந்து கிழக்காக நூழ்வழுத்த கப்பி செல்கிறது. எனவே குவாரி குத்தகை வழங்குவதற்கு முன் அகற்றப்பட வேண்டும் இல்லையேல் போதிய பாதுகாப்பு இடைவெளி 50 மீட்டர் விடப்பட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.
- விண்ணப்பப் புலத்திற்கு அருகேயுள்ள புல எண்.32–ன் வழியாக பூஸ்துதி கால்வாப் புல எண்.14/2-ன்வழியாக சென்று புல எண்.13–ல் சென்று முடிவடைகிறது. எனவே இக்கால்வாய்க்கு 10 மிட்டர் போதிய பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யப்படவேண்டும்.
- 5. விண்ணப்பப் புல எண்.15/3-ன் வடகிழக்கே வண்டிப்பாதை மற்றும் நடைபாதை அமைந்துள்ளதால் மனுதாரர் உரிய அனுமதி பெற்று மாற்று வண்டிபாதை, நடைபாதை ஏற்படுத்தி கொடுக்கும்பட்சத்தில் வண்டிப்பாதை மற்றும் நடைபாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ளலாம்.
- 6 மனுதாரரின் பெயரிலேயே ஏற்கனவே இயங்கிவரும் புல எண்.13/2-ல் செயல்பட்டு வரும் குவாரிக்கும் தற்போது அனுமதி கோரும் புல எண்களுக்கும் இடையேயுள்ள பாதுகாப்பு இடைவெளி பகுதியான புல எண்.13/2-ல் குவாரிப்பணி செய்யும் முன்னர் Directorate General of Mines Safety-ல் அனுமதியினை குவாரிக்குத்தகை வழங்குவதற்கு முன் பெறும்பட்சத்தில் குவாரிபணி மேற்கொள்ளலாம்.

எனவே மதுராந்தகம் வருவாய் கோட்டாட்சியர் மற்றும் காஞ்சியுரம் புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் ஆகியோரின் அறிக்கையின் அடிப்படையில் செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், நெட்ரம்பாக்கம் கிராமம், பட்டா புல எண்கள்.14/1A(0.40.50), 14/1B(1.62.00), 14/2(1.79.50), 15/3(0.72.00) -ல் மொத்த பரப்பு 4.54.00 ஹெக்டேர் பரப்பளவில் சாதாரண கற்கள் மற்றும் கிராவல்மண் வெட்டிபெடுக்க பத்து வருட காலத்திற்கு குத்தகை உரியம் வழங்க தகுதி வாய்ந்த

நிலப்பரப்பாக தி/ள்.Triway ware houses & Holdings Pvt. Ltd., என்ற நிறுவனத்தினருக்கு தெரிவிக்கப்படுகிறது.



மேலும் குவாரி அனுமதி வழங்குவது தொடர்பாக வரைவு கரங்கத் திட்டத்தை
(Mining Plan) மூன்று மாத காலத்திற்குள் உதவி இயக்குநர் முன்பு சமர்ப்பித்து ஒப்புதல்
பேறவும் குவாரி உரிமம் பெறுவது தொடர்பாக மாநில சுற்றுச் சூழல் தாக்க மதிப்பீட்டு
ஆணையத்தின் (SEIAA) இசைவினை பெற்று சமர்ப்பிக்கவும் அறிவறுத்தப்படுகிறது.

உதவி இயக்குநர் (பொ), புவியியல் மற்றும் சுரங்கத்துறை, செங்கல்பட்டு.

பெறுநர் தி/ள்.Triway ware houses & Holdings Pvt. Ltd., எண்.14, ஜாபர் தெரு, சென்னை – 600 001. 18-10-2022

நகல்:-

1) தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையும், சென்னை.

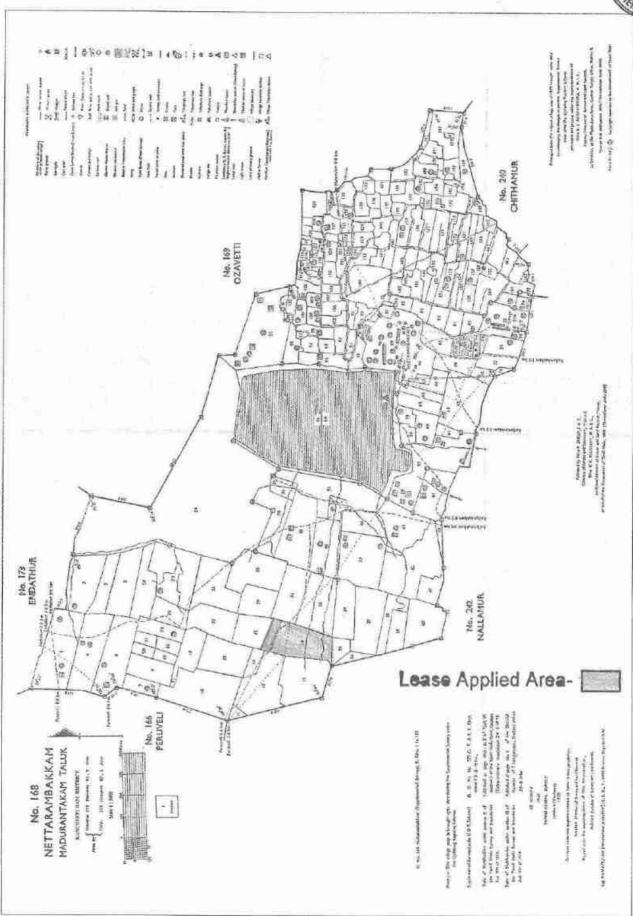
2) ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்ளடி, சென்னை 600 032.



Amerikasia Der 13 aco. 168.donuis loun: Orreginat. டிவளன். 14 E 01. 620 பரப்பு: ஹெக்டோ 15 12 INS IN A 13 32 (1946) धी दर्भ अवस्थित की हतन्त्रहरू Her Many 338/1914. Simple of 1109 2023 தோம நிர்வாக அலுவலர் 179.தெரும்பாக்கம் கிராமக் மதுநாத்துகம் வட்டம் கொள்ளல்லக்கு மாவட்டம் Lease Annlied Area-S. M.S. . 5 ...

சிராமம் பரப்பு: ஹெக்டேர் 2 att. 86-5 27 28.2 192.0 31 14 Lease Applied Area-





வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்





# வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : செங்கல்பட்டு

வருவாய் கிராமம் : நெட்ரம்பாக்கம்

வட்டம் : மதுராந்தகம்

பட்டா எண்: 44

# உரிமையாளர்கள் பெயர்

. មាស់នាំប្រាយ់ទាំប			•••	ரவிசா	பகர்			
புல என்	உட்பிரிவு	புண்	ர்கம்	நன்	நன்செய் ம		ഞഖ	குறிப்புரைகள்
		பரப்பு	தீர்வை	սյնկ	தீர்வை	ունուի	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரு - பை	
13	2	2 - 2.50	3.75		-	-	:==	16-06- 2001
14	18	1 - 62.00	3.00			-44	311	23-10- 2014
14 2	1 - 79.50	3.33					27-05- 2011	
		5 - 44.00	10.08				5	

# குறிப்பு2 :



- 1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 35/07/179/00044/40918 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- 2. இத் தகவல்கள் 21-10-2023 அன்று 04:11:15 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- 3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்





# தமிழ்நாடு அரசு

# வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : செங்கல்பட்டு

வட்டம் : மதுராந்தகம்

பட்டா எண் : 301

வருவாய் கிராமம் : நெட்ரம்பாக்கம்

உரிமையாளர்கள் பெயர்

	<del>(2011/012111111</del>			சங்கேர்ஸ்	வர்ப்ப			25
புல எண்	உட்பிரிவு	புன்	ிசய்	நன்	ிசய்	மற்ற	வை	குறிப்புரைக
		பரப்பு	<b>தீ</b> ர்வை	սյնկ	தீர்வை	սցնկ	தீர்வை	
		ஹெக் - ஏர்	ര്ര - വെ	ஹெக் - ஏர்	ரு - பை	ஹெக் - ஏர்	ரூ - பை	
14	1A	0 - 40.50	0.75		-	-		23-10 2014
15	1A	0 - 40.50	0.75				300	23-10 2014
15	1В	0 - 40.50	0.75	-			-	15-12 2008
15	1C	0 - 40.50	0.75	650		177		23-10 2014
15	1D	0 - 22.00	0.41		54	22	744	23-10- 2014
15	2	0 - 71.00	1.32		সো			23-10- 2014
15	3	0 - 72.00	1.34					23-10- 2014
17	1H	0 - 20.00	0.38			-		23-10- 2014
17	11	0 - 20.50	0.38				**	23-10- 2014
17	2	1 - 17.50	2.18	(44)	22		22	D2006/1700 15-12-2008
27	1	0 - 35.50	0.67				**	15-12- 2008
27	2	0 - 36.00	0.67	( <del>ice</del> )	1441	1944		15-12- 2008
27	3	0 - 36.00	0.67	***	==	्यर .	**	23-10- 2014
27	4	0 - 36.50	0.67	N#4.				15-12- 2008
27	5	0 - 36,50	0.67	-		-	+	15-12- 2008
27	б	0 - 36.50	0.68	***			#E	15-12- 2008
27	7	0 - 36.50	0.68		**	-	#	23-10- 2014
27	8	0 - 36.50	0.67	+	TIE!			23-10- 2014
28	1	0 - 40.50	0.75	i <del>pin</del>	H+:		**	15-12- 2008

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபாங்கள்

Summer of the second			municipal management	Colisionenene E	20076001 ILL 1807601	160 - 12160 BT 0.160	TO SHILL DESIGN	MS/
28	10	0 - 40.50	0.75	*	-			D2003/33PP
28	11	0 - 40.50	0.75	.++			¥#.	2014
28	2	0 - 40.50	0.75			22	*	15-12- 2008
28	3	0 - 12.00	0.23					23-10- 2014
28	5	0 - 40.50	0.75		1440	-	1460	05-02- 2016
28	6	0 - 40.50	0.75		7.55	=	-	15-12- 2008
28	7	0 - 40.50	0.75		***		1441	15-12- 2008
28	8	0 - 40.50	0.75		-	-	355)	15-12- 2008
28	9	0 - 40.50	0.75	**		l÷÷	244	23-10- 2014
		11 - 51.50	21.37					

#### குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 35/07/179/00301/30984 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- <sup>2</sup>. இத் தகவல்கள் 29-09-2023 அன்று 05:32:15 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- 3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

ANNEXUBRANT

கிராமக் கணக்கு . 4<u>9</u>33 . – ஆம் பசலியில் 68573886 வட்டம் のようないのいとう மாவட்டம் நில வரித் திட்டத்தின்படி ( புலன்களின் விபரம். சாகுப்த யானரின் முதல் போகம். Quiur. 原西 நிலத்தின் எந்த பகுதி யாவது சாகுப்டியாளராள் பயிரிடப்பட்டுள்ளதா. கைப்பற்று தாரருடைய பெயரும் எண்ணும் எந்த மாதத்தில் பயிர் செய்யப்பட்து எந்த மாதத்தில் அறுவடை செய்யப்பட்து Guran giang Gurani. விளைச்சல் அளவு விழுக்காடு. क्षांना का का महत्त्व. அல்லது அனுபோக தார்குடைய பெயர். பலிரான / ஆற்வடை யான பாப்பு. unides ஆதாம். unSiffeir Quarif. A. SOSTISTICATION SAL 2 L' 19HB1 Bremen. UNTILL 96 (1) (2) (3) (4) (5) (6) (7) (B) (9) (10)(11) (12)14 8055FFW 300 POD BOSE of 09 29 கிராம நீர்வாக அலுவலா 179 நெரேம்பாக்கம் கிராமம் நெராந்தகம் வட்டம்

380/ 78-R.F. III-A-10-30,00,000 Cps,-GBP,-MDU.-7-202 3.

ANNEXUSE OF SECTION OF

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#### வட்டாட்சியர் அலுவலக இணைய சேவை - அ-பநிவேடு விவரங்களை பார்வையிட

#### அ-பதிவேடு விவரங்கள்

மாவட்டம் : செங்கல்பட்டு

வட்டம் : மதுராந்தகம்

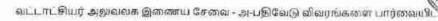
இராமம் : நெட்ரம்பாக்கம்

1. புல எண்	14	9. மண் வயனமும் ஏகமும்	8 - 3
2. உட்பிரிவு எண்	1A	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	14-1	STATE OF STA	1.85
4. பகுதி	<u></u>	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 40,50
5, அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.75
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	301
7. பாசன ஆதாரம்	2	15. குறிப்பு	(%)
8. இரு போகமா	1	16. பெயர்	1.சங்கர்ஸ் பார்ம்

#### குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 10984 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும். 10/21/23, 3:20 PM



#### அ-பதிவேடு விவரங்கள்

மாவட்டம் : செங்கல்பட்டு

வட்டம் : மதுராந்தகம்

கிராமம் : நெட்ரம்பாக்கம்

1. புல எண்	14	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	1B	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	14-2	11. தீர்வை (ரு - ஹ <u>ொ</u> )	
4. பகுதி	:=s	12. பரப்பு (ஹெக்டேர் - ஏர்)	
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	3.00
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	44
7. பாசன ஆதாரம்	2	15. ക്രനിവ്വ	*
8. இரு போகமா	1	16. பெயர்	1.ரவிசங்கர்

#### குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 10918 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.



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#### வட்டாட்சியர் அலுவலக இணைய சேவை - அ-பதிவேடு விவரங்களை பார்வையிட

#### அ-பதிவேடு விவரங்கள்

மாவட்டம் : செங்கல்பட்டு

வட்டம் : மதுராந்தகம்

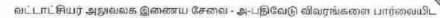
இராமம் : நெட்ரம்பாக்கம்

1. புல என்	14	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	2	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	
4. பகுதி	: <del>-</del>	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 79.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	3.33
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா என்	44
7. பாசன ஆதாரம்	2	15. குறிப்பு	-
8. இரு போகமா	*	16, பெயர்	1.ரவிசங்கர்

#### குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிவிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 10918 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும். 10/21/23, 3:22 PM



#### அ-பதிவேடு விவரங்கள்

மாவட்டம் : செங்கல்பட்டு

வட்டம் : மதுராந்தகம்

இராமம் : நெட்ரம்பாக்கம்

1. பல என்	15	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	3	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	-3	11. தீர்வை (ரூ - ஹெ)	
4. பகுதி	æs.	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 72.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1,34
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	301
7. பாசன ஆதாரம்	2	15. குறிப்பு	<b>(</b>
8. இரு போகமா	<b>#</b> 0	16. பெயர்	1.சங்கர்ஸ் பார்ம்

#### குறிப்பு 1:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 10984 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.





THIS LAND LEASE AGREEMENT is MADE ON the 01st day September, 2023

#### BETWEEN

SHANKAR'S FARM represented by its proprietor Mr.N.RAVISHANKAR, son of Mr.P.Natarajan, aged about 61 years (AADHAAR NO.7425 1001 6096, PAN -AAEPR5270K) residing at door No.1805, I- Block, 28th Street, Kambar Colony, Anna Nagar West, Chennai - 600 040, hereinafter referred to as the LANDLORD.

#### AND

M/s.TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED, a Company incorporated under the Companies Act, 1956 (Certificate of Incorporation No.U63023TN2006PTC059635 issued by the Registrar of Companies, Tamilnadu), (PAN - AACCT4496J) having its registered office at No.325, Thambu Cheety Street, Chennai - 600001, represented herein by its Authorized signatory Mr.A.Manimaran, the CFO of the Company, hereinafter referred to as the TENANT;

(Signature of the LANDLORD) FOR SHANKAR'S FARM

(Signature of the TENANT)

Authorized Signature



...2...

WHEREAS the LANDLORD is the absolute owner of the property at Survey Nos. 14/1A - 1 Acres, 15/3- 1 Acre 78 Cents, Netrambakkam Village, Madhuranthagam Taluk, Chengalpattu District. SRO – Cheyyur, which is morefully described in the schedule hereunder as was owned by the Vendor, he has purchased the Land from Kaliki Ranga Reddy, under a Deed of Sale dated 6.03.2008, registered as document No.893/2008, before the SRO – Cheyyur.

WHEREAS the LANDLORD is the absolute owner of the property at Survey No.14/1B, - 4 Acres, Netrambakkam Village, Madhuranthagam Taluk, Chengalpattu District. SRO – Cheyyur, which is morefully described in the schedule hereunder as was owned by the Vendor, he has purchased the Land from S.Seetharama Reddiar, under a Deed of Sale dated 24.02.2009, registered as document No.461/2009, before the SRO – Cheyyur.

WHEREAS the LANDLORD is the absolute owner of the property at Survey No.14/2, - 4 Acres 44 Cents, Netrambakkam Village, Madhuranthagam Taluk, Chengalpattu District, SRO – Madhuranthagam, which is morefully described in the schedule hereunder as was owned by the Vendor, he has purchased the Land from Rajaammal and others, under a Deed of Sale dated 20.01.2010, registered as document No.3808/2012, before the SRO – Cheyyur.

AND WHEREAS at the request of the TENANT the LANDLORD has agreed to let the said land on a monthly lease rent of Rs.10,000/- (Rupees Ten thousand only) to the TENANT.

AND WHEREAS both the parties have thought it fit to put forth their understanding in writing, this LAND LEASE AGREEMENT is drawn setting forth the following Terms and Conditions:

- The TENANT shall Apply, Quarry Permission, Stockyard Permission, Stock Yard Permit, shall be used in connection with running of a quarry and will be used for commercial purpose only.
- The LANDLORD, in consideration for the monthly lease rent of Rs.10,000/-(Rupees ten thousand only) hereby grants a lease upon the terms set forth below.

(Signature of the LANDLORD)

For SHANKARS FARM

Proprierar.

(Signature of the TENANT)

For TRIMAY WAREHOUSES AND HOLDINGS PUT LED.

Authorized Signature



...3....

- The TENANT shall pay a sum of Rs.50,000/- (Rupees Fifty Thousand only) as rental advance. The said advance shall be held by the LANDLORD free of interest as a security deposit and shall be returned at the time of termination of this land lease agreement.
- The lease shall be for a period of 15 Years initially with the option for renewal for a further period, by mutual agreement.
- The tenancy shall take effect from the 1<sup>st</sup> day of September, 2023.
- The lease rent shall be paid on or before 10<sup>th</sup> day of every month.
- The LANDLORD shall provide the TENANT, during the tenure of tenancy, light, water, electric power, sanitary conditions and other amenities as may be required, provided that the TENANT shall bear all running costs including energy and water charges.
- 8. The TENANT shall on the expiry of the terms created or any renewal thereof and subject to the covenant handover the vacant possession of the said property together with the fixtures and other fittings that are presently installed at the time of handing over the said property.
- The TENANT agrees that property shall be used in connection with running of a quarry and will be used for commercial purpose only.
- 10. Both the parties have the option at any time during the period of tenancy or its renewal thereof to issue as notice of vacation of the premises giving at least one month prior intimation of their intention.
- 11.The LANDLORD shall look after major repairs to the door, windows, locks, bolts, latches, electrical fixtures, maintenance and repair to pump sets.
- 12. The LANDLORD shall not be responsible for stoppage of water supply by the Corporation, nor failure by the Tamil Nadu Electricity Board to supply adequate power and any additional expense incurred by the TENANT is not reimbursed by the LANDLORD.
- 13. The LANDLORD shall pay all taxes pertaining to the said property, including Municipal Tax, Water Tax and Sewerage tax.

(Signature of the LANDLORD)

FOR SHANKARS FARM

(Signature of the TENANT)

FOTTRINAY WAREHOUSES AND HOLDINGS PAY LTD.,

Authorized Signature



...4...

- 14. Both the parties agree that at the time of vacating the said premises with the exception to damage done due to earthquake, lightning, tempest, riot, war, air-raid or any other act of God or normal wear and tear and the TENANT shall hand over the property in perfect conditions and shall be responsible to restore in the same conditions in which it was taken over originally
- 15. The TENANT is hereby permitted to install Quarry Machine, Gensets, Electrical Fittings, concrete buildings Weighing Machine, infrastructures required to run the quarry operations at said site.

#### SCHEDULE

All the piece and parcel for the land situated at, Survey Nos .14/1A- 1 Acres, 15/3- 1 Acre 78 Cents, 14/1B - 4 Acres, 14/2- 4 Acres 44 Cents Netrambakkam Village, Madhuranthagam Taluk, Chengalpattu District SRO - Cheyyur, Registration District of Chengalpattu.

IN WITNESS WHEREOF the parties hereto mentioned above have set their hands in the presence of the witnesses mentioned against each on the day, the month and the year first above written.

(Signature of the LANDLORD)

FOI SHANKARS FARM

(Signature of the TENANT)

Authorized Signature

Witnesses

(S.SELVAKUMAN)
(S.SELVAKUMAN)
NO JOA PRENYAN NOJAS BARM
NO JAZ SHOWER Chemes 91

Late J.victor

3/0 5. Jayonong No. 80 New Amarangi Process Toroliarpet, Chemi -81.

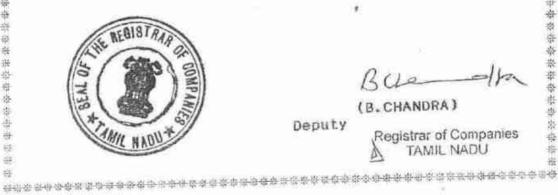
ANNEXURE VIII

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# FORM I R. CERTIFICATE OF INCORPORATION CIN. U63023TN2006PTC059635

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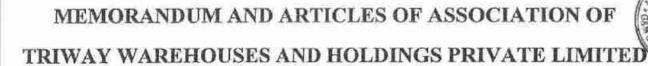
Deputy

Registrar of Companies TAMIL NADU

for TRIWAY WAREHOUSES AND HOLDINGS PVI, LTD.

Managing Director.

ANNEXURE VI



(As amended and adopted vide Resolution of the Annual General Meeting dated 30.09.2019)

CIN: U63023TN2006PTC059635

This is the certified true copy of the proceedings of the Annual General Meeting of the Shareholders held at the Registered Office of the company on 30th September 2019.

For Triway Warehouses and Holdings Private Limited

N.Bayishankar Managing Director

DIN 004327236

Shanthi Ravishankar

Director, DIN 01665388

Regd. Office: 14, Jaffer Syrang Street Chennal - 600 001

# SSTANT DIRECTOR

#### UNDER THE COMPANIES ACT, 1956

#### A COMPANY LIMITED BY SHARES

#### MEMORANDUM OF ASSOCIATION

#### OF

#### TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED

- I. The name of the company is TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED.
- II. The Registered Office of the company will be situated in the state of Tamilnadu.
- III. The objects for which the company is established are:
- A The main objects to be pursued by the company on its incorporation are:
- To carry on the business of Warehousing, Container handling and Grouping of cargo.
- To act as chartering brokers for Aircrafts, Ships and Land transport Vehicles, acting as General Trading and Indenting Agent, to operate Multimodel Systems Combined Transport Systems, inland transportation Cargo Agent and Road Transport Agent.
- 3. To establish warehouse, to carry on the business of warehousemen, stores of commodities, articles, things and preparation of all kinds and description, storage rooms, bins, god owns, cold storage and clearing, forwarding, transportation and distribution of wines and liquor, beverages, food products and merchandise of all kinds for import, export, inter-state and inter-state forwarding.
- To mine, trade, manufacture, import, export, process blue metal, granite, dust, m-sand, p-sand, sand & other minerals and for the purpose of the same to acquire and take on lease the quarries

Clause III was amended vide a special resolution passed in AGM dated 30.09,2019

By order of the Board, riway Warehouses and Holdings Private Limits

for Triway Warehouses and Holdings Private Limited

Place

Chennai

Date

30-09-2019

Managing Director,

DIN 004327236

SHANTHI RAVISHANKAR

Director, DIN 01665388

- The objects incidental or ancillary to the attainment of above main object are
- STANT OLOGICA OR THE STANT OLO
- To purchase, acquire or otherwise take on lease lands, buildings, furniture, plant and machinery or vehicles that may be required for carrying on the above objects.
- To build, make construct, maintain, improve or alter buildings, erect roads and other works and conveniences, which may be necessary for the purpose of the Company.
- To improve, manage, let, develop, dispose-of, exchange, mortgage, turn into
  account or otherwise deal with the whole or any portion of the lands, property,
  rights or other assets of the Company.
- To acquire and undertake the whole or any part of the business, property and liabilities of any person or company carrying on any business similar to that of the Company.
- To invest and deal with the moneys of the Company, not immediately required for the purposes thereof, upon such securities and in such manner as may from time to time be determined.
- To make advances upon or for the purchase of articles or materials of all kinds, both raw and manufactured, which are required for the purpose of the Company.
- 7. To receive money on deposit from Members/Directors or loan and to lend money and make advances and give credit to customers and others having dealings with the Company upon such terms as the Company may think fit, but the Company shall not do business of banking within the meaning of the Banking Regulation Act, 1949.
- 8. To borrow or raise or secure the payments of money in such manner as the Company shall think fit and in particular by the issue of Debentures and Debenture stocks, perpetual or otherwise upon all or any of the Company's property (present or future) including its uncalled capital and to purchase, redeem or pay off any such security.
- To draw, make, accept, discount, endorse, execute and issue cheques, drafts, promissory notes, bills of exchange, bills of lading, warrants, debenture and other negotiable and transferable instruments and trust receipts.
- 10. To take over any partnership business, to enter into any partnership or joint venture or any agreement for co-operation or sharing or polling of profits or controlling or limiting profits or output or otherwise for mutual assistance, with any person or company carrying on any business which the Company can carry on and to amalgamate with such company or companies having similar objects in such manner as the Company shall think fit.

11. To remunerate any person or company for services rendered or to be rendered in or about the formation or promotion of the Company or the conduct of its business and to pay all expenses incurred in connection with the promotion, formation and incorporation of the Company.



- To amalgamate with any other Company or to acquire or absorb any other Company by amalgamation, having objects altogether or in part similar to those of the Company.
- 13. To expend any of the monies of the Company in exhibiting or otherwise advertising or making known the business and products of the Company and to make any arrangements for the payments of commissions or shares of profits to or otherwise remunerating any person or Company so advertising or making known such business or products
- 14. To insure with any person or Company against losses, damages, risks and liabilities of any kind which may effect the Company either wholly or partly and if thought fit, to effect any such insurance by joining or becoming members of any mutual insurance, protection or indemnity association, federation or society and to accept any such insurance or any part thereof for the account of the Company.
- 15. To initiate, conduct, defend, compound or abandon any legal proceedings by or against the Company or its officers or otherwise concerning the affairs of the Company and also to compound and allow time for payment or satisfaction of any debts due and of any claim or demands by or against the Company.
- 16. To enter into any agreements with any Government or authorities, Central, State, Municipal, Local or otherwise or any companies, firms, or persons that may seem conducive to the attainment of the Company's objects, or any of them and to obtain from any such Government, authority, Company, firm or person and any charters, contracts, decrees, rights, privileges and concessions which the Company may think desirable and carry out, exercise and comply with any such charters, contracts, decrees, rights, privileges and concessions.
- 17. To apply for, purchase or otherwise acquire any patents, brevets d' invention, licenses, concessions and the like, conferring any exclusive or limited right to use or any other information as to any invention which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company and to use, exercise, develop or grant licenses in respect or otherwise turn into account the property rights or information so acquired.
- To invest surplus funds of the Company in shares, debentures, stocks, bonds, and other securities of any company, body, public/government authority and to hold, vary or dispose of such investments.
- 19. To pay for any lands, immovable or movable property or assets of any kind acquired or to be acquired by the Company or for any services rendered or to be

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rendered to the Company and generally pay or discharge the consideration to be paid or given by the Company in money or in shares (whether fully paid up or partly paid up) or debentures or debenture stock.



- 20. To establish and support or subscribe to any charitable or public object and any institution, society or club for the benefit of the Company or its employees and to give pensions, gratuities or charitable aid to any person who may have served the Company or to the wives, children or other relatives or other dependants of such person, and to make payments towards insurance and form and contribute to Provident Fund or other benefit funds for the benefit of any such person or of his wives, children or other relatives or dependants, But the Company shall not make contributions to any political party or for any political purpose to any individual or body.
- 21. To purchase or by any other means acquire any freehold, leasehold or other property or any estate or interest whatsoever, and any requests, privileges or easements over or in respect of any property, any buildings, offices, factories and any real or personal property or rights whatsoever which may be necessary for or may be conveniently used with or may enhance the value of any other property of the Company.
- 22. To establish and maintain any agencies or branch offices in any part of the world for the conduct of the business of the Company or for the sale of any materials or things for the time being at the disposal of the Company for sale and adopt means of making known or promoting the use of all or any of the manufacturer's products or goods of the Company or any articles or goods traded or dealt in by the Company in any way that may be thought advisable including the posting of bills in relation thereto and the issue of circulars, book, pamphlets and price lists and the conducting of competitions, exhibitions and the giving of prizes, rewards and donations.
- To do research and development in any of the products, projects and services, dealt with or proposed to be dealt with by the Company.
- 24. To print Pamphlets, Bulletins, Newspapers, Journals and Magazines and circulate them and also to issue compliment conducive to the advertisement and expansion of the business for the Company.
- C The other objects for which the Company is established are:
- To carry on the business of import, export, distribution of all merchandise and to act as agents, stockiest and distributors for firms and companies in India and abroad.
- To carry on the business of import, export and distribution of feature and video films



- O3. To carry on all or any of the business of goldsmiths, silversmiths, jewellers, gem and diamond merchants and of manufacturing and dealing in clocks, watches, jewellery and cutlery and their components and accessories and producing, acquiring, importing and trading in metals, bullion, gold ornaments, silver, silver utensils, diamonds, precious stones, paintings, coins, manuscripts, curios, antiques and objects of art.
- O4. To carry on all or any of the business of manufacturers, processors, and importers of and dealers in gases of all types meant for any industrial, non-industrial use whatsoever.
- 05. To carry on all or any of the business of manufacturers, processors, importers, exporters and dealers in gas cylinders, graphite electrodes, welding rods and materials and all types of components, materials and things generally used in the same.
- O6. To carry on business of manufacturers, suppliers of plant, machinery and equipment, stores, tools, gadgets, devices, contraptions, instruments, spares and components and to develop, acquire, supply plans, drawing estimates, project reports and know-how for industries, business, companies, services and public bodies and governments.
- 07. To carry on business as manufactures of and merchants and dealer in vinegar, acetic acid, glucose, yeast, aerated water, carbonic acid gas, mustard pickles, sauces, condiments of all kinds, cocoa, coffee, preserves and all or any other commodities and things which may be conveniently used or manufactured in conjunction with any of the above.
- 08. To carry on the business of cold storage of fruits, vegetables, seeds, fish, meat, agricultural products, milk and dairy products and other perishable items.
- To carry on the business of manufacturers and dealers in tractors, automobiles, earth moving equipments, internal combustion engines, boilers, locomotives and compressors.
- To manufacture and /or deal in automobile parts and components and machineries and to act as agents for manufacturers of various parts and components.
- To carry on the manufacture and sale of patent medicines and preparations
  generally and to carry on the business of manufacturers, buyers, and sellers of
  and dealers in all kinds medicines, preparations and drugs whatsoever and obtain
  patents for them.
- 12. To carry on the business of manufacturers of and dealers in all types of rubber and plastic goods, particularly industrial rolls, rollers, sheets, belting and consumer goods such as tyres, tubes and other allied products, chap pals, shoes, toys, medical and surgical goods and all other kinds of products.



- 13. To carry on the business of machinists, makers of machinery, manufacturers of pressed tools, mechanical engineers, marine engineers, iron founders, brass founders, iron and steel converters, metallurgists, smiths, and wood workers, iron masters, steel masters, blast furnace proprietors, repairers, boiler makers, smiths, sandblast proprietors, consulting engineers, electrical engineers, asbestos manufacturers, spanners, annealers, enamellers, electric and chromium palters, polishers, painters, garage proprietors, blacksmith, iron smith, iron mongers, alloy makers, metal palters, wire-weavers and to buy, sell, manufacture, repair, alter convert, let on hire and deal in plant, machinery, tools, implements, utensils, rolling stock and hardware of all kinds.
- 14. To manufacture, buy and sell machinery, store engineering products of all kinds and description and to carry on the business of suppliers of and dealers in all types of machinery and in all products intended for use in foundry and treatment of metal.
- To carry on the business as manufacturers of or dealers in glass products including sheet and plate glass, optional glass, glass wool and laboratory ware.
- To carry on the business of manufacturers of or dealers in textiles, including man made fibers, cotton, silk, jute, woolen and synthetics.
- To carry on the business as stockiest, exporters, and importers of and dealers in bolts, nuts, nails, rivets, hinges, hooks, and all other hardware items of all types and descriptions.
- 18. To carry on business as manufactures, stockiest, importers and exporters of wearable and unwearable fabrics, high density polythene and polypropylene, woven sacs, tarpaulins of various qualities and types.
- 19. To carry on the business as, stockiest, importers and exporters of general goods, suppliers, commission agents and clearing and forwarding agents and to carry on all or any of the business of wholesale and retail in all kinds of merchandise such as textile yarns, steel, spices, dry fruits, chemicals, dye chemicals and grains.
- 20. To saw, cut, cleave and polish diamonds, semiprecious, precious and synthetic stones and to buy, sell, import and export and deal both as wholesalers and retailers in rough and polished diamonds, industrial diamonds, precious stones and pearls real, culture and imitation
- To carry on the business of manufacturers of and dealers in all kinds of packaging, packing requisites and cartons made of cardboard, strawboard, wood, glass or any other materials, metal, glass or plastic containers as also containers of any other materials.
- 22. To carry on the business of importers, exporters, stockiest, suppliers and manufacturers of and dealers in commercial, industrial and domestic plastics and plastic products of any nature, substance and form and of any raw material including styrene, vinyl chloride, polyvinyl polyethylene, polyolifines, vinyl

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acetate and co-polymers and other allied materials, acrylics and polyesters, poly carbonates and polyesters, epoxy resins and other compositions, silicon resins and other thermoplastic moulding compositions in prefabricated sections and shapes, cellulosic plastic and other thermosetting and thermoplastic materials (of synthetic or natural origin) coloring materials, plastic and resin materials and adhesive compositions.

- 23. To carry on the business of manufacturers, importers and exporters of, traders and dealers in or otherwise engage generally in ceramic, refractory and plastic (such as PVC, bakelite, urea formaldehyde and other similar chemical compositions) products of all classes viz, fiber glass, glass wool, fire clay, refractoriness, insulations, cement of all types, glass, chinaware's, porcelain wares, earthenware's, stone wares, terracotta, plastic moulding and extrusions and all types of any such class viz., crockery wares, tableware's, glassware's, figure and statues, artificial teeth, electrical insulators, sanitary wares, glazed or unglazed tiles, laboratory, hospital and industrial requisites, sparkling plugs, drainage and water supply pipes, refractory and insulation cements, bricks and other shapes and linings and all other types and kinds of any class of plastic heavy clay and ceramic products.
- 24. To carry on all or any of the business of manufacturers, processors, importers, exporters of and dealers in ceramics and refractoriness and allied articles of all types, categories, grades, standards and qualities.
- 25. To organize, run, maintain, operate, promote the business of interior decorators, furniture and carpet designers, and manufacturers of boutiques, operators of fashion centers and to make, acquire, deal in any way in handicraft, objects of art, precious stones, jewellery, whether artificial or otherwise and articles wherein precious stones may be used in textile fabrics and to manufacture and deal in any products as are dealt in by boutiques and interior decorators.
- 26. To carry on the business of manufacturers of and dealers in all kinds and classes of paper and pulp including sulphite and sulphate wood pulp, animal pulp, and soda pulp and papers including transparent, vellum, writing, printing, glazed, absorbent, newsprint, wrapping, tissue, cover, blotting, filter, bank or bond, badami, brown, buss or colored, lined, azure laid, grass or water proof, hand made parchment, drawing, craft, carbon, envelop and box and straw duplex and triplex boards and all kinds of articles in the manufacture of which in any form of pulp, paper or board is used and also to deal in or manufacture artificial leather of all varieties, grades and colors and any other articles or things of a character, similar or analogous to the foregoing or any of them connected therewith
- IV The liability of the members is limited

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V The Authorised Share Capital of the Company is \*Rs.10,000,000/- (Rupees One Crore Only) divided into 10,000/- (Ten Thousand Only) Equity Shares of Rs.1,000/- (Rupees One Thousand Only) each. The Company has the power from time to time to increase or reduce its capital and to issue any shares in the original or new capital as equity, preferred or deferred shares and attach to any class of shares such rights, privileges, restrictions or limitations as may from time to time be determined in accordance with the Articles of the Company.

\*Increased From Rs.5,00,000/- to Rs.10,000,000/- w.e.f. 30th March 2011



We, the several persons, whose names and address are subscribed, are desirous of being formed into a Company in pursuance of this Memorandum of Association and we respectively agree to take the number of shares in the capital of the Company set opposite to our respective names:.



Sl.No	Signature, Name, Address, Description and Occupation of the subscribers	Number of Equity Shares taken by each subscriber	Signature, Name, Address, Description & Occupation of Witness
1)	Sd/- N. Ravishankar N.RAVISHANKAR S/o.P. Natarajan No.1805, 28 <sup>th</sup> Street, I Block Kambar Colony, Anna Nagar West, Chennai - 600 040.	(100) One Hundred Only	
2)	BUSINESS  PAN. AAEPR 5270 K  Sd/- R.Shanthi R.SHANTHI W/o.N.Ravishankar No.1805, 28 <sup>th</sup> Street, I Block Kambar Colony, Anna Nagar West, Chennai - 600 040.  BUSINESS  PAN. AASPS 3254 N	( 100 ) One Hundred Only	Sd/- E. Balu E. BALU S/o.N.Elumalai No.172/93,Coral- Merchant Street., Chennai - 600 001.  CHARTERED ACCOUNTANT. M.No.21400
	Total	200	
	Total number of Shares taken is	Two Hundred Only	

Date: 26.04.2006

Place: Chennai.



#### UNDER THE COMPANIES ACT, 1956

#### A COMPANY LIMITED BY SHARES

#### ARTICLES OF ASSOCIATION

OF

#### TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED

#### PRELIMINARY

- 01 The Regulation contained in Table A in the First schedule to the Companies Act 1956, shall to the extent they are applicable to Private Companies, apply to this Company save in so far as they are excluded or varied hereby.
- O2 The Company is a Private Limited Company as defined in section 3 (1) (iii) of the Companies Act, 1956 and accordingly which has a minimum paid up capital of one lakhs rupees or such higher paid up capital as may be prescribed, and by its articles.
  - (a) The right to transfer shares in the Company is restricted in the manner hereinafter provided.
  - (b) The number of members of the Company, not including persons who are in the employment of the Company or who have been formally in the employment of the Company or who having been formerly in the employment have continued to be members after the employment ceased, shall not exceed fifty, provided that when two or more persons hold one or more shares in the Company jointly they shall, for the purpose of this provision, be treated as a single member.
  - (c) Any invitation to the public to subscribe for any shares or debentures of the Company is hereby prohibited.
  - (d) Any invitation or acceptance of deposits from persons other than its members directors or their relatives is hereby prohibited.



#### SHARE CAPITAL

- The Authorised Share Capital of the Company is Rs.\*10,000,000/- (Rupees One Crore Only) divided into 10,000 (Ten Thousand Only) Equity Shares of Rs.1,000 (Rupees One Thousand Only) each and may be increased or reduced in accordance with law.
  - \*Increased From Rs.5,00,000/- to Rs.10,000,000/- w.e.f. 30th March 2011
- 04 The shares shall be under the control of the Board of Directors who may allot or otherwise dispose of the same as it thinks fit. The Company may from time to time by ordinary resolution.
  - Increase the Share Capital by such sum, to be divided into shares of such amounts, as it thinks expedient.
  - (ii) Consolidate or divide all or any of its Share Capital into shares.
  - (iii) Convert all or any of its fully paid up shares into stock or reconvert that stock into fully paid up shares of any denomination.
  - (iv) Sub-divide its shares or any of them into shares of smaller amount than is fixed by the Memorandum, so however that in the sub-division the proportion between the amount, if any, unpaid on each reduced share shall be the same as it was in the case of the share from which the reduced share is derived.
  - (v) Cancel shares which at the date of passing of the resolution in that behalf have not been taken or agreed to be taken by any persons and diminish the amount of its Share Capital by the amount of the shares so cancelled.
- 05 The Company may by special resolution, reduce its Share Capital in any manner subject to any incident authorized and consent required by law.
- The Board of Directors may issue and allot shares in the capital of the Company as payment for any properties sold or goods transferred or machinery or appliances supplied or for services rendered or to be rendered to the Company in or about the formation or promotion of the Company.
- 07 The Company shall, except as otherwise provided by these articles and subject to the provisions of Section 187 C of the Companies Act, 1956, be entitled to treat the registered holder of any shares as the absolute owner thereof and shall be under no obligation to recognize any interest, equity or trust in or affecting any share other than the absolute right thereto of the registered holder.

08 If any share certificate is defaced or lost or destroyed a new share Certificate may be issued on payment of a fee Re.1 (Rupees One Only) on such terms if any, as to evidence and indemnity as the Board of Directors thinks fit.



#### TRANSFER OF SHARES

- O9 Subject to the restrictions of these articles, shares shall be transferable, but every transfer must be in the form prescribed under Section 108 of the Companies Act, 1956, and the provisions as to transfer, contained in Section 108 of the Companies Act, 1956, so far as it applicable to a Private Company shall apply. A fee not exceeding Re.1 (Rupees One Only) as the Board of Directors may determine from time to time shall accompany the application for transfer
- No member shall be entitled to transfer his share in the Company except with the previous sanction of the Board of Directors.
- No shares shall be transferred to a person who is not a member so long as any member is willing to purchase the same at fair value, which shall be determined as hereinafter provided.
- In order to ascertain whether there is anyone among the members willing to purchase the share at the fair value, the member intending to transfer any share shall give notice (hereinafter called the transfer notice) of his intention in writing to the Company. Such notice shall specify the number of shares proposed to be transferred and the fair value fixed therefor and shall also state that the Company has been appointed as his Agent for the sale of the share or shares therein mentioned.
- Within 30 days after the receipt of the transfer notice, the Board of Directors shall, in such manner as it thinks proper communicate the intending transferor's proposal of transfer to all the members and invite applications from them as to their willingness to purchase the share within such time and fair value as may be fixed by the Board of Directors.
- 14 If the Board of Directors find any member willing to purchase the share in pursuance of the enquiry made under the foregoing articles, notice of the fact shall within seven (7) days after the expiry of the time fixed by Clause 13 of these Articles, be served on the intending transferor who shall there upon be bound to transfer the shares to the purchasing member on payment by him of the fair value of the intending transferor. Both the intending transferor and the purchasing member shall execute the instrument of transfer in accordance with the provisions of Section 108 of Companies Act, 1956 and complete the transaction within three months from the date of service of the last mentioned notice.



- 15 If several members apply for the purchase of the shares of the intending transferor, the question shall be decided by drawing lots or the shares shall be sold to such intending purchasers in proportion to their shareholding at the time.
- The Board of Directors shall fix the price at which the shares for the time being forming part of the capital of the Company may be purchased in pursuance of the transfer notice and the price thus fixed shall be known as the "fair value". Unless the "fair value" has been fixed as herein provided, a sum equal to the capital paid up on any share is deemed to be the fair value of such share.
- 17 If within 30 days after the issue of the communication referred to in Clause 13 hereof, no member applies for purchase of the share mentioned in the transfer notice, the intending transferor may within three months thereof sell the share to any person at any price.
- The Board of Directors may, in its discretion, refuse to register the transfer of any share to a person, if in their opinion, it is not desirable in the interests of the Company to admit such person to the membership. The Board of Directors may refuse to register any transfer of shares on which the Company has a lien. The Board of Directors may also decline to transfer the shares if the number of members exceeds the limit prescribed in clause 2 above.
- Any person or persons becoming entitled to any share by any court or other coercive sale or by reason of insolvency of a member shall offer such shares to the other member or members to be purchased at the fair value and it is only in the event of refusal to purchase by every member of the Company that such person shall have the right to have his name registered as a member of the Company.
- Any money due from the Company to a shareholder may, with or without the consent of such shareholders, be applied by the Company in or towards the payment of any money due from him and for the latter money, the Company shall have a first lien on all shares held by such shareholders and on all dividends accruing thereon, with full power of sale for the Directors in respect of shares subject to any such lien.

#### BORROWING POWERS

- 21 The Board of Directors may from time to time at their discretion raise or borrow or secure the payment of any sum or any sums of money for the purpose of the Company.
- 22 The Board of Directors may raise or secure the payment or repayment of such sum or sums in such manner and upon such terms and conditions in all respects as its thinks fit and in particular by the issue of debentures or debenture stock of the company charged upon all or any part of the property or undertaking of the



Company both present and future, including uncalled capital, if any, for the time being of the Company.

23 Any Debenture or debenture stock or other securities may be issued at a premium or discount and with any special privileges as to redemption, surrender, drawing, allotment of debentures, attendance at general meetings of the Company or appointment of directors.

#### GENERAL MEETING

- No business shall be transacted at any general meeting unless a quorum of members is present at the time when the meeting proceeds to business.
- 25 Two members personally present shall be the quorum
- 26 The Board of Directors shall elect one of them to be the Chairman for such time, as they shall decide. The Chairman shall preside at every general meeting, but if at any meeting he is not present within fifteen minutes appointed for holding the same or is unwilling to act as Chairman, the members present shall choose one Director or if no Director is present or if all Directors present decline to take the chair, any one of the members present shall act as the Chairman of the meeting.
- On a show of hands every member present in person shall have one vote and on a poll every member shall have one vote for every share held by him/her.
- 28 The instrument appointing a proxy shall be deemed to confer authority to join in demanding a poll

#### DIRECTORS

- 29 The number of Directors shall not be less than two or more than ten.
  - a) The First Directors shall be:
    - 1) N. RAVISHANKAR
    - 2) SHANTHI RAVISHANKAR
  - b) The Board of Directors shall have the power to co-opt one or more persons as Directors. The first Directors shall hold office during their lifetime. The other Directors co-opted or elected at a general meeting shall retire at the third annual general meeting after their co-option or election as the case



- may be unless the period for which they shall so act as Directors is stipulated by the resolution appointing them as Directors.
- e) The Board of Directors may by their resolution appoint any one ore more among them as Managing Director/s or Director with any other designation on such terms and for such period as they may decided upon.
- d) If the office of any Director becomes vacant before the expiry of the period of his Directorship in normal course, the Board of Directors may fill the resulting casual vacancy at a meeting of the Board. Any person so appointed should hold office only up to the date of which the Director in whose place he is appointed would have held office if the vacancy had not occurred as aforesaid.
- No qualification shares shall be necessary for holding the office of the Director of the Company.
- 30 The quorum necessary for the meeting of the Board of Directors shall be one third of its total strength (any fraction contained in that one third being rounded off as one) or two whichever is higher.
- A resolution in writing which has been circulated in draft together with the necessary papers, if any, to all the Directors, then in India (not being less in a number than the quorum fixed for a meeting of the Board) and to all other Directors at their usual address in India and has been approved by such of the Directors as are then in India or by a majority of such of them as are entitled to vote on the resolution, shall be as effective for all purposes as a resolution of the Board of Directors duly passed at a duly constituted meeting of the Board.
- 32 (a) Remuneration of the Directors for attending Board Meeting shall be such sum as may be fixed by the Board of Directors from time to time besides the actual travelling and other out of pocket expenses for attending the Board Meeting.
  - (b) If any Director is willing and called upon to perform services or to make any special exertions in connection with the business of the Company, the Company shall remunerate such Director/s either by way of salary, commission or participation in the profit or partly in one way and partly in another as may be determined by the Company in general meeting subject to the provisions of the Act.



#### POWER AND DUTIES OF DIRECTORS

- 33 The business of the Company shall be managed by the Directors who may pay all expenses incurred in getting up and registering the company and may exercise all such power of the company as are not excluded by the Companies, Act 1956, or any statutory modification thereof for the time being in force or by these articles, required to be exercised by the company in general meeting, subject nevertheless to any regulation of these articles and to such regulation not being inconsistent with the aforesaid regulations or provisions as may be prescribed by the company in general meeting, provided that no regulation made by the Company in general meeting shall invalidate any prior act of the Directors which would have been valid if that regulation had not been made.
- 34 The Board of Directors are authorized to appoint Alternate Directors to act for an Original Director/s during his/their absence for a period of three months from the State of Tamilnadu and the appointment of such Alternate Director shall be governed by section 313(2) and (3) of the Companies Act, 1956. Any Alternate Director if appointed to represent more than one Director, shall have one vote for each such Director for whom he is an alternate.
- 35 Without prejudice to the general powers conferred by the preceding clause and the other powers conferred by the Articles, it is hereby expressly declared that the Board of Directors shall have the following powers namely:
  - (a) To pay costs, charges and expenses, preliminary and incidental to the promotion, formation establishment and registration of the Company.
  - (b) To purchase or otherwise acquire for the Company property rights or privileges which the Company is authorized to acquire, at such price and generally on such terms and conditions, as it thinks fit.
  - (c) At its discretion, pay for any property, rights or privileges acquired by or services rendered to the Company either wholly or partially in cash, bonds, debentures or other securities of the Company and any such bonds, debentures or other securities may be either specifically charged upon all or any part of the property of the Company and its uncalled capital not so charged.
  - (d) To secure fulfillment of any contract or agreements entered into by the Company by mortgage or charge of all or any of the property of the Company and its uncalled capital for the time being.



- (e) To appoint and as its discretion, remove or suspend such Directors, ( not as members of the Board) managers, secretaries, officers, clerks, agents and servants for permanent, temporary or special services as it may from time to time think fir and determine its powers and duties and fix their salaries or emoluments and to require security in such instance and for such amount as it thinks fit.
- (f) To institute, conduct, defend, compound or abandon any legal proceedings by or against the Company or its officers or otherwise concerning the affairs of the Company and also to compound and allow time for payment or satisfaction of any debts due and of any claim of demand by or against the Company.
- (g) To refer any claim or demands by or against the Company to arbitration and to observe and perform awards.
- (h) To make and give receipts, release and other discharges for money payable to the Company and for the claim and demands of the Company.
- To determine who shall be entitled to sign on the company's behalf bills, notes, receipts, acceptances, endorsements, cheques, releases, contracts and documents.
- (j) To invest and deal with any of the moneys of the company not immediately required for the purposes thereof upon such securities and in such manner as it thinks fit and from time to time vary or release such investments.
- (k) From time to time make, vary and repeal bylaws for the regulation of the business of the Company, its officers and servants.
- (I) To enter into all such negotiations and contracts and rescind and vary all such contracts and execute all such acts, deeds and things in the name and on behalf of the Company, as it may consider expedient for or in relation to any of the matters aforesaid or otherwise for the purpose for the Company.
- (m) To open current, time deposit account or other accounts with banker or bankers at its choice and to operate on such accounts and also when necessary to overdraw or take loan on such accounts on the security of Company or any of its assets.

GAMTO OF STREET

(n) To draw, accept, endorse, discount, negotiate and discharges on behalf of the Company any bills of exchange, promissory notes, cheques, handiest, drafts, railway receipts, dock warrants and delivery orders, Government Promissory Notes, other Government Instruments, Bonds, Debentures or debenture Stocks of Corporations, Local Bodies, Port Trust, Improvement trusts or other Corporate bodies and to execute transfer deeds for transferring stocks, shares or stock certificate of the Government and other local or corporate bodies in connection with any business or any objects of the Company.

#### MANAGEMENT

- 36 The Board of Directors may from time to time appoint one among them to be the Managing Director to manage the affairs of the company for such period and upon such terms and conditions, as it may think fit, as regards their respective powers, duties and functions and also their remuneration and may remove them and appoint others in their places on such conditions, restrictions and terms as it may think fit.
- 37 The Managing Director shall receive remuneration whether by way of salary, commission or participation in the profits or partly in one way and partly in another as the Board of Directors may from time to time determine.
- 38 The Managing Director shall, subject always to the supervision and general control of the Board of Directors, manage all the affairs and business of the company and all of its assets and he shall have and exercise all such powers and authorities as are not by statute or by regulations of the company or by any resolutions of the Board of Directors expressly or specially required to be exercised only by the company in general meetings or by the Board of Directors.

### MINUTES OF PROCEEDINGS OF THE GENERAL MEETING AND THE BOARD

The Company shall cause minutes of all proceedings of every general meeting and of all proceedings of every meeting of its Board of Directors to be made within thirty days of the conclusion of every such meeting concerned, by making entry thereof in the books kept for that purpose with their pages consecuviently numbered. Each page of every such book shall be initialed or signed and the last page of the record of proceedings of each meeting in such books shall be dated and signed (a) in the case of minutes of proceedings of the meeting of the Board by the Chairman of the said meeting (b) in the case of minutes of proceedings of the general meeting with in the aforesaid period of thirty days or in the event of death or inability of the Chairman of the meeting with in the period, by a Director duly authorized by the Board for the purpose. The minutes of each meeting shall contain a fair and correct summary of the proceedings thereat. All appointments of officers made at any of the meetings aforesaid shall be included in the minutes

of the meeting. In the case of a meeting of the Board of Directors the minutes shall also contain:



- (a) The names of the Directors present at the meeting.
- (b) In the case of each resolution passed at the meeting, the names of the Directors, if any, dissenting from or not concurring with the resolutions.
- 40. Nothing contained in this Articles shall be deemed to require in any such minutes of any matter which in the opinion of the chairman of the meeting:
  - (a) Is or could reasonably be regarded as defamatory of any person.
  - (b) Is detrimental to the interests of the company.
  - (c) Is irrelevant or immaterial to the proceedings.

The chairman shall exercise absolute discretion in regard to the inclusion or noninclusion of any matter in the minutes on the grounds specified in these Articles,

Any such minutes kept in accordance with the above provisions of these articles shall be evidence of the proceedings recorded therein.

Where minutes of proceedings of any general meeting of the company or of any meeting of its Board of Directors have been made and signed in accordance with the provisions contained in preceding Articles then the contrary is proved, the meeting shall be deemed to have been duly called and held and all preceding there at to have duly taken place and in particular, all appointments of Directors made at the meeting shall be deemed to be valid.

#### SEAL

The directors shall provide a common seal for the purpose of the Company and shall have power from time to time to destroy the same and substitute a new seal in lieu there of and the Directors shall provide for the safe custody of the seal for the time being and the seal shall never be used except by the authority of the Directors previously given. Every deed or other instrument to which the seal of the company is required to be affixed shall unless the same is executed by a duly constituted attorney of the Company be signed by one Director at least in whose presence the seal shall be affixed

#### BOOKS OF ACCOUNTS, BALANCE SHEET AND AUDIT

43 The company shall duly comply with the requirement of sections 209,210,217 and 224 of the companies Act, 1956, in respect of the several matters provided therein.

#### DIVIDENDS AND RESERVES



- 44 The company in general meeting may declare dividends but no dividend shall exceed the amount recommended by the Directors.
- 45 The Board of Directors may create a general reserve or any other reserves to be applied for meeting contingencies or for equalizing dividends or for any other purposes and may recommend the allocation to the said fund or funds, out of the declared profits, such amounts as it thinks proper.

#### INDEMNITY

Every Director or other Officer of the Company shall subject to sections 201 and 633 of the companies Act, 1956, be indemnified against and it shall be the duty of the company to pay all costs, losses, expenses which any director or other officer of the company may incur or became liable by reason of any contract entered into or things done by him as such officer or in any way in the discharges of his duties.

#### SECRECY CLAUSE

47 No member shall be entitled to require disclosure of any information respecting any details of the Company's working or any matter in the nature of a trade secret, mystery of trade or secret process which may relate to the conduct of the business of the company and which in the opinion of the Directors it may be inexpedient in the interests of the Company to communicate to the public.

#### WINDING UP

- 48 In the winding up, the assets available for distribution amongst members shall (subject to the rights of members in respect of shares which confer special rights) be divided between the members in proportion to the amounts paid upon the shares held by them respectively.
- 49 Any of the assets of the Company may with the sanction of a special resolution be divided in specie amongst the members or be invested in trusts for the benefit of the member need not accept shares subjects to any liability.

Sl.No	Signature, Name, Address, Description and Occupation of the subscribers	Signature, Name, Address, Description and Occupation of Witness
1)	Sd/- N. Ravishankar N.RAVISHANKAR S/o.P. Natarajan No.1805, 28 <sup>th</sup> Street, I Block Kambar Colony, Anna Nagar West, Chennai - 600 040.  BUSINESS PAN. AAEPR 5270 K	Sd/- E. Balu E. BALU S/o.N.Elumalai No.172/93,Coral- Merchant Street., Chennai - 600 001.
2)	Sd/- R.Shanthi R.SHANTHI W/o.N.Ravishankar No.1805, 28 <sup>th</sup> Street, I Block Kambar Colony, Anna Nagar West, Chennai - 600 040. BUSINESS PAN. AASPS 3254 N	CHARTERED ACCOUNTANT. M.No.21400

Date: 26.04.2006

Place: Chennai.





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#### SPECIAL POWER OF ATTORENY

This Special Power of Attorney is executed on this the 1st Day of September 2023 at Chennai, By

Mr N.RAVISHANKAR, aged 61 years S/o. Natarajan, residing at No.1805, I- Block, 28th Street, Kampar Colony, Anna Nagar West Chennai-600040. (1).

Mrs.SHANTHI RAVISHANKAR, wife of Mr.N.Ravishankar, aged about 53 years, residing at Door No.1805, I Block, Kambar Colony, 28th Street, Anna Nagar West, Chennai - 600 040(2), Board of Directors of M/s.TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED, a Company incorporated under the Companies Act, 2013 (Certificate of Incorporation No.U63023TN2006PTC059635 issued by the Registrar of Companies, Tamilnadu), (PAN -AACCT4496J) having its registered office at No.325, Thambu Chetty Street, Chennai - 600001,

For TRIMAY WAREHOUSES

Managing Dire

For TRIWAY WAREHOUSES AND HOL

Director

WD BER



herein after referred to as the "said Company". Carrying on the business of Quarry hereby nominate, Constitute and appoint Mr.A.Manimaran, son of Mr. A. Anandan, aged 50 years, (hereafter called as the Power of Attorney) as our attorney to act for us in our name and on our behalf and for and in the name of the company to execute and perform all of any of the followings acts, deed, matters and things in the connection with the following works.

We hereby authorize Mr.A.Manimaran, son of Mr. A. Anandan the mentioned persons with regard to persons signature and to Visit Government Official to "Nadai Chittu" and, To sign all forms and applications for transfer of revenue records in the Corporation, To represent, appear and act any Municipal authority, Central or Stare Government District Board or any other authority and to make representations regarding the same orally or in writing, relating to the on my behalf in connection Quarry relating matters Authorized person.

- (1) To represent Power of Attorney is also authorized to swear the Affidavits, file application and appear before the Government Authorities, Organizations, Corporations, Persons, Companies in connection with the executing of aforesaid project on behalf of our company to sign all letters, receipts, documents, papers and writings whatsoever and to conclude all to the prospective departments and agencies.
- (2) To ask, demand, sue for recovery, receive and collect all money due payable to the said company in connection with the above work from any person or persons, company, association, Government Department, including any statutory body or authority and to give valid report and discharges thereof.
- (3) To Appear before and represent the Company before income tax, GST and other authorities, Municipal Corporation, etc., to sign all application and forms required for the licenses, permit, etc., from state Government, Central government, Municipal or other Statutory authority as may be necessary or requisite for the purpose of carrying on the aforesaid project.

For TRIMAY WAREHOUSES AND HOLDINGS PVT LTD.,
Managing Director

FOR TRIMAY WAREHOUSES AND HOLDINGS PVT LTD

Director

107 A



(4) I hereby agree and undertake to ratify and confirm all and whatsoever my said attorney, under the power in that behalf herein before contained, shall lawfully do, execute or perform in exercise of the power, authorities and liberty hereby conferred upon, under and by virtue of this deed.

IN WITNESS THEREOF, THE SPECIAL POWER OF ATTORNEY is signed by me on this 1st Day of September, 2023 at Chennai.

For TRIWAY WAREHOUSES AND HOLDINGS PVT LTD.

Managing Director

Board of Director

Director Board of Director

Specimen Signature of

Mr. A.Manimaran

Witness:

Stated (S. SELVOKUMOR) CS SELVOKUMOR) NO JOB, PONYMORAPOR BYM JUL Street, MASIARDIAM CHEDNAI - 60009) 2.S. (LEMMS)
NO. E3/282, 3rd Street
Burna Nagar Sadayun kuppi.
CLinneis -600/03



J.A. SELVAKUMAR ADVOCATE & NOTARY PUBLIC Old No.162, New No.344 Thambu Cherry Street, Chemos should. Webile: 94442 94240

108 A

ANNEXURE

#### TRIWAY WAREHOUSES AND HOLDINGS PRIVATE LIMITED Regd. Office: 14, Jaffer Syrang Street Chennai - 600 001

CIN: U63023TN2006PTC059635



EXTRACT OF THE SHAREHOLDERS RESOLUTION agreed and resolved on ANNUAL GENERAL MEETING OF SHAREHOLDERS held on Monday 30th day of September 2019 at the registered office of the Company situated at No.14, Jaffer Syrang Street, Chennai - 600 001 at 12.30 p.m.

The Chairman explained the members about the necessity for diversification of business as explained in the notice and explanatory note of the meeting.

(1) It was considered and thought fit, and the resolution was passed without modifications, as Special Resolution.

"RESOLVED THAT pursuant to provisions of Section 13 of the Companies Act, 2013, (including any modification or reenactment thereof) and other applicable provisions of the Act, the main object clause of the Memorandum of Association of the Company shall be altered and amended, without any further act or deed, to include the objects as mentioned below.

RESOLVED FURTHER THAT following clause shall be added to the Memorandum of Association of the Company and Memorandum of Association of the Company shall be altered and amended and necessary revisions in numbering of the clauses inserted shall be carried out.

(4) To mine, trade, manufacture, import, export, process blue metal, granite, dust, m-sand, p-sand, sand & other minerals and for the purpose of the same to acquire and take on lease the quarries.

RESOLVED FURTHER THAT for the purpose of giving effect to these resolutions, the Board thereof and/or any Director or any individual delegated with powers necessary for the purpose be and is hereby authorized to do all such acts, deeds, matters and things, as may be necessary, proper or expedient without being required to seek any further consent or approval of the Company or otherwise to the end and intent that they shall be deemed to have been given all necessary approval thereto expressly by the authority of this resolution.

This is the certified true copy of the minutes of the meeting of the extraordinary general meeting of the members of the company held on Monday the 30th day of September 2019 at the Registered office of the company at 12.30 p.m.

for Triway Warehouses and Holdings Private Limited

Place

Chennai

Date

30-09-2019

Managing Director.

DIN 004327236

SHANTHI RAVISHANKAR Director, DIN 01665388







இந்திய தனிப்பட்ட அடையாள ஆனைப்மைப்பு

#### இந்திய அரசாங்கம் Unique Identification Authority of India Government of India

பதிவு அடையாளம் / Enrollment No.: 1057/00087/02144

To g. stolessissis

N. Revishanker
S. S/O Neterajen
E. 1605, I BLOCK 28TH STREET
KAMBAR COLONY Anna Nagar West
Chennal
Temil Nadu 600040
9840099086





உங்கள் ஆகள் எண் / Your Aadhaar No. :

## 7425 1001 6096

ஆதார் - சரதாண மனிதவின் அதிகாரம்



भारत सरकार GOVERNMENT OF INDIA

நாவிசங்கர் N.Ravishankar நேந்தவருடன் / Year of Sinth : 1981 ஆன்பால் / Main

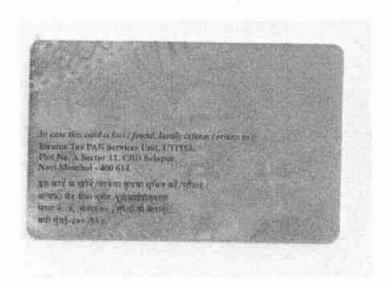


7425 1001 6096

ஆதார் - சுதரண மனிதவில் அதிகரும்







# அண்ணாமலைப் ANNAMALAI



**பல்கலைக்கழகும்** 

Reg. No.: 090895



அறிவியற்புலம் FACULTY OF SCIENCE

Gu, 2011 இல் பயன்பாட்டு நிலத்தியல்

பிரிவில்

<u>நடத்திய</u> தேர்வுகளில் வெங்கடகிரி பா/

கூடுதல்

மதிப்புப்புள்ளிகள் 10.00 க்கு சராசரியாக 6.03 பெற்று

் இரண்டாம் வகுப்பில்

தேர்ச்சியடைந்து முறையாக அமைக்கப்பெற்ற தேர்வுக்குமுவினர்

சான்றளித்தபடி.

அறிவியல் நிறைஞர்

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பெறுவதற்கு

உரியவர் ஆகின்றார்

என அண்ணாமலைப் பல்கலைக்கழக ஆளவை இதன்வழி

அறிவிக்கின்றது.

The Senate of the ANNAMALAI UNIVERSITY hereby makes known

that VENGATAGIRI B

has been admitted to the

MASTER OF SCIENCE in APPLIED GEOLOGY, Degree of

he/she having secured OGPA of 6.03 / out of 10.00 been certified

duly

appointed

Examiners

the

Examination held

MAY.2011

to be qualified to receive the same,

he/she was placed in SECOND CLASS.

பல்கலைக்கழக முத்திரை பெறுகின்றது Given under the seal of the University



அண்ணாமலைநகர் Annamalainagar

நாள்:

Dated: 09/11/2011

துணை தேர்வாணையர் (கல்விச்சிர்ந்த) Dy. Controller of Examinations (Academic)

4. Whialt

Dr.M.Rathinasabapathi பதிவாளர்

Registrar

Dr.M.Ramanathan துணை வேந்தர் Vice-Chancellor

# MINISTRY OF LABOUR AND EMPLOYMENT DIRECTORATE OF MINES SAFETY

Genificate of practical expenence granted by the Manager to a Candidate for a Manager's / surveyor's / Mining Foreman / Mining Mate / Blasters Certificate of Competency Examination under the metalliferous Mines Regulations 1961

I M. 9 PAYET being the owner / Agent / Manager of KINTICHAMPATTI MULTICOLOR GRANTE Mine belonging to Ms. Reaning Kumar Lokia do hereby certify that

Shi B. VENGADAGIRT S/o Shi D. BALASUARAMANTAN whose signature is appended, worked in the above Mines from 15.07 Large to 2/1/6.0/1/6 and is still working. Daring his term of work he has obtained produced experience as detailed overleaf. The duties connected with his work have involved his continuous attendance at the Mine and have been efficiently performed by him.

I believe him to be a good character and a fit and proper person to be examined for a or informe of competency.

For K.Pitchampatti Multipolour Grands and a

Signature with Date M S TO MANAGER (MINES)

MANAGER (MINES)

Owner/Agent Managemulticolour granite mine
K. PITCHAMPATTI

Post | K P IT CH OMPOKAPUR - TALUK & DIST

District KARUR

State TAMILNADU

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State the name of the Mineral Works.

MULTI COLOUR GRANITE

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INSTRUCTIONS:-

State clearly the nature of duties

For K.Pitchampatti Multicolope Granite Mines A WANAGER IMINES!

SIGNATURE OF MANAGER WITH DATE MANAGER (MINES)

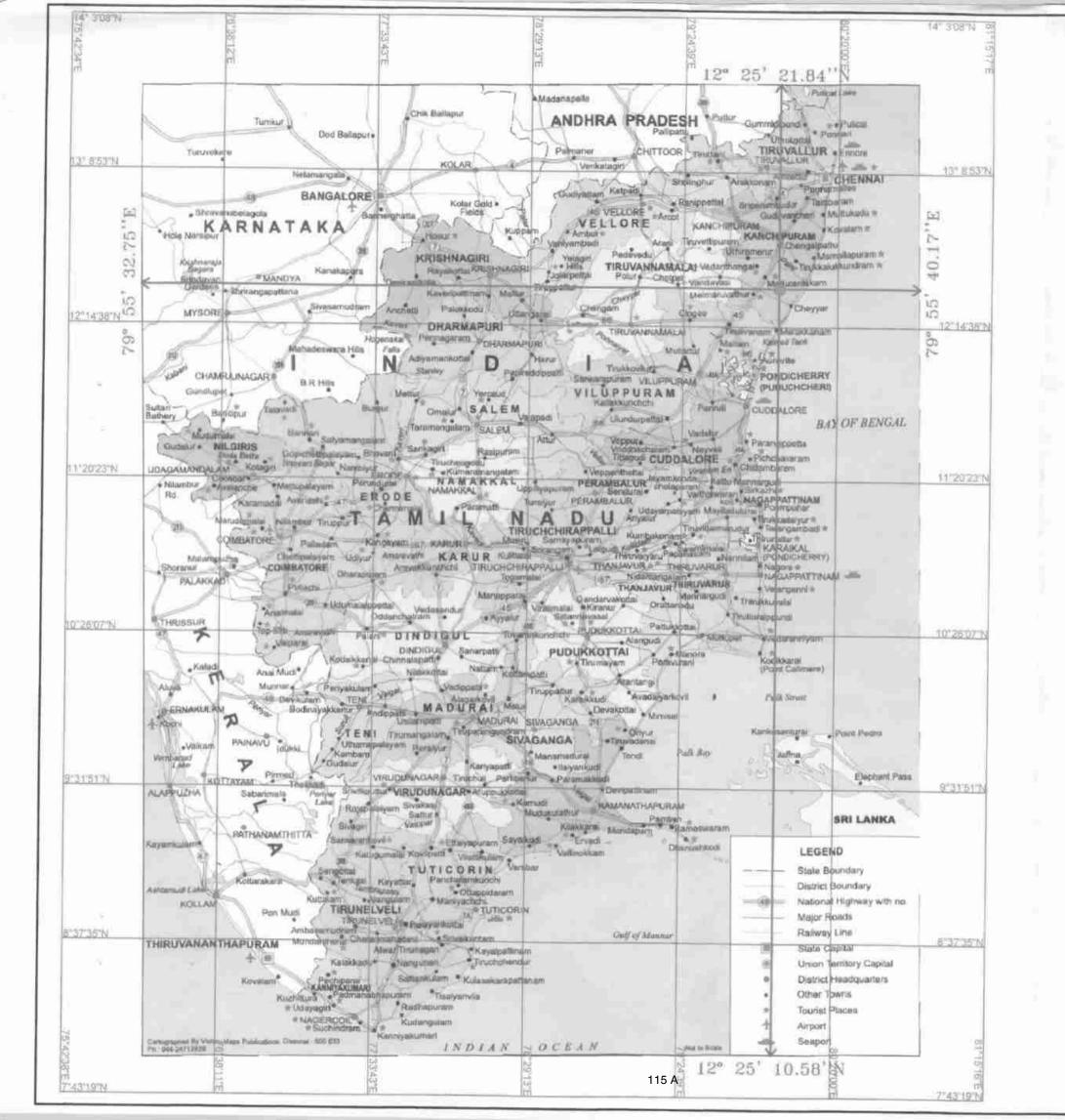
MULTICOLOUR GRANITE MINE K. PITCHAMPATTI, KARUR - TALUK & DIST

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Delete if the mine is Metalliferous mine. H. Addison

Delete if the mine coal mine.





#### PLATE NO:I

DATE OF SURVEY: 28,10,2023

#### APPLICANT:

TVI.TRIWARY WARE HOUSES & HOLDING Pvt Ltd., No.14,JAFFER STREET, CHENNAI-600 001.

#### LOCATION OF QUARRY:

S.F.NO : 14/1A,1B,2 & 15/3,

EXTENT : 4.54.00Ha,

VILLAGE : NETRAMPAKKAM,

TALUK : MADURANTHAGAM,

DISTRICT : CHENGALPATTU.

CTATE TANKER OF

STATE : TAMILNADU

#### INDEX

Q. L.A. AREA



TOPO SHEET NO.: 57 P/15

LATITUDE: 12° 25' 10.58"N to 12°25' 21.84"N

LONGITUDE: 79° 55' 32.75"E to 79° 55' 40.17"E

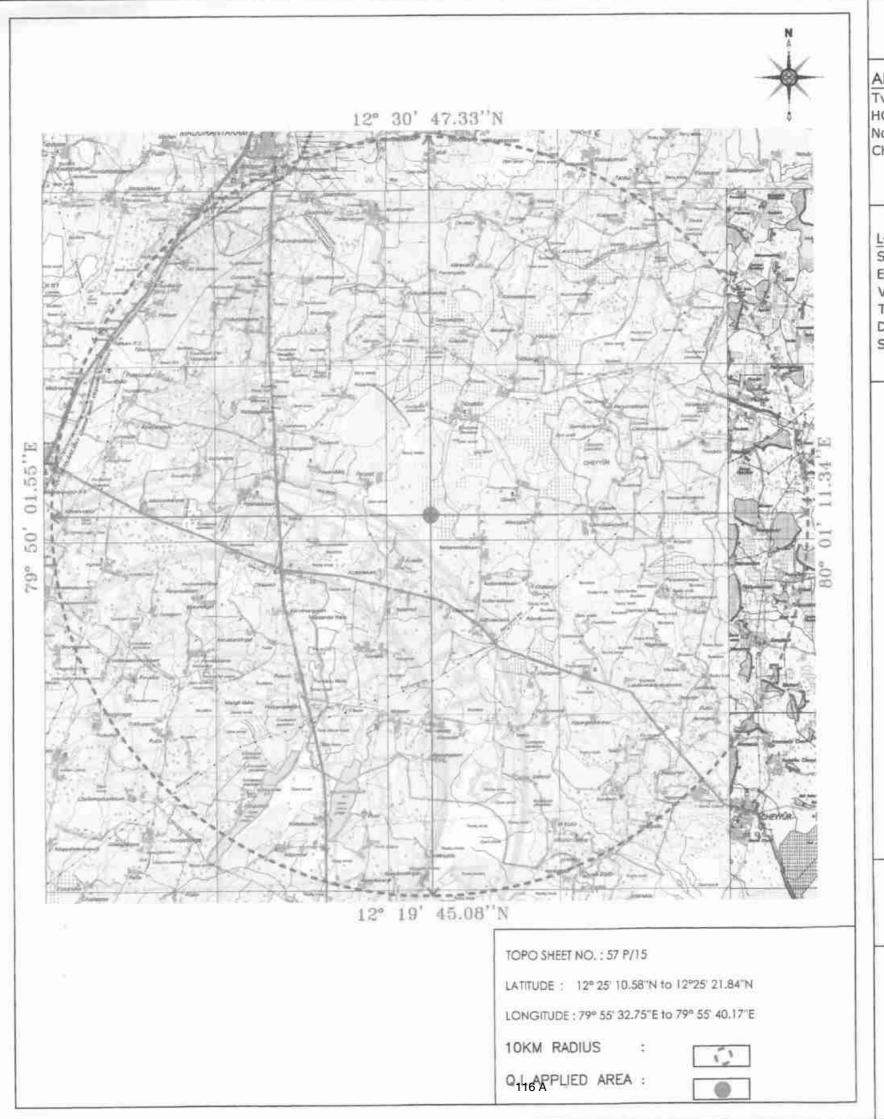
#### LOCATION PLAN

SCALE 1:24,00,000

#### PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED

B.VENGASAGIRI, B.Sc., OUALTIED EDISSON Under Rule 15(1)(o)and(b)of MCR.2016



8

## PLATE NO:I-A

DATE OF SURVEY: 28.10.2023

### APPLICANT:

TVI.TRIWARY WARE HOUSES HOLDING PVt Ltd., No.14,JAFFER STREET, CHENNAI-600 001.



#### LOCATION OF QUARRY:

S.F.NO : 14/1A,1B,2 & 15/3,

EXTENT : 4.54.00Ha,

VILLAGE : NETRAMPAKKAM, TALUK : MADURANTHAGAM,

DISTRICT : CHENGALPATTU,

STATE : TAMILNADU

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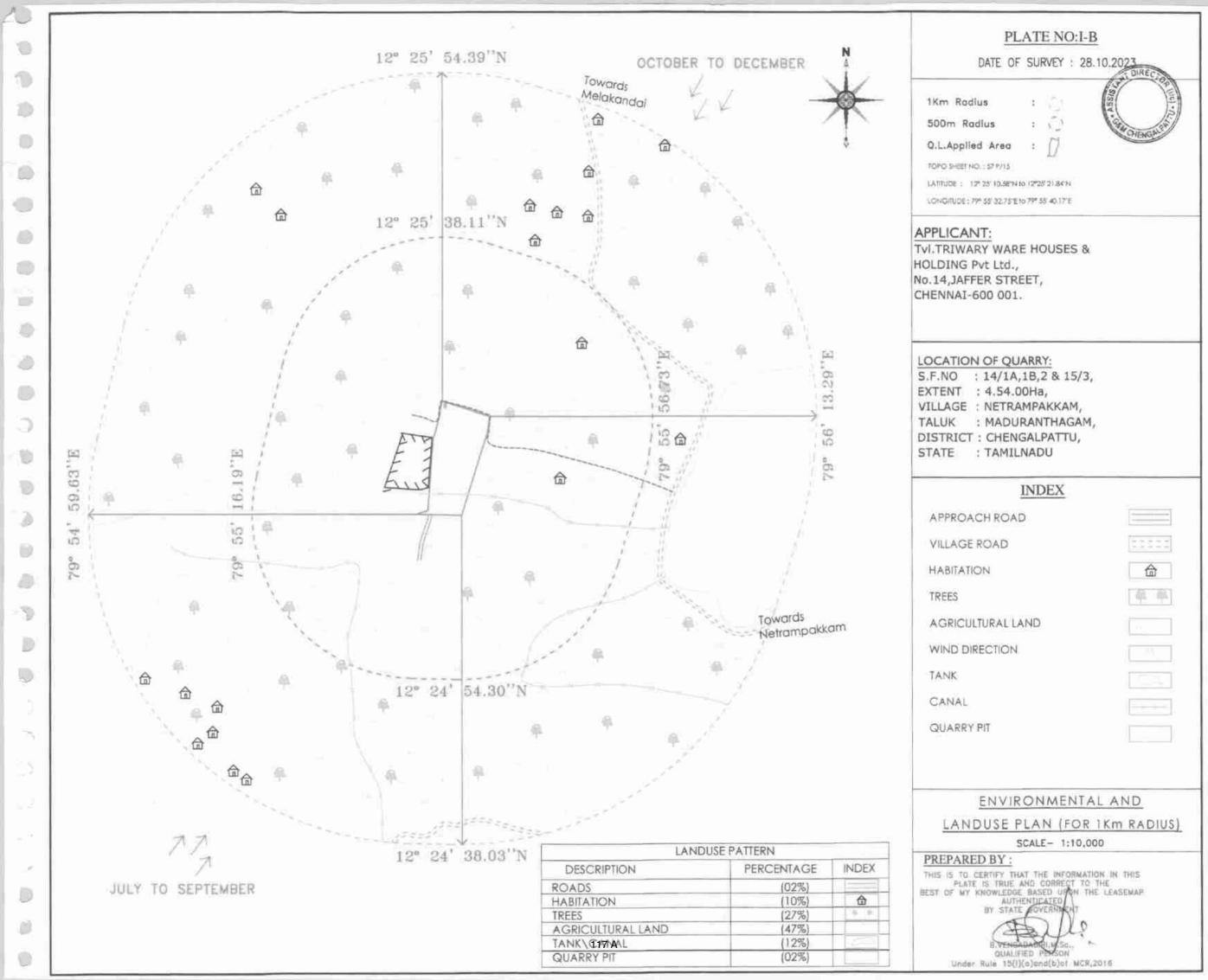
# TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

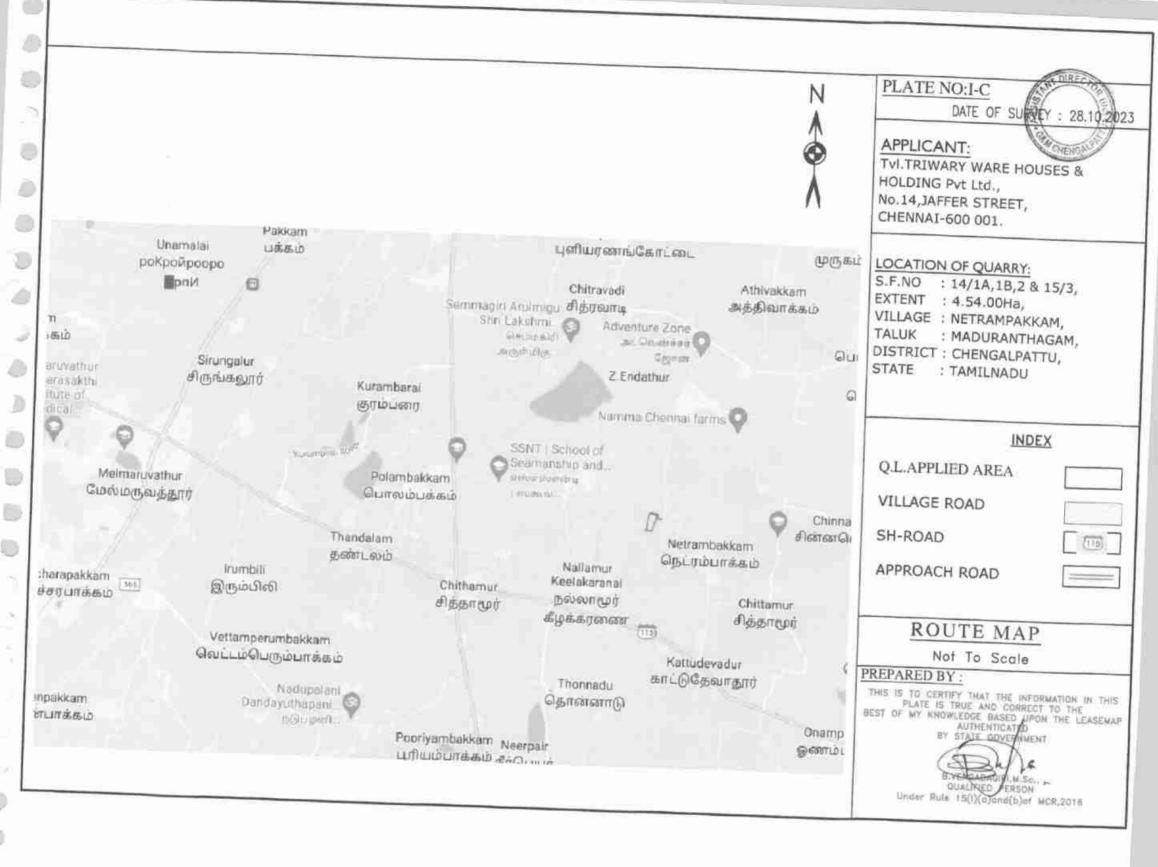
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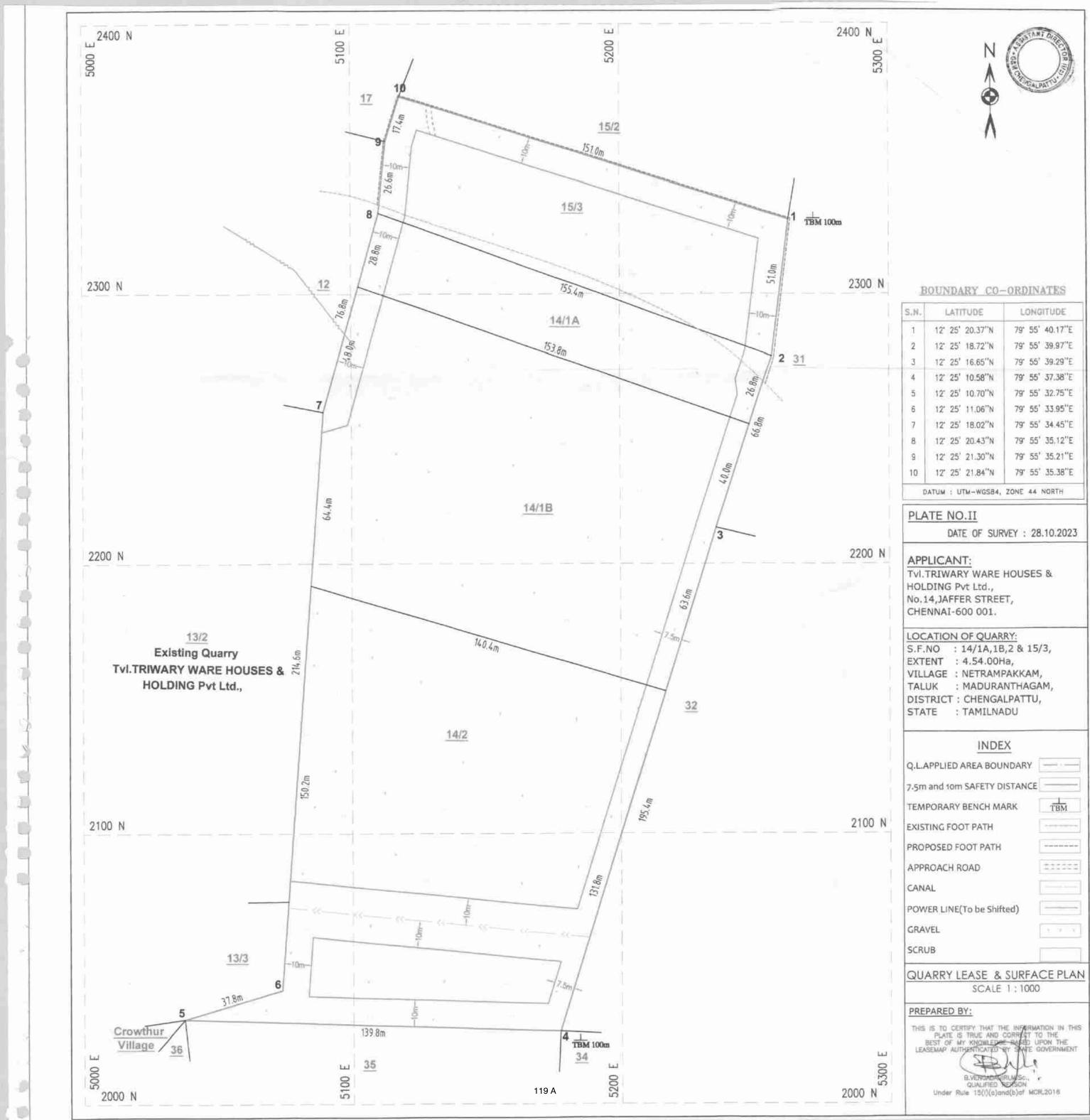
#### PREPARED BY:

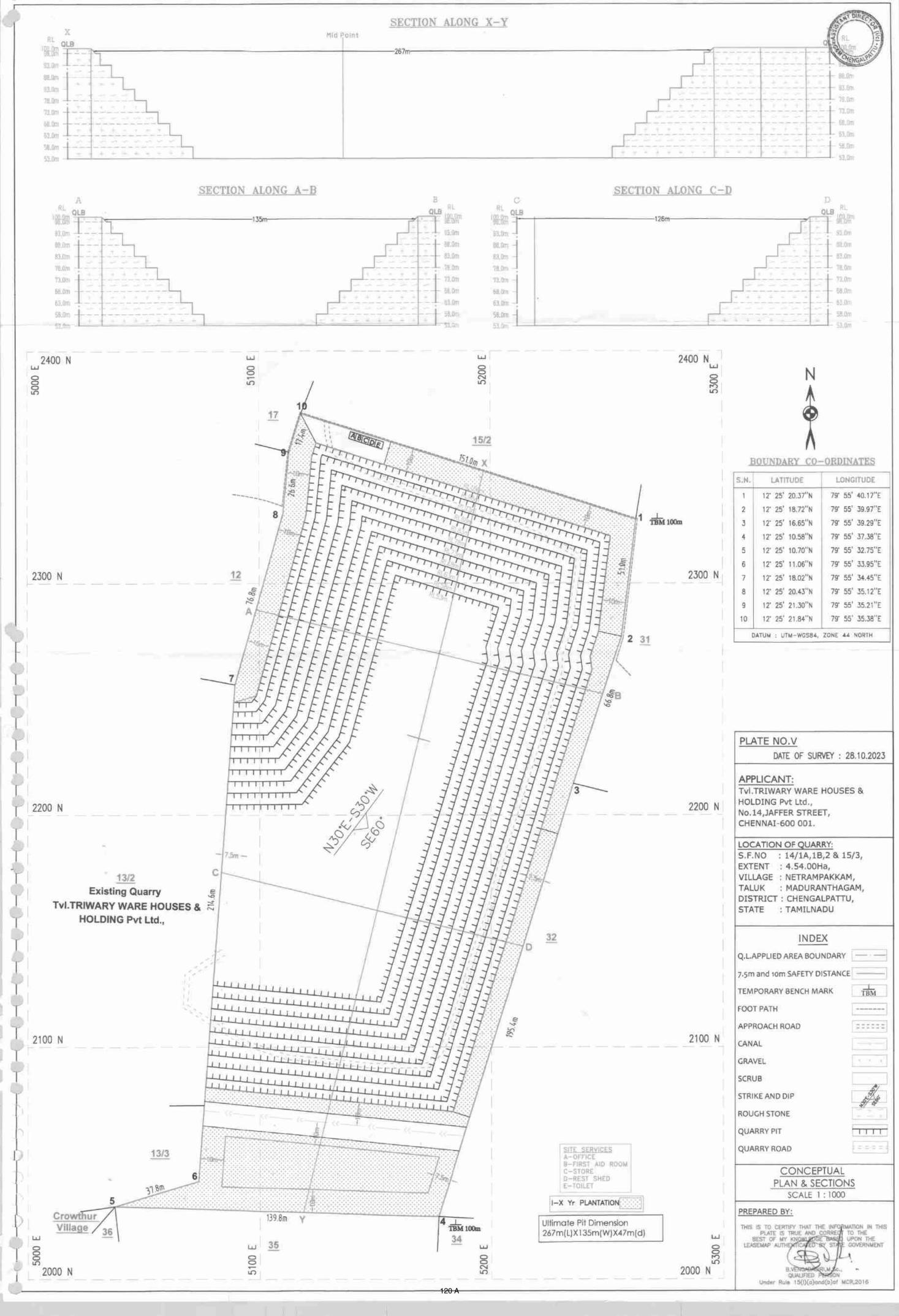
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP AUTHENTICATED

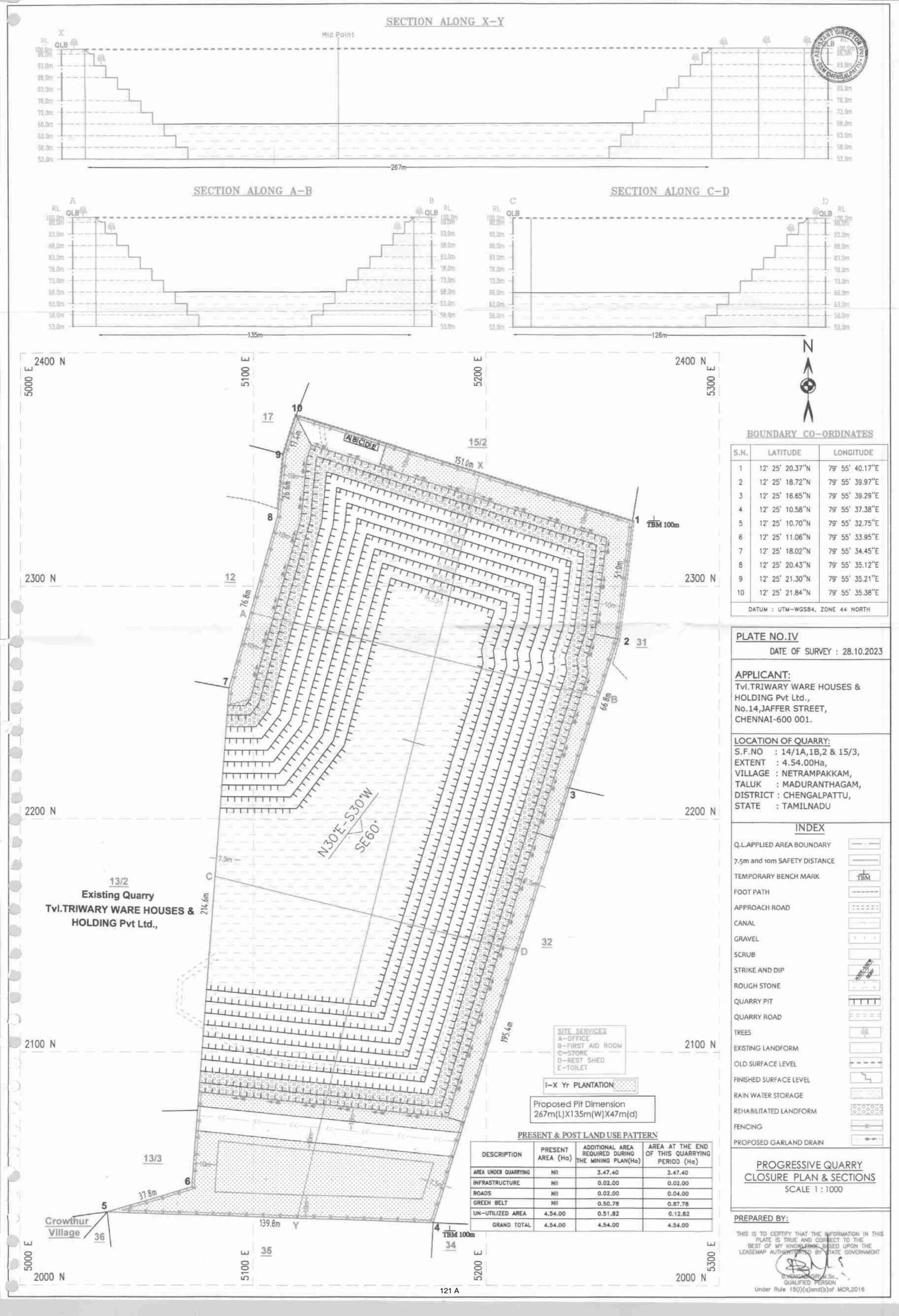
B. VENCADLOFFI, M.S., QUALIFIED PERSON Under Rule 15(1)(a)and(b)a1 MCR,2016

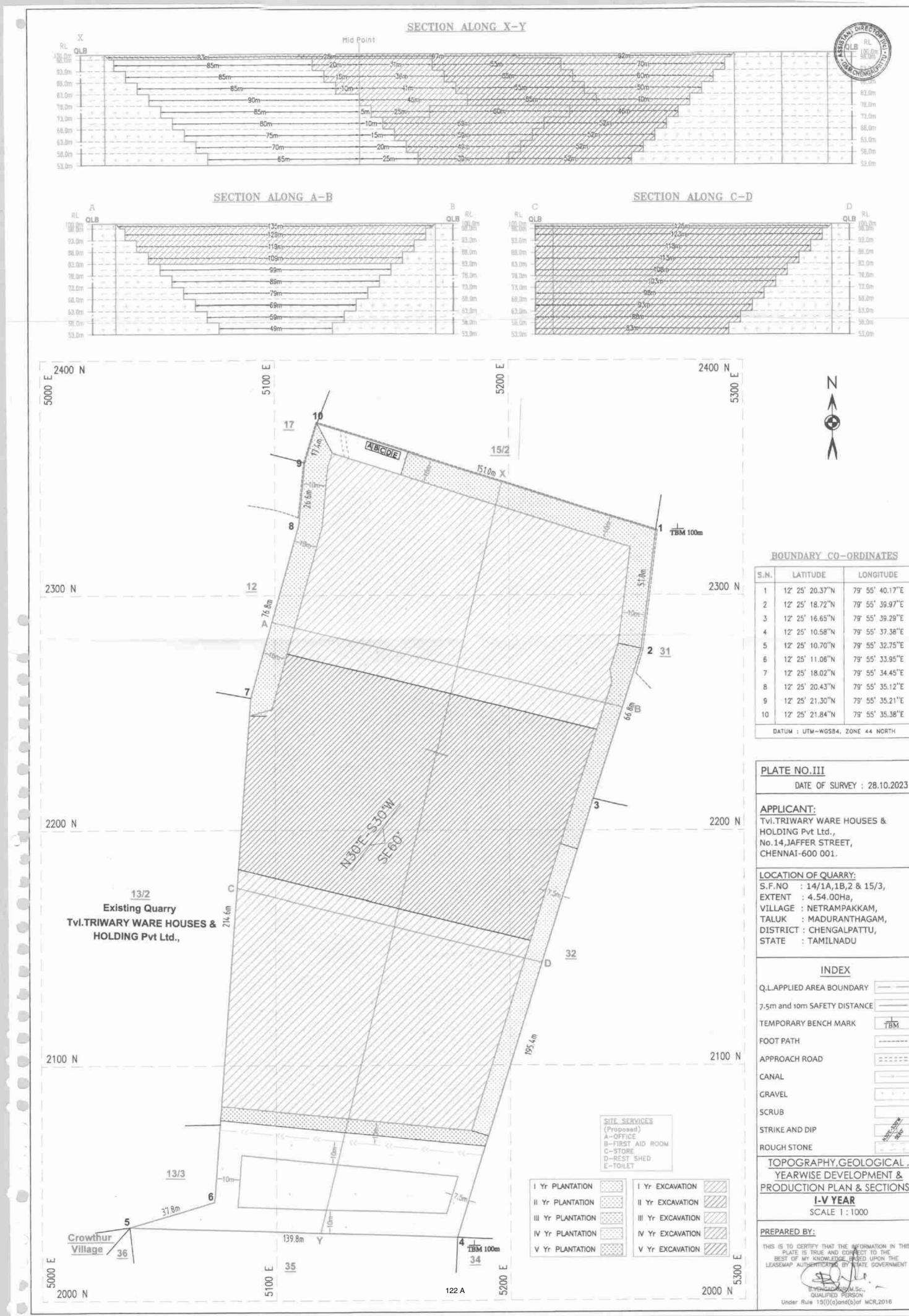




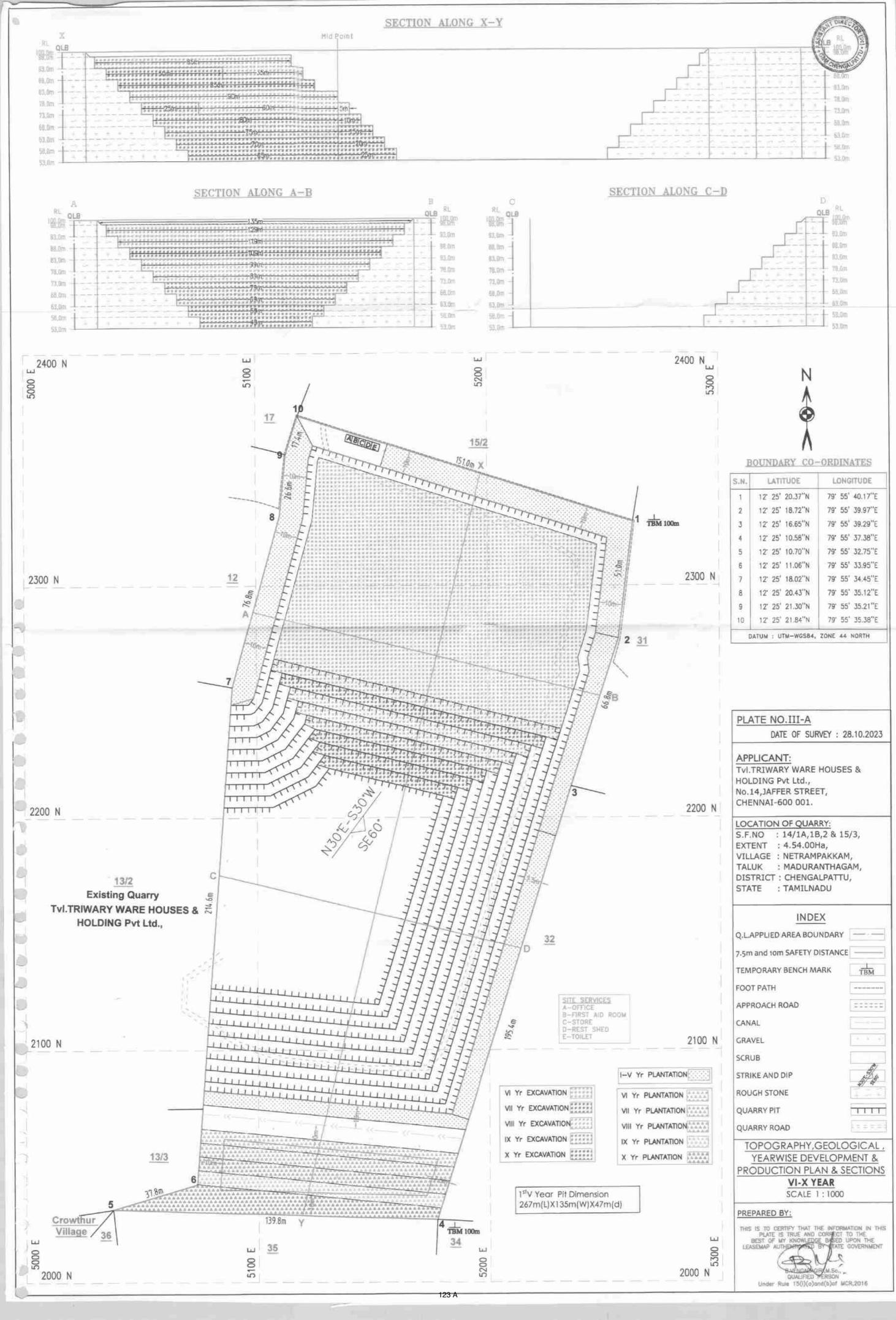


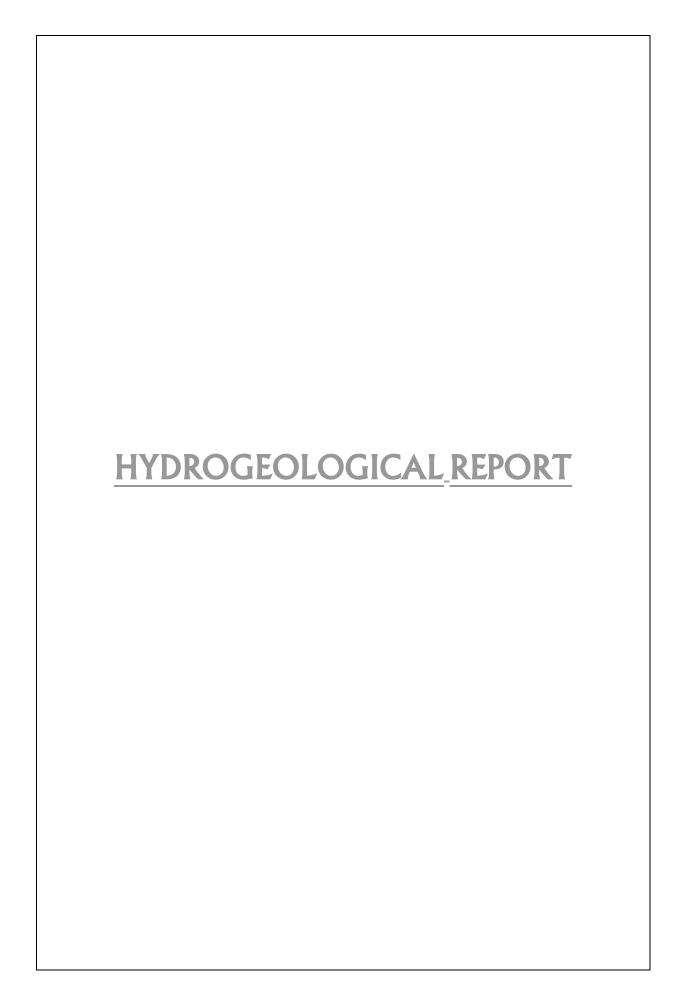






TBM





## HYDRO GEOLOGICAL REPORT

#### 1. INTRODUCTION

#### NAME OF THE APPLICANT WITH ADDRESS-

NAME OF THE APPLICANT: Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

No.14, Jaffer Street,

Address : Chennai

State with Pin Code : Tamil Nadu -600001

Mobile No : +91 98407 17088

Aadhaar No : 7425 1001 6096 (Annexure No. X)

Email ID : manimaran@triway.in

**DETAILS OF THE AREA-**

Survey No : 14/1A, 14/1B, 14/2 & 15/3

Extent : 4.54.0ha

Village : Netrampakkam
Taluk : Maduranthagam

District : Chengalpattu

The Client requires detailed information on Ground Water Occurrences at Proposed Project Site. The objective of the present study is to assess the availability of groundwater and comment on aspects of depth to potential aquifers, aquifer availability and type, possible yields and water quality. For this purpose, all available hydrogeological information of the areas has been analyzed, and a geophysical survey was done.

The investigations involved hydrogeological, geophysical field investigations and a detailed study in which the available relevant geological and hydrogeological data were collected, analyzed, collated and evaluated within the context of the Client's requirements. The data sources consulted were mainly:

- a) Central Ground Water Board (CGWB) Data
- b) State & District Geological and Hydrogeological Reports and Maps.
- c) Technical reports of the area by various organizations.

#### 2. SCOPE OF THE WORKS -

The scope of works includes:

- Site visits to familiarize with the project areas. Identify any issues that might impact the Ground Water Scenario due to proposed mining activities.
- To obtain, study and synthesize background information including the geology, hydrogeology and existing borehole data, for the purpose of improving the quality of assessment and preparing comprehensive hydrogeological reports,
- To carry out hydrogeological evaluation and geophysical investigations in the selected sites in order to determine potential for groundwater at project site.
- To prepare hydrogeological survey reports in conformity with the provisions of the
  rules and procedure outlined by the Central Ground Water Board (CGWB), by
  Assessment of water quality and potential infringement of National standards,
  Assessment of availability of groundwater and Impact of proposed activity on aquifer,
  water quality and other abstractors.

#### 3. BACKGROUND INFORMATION

#### Geographical information of the study area-

The investigated site falls in the Toposheet No: 57 P/15 Latitude between 12° 25' 10.58" N to 12° 25' 21.84" N and Longitude between 79° 55' 32.75" E to 79° 55' 40.17" E on WGS datum-1984.

#### REGIONAL GEOLOGY OF CHENGALPATTU DISTRICT-

The Chengalpattu district is endowed with a complex geological set up with crystalline rocks occurring in the southern part of the area and the northern part of the area the crystalline rocks occur at depths covered by sedimentary formations ranging from Gondwana to Recent. The Precambrian crystalline rocks are represented by charnockites and contain several enclaves mafic granulite. Garnetiferous biotite gneisses, leptinites and banded magnetite quartzites are also encountered as linear bands. Intrusions of dolerite dykes are also found.

The exposes crystalline rocks of Archaean age and sedimentary rocks of Gondwana Supergroup and the Cuddalore Formation belonging to Mio-Pliocene age. A gravel and shingle bed locally known as Kanjeevaram Gravels belongs to the Pliocene to lower Pleistocene age. The laterite and alluvium are related to Quaternary age.

The Archaean rocks are represented by Khondalite Group, Charnockite Group and Migmatite complex. Garnet sillimanite gneiss is well exposed in the northeastern part of the district in Pachchamalai hill at Chrompet, Parangimalai and southeast of Pallavaram. In Pachchamalai hill it is essentially a quartz sillimanite rich rock with minor amount of felspar. In Tambaram hill, chanockite and metapellite are intimately interbanded, particularly along the hinge zones. Isolated outcrops are also seen on either side of National Highway No.45 near Kadaperi. The major part of the district is occupied by charnockite with enclaves of khondalite, leptynite and BMQ seen around St. Thomas Mount, east of Guduvancheri, Madurantakam, and Paler and around Tirukkalukkunram. St. Thomas mount is an extensively studied type area for the chamockite. It is a typical rock with bluish grey quartz, hard and compact, jointed showing recognizable foliation at places. The outcrop stands out prominently as isolated cluster of hills.

The lower Gondwana sediments (Talchirs) overlie the Archaean rocks unconformably and are seen to the northeast and south of Palar River preserved in the trough faults and comprise boulder beds, dirty white to light green, greyish yellow fine sandstone, siltstone with clasts of rock fragments and khaki green to greenish grey shales.

Charnockite is applied to any orthopyroxene-bearing quartz-feldspar rock, composed mainly of quartz, perthite or antiperthite and orthopyroxene (usually hypersthene) formed at high temperature and pressure, commonly found in granulite facies metamorphic regions, as an end-member of the charnockite series.

#### Silt

Silt is granular material of a size between sand and clay, whose mineral origin is quartz and feldspar. Silt may occur as a soil (often mixed with sand or clay) or as sediment mixed in suspension with water (also known as a suspended load) and soil in a body of water such as a river. It may also exist as soil deposited at the bottom of a water body, like mudflows from landslides. Silt has a moderate specific area with a typically nonstick, plastic feel. Silt usually has a floury feel when dry, and a slippery feel when wet. Silt can be visually observed with a hand lens.

#### Stratigraphy sequences of Chengalpattu District

Age	Formation	Lithography
Recent	Alluvium and beach sands	Sand, gravel, silt and clay
Pleistocene	Laterite, soils, talus	Laterites, sandy clay, silt
Pleistocene to upper Miocene	Conjeevaram gravels	Boulders, cobbles Pebbles and gravels chiefly of quartzites
Lower Cretaceous to Jurassic	Sandstones &Shales	Fine to medium grained sand stone with clay intercalations of greenish soft shale
	Boulder bed	Big boulders of granite gneiss with or without Matrix of clay and the sand
	Unconformity	
Archaean	Crystalline formations	Mixed gneisses, charnockites, granites and associated basic and ultra basic intrusive

#### 4. GEOPHYSICAL INVESTIGATION METHODS

A variety of methods are available to assist in the assessment of geological sub-surface conditions. The main emphasis of the fieldwork undertaken was to determine the thickness and composition of the sub-surface formations and to identify water-bearing zones. This information was principally obtained in the field using, and vertical electrical soundings (VES). The VES probes the resistivity layering below the site of measurement. This method is described below.

#### **Resistivity Method**

Vertical electrical soundings (VES) were carried out to probe the condition of the subsurface and to confirm the existence of deep groundwater. The VES investigates the resistivity layering below the site of measurement.

#### **Basic Principles**

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower

is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A, expressed as: R = Rs \* L/A (in Ohm)

Where Rs is known as the specific resistivity (characteristic of the material and independent of its shape or size) With Ohm's Law,

$$R = dV/I$$
 (Ohm)

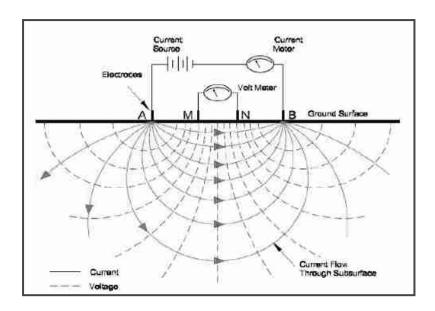
Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$Rs = (A/L) * (dV/I) (in Ohm m)$$

#### **Vertical Electrical Sounding (VES)**

When carrying out a resistivity sounding, current is led into the ground by means of two electrodes. With two other electrodes, situated near the center of the array, the potential field generated by the current is measured. From the observations of the current strength and the potential difference, and taking into account the electrode separations, the ground resistivity can be determined. During a resistivity sounding, the separation between the electrodes is step-wise increased (known as a Schlumberger Array), thus causing the flow of current to penetrate greater depths. When plotting the observed resistivity values against depth on double logarithmic paper, a resistivity graph is formed, which depicts the variation of resistivity with depth. This graph can be interpreted with the aid of a computer, and the actual resistivity layering of the subsoil is obtained. The depths and resistivity values provide the hydro geologist with information on the geological layering and thus the occurrence of groundwater.

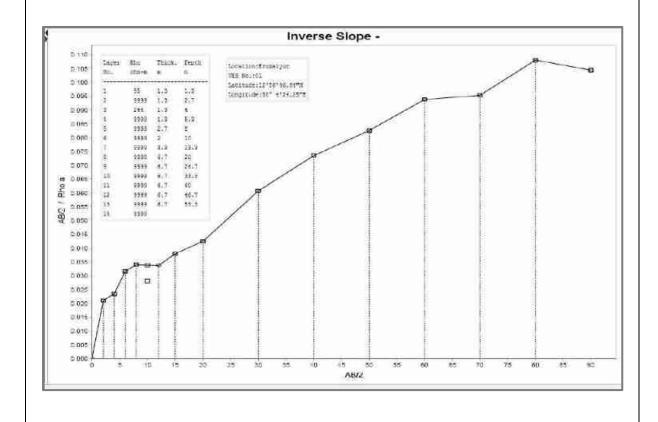
# Geophysical Survey at study area



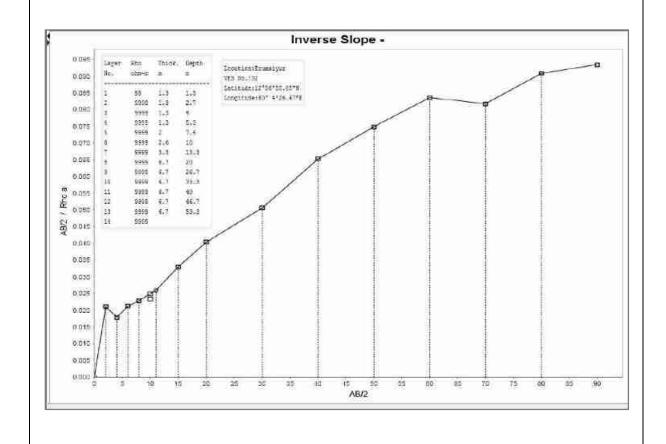


# Geophysical Data's and Inver slop method Graphs

S	TATION	I-1- 12°25	5'16.65"N 79	°55'39.2	9"E
S.No	<i>Ab</i> /2	Mn/2	K	R	Rho
1	2	1	4.71	20.25	95.42
2	4	1	23.55	7.27	170.97
3	6	1	54.95	3.46	190.13
4	8	1	98.91	2.38	235.41
5	10	1	155.45	1.90	295.36
6	10	5	23.55	15.05	354.66
7	15	5	62.80	6.30	395.64
8	20	5	117.75	4.00	471.00
9	30	5	274.75	1.80	494.55
10	40	5	494.55	1.10	544.01
11	50	5	777.15	0.79	606.18
12	60	5	1122.55	0.57	639.85
13	70	5	1530.75	0.48	734.76
14	80	5	2001.75	0.37	740.65
15	90	5	2535.55	0.34	862.09
16	100	5	3132.15	0.32	970.97



S	TATION	l-2 - 12°2	25'21.30"N 7	'9°55'35.	21"E
S.No	<i>Ab</i> /2	Mn/2	K	R	Rho
1	2	1	4.71	20.25	95.42
2	4	1	23.55	9.57	225.14
3	6	1	54.95	5.16	283.54
4	8	1	98.91	3.56	352.12
5	10	1	155.45	2.59	402.62
6	10	5	23.55	18.26	430.02
7	15	5	62.80	7.25	455.93
8	20	5	117.75	4.21	494.55
9	30	5	274.75	2.16	593.46
10	40	5	494.55	1.23	613.24
11	50	5	777.15	0.86	668.35
12	60	5	1122.55	0.64	718.43
13	70	5	1530.75	0.56	857.22
14	80	5	2001.75	0.44	880.77
15	90	5	2535.55	0.39	963.51
16	100	5	3132.15	0.34	1064.93



#### 5. Conclusion -

Based on the available information and the geophysical investigations it is concluded that the project area is considered to have medium to good groundwater potential. Productive aquifers are expected within weathered/fractured metamorphic terrain. Present scenario is shallow aquifers are expected above 85-90m BGL. The ultimate pit limit as per the approved mining plan depth is 47m below ground level which will have no impact on the Ground Water.

Dr. P. Thangaraju, M.Sc., Ph.D.,

Duymy-

Govt. Approved Hydro Geologist

M/s. Geo Exploration and Mining Solutions,

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Alagapuram, Salem – 636 004, Tamil Nadu

Mobile: +91 - 94433 56539

E-Mail: infogeoexploration@gmail.com

அனுப்புநர் திரு.ஆதியாகராஜன், வருவாப் கோட்டாட்சியர் மதுராந்தகம் பெறுநர் மாவட்ட ஆட்சித்தலைவர் செங்கல்பட்டு

#### ந.க. எண் 442/2022/ஆ், நாள் 12.09.2023

ஐயா.

பொருள் கணிமங்களும் குவாரிகளும் - செங்கல்பட்டு மாவட்டம் மதுராந்தகம் கோட்டம் - மதுராந்தகம் வட்டம் - நெ.179. நெட்ரம்பாக்கம் கிராமம் புல எண்.14/1A ல் 0.40.5 ஏர்ஸ் மற்றும் சில புலங்களின் மொத்த விஸ்தீரணம் 4.54.00 ஹெக்டேர் பரப்பளவில் சாதாரண கற்கள் கிராவல் மண் வெட்டியெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி M/s.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர் குத்தகை உரிமம் கோரியது அறிக்கை அனுப்புதல் - தொடர்பாக.

பார்வை 1.செங்கல்பட்டு, துணை இயக்குநர் / உதவி இயக்குநர் (பொ)
புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் கடிதம்
ந.க.எண்.1944/கணிமம்/2022 நாள்.10.02.2023.
2.இவ்வலுவலக இதே எண்ணிட்ட கடித
நக.எண்.442/2022/ஆ, நாள்.23.02.2023.

3உதவி இயக்குநர் (பொ) புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் கடிதம் ந.க.எண்.1944/கனிமம்/2022 நாள்.11.08.2023.

4.இவ்வலுவலக இதே எண்ணிட்ட கடித ந.க.எண்,442/2022/ஆ, நாள்.11.08.2023. 5.மதுராந்தகம். வட்டாட்சியரது ந.க.எண்,4074/2023/அ1, நாள்.11.09.2023

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செங்கல்பட்டு மாவட்டம். மதுராந்தகம் வட்டம், நெ.179. நெட்ரம்பாக்கம் கிராமம் புல எண்.14/1A-ல் (0,40.50) .14/1B (1,62.00),15/3 (0.72.00) புல எண்களில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி M/s.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர்மனு செய்து கூடுதலாக புல எண் 14/2(1,79.50) -ணை சேர்த்து குவாரி பணி செய்ய அனுமதி கோரியது தொடர்பாக

எனதறிக்கையினை பின்வருமாறு சமர்பிக்கிறேன்

மனுதாரர் குவாரி குத்தகை உரிமம் கோரிய புலங்கள் கிராம கணக்கு உட பதிவேட்டில் பின்வருமாறு தாக்கலாகியுள்ளது. நில உடமை மேம்பாட்டுத்திட்ட "அ:" பதிவேடு

ഖ്യിതச ഒൽ.	வருவாய்	e e e e e e e e e e e e e e e e e e e	பரப்பு/ எக்டேரில்	வகைபா டு	பட்டா எண் மற்றும் பட்டாதாரர் பெயர்
1	நெ.179.	14/1	2.02.5	புண்செய்	63, பாலசுந்தரம்
2	நெட்ரம்பாக்கம்	14/2	179.5	புண்செய்	58பாபங்கஜ்ம்மாள்
3		15/3	0.72.0	புண்செய்	141.மு.கிருஷ்ணபிள்ளை(1) வி.குப்பம்மாள்(2), அநரசிம்ம பிள்ளை(3)

மேற்படி புலங்கள் தற்போது தமிழ்நிலம் -அ- பதிவேட்டில் பினடவருமாறு

ഖ്യിതச எ <b>ത്</b> ദ.	வருவாய் கிராமம்	പരാ	பரப்பு/ எக்டேரி ல்	வகைபாடு	பட்டா எண் மற்றும் பட்டாதாரர் பெயர்
1	நெ.179.	14/1A	0.40.5	புண்செய்	301, சங்கர்ஸ்பார்ம்
2	நெட்ரம்பாக்கம்	14/1B	1.62.0	புண்செய்	44.ரவிசங்கர்
3		14/2	1.79.5	புண்செய்	44. ரவிசங்கர்
4		15/3	0.72.0	புண்செய்	301. சங்கர்ஸ்பார்ம்
மொத்த	விஸ்தீரணம்		4.54.0		

மேற்படி புலங்களின் பட்டாதாரரான திரு.ரவிசங்கர் மற்றும் சங்கர்பார்ம் நிறுவனத்தினர் Mrs.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர் குவாரி பணி மேற்கொள்ள ஒப்பந்தம் செய்துள்ளனர்.

மேற்படி புலங்களில் குவாரி பணி செய்வது தொடர்பாக 17.08.2023 அன்று கிராமத்தில் பொது விளம்பரம் செய்யப்பட்டது. மேற்படி பொது விளம்பரத்தில் கிராம பொது மக்கள் கையொப்பமிட்டுள்ளனர் எனவும், பொது மக்களிடமிருந்து ஆட்சேபணைகள் ஏதும் எழுத்து பூர்வமாக வரப்பெறவில்லை என்பது வட்டாட்சியர் அறிக்கையின் மூலம் தெரியவருகிறது.

மேலும் மனுதாரர் குவாரி பணி செய்ய அனுமதி கோரும் பிரஸ்தாப புலங்களுக்கு உள்ளே அரசு புறம்போக்கு நிலங்கள் ஏதும் இல்லை. மனுதாரர் அனுமதி கோரும் புல எண் 32 லிருந்து புல எண்.14/2-ன் வழியாக ஒரு பூஸ்துதி கால்வாய் புல எண் 13-யை அடைகிறது. மேலும் மற்றொரு பூஸ்துதி கால்வாய் புல எண்.32-லிருந்து புல எண்.14/18-ன் வழியாக சென்று புல எண்.13-யை அடைகிறது. தற்போது புல எண்.13-ல் மனுதாரருக்கு ஏற்கனவே குவாரி அனுமதி வழங்கப்பட்டு குவாரி பணி நடைபெற்று வருகிறது.மேலும் புல எண். 14/2-ன் வடகிழக்கு பகுதியில் வண்டிப்பாதை ஒன்றும் நடைபாதை ஒன்றும் உள்ளது.மேற்படி பாதைகள் தற்போது பயன்பாட்டில் இல்லை என்பது வட்டாட்சியர் அறிக்கையின் மூலம் தெரியவருகிறது. மேலும் விசாரணையில் மனுதாரர் புல எண்.14 ன் வழியாக செல்லும் இரண்டு கால்வாய்களும் புல எண்.13-ல் முடிவடைவதாகவும் புல எண்.13-ல் தற்போது குவாரி பணி செய்து வருவதாகவும் வேறு நிலங்களுக்கு இக்கால்வாய் பாசன வசதியில்லை எனவும், எனவே குவாரி பணி செய்ய உள்ளதால் தங்களுக்கு கால்வாய் தேவையில்லை எனவும், மேற்படி கால்வாய் மற்றும் வண்டிப்பாதைகளுக்கு போதிய பாதுகாப்பு இடைவெளி கனிம விதிகளின் படி விட்டு குவாரி பணி செய்ய அனுமதி வழங்குமாறும் கோரியுள்ளார்.

மனுதாரருக்கு ஏற்கனவே புல எண்.13-ல் குவாரி அனுமதி வழங்கப்பட்டு தற்போது குவாரி பணி செய்யப்பட்டு வருகிறது. மேற்படி குவாரிக்கான பாதையையே தற்போது அனுமதி கோரும் குவாரிக்கும் பாதையாக பயன்படுத்துவதாக மனுதாரர் தெரிவித்துள்ளார்.

அனுமதி வழங்க கோரும் புலத்தின் வடக்கு பகுதியில் சுமார் 20 மீட்டர் தொலைவில் மேற்கில் இருந்து கிழக்காக தாழ்வு அழுத்த மின் கம்பி ஒன்று செல்கிறது. அதை தவிர்த்து சுற்றளவுக்குள் உயர் மற்றும் தாழ் மின்னழுத்த கம்பிகள் ஏதுமில்லை. அனுமதி கோரும் புலத்தின் 50 மீட்டர் சுற்றளவில் மயானம் ஏதும் இல்லை. குவாரி குத்தகை உரிமம் கோரும் புலத்தின் எல்லகைள் வரையறுக்கப்பட்டு கற்கள் நடப்பட்டுள்ளது.

மேலும் அனுமதி கோரும் பகுதிலிருந்து 500 மீட்டர் சுற்றளவிற்குள் வரலாற்று சின்னங்களோ, தொல்பொருள் பாகங்கள் பகுதியாக அறிவிக்கப்பட்ட இடங்களோ ஏதுமில்லை. மேற்படி அனுமதி கோரும் புலத்தில் இருந்து சுமார் 300 மீட்டருக்குள் வரையறுக்கப்பட்ட குடியிருப்பு பகுதிகள் இல்லை. மேற்படி புலத்தின் கிழக்கு பகுதியில் இருந்து சுமார் 100 மீட்டரில் பட்டா எண்.280-ல் அடங்கிய புல எண்.32/1-ல் சுமார் 0.010 ஏர்ஸில் குருசாமி தடுபகோவிந்தசாமி வைகையறா என்ற பெயரில் வரையறுக்கப்படாத புன்செய் நிலத்தில் பண்ணை வீடு ஒன்று உள்ளது. மேற்படி புலத்தில் குவாரி பள்ளம் ஏதும் இல்லை.

மேலும் ஒரு கிலோ மீட்டர் சுற்றளவிற்குள் சுற்றுச் துழல் பாதுகாப்பு பகுதிகள், தேசிய பூங்காக்கள், யாணை வழிதடங்கள் மற்றும் காப்பு காடுகள் ஏதுமில்லை. இப்புலங்கள் தொல்லியல் துறை சார்ந்த புலங்கள் (ம) நில எடுப்பு சம்மந்தமான நடவடிக்கைகள் ஏதுமில்லை. மேற்கண்ட நிலங்கள் நில சீர்திருத்த சட்டம் பிரிவு 1961-ன் கீழ் கவரப்படவில்லை. நில கையகப்படவில்லை சட்டம் 1894 பிரிவு 4(1) கீழ் எந்த துறையினரால் அறிவிப்பு செய்யப்படவில்லை

மதுராந்தகம் வட்டம், நெ.179. நெட்ரம்பாக்கம் கிராமம் புை எண்.14/1A-ல் 0.40.50.14/1B(1.62.00).15/3(0.72.00) மற்றும் சிை மொத்த பரப்பு 4.54.0 ஹெக்டேரில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க தமிழ்நாடு சிறு கனிம சலுகை விதிகளுக்குட்பட்டு குவாரி குத்தகை உரிமம் M/s.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்திற்கு அனுமதி வழங்களைம் என தெரிவித்து. இத்துடன் வட்டாட்சியர் அறிக்கை மற்றும் கிராம கணக்குகள் ஆகியவற்றை இணைத்து அனுப்பியுள்ளேன் என்பதை பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு மேற்கூறியவாறு.

தங்கள் உண்மையுள்ள.

வருவாய் கோட்டாட்சியர்

மதுராந்தகம்

1	நெ.179.	14/1Å	0.40.5	புண்செய்	301. சங்கர்ஸ்பார்ம்
2	நெட்ரம்பாக்கம்	14/1B	1.62.0	புண்செய்	44. ரனிசங்கர்
3		14/2	1.79.5	புண்செய்	44. ழவிசங்கர்
4		15/3	0.72.0	புண்டுசம்	301 சங்கர்ஸ்பார்ம்
மொக்	த விஸ்தீரணம்		4.54.0		

மேற்படி புலங்களின் பட்டாதாரரான திரு.ரவிசங்கர் மற்றும் சங்கர்பார்ம் நிறுவனத்தினர் Mrs.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர் குவாரி பணி மேற்கொள்ள ஒப்பந்தம் செய்துள்ளனர்.

மேற்படி புலங்களில் குவாரி பணி செய்வது தொடர்பாக 17.08.2023 அன்று கிராமத்தில் பொது விளம்பரம் செய்யப்பட்டது. மேற்படி பொது விளம்பரத்தில் கிராம பொது மக்கள் கையொப்பமிட்டுள்ளனர் எனவும், பொது மக்களிடமிருந்து ஆட்சேபணைகள் ஏதும் எழுத்து பூர்வமாக வரப்பெறவில்லை என்பது வட்டாட்சியர் அறிக்கையின் மூலம் தெரியவருகிறது.

மேலும் மனுதாரர் குவாரி பணி செய்ய அனுமதி கோரும் பிரஸ்தாப புலங்களுக்கு உள்ளே அரசு புறம்போக்கு நிலங்கள் ஏதும் இல்லை. மனுதாரர் அனுமதி கோரும் புல எண்.32-லிருந்து புல எண்.14/2-ன் வழியாக ஒரு பூஸ்துதி கால்வாய் புல எண்.14/1B ன் வழியாக சென்று புல எண்.13-யை அடைகிறது. மேலும் மற்றொரு பூஸ்துதி கால்வாய் புல எண்.32-லிருந்து புல எண்.14/1B ன் வழியாக சென்று புல எண்.13-யை அடைகிறது. தற்போது புல எண்.13-ல் மனுதாரருக்கு ஏற்கனவே குவாரி அனுமதி வழங்கப்பட்டு குவாரி பணி நடைபெற்று வருகிறது.மேலும் புல எண். 14/2-ன் வடகிழக்கு பகுதியில் வண்டிப்பாதை ஒன்றும் நடைபாதை ஒன்றும் உள்ளது.மேற்படி பாதைகள் தற்போது பயன்பாட்டில் இல்லை என்பது வட்டாட்சியர் அறிக்கையின் மூலம் தெரியவருகிறது. மேலும் விசாரணையில் மனுதாரர் புல எண்.14 ன் வழியாக செல்லும் இரண்டு கால்வாய்களும் புல எண்.13-ல் முடிவடைவதாகவும் புல எண்.13-ல் தற்போது குவாரி பணி செய்து வருவதாகவும் வேறு நிலங்களுக்கு இக்கால்வாய் பாசன வசதியில்லை எனவும், எனவே குவாரி பணி செய்ய உள்ளதால் தங்களுக்கு கால்வாய் மத்தையில்லை எனவும், மேற்படி கால்வாய் மற்றும் வண்டிப்பாதைகளுக்கு போதிய பாதுகாப்பு இடைவெளி கணிம விதிகளின் படி விட்டு குவாரி பணி செய்ய அனுமதி வழங்குமாறும் கோரியுள்ளார்.

# மதுராந்கம் வருவாய் கோட்ட அனுவரைது புலத்தணிக்கை குறிப்பு

ப்_ட்டம்	செங்கல்பட்டு
வட்டம்	மதுராந்தகம்
விராமம்	நெ.179. நெட்ரம்பாக்கம் கிராமம்
பുരാ எண்	14/1A, 14/1B,14/2 wṛṅgyiù 15/3
புலத்தணிக்கை நாள்	12.09.2023
புலத்தணிக்கை அலுவலர்	வருவாய் கோட்ட அலுவரை, மதுராந்தகம்

செங்கல்பட்டு மாவட்டம், மதுராந்தகம் வட்டம், நெ.179. நெட்ரம்பாக்கம் கிராமம் புல எண்.14/1A-ல் (0.40.50) ,14/1B (1.62.00),15/3 (0.72.00) புல எண்களில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி Mrs.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர் மனு செய்து கூடுதலாக புல எண் 14/2(1.79.50) கை சேர்த்து குவாரி பணி செய்ய அனுமதி கோரியது தொடர்பாக இன்று 12.09.2023 புலத்தணிக்கை மேற்கொள்ளப்பட்டது. மேற்படி புலத்தணிக்கையின் போது ஓணம்பாக்கம் வருவாய் ஆய்வாளர், நெட்ரம்பாக்கம் கிராம நிர்வாக அலுவலர் மற்றும் கிராம உகவியாளர் ஆகியோர் உடன் இருந்தனர்.

மனுதாரர் குவாரி குத்தகை உரிமம் கோரிய புலங்கள் கிராம கணக்கு அ பதிவேட்டில் பின்வருமாறு தாக்கலாகியுள்ளது.

நில உடமை மேம்பாட்டுத்திட்ட "அ" பதிவேடு

வழிசை எல்ர.	வருவாய் கிராமம்	புல எண்	பரப்பு/ எக்டேரில்	வகைபா டு	பட்டா எண் மற்றும் பட்டாதாரர் பெயர்
1	நெ.179.	14/1	2.02.5	புண்செய்	63. பாலசுந்தரம்
2	_ நெட்ரம்பாக்கம் 	14/2	1.79.5	புண்செய்	58.பா.பங்கஜ்ம்மாள்
3		15/3	0.72.0	புண்டுசய்	141.மு.கிருஷ்ணபிள்ளை(1) வி.குப்பம்மாள்(2), அநரசிம்ம பிள்ளை(3)

மேற்படி புலங்கள் தற்போது தமிழ்நிலம் "அ" பதிவேட்டில் பினடவருமாறு

காக்கரைகியுள்ளது.

வரிசை	வருவாய் கிராமம்	rteo	பரப்பு	வகைபாடு	uilm	61 ठरंग	மற்றும்
எண்.		न खंधा	எக்டேரி		பட்டாது	ருர் பெயர்	
			ත් <b>ර</b>				

மணுதாரருக்கு ஏற்கனவே புல எண்.13-ல் குவாரி அனுமதி வழங்கப்பட்டு தற்போது குவாரி பணி செய்யப்பட்டு வருகிறது. மேற்படி குவாரிக்கான பாதையையே தற்போது அனுமதி கோரும் குவாரிக்கும் பாதையாக பயன்படுத்துவதாக மணுதாரர் தெரிவித்துள்ளார்.

அனுமதி வழங்க கோரும் புலத்தின் வடக்கு பகுதியில் சுமார் 20 மீட்டர் தொலைவில் மேற்கில் இருந்து கிழக்காக தாழ்வு அழுத்த மின் கம்பி ஒன்று செல்கிறது. அதை தவிர்த்து சுற்றளவுக்குள் உயர் மற்றும் தாழ் மின்னழுத்த கம்பிகள் ஏதுமில்லை. அனுமதி கோரும் புலத்தின் 50 மீட்டர் சுற்றளவில் மயானம் ஏதும் இல்லை. குவாரி குத்தகை உரிமம் கோரும் புலத்தின் எல்லகைள் வரையறுக்கப்பட்டு கற்கள் நடப்பட்டுள்ளது.

மேனும் அனுமதி கோரும் பகுதிலிருந்து 500 மீட்டர் சுற்றளவிற்குள் வரலாற்று சின்னங்களோ, தொல்பொருள் பாகங்கள் பகுதியாக அறிவிக்கப்பட்ட இடங்களோ ஏதுமில்லை. மேற்படி அனுமதி கோரும் புலத்தில் இருந்து சுமார் 300 மீட்டருக்குள் வரையறுக்கப்பட்ட குடியிருப்பு பகுதிகள் இல்லை. மேற்படி புலத்தின் கிழக்கு பகுதியில் இருந்து சுமார் 100 மீட்டரில் பட்டா எண்.280-ல் அடங்கிய புல எண்.32/1-ல் சுமார் 0.01.0 ஏர்ஸில் குருசாமி த/பெ.கோவிந்தசாமி வைகையறா என்ற பெயரில் வரையறுக்கப்படாத புன்செய் நிலத்தில் பண்ணை வீடு ஒன்று உள்ளது. மேற்படி புலத்தில் குவாரி பள்ளம் ஏதும் இல்லை.

மேலும் ஒரு கிலோ மீட்டர் சுற்றளவிற்குள் சுற்றுச் தூல் பாதுகாப்பு பகுதிகள், தேசிய பூங்காக்கள், யானை வழிதடங்கள் மற்றும் காப்பு காடுகள் ஏதுமில்லை. இப்புலங்கள் தொல்லியல் துறை சார்ந்த புலங்கள் (ம) நில எடுப்பு சம்மந்தமான நடவடிக்கைகள் ஏதுமில்லை. மேற்கண்ட நிலங்கள் நில சீர்திருத்த சட்டம் பிரிவு 1961-ன் கீழ் கவரப்படவில்லை. நில கையகப்படவில்லை சட்டம் 1894 பிரிவு 4(1) கீழ் எந்த துறையினரால் அறிவிப்பு செய்யப்படனில்லை

மதுராந்தகம் வட்டம், நெ.179. நெட்ரம்பாக்கம் கிராமம் புை எண்.14/1A ல் 0.40.50.14/1B(1.62.00),15/3(0.72.00) மற்றும் சில மொத்த பரப்பு 4.54.0 ஹெக்டேரில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க தமிழ்நாடு சிறு கனிம சலுகை விதிகளுக்குட்பட்டு குவாரி குத்தகை உரிமம் M/s.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்திற்கு அனுமதி வழங்கலாம்.

வருவாய் கோட்டாட்சியர்

மதுராந்தகம்

ுணிந்து சமர்ப்பிக்கப்படுகிறது.

செங்கல்பட்டு மாவட்டம் மதுராந்தகம் கோட்டம். மதுராந்தகம் வட்டம் நெ.179.
நெட்ரம்பாக்கம் கிராமம் புல எண் 14/1A ல் 0.405 ஏர்ஸ் மற்றும் சில புலங்களின் மொத்த விஸ்தீரணம் 4.54.0 ஹக்டேர் பரப்பளனில் சாதாரன கற்கள் கிராவல் மண் வெட்டியெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி Ms Triway Warehouse and Holdings Pvt Ltd என்ற நிறுவனத்தினர் குத்தகை உரிமம் கோரியது மேனும் கூடுதலாக விண்ணப்ப புல எண்.14/2 ஐ சேர்த்து குவாரி உரிமம் வழங்க கோரியது கூடுதல் அறிக்கை அனுப்ப கோரிய மனு மீது ஓணம்பாக்கம் குறுவட்ட வருவாய் ஆய்வாளர் அவர்களின் விசாரணை எனத் தெரிந்து அதன் பேரில் விசாரணை செய்து எதைநிக்கையினை பின்வருமாறு சமர்ப்பிக்கின்றேன்.

செங்கல்பட்டு மாவட்டம். மதுராந்தகம் வட்டம். ஓணம்பாக்கம் குறுவட்டம் நெ.179. நெட்ரம்பாக்கம் கிராமம் புல எண்.14/1A ல் 0.40.5 ஏர்ஸ் மற்றும் சில புலங்களின் மொத்த விஸ்தீரணம் 4.54.0 ஹக்டேர் பரப்பளனில் சாதாரண கற்கள் கிராவல் மண் வெட்டியெடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி M.s.Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினர் குத்தகை உரிமம் கோரியது மேலும் கூடுதலாக விண்ணப்ப புல எண்.14/2 ஐ சேர்த்து குவாரி குத்தகை உரிமம் கோரியம் கோரும் இடமானது மதுராந்தகம் வட்டம். ஓணம்பாக்கம் குறுவட்டம். தெ.179. நெட்ரம்பாக்கம் வருவாய் கிராமத்தில் கீழ்கண்ட புல எண் அமைந்துள்ளது.

நில உடமை மேம்பாட்டுத்திட்ட அடபதிவேடு

ഖ്യിതാச ഒൽം.	வருவாய் கிராமம்	rieo erecior	பரப்பு எக்டேரில்	வகைபாடு	பட்.டா எண் மற்றும் பட்டாதாரர் பெயர்
1	நெ.179.	14/1	2.02.5	புண்டுசய்	63. பாலசுந்தரம்
2	நெட்ரம்பாக்கம்	14/2	179.5	புண்செய்	58.பா.பங்கஜ்ம்மாள்
3		15/3	0.72.0	ப்ஷ்டுகர்	141.மு.கிருஷ்ணபிள்ளை(1) விகுப்பம்மாள்(2). அநரசிம்ம பிள்ளை(3)
மொத்த	விஸ்தீரணம்		4.54.0		

அதன் பின்பு உட்பிறிவு செய்யப்பட்டுள்ளது தற்பொழுது தமிழ்நில அட பதிவேட்டில் பின்வருமாறு உள்ளது.

வரிசை எண்.	வருவாய் கிராமம்	LJ60 eredor	பரப்பு எக்டேரில்	வகைபாடு	பட்டா பட்டாதாரர் பெயர்	வ்றுள்வ
1	நெ.179.	14/1A	0.40.5	புண்செய்	301. சங்கர்ஸ்பார்ம்	

2	கொருப்பாக்கம்	34/113	162,0	புண்டுகர்.	44.46/118/118/11
3		1475	1,79,5	புண்கெய்	44.gohlamag
4		15/3	0.72.0	புண்செய்	301 சங்கர்ஸ்பார்ம்
மொத்	த விஸ்தீரணம்	<u> </u>	4.54.0		

மேற்கண்ட புளைண்கள் மனுதாரரான M/s Triway Warehouse and Holdings Pvt.Ltd என்ற நிறுவனத்தினருக்கு சங்கர்பாம்ஸ் நிறுவனர் ரவிசங்கர் என்பவர் கனிம குத்தகை உரிமம் உறுதிமொழி ஆவணத்தின்படி மனுதாருக்கு அளித்துள்ளார் என தெரியவருகிறது.

மேற்கண்ட புல எண்ணில் சாதாரண கற்கள். கிராவல் மண் எடுக்க பத்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரும் புலத்திற்கு 17.08.2023 அன்று மேற்படி கிராமத்தில் பொது விளம்பரம் செய்யப்பட்டுள்ளது மேற்படி பொது விளம்பரத்தில் கிராம பொது மக்கள் கையொப்பமிட்டுள்ளனர். மேற்படி பொது மக்களிடம் இருந்து ஆட்சேபனைகள் ஏதும் எழுத்து பூர்வமாக வரப்பெறவில்லை மேற்காணும் கூட்டு புலப்படத்தின்படி நான்கு எல்லைகள் விவரம் பின்வருமாறு

புல எண்கள்	வடக்கு	தெற்கு	இழ் <b>சு</b> கு	மேற்கு
14/1B	цео егеоог.15/3	цох втобог.31 бо	<b>புல எண்.</b> 31/1	13,2 ശേற്വേമ
14/1B.	சங்கர்பாம்ஸ்	0.91.0 ஏர்ஸ்	மற்றும் 32/10	நிறுவனத்தின் பட்டா
14/2,	பட்டா நிலம்	புண்செய் தரிசு	உள்ள	நிலம் கல்குவாரி
15/3		அரசு புறம்போக்கு	தனிநபர்	தற்பொழுது இயங்கி
		நிலம்	பட்டா நிலம்	வருகிறது)

இது குறித்த நெ.179 நெட்ரம்பாக்கம் கிராமத்தில் 17.08.2023 அன்று A1 நோட்டிஸ் மூலம் பொது விளம்பரம் செய்யப்பட்டதில் நாளது தேதிவரை எவ்வித ஆட்சேபணைகள் பொது மக்களிடம் இருந்து எழுத்து பூர்வீகமாக ஏதும் வரப்பெறவில்லை.

மேற்படி மணுதாரர் சதாரண கற்கள் / கிராவல் மண் எடுக்க அணுமதி கோரும் பிரஸ்தாப புலங்களில் ஊடே அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை. மேற்கண்ட நிலம் புன் செய் நிலமாகும். மேலும் புல எண் 14/2 யில் பூஸ்திகால்வாய் ஒன்று செல்கிறது மற்றும் மேற்படி பட்டா நிலத்தில் கிராம வரைப்படத்தின் படி வழிபாதை மற்றும் வண்டிபாதை ஒன்று என உள்ளது ஆனால் புலத்தில் அடையாளங்கல் இல்லை. மேலும் அனுமதி கோரப்படும் புலத்தின் எல்லைகள் வரையறுக்கப்பட்டு எல்லை கற்கள் நடப்பட்டுள்ளது.

மேற்படி புலத்திற்கு காட்டுத்தேவாதும் முதல் ஒமீன் எண்டத்துர் செல்லும் தார் சாலையிலிருந்து பட்டா நிலத்தின் வழியாக மேற்படி புலத்திற்கு செல்லும் கனிநபர் பட்டா நிலத்தின் சாலை வழியாக அணுபாதை உள்ளது.

அனுமதி வழங்க கோரும் புலத்தின் டைக்கு பகுதியில் சுமார் 20 மீட்டர் தொலைவில் மேற்கில் இருந்து கிழக்காக தாழ்வு அழுத்த கம்பிகள் ஒன்று மட்டும் செல்கிறது. அதை தவிர்த்து சுள்ளவுக்குள் உயர் மற்றும் தாழ் மின்னழுத்த கம்பிகள் ஏதுமில்லை. அனுமதி கோரும் புலத்தின் 50 மீட்டர் சுற்றளனில் மயானம் ஏதும் இல்லை உள்ளது.

மேலும் அனுமதி கோரும் பகுதிலிருந்து 500 மீட்டர் கமிவனிற்குள் வரலாற்று சின்னங்களோ. தொல்பொருள் பாகங்கள் பகுதியாக அறிவிக்கப்பட்ட இடங்கள் ஏதுமில்லை. மேற்படி அனுமதி கோரும் புலத்தில் இருந்து சுமார் 300 மீட்டருக்குள் வரையறுக்கப்பட்ட குடியிருப்பு பகுதிகள் இல்லை. மேற்படி புலத்தின் கிழக்கு பகுதியில் இருந்து சுமார் 100 மீட்டரில் பட்டா எண்.280 ல் இடங்கிய புல எண் 324-ல் சுமார் 0.010 ஏர்ஸில் குறுசாமி த-பெ கோவிந்தசாமி வைகையறா என்ற பெயரில் வரையறுக்கப்பட்டாத புன் செய் நிலத்தில் தளம்வீடு ஒன்று உள்ளது. மேற்படி புலத்தில் குவாரி பள்ளம் ஏதும் இல்லை.

மேலும் ஒரு கிலோ மீட்டர் சுற்றளவிற்குள் சுற்றுச் தூழல் பாதுகாப்பு பகுதிகள். தேசிய பூங்காக்கள், யானை வழிதடங்கள் மற்றும் காப்பு காடுகள் ஏதுமில்லை. இப்புலங்கள் தொல்லியல் துறை சார்ந்த புலங்கள் (ம) நில எடுப்பு சம்மந்தமான நடவடிக்ககைள் ஏதுமில்லை. மேற்கண்ட நிலங்கள் நில சீர்திருத்த சட்டம் பிரிவு 1961ன் கீழ் கவரப்படவில்லை. நில கையகப்படவில்லை சட்டம் 1894 பிரிவு 4(1) கீழ் எந்த துறையினாரால் அறிவிப்பு செய்யப்படவில்லை. நில அர்ஜிதம் சம்மந்தமாக இன்றைய தேதியில் பரிசீலனைக்கு பெறப்படவில்லை. மேலும் இத்துடன் கிராம கணக்குகள், கிராம பொதுவிளம்பரம், மற்றும் ஆவணங்களை இணைத்து அனுப்பியுள்ளேன் என்பதை பணிவுடன் தெரிவித்துக்கொள்கிறேன்

இராம் நீர்வாக அலுவலர் 179. நெட்ரம்பாக்கம் கிராமம் மதுராந்தகம் வட்டம் செங்கல்பட்டு மாவட்டம்

ஒண**ம்பாக்கம்** குறுவட்டம் மதுராந்தகம் வட்டம்

# பொது விளம்பரம்

செர்பல்சாரு பானட்டி, மதுரந்துகர் வட்டம், ஒணர்பாககர் குறுவட்டம், நெ.179.நெட்ரம்பாக்கம் வருமைப் மிராமம் புல எண்கள்.14/1A, 14/1B, 15/3 மற்றும் 14/2 மொத்த பரப்பு 4.54.00 ஹெக்டேர்ஸ் பரப்பனவு நிலத்தில் சாத்சுண கற்கள் கிராவல் மண் எடுக்க பத்து ஆண்டுகளுக்கு குவார் தத்தகை உரிமம் வழங்க கோரி தி/ள் Triway ware house & Holdings Private Limited என்ற நிறுவனத்தினர் செய்துள்ளனர் 100001 61601 到市岛 விளம்பரத்தின் தெரிவிக்கப்படுகிறது. இதன் மீது ஏதேனும் OLL COLLISOR இருப்பின் 15 தினங்களுக்குள் நெட்ரம்பாக்கம் **Æ**gnu நிருவாக гознацие அல்லது ஓணம்பாக்கம் குறுவட்ட வருவாப் ஆப்வாளரிடம் எழுத்து மூலமாக தெரிவிக்க இதன் மூலம் தெரிவிக்கப்படுகிறது.

கிராம பொது மக்கள் கையொப்பம்

- Tojodular

R. Galy S. Sanjag

N. 8,778

Mr. Brings

S. Madry K. Chothling

R. Membermay

J. pourboth

K. Phiregh

S. EysiBynox

V. 7722000

C. Marsell.

To oborn

11. Fewananthay

\* C. Salhyfung \* C. Salhyfung \* M. Charle \* M. Ruthra Koman \* S. B. Comf \* S. B. Comf

Moresoff gawwsvers.

கிராம் நிர்வாக அனுவண்டி 179.நெட்ரம்பாக்கம் கிராமம் மதுராந்குகம் வட்டம் செங்கல்பட்டு மாவட்டம் A-1 கவர்மேன்டார் வசத்திலிருக்கும் நிலத்துக்காக சேய்துகோள்ளப்பட்ட விண்ணப்பத்தை குறிக்க அறிக்கை

செங்கல்பட்டு மாவட்டம் டுதிறாக்குகவோடம் கொடிரு.அக்கேமாக்கே கிற்கண்ட ஜெடியூலில் காட்டப்பட்டிருக்கும் நிலங்களுக்கு விக்கின்றாட்டு வழங்க விண்ணப்பம் செய்து கொண்டிருக்கிறாரென்ற இதனால் அரிக்கை வெளியி பாருகிறது Giritary कि वर संस्कृत्याना ஒப்படை செய்யிக்கூடர்தென்று ஆட்சேர்ப்பவர்கள் இங்க அரிவிக்கை digastii) செய்யர்கும் தேதியிலிருந்து 15 கினங்கள் Gerali sosti 69 16 Vehicle. அளவுக்குள் போர்பார சுராமத்தின் மணியக்காரரி த்திலும். கர்ணத்தி த்திலும் அங்களுடைய ஆட்சேபகணகளை தெரவிக்க வேண்டும்.

வ.எண் புலத்தின் வி எண்கள்		விஸ்தீர்ணம் தீர்வை	ileds/sector		
11	14/13/14/15/14/2	0.90.5 1.62.0 1.79.5 0.72.0	111 4回 15 13. おかまれ いれんさのか よれられている いかの 40かのまままれ 31/1,32/10 いかの いっしい 12であれる 31/1,32/10		

Sgrud Branco

: 79. நெட்ரம்பாக்கம் கிராமம் மதுராந்தகம் வட்டம் 🎻 செங்கல்யட்டு மாவட்டம்

655 17.08. 2023

igen Shikalli in shikalike uni ஒணம்பாக்கம் குறுவட்டம் மதுராந்தகம் வட்டம்

அறிக்கையானது மேடே கண்ட கேக்கள்ற கண்டோர் போட்டுப் பிரசித்தப்படுத்தப்பட்டதென்றும் காரம் சபைரயிலும் சம்மங்கப்பட்ட நிலக்கள்லும் காட்டி வைக்கப்பட்டதென்றும் உறுதிமொழ் எற்பருக்றது.

- கிராமத்தில் வசிக்கும் பரத்தவர்களில் குறைந்தது நென்கு நபர்களுடைய கைபெழுத்துக்கள்
- மேலே (1) பத்தியில் குறிப்பி பா முரும்மர்களின் கையெழுக்குக்களை வாங்காததற்கு காரணம்
- 1. 1 1 He He Jest 1 00)
- 2 7 130 Somfo,

சிராய நிர்பாக அலுவலர் 179. நேட்ரம்பாக்கம் கிராம்

குறிப்பு தென்கண்டம் ஜில்லாவின் விடியத்தில் இந்த நமுளைவுக்கு இருக்க வேண்டும். அடியிற்கண்டமடி இருக்க வேண்டும்

மேலே குறப்படப்பட்ட தேகங்கள்று அறிக்கையானது เมืองรัฐแน தர்க்க நர்து 玉如西西的 காட்டிவைக்கப்பட்டது. apsylmuit பிரச் க்கம் செய்யப்பட்ட சென்றும் ரெஜிஸ். ரான கைப்பற்றுதாரர்களிடத்திலும் 16 Stun விஆயமாய் (d) (hal கதந்திரங்களையுடைய வாலர்க்கதாரர்களிடத்திலும். முலகேண் காரர்களிடத்திலும். راورالك நகர்க்கள் சிவயிஜமா அனுபோகதார்களிடத்திலும் morni ஏற்பட்டுன் பிரகமும் அந்த நிலத்திலுள்ள ஒரு கிரைற்றில் தண்ணீரைச் 祖司(母)川井(広(母) एक्कां व கொண்டுருப்பவர்கள் கத்திரர் 16 evin அறக்கை சேர்ப்பிக்கப்பட்டிருக்கிறதென்றும் உறுக்மொழ் கூறப்படுகிறது.

GST No.: 33AUZPS6311B1ZI

Mobile: 94440 66373

9080119881

# **UDAYAM EXPLOSIVES**

No. 6/22, Ramani Nagar, 2nd Street, Krishna Nagar, West Tambaram, Chennai - 600 045

Proprietor

J. SIVAKUMAR

Date 87 110 12023

To, M/S. TRIWAY WARE HOUSES& HOLDINGS Pvt , Ltd., No.14, Jaffer street, Chennai - 600001

Sub: Regarding blasting work using explosive in your proposed quarry

Sir.

We are having explosive license in Form 22 holding no. E/SC/TN/22/164 (E10462) situate in survey no.4/1, Nattarasanpattu Village, Sriperumbudhur Taluk, Kanchipuram District, our office functioning at address 6/22, Ramani Nagar, 2nd Street, Mudichur Road, West Tambaram, Chennai 600 045.

We are enacting explosive vans for transporting detonators and class:2 separately for our magazine to our work site. We are well experienced with licensed blasters and shot fired for safe blasting work since 10 years without untoward incident.

We are willing to undertake blasting work on contract basis at your proposed quarry at SF. Nos. 14/1A,14/1B,14/2,15/3 over an extent of 4.54.00 Hectares. Netrambakkam village, Maduranthagam Taluk, Chengalpattu District.

Thank You,

Enclosure: 1. License copies

2. E-Van license copies

Signature
For UDAYAN EXPLOSIVES

(For Udayam Explosives)



# GOVERNMENT OF INDIA MINISTRY OF COMMERCE & INDUSTRY PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION(PESO).

(Formerly Department of Explosives)

A & D - Wing, Block 1-8, 1Ind Floor, Shustri Bhavan

26 Haddous Road, Nungambakkam Chennai 600006

Tele: 28281023 Fax: 28284848

Email: jtccechennai@explosives.gov.in

No:E/SC/TN/25/1424(E113633)

Dated: 14/02/2023

Tie

Udayam Explosives,

J. Stvakumer, Proprietor Occupier, M/s Udayam Explosives No. 6/22, Romanl Nagor, 2nd street, MUdichar Road, West Tumbaron

Town/Village - West Tamburam

Distr. KANCHIPURAM, State, Tomil Nada, Pineade-600045

Subject:

Road Van for the carriage of Explosives Registration No TN-11/AJ-2637 Licence No.E/SC/TN/25/1424(E113633) granted in Form LE-7 of of Explosives Rules 2008 - Renewal regarding

Su(s).

Reference to your letter No.: 77447 dated: 27/01/2023, the subject licence duly renewed upto 31/3/2028 and issued in Form LE-7 of Explosives Rules, 2008 is forwarded becavild.

For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2028;

- · Application in Form RE-1 duly filled in and signed.
- Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- · Original licence with approved plan.
- · In this connection, please also refer to Rule 112 of Explosives Rules, 2008.

Please follow following instructions strictly:

- The records of explosives transported by the licenced Roadvan shall be maintained in the proforma RE-6 under Part 5 of schedule V of Explosives Rules 2008.
- 2. Please ensure that persons whose antecedents verified by the local Police shall only be employed with the licenced explosives roadvan/compressor mounded truck as drivers or elements. List of such drivers and elements alongwith the personal particulars shall be made available to the local police in advance. The re-verification of such staff shall also be made at least once in a year in compliance to Rule 61(3) of Explosives Rules 2008.
- 3. Please note that during transportation of explosives, the Roadvan shall always be attended to by two armed guards. If the consignment of explosives is likely to pass through sensitive areas notified by Ministry of Home Affairs, it should be escorted by armed Police escort / guard provided by District Police Administration as required in Rule 67(7) of Explosives Rules 2008.

### Enclosures :

Yours faithfully,

(Manmeet Singh Manhas)
Dy. Controller of Explosives
For Joint Chief Controller of Explosives
South Circle, Chennai

Copy Forwarded to:

1. District Magistrate, KANCHIPURAM (Tamil Nadu) for information.

For Joint Chief Controller of Explosives South Circle, Chemni

[For more information regarding status, fees and other details, please visit our web site http://peau.gov.in]

# Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

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# GOVERNMENT OF INDIA MINISTRY OF COMMERCE & INDUSTRY PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION(PESO)

(Farmerly Department of Explosives) A & D - Wing, Block 1-8, Und Floor, Shastri Bhavan 26 Haddous Road, Nungambakkam Chennai 600006 Tele: 28281023 Fax: 28284848 Email: itecechennai@explosives.gov.in

No:E/SC/TN/25/1428(E113629)

Dated 14 02 2023

Udavam Explosives,

J. Sivakumar, Proprietor/Occupier, Mis Udayam Explosives No. 6/22, Ramani Nogar, 2nd street, Mudichur Road, West Rambaram Town/Village - West Tambaram

Distr. KANCHIPURAM, State, Tamil Nada, Pincode-600045

Subject:

Road Van for the carriage of Explosives Registration No TN-11/AJ-2506 Licence No.E/SC/TN/25/1428(E113629) granted in Form LE-7 of of Explosives Rules 2008 - Renewal regarding

Sir[s].

Reference to your letter No.: 77327 dated: 25/01/2023, the subject licence duly renewed upto 31/3/2028 and issued in Form LE-7 of Explosives Rules, 2008 is forwarded herewith.

For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2028.

- · Application in Form RE-1 duly filled in and signed.
- . Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- Original licence with approved plan.
- In this connection, please also refer to Rule 112 of Explosives Rules, 2008.

Please follow following instructions strictly;

- 1. The records of explosives transported by the licenced Roadvan shall be maintained in the proforma RE-6 under Part 5 of schedule V of Explosives Rules 2008.
- 2. Please ensure that persons whose antecedents verified by the local Police shall only be employed with the licenced explosives roadvan/compressor mounded truck as drivers or cleaners. List of such drivers and cleaner's alongwith the personal particulars shall be made available to the local police in advance. The re-verification of such staff shall also be made at least once in a year in compliance to Rule 61(3) of Explosives Rules 2008.
- 3. Please note that during transportation of explosives, the Roadvan shall always be attended to by two armed guards. If the consignment of explosives is likely to pass through sensitive areas notified by Ministry of Home Affairs, it should be escorted by armed Police escort guard provided by District Police Administration as required in Rule 67(7) of Explosives Rules 2008.

# Enclosures :

Yours faithfully,

(Mannect Singh Manhas) Dy. Controller of Explosives For Javra Chief Communics of Explosives South Circle, Chennai

Copy Forwarded to:

. District Magistrate, KANCHIPURAM (Tamil Nadu) for information.

For Joint Chief Controller of Explosives South Circle, Chemnai

ji'ur more information regarding status, fees and other details, plante visit our web site http://peny.gov.iii'

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वाणिज्य और उद्योग मंत्रालय | Ministry of Commerce & Industry पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसी) | Petroleum & Explosives Safety Organisation (PESO)

पूर्व नाम- विस्फोटक विभाग | Formerly- Department of Explosives A और D - विंग, ब्लॉक 1-8, दूसरा तल, शास्त्री भवन | A & D - Wing, Block 1-8, IInd Floor, Shastri Bhavan 26 हङ्कोउस रोड, नुगम्बक्कम चेन्नै | 26 Haddous Road, Nungambakkam Chennal 600006 फोन (Phone):- 28281023 | फैक्स (Fax):- 28284848 ई-मेल Email: |tccechennal@explosives.gov.in

संख्या (No.):

E/SC/TN/22/164(E10462)

दिनांक (Date): 13/03/2023

सेवा में | То,

M/s.UDAYAM EXPLOSIVES Proprieter.J.Sivakumar,

NO.6/22, Ramani Nagar, 2nd Street, Mudichur Road, West Tambaram, Chennai, Town/Village - Chennai

District-CHENNAI, State-Tamil Nadu, Pincode - 600045

विषय

Survey No(s).4/1, ग्राम Nattarasampattu, जिला KANCHIPURAM, राज्य Tamil Nadu में विस्फोटक के मैगजीन में उपयोग के लिए कब्जा हेतु विस्फोटक नियम, 2'008 के अंतर्गत LE-3 में जारी अनुज्ञप्ति सं

E/SC/TN/22/164(E10462) के नवीनीकरण संदर्भ में।

Possession for Use of of Explosives from magazine situated at Survey No(s): 4/1,

Subject: Nattarasampattu, Dist. KANCHIPURAM, Tamil Nadu -Licence No.: E/SC/TN/22/164(E10462) granted in Form LE-3 of Explosives Rules, 2008 - Renewal regarding

महोदय | Sir,

आपका उपर्युक्त विषय पर पत्र संख्या X दिनांक 25/01/2023 का संदर्भ ग्रहण करें। विस्फोटक नियम, 2008 के अंतर्गत प्ररूप LE-3 में जारी अनुज्ञांक्ति दिनांक

31/3/2028

तक नवीनीकृत कर इस पत्र के साथ भेजी जा रही है।

Reference to your letter No.: X dated: 25/01/2023, the subject licence duly renewed upto

31/3/2028

and issued in Form LE-3 of Explosives Rules, 2008 is forwarded herewith. अनुज्ञप्ति के आगामी नवीकरण हेतु कृपया निम्नलिखित दस्तावेज दिनांक

31/03/ 2028

से पहले

इस कार्यालय

को भेजे जाएं.

For further renewal of licence, please submit the following documents so as to reach this office

on or before

31/3/2028

August 17

Supplemented, servered decimagnito

> தோம் நீர்வாக் அலுவலர் அதுராந்தகம் வட்டம்

# TOPOGRAPHICAL VIEW OF NETRAMPAKKAM ROGH STONE & GRAVEL QUARRY LEASE APPLIED AREA



Name of the Applicant

Tvl. Triway Warehouses & Holdings Pvt. Ltd.,

Thiru, A. Manimaran, Authorized Person,

Address

No.14, Jaffer Street,

Chennai - 600 001,

Tamil Nadu State.

Location:

S.F.Nos.

14/1A, 14/1B, 14/2 & 15/3

Extent

4.54.0Ha

Village

Netrampakkam

Taluk

Maduranthagam

District

Chengalpattu

Signature of the applicant

For Tvl. Triway Warchouses & Holdings Pvt. Ltd., 973 179 076 710 mb Kongmon

மதுராந்தகம் வட்டம்

(A. Manimaran)

(Authorized Person)

(Village Administrative Officer)

Attestation

# TAMIL NADU FOREST DEPARTMENT

From

Thiru.Ravi Meena,I.F.S., District Forest Officer, Chengalpattu Division, No.5/9 Varadaraja Farm, Vandavasi Road, Kancheepuram 631 501. To

Assistant Director, Mines and geology, Chengalpattu.

# C.No.D/5973/2023 Dt.12.01.2024

Sub: FORESTS - Chengalpattu Division, Chengalpattu District Mathuranthagam Taluk - Netrampakkam Village M/s.Triway ware houses & Holdings Pvt Ltd, Rough Stone
and Gravel quarry S.No.14/1A, 14/1B, 14/2, 15/3 - 4.54
Ha - Remarks Submitted - regarding.

Ref: 1.Assistant Director, Mines and geology, Chengalpatru Ref No.1944/களியம்/2022 Dt.23.11.2023.

 Forest Range Officer, Madhuranthagam, C.No.767/2023, Dt:21.12.2023.

With reference to the above Subject, it is informed that M/s.Triway ware houses & Holdings Pvt Ltd, Rough Stone and Gravel quarry S.No.14/1A, 14/1B, 14/2, 15/3-4.54 Ha in Netrampakkam village, Mathuranthagam Taluk, Chengalpattu District.

The proposal site was inspected By Forest Range Officer, Maduranthagam. The Distance is 3.65 Km nearest Pazhavoor Reserved Forest.

The distance of the proposed quarry site from the nearby sanctuaries are as follows:-

SI, No	Name of Sanctuary	Distance in Km	
1	Karikili Bird Sanctuary to Rough Stone and Gravel quarry	21.37 km	
2	Vendathangal Bird Sanctuary to Rough Stone and Gravel quarry	15.58 km	

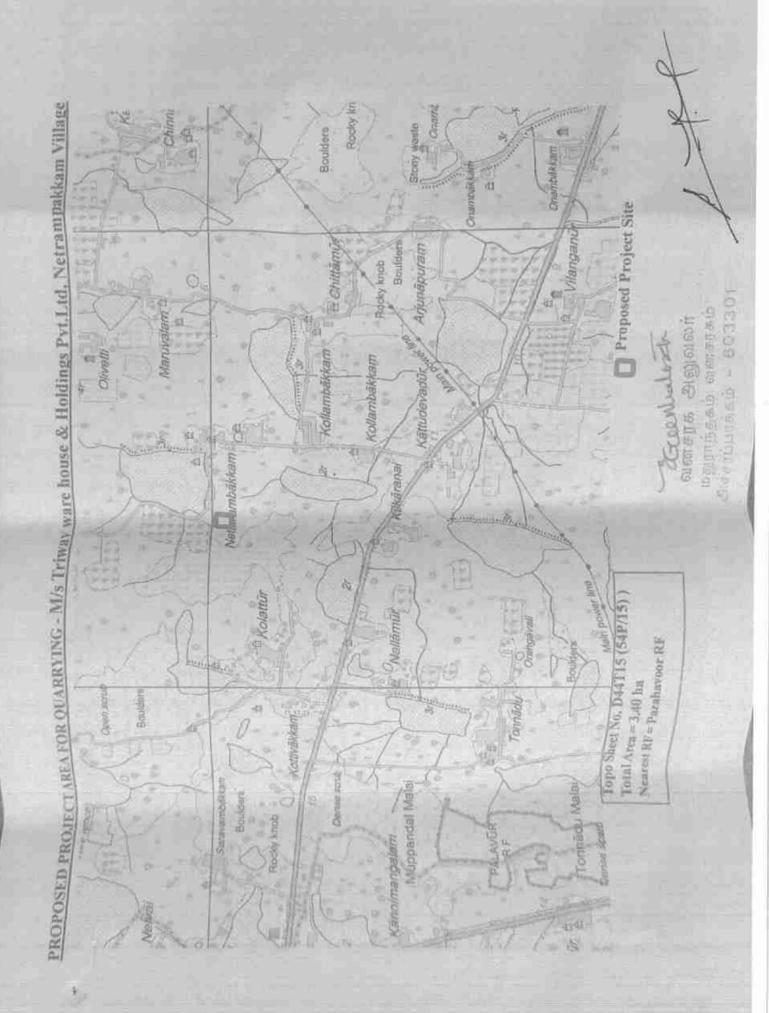
Encl: KML Map

Sd/- Ravi Meena, District Forest Officer, Chengalpattu Division, Kancheepuram.

Copy to SEAC Committee for favour of kind information.

/t.c.b.o./

Superintenden



# TAMILNADU FOREST DEPARTMENT

Notrampakkam Village, Madurantakkam, Takk, Chengalpattu District Polaviar RF, Nadurantakam Forest Range, Chengalpattu Division MS Triway Ware Houses & Holdings Put Ltd Nestampablam D

quarry site area - 3.40 hrs

Legend

1242/6479 92764

12,42132,79,92751

12,42(0)/6 (19)927734

124/1978 79 92605

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# Vederifiangal - 15.583 km \* Kerilli - 21 377 km 12 422 12 79 92634 Legend edanthangal BS112 544986 79:856254 11 BS12/596979 79 8426 Netrampakkam village, Madurantaksan Tauk Chengalpattu District Patavur RE, Maduramakam Forest Rango, Changopattu DMaton TAMILINADU FOREST DEPARTMENT We Triway Ware Houses & Holdings P.e. Un Netrampablish BIRD SANCTUARY DISTANCE 158 A



# Dr. JAYANTHI, M, I.F.S MEMBER SECRETARY

# STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai, No.1 Jeenis Road, Saidapet, Chennai-15. Phone No.044-24359973 Fax No. 044-24359975

# ENVIRONMENTAL CLEARANCE

# Lr. No.SEIAA-TN/F.No.6863/1(a)/ EC.No:4034/2019 dated: 29.08.2019

To

M/s. Triway Warehouses and Holdings Pvt Ltd No.14, Jaffer Street, Chennai - 600 001.

# Sir/Madam,

Sub: SEIAA-TN - Proposed Rough stone and Gravel quarry over an Extent of 2.02.50Ha in S.F.No. 13/2 at Netrampakkam Village, Maduranthagam Taluk, Kancheepuram District, Tamil Nadu by M/s. Triway Warehouses and Holdings Pvt Ltd - issue of Environmental Clearance - Reg.

- Ref: 1. Your Application for Environmental Clearance dated: 17.06.2019
  - 2. Minutes of the 131st SEAC meeting held on 17.07.2019
  - 3. Minutes of the 353<sup>rd</sup> SEIAA meeting held on 29.08.2019

# Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	M/s. Triway Warehouses and Holdings
	CHANGET MEDICIT ASSESSMENT	No.14, Jaffer Street, Chennai - 600 001.

MEMBER SECRETARY
SEIAA-TN

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	Location of the Proposed Activity			
1	Survey Number	13/2		
	Latitude and Longitude	12°25'12.10"N to 12°25'18.90"N 79°55'29.80"E to 79°55'34.30"E		
	Village	Netrampakkam		
	Taluk	Maduranthagam		
	District	Kancheepuram		
3	Proposed Activity			
	i. Minor mineral	Rough Stone and Gravel		
	ii. Mining Lease Area	2.02.50 Ha		
	iii. Approved quantity	3,61,084cu.m of Rough stone and 36,736 cu.m of Gravel		
	iv. Depth of Mining	53m below the ground level		
-	v. Type of mining	Opencast Semi Mechanized Method  B2  Rc.No.340/Q2/2018 Dated: 29.01.2019.		
	vi. Category(B1/B2)			
-	vii. Precise area communication			
	Mining plan approval by Director of Geology and Mining, Chennai	Assistant Director Rc.No.340/Q2/2018 Dated: 08.03.2019		
-	viii. Mining lease period	5 Years		
4	Whether Project area attracts any General conditions specified in the EIA notification 2006 as amended:-	Not attracted. Affidavit furnished.		
5	Man Power requirement per day:	18 Employees		
6	Utilities			
	i. Source of Water :	Water Vendors & Existing Bore whole		
	ii. Quantity of Water Requirement in KLD:	4.0 KLD		
	a. Domestic & Drinking purpose b. Green Belt & Dust Suppression	1.0 KLD 3.0 KLD		
	iii. Power Requirement:  a. Domestic Purpose  b. Industrial Purpose	TNEB 2,96,514 liters of HSD		

7	i. Project Cost ii. EMP Cost	73.50 lakhs 7 lakhs			
8	Date of Appraisal by SEAC:- Agenda No:	17.07.2019 131			
9	Date of Review/Discussion by SEIAA and the Remarks:-  The proposal was placed before the SEIAA in its 353 <sup>rd</sup> Meeting held on 29.08.2019 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Rough Stone and Gravel subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.				
10 <u>Validity:</u> This Environmental Clearance is granted to Mining of Rough Stone and Gravethe production quantity 361084cu.m of Rough stone & 36736 cu.m of Gravel for period of 5 Years from the date of execution of the Mining Lease period.					

The Proponent has furnished affidavit in Fifty Rupees stamp paper attested by the Notary stating that

We, N.Ravishankar, Managing Director of Triway Ware houses and holdings Pvt.Ltd., No.14, Jaffer Street, Chennai – 600 001, solemnly declare and sincerely affirm that:

We have apply for getting Environment Clearance to SEIAA, Tamil Nadu for quarry lease for quarrying of Rough stone and GravelQuarryover an extent 2.02.50hain S.F.No.13/2, Netrampakkam Village, MaduranthagamTaluk, KancheepuramDistrict.

- We swear to state and confirm that within 10km area of the quarry site, We have applied for environment clearance, none of the following is situated.
  - a. Protected areas notified under the wild life (Protection) Act, 1972
  - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act 1974.
  - c. Eco-Sensitive areas as notified
  - Interstate boundaries and international boundaries within 5km radius from the boundary of the proposed site.
- We will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakh)	CER Cost 2.0% of project cost (Rs in Lakh)	
Developing the Library facilities / Drinking waterfacilities in Netrampakkam High School	73.5	1.47	
Total Cost Allocation	73.5	1,47	

- 3. No quarries located within 500m radius from the periphery of our quarry.
- There will not be hindrance or disturbance to the people living no enrouted/ nearby our quarry site while transporting the mineral our material and due to quarrying activities.
- 5. There is no approved habitation within 300m radius from the periphery of our quarry.
- We swear that afforestation will be carried out during the course of quarrying operation and maintained.
- The required insurance will be taken in the name of the laborers working in our quarry site.
- The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone and Gravel.
- We will not engage any child labor in our quarry site and We aware that engaging child labor is punishable under the law.
- 10. All types of safety / protective equipment will be provided to all the laborers working in our quarry.
- No permanent structures, temples etc., are located within 500m radius from the periphery of our quarry.

We ensure to do all the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

Further, the project proponent has obtained and submitted a letter from Assistant Director, Geology and mining, Kancheepuram District vide Letter Rc. No. 340/Q2/2018, dated 27.08.2019 "stated that other than the proposed quarry there is no abandoned, existing and proposed quarries are located within 500m radius from the proposed area".



# Conditions to be Complied before commencing mining operations:-

- The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
  - I. The project has been accorded Environmental Clearance.
  - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
  - III. Environmental Clearance may also be seen on the website of the SEIAA.
  - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
- Mining activity should be reviewed by the District Collector after three years and decide for further extension.
- The applicant has to obtain land use classification as industrial use before issue/renewal
  of mining lease.
- NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
- The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
- 6. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
- Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
- 8. The proponent shall ensure that First Aid Box is available at site.
- 9. The excavation activity shall not alter the natural drainage pattern of the area.
- 10. The excavated pit shall be restored by the project proponent for useful purposes.

11. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.

- 12. The quarrying operation shall be restricted between 7AM and 5 PM.
- 13. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
- 14. A minimum distance of 50 mts. From any civil structure shall be kept from the periphery of any excavation area.
- 15. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
- 16. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
- 17. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
- 18. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
- 19. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
- 20. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
- 21. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
- The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF & CC, GoI on 16.11.2009.
- 23. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
  - Roads shall be graded to mitigate the dust emission.

ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust.

MEMBER SECRETARY SEIAA-TN

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- 24. The following measures are to be implemented to reduce Noise Pollution
  - i. Proper and regular maintenance of vehicles and other equipment
  - ii. Limiting time exposure of workers to excessive noise.
  - The workers employed shall be provided with protection equipment and earmuffs etc.
  - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
- 25. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF & CC, GoI to control noise to the prescribed levels.
- 26. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
- Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
- 28. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
- 29. The following measures are to be adopted to control erosion of dumps:-
  - Retention/ toe walls shall be provided at the foot of the dumps.
  - Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
- 30. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
- 31. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

 Rain water harvesting to collect and utilize the entire water falling in land area should be provided.

MEMBER SECRETARY
SEIAA-TN

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- 33. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
- 34. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
- 35. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
- 36. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
- 37. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
- 38. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
- Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF & CC, GOI.
- 40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF & CC, GOI.

41. Bunds to be provided at the boundary of the project site.

- 42. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
- 43. At least 10 Neem trees should be planted around the boundary of the quarry site.
- 44. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
- 45. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
- 46. The Project Proponent shall provide solar lighting system to the nearby villages.
- 47. Rainwater shall be pumped out Via Settling Tank only
- 48. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
- 49. Safety equipments to be provided to all the employees.
- 50. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
- 51. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
- 52. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
- 53. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
- 54. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
- 55. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
- Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
- 57. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as

MEMBER SECRETARY SEIAA-TN

29/0/19

- reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
- 58. The Project Proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable.
- 59. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 1m height.
- 60. A letter /certificate shall be obtained from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and the same shall be furnished before applying CTO from TNPCB.
- Ground water quality monitoring should be conducted every month and the report should be submitted to TNPCB.
- 62. The operation of the quarry should no way impact the two water bodies(Tanks)located at a distance of 250m & 260m surrounding the project site.
- 63. It was reported that a depth of 53m (0.5m top soil, 2m Gravel and 40m Rough stone) below ground level is proposed in the approved Mining Plan. If any chances the depth of the quarry intersects with the water table the mining operation should be stopped.
- 64. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road. Suitable protection measures need to be undertaken.
- 65. The Project Proponent shall comply with the mining and other relevant rules and regulations wherever applicable.
- 66. Prior clearance from Forestry & Wild Life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10km from National Park and Sanctuaries.
- 67. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
- 68. The recommendation for the issue of environmental clearance is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016)

- and O.A.No.102/2017 and O.A.No.404/2016(M.A.No.758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A.No.843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).
- 69. The entire mining operation should be as per the guidelines for sustainable sand mining issued in 2016 by the MoEF & CC, GOI, New Delhi.
- 70. To ensure safety along the boundary of the quarry site, security guards are to be posted during the entire period of mining operation.
- 71. To prevent dust pollution, suitable working methodology needs to be adopted taking wind direction into consideration.
- 72. All the condition imposed by the District collector, Kancheepuram District vide Rc.No.340/Q2/2018 Dated: 29.01.2019 should be strictly followed.
- 73. CER activities should be carried out for developing Library/ sports, & facilities, to Government primary school, Netrampakkam Village for an amount of Rs. 1.47 lakhs (2 % of the project cost) as committed by the proponent as per Office Memorandum of MoEF & CC dated 01.05.2018. The above activity shall be carried out before obtaining CTO from TNPCB.
- 74. The Project proponent has to strictly comply the outcome/direction of the Hon'ble NGT, Principle Bench, New Delhi in the Ø.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/ 2016 (M.A.No.1182 /2016) and O.A.No.102/2017 and O.A.No.404/ 2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017)
- 75. The EMP Cost shall be deposited in a nationalized bank by opening separate account and head wise expense statement shall be furnished to TNPCB with a copy to SEIAA annually.
- 76. The proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

# General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.

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- The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.
- No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
- No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- 5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
- Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
- 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- 11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
- 12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the <u>purpose</u>, schedule of health examination of the workers

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- should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
- Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
- 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
- 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
- 16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
- 17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
- 18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
- 19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
- 20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
- 21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for

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protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

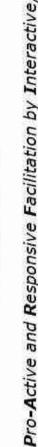
- Any other conditions stipulated by other Statutory/Government authorities shall be complied
- 23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

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# Copy to:

- 1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
- The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
- The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
- The Chairman, Central Pollution Control Board, PariveshBhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
- The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
- 7. The District Collector, Kancheepuram District
- 8. The Commissioner of Geology and Mines, Guindy, Chennai-32
- 9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
- 10. Spare.





and Virtuous Environmental Single-Window Hub





# Government of India Ministry of Environment, Forest and Climate Change (Issued by the State Environment Impact Assessment Authority(SEIAA), TAMIL NADU)

To,

The Managing Partner NAVEEN ENTERPRISES

M/s. Naveen Enterprises, Side Portion, No.2/141-4, Udaiyar Street, Minnampalli, Namakkal Taluk & District, TamilNadu- 637 019 -637019

**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/407621/2022 dated 10 Mar 2023. The particulars of the environmental clearance granted to the project are as below.

1. EC Identification No.	EC23B001TN185072
--------------------------	------------------

File No. 9600
 Project Type New
 Category B

5. **Project/Activity including** 1(a) Mining of minerals Schedule No.

6. Name of Project Nallamur Village Rough stone and Gravel quarry lease

7. Name of Company/Organization NAVEEN ENTERPRISES

8. Location of Project TAMIL NADU

9. TOR Date N/A

The project details along with terms and conditions are appended herewith from page no 2 onwards.

(e-signed)
Thiru.Deepak S.Bilgi
Date: 25/04/2023
Member Secretary
SEIAA - (TAMIL NADU)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH.Please quote identification number in all future correspondence.

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THIRU. DEEPAK S. BILGI, LF.S. MEMBER SECRETARY

# STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai, No.1, Jeenis Road, Saidapet, Chennai - 600 015. Phone No. 044-24359973 Fax No. 044-24359975

# ENVIRONMENTAL CLEARANCE

# Lr. No.SEIAA-TN/F.No.9600/EC.No:5672/2022, dated:10.04.2023

# Sir/Madam.

Sub: SEIAA-TN - Proposed Rough Stone and Gravel Quarry lease over an extent of 2.83.20Ha at S.F.No.37/1, 37/23(P), 37/24(P), 37/25(P) & 37/26 (P), Nallamur Village, Maduranthagam Taluk, Chengalpattu District by M/s.Naveen Enterprises under Category "B2" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006 issue of Environmental Clearance - Regarding.

- Ref: 1. Online Proposal No. SIA/TN/MIN/ 407621/2022 dt 23.11.2022.
  - Your Application for Environmental Clearance dated: 29.11.2022.
  - Minutes of the 363<sup>rd</sup> SEAC meeting held on 14.03.2023.
  - Minutes of the 609th SEIAA meeting held on 10.04.2023

# Details of Minor Mineral Activity:-

This has reference to your application 1st & 2nd cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of minor minerals based on the particulars furnished in your application as shown below.

SI. No	Details of the Proposal	Data Furnished			
I	Name of the Owner/Firm	M/s.Naveen Enterprises  Side Portion, No.2/141-4, Udayar  Street, Meenampalli, Namakkal Taluk,  Namakkal District,  Tamil Nadu – 637019.			

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2	Type of quarrying	Rough Stone and Gravel		
3	S.F No. of the quarry site	37/1, 37/23(P), 37/24(P), 37/25(P) & 37/26 (P)		
4	Village in which situated	Nallamur		
5	Taluk in which situated	Maduranthagam		
6	District in which situated	Chengalpattu		
7	Extent of quarry (in ha.)	2.83.20Ha		
8	Latitude & Longitude of all corners of the quarry site	12°25'8.44"N to 12°25'13.88"N 79°55'21.25"E to 79°55'29.34"E		
9	Topo Sheet No.	57 – F/15		
10	Type of mining	Opencast Semi - Mechanized of Mining		
11	Period of current mine plan	5 Years		
12	Production (Quantity in m <sup>3</sup> )	328324m³ of Rough Stone & 46736m of Gravel		
13	Depth of mining	20m BGL		
14	Depth of water table	55m - 50m BGL		
15	Man Power requirement	18 Nos.		
16	Water requirement:	6.75 KLD		
	1. Domestic & Flushing	2.75 KLD		
	2. Dust suppression	2.0 KLD		
	3. Green Belt	2.0 KLD		
17	Power requirement  a. Domestic Purpose  b. Industrial Purpose	TNEB 317358 Liters of HSD		
18	Precise area communication approved by the, District Collector, Department of Geology and Mining with date	Re.No.2185/Kanimam/2020, dt: 21.09.2022		
19	Mining Plan approved by Assistant Director (i/c), Department of Geology and Mining with date	Roc.No.2185/Mines/2022, dt: 19.10.2022		

Assistant Director (i/c), Department of	Roc.No.2185/Mines/2022, dt:			
Geology and Mining 500m cluster letter	19.10.2022			
VAO certificate regarding 300m radius cluster	Letter dt: 23.11.2022.			
Project Cost (excluding EMP)	Rs.121.55 Lakh			
EMP cost	Rs.181.534 Lakhs/10 Years			
CER Cost	Rs.6.0 Lakhs			
Validity:  This Environmental Clearance is accorded for the quantity of 328324m³ of Rough Stone & 46736m³ of Gravel up to depth of 20m as per the approved mining plan and is valid as per the approved mine plan period and as per MoEF&CC's notification S.O.1533(E) dated.14.09.2006 and S.O. 1807(E) dated				
	Geology and Mining 500m cluster letter  VAO certificate regarding 300m radius cluster  Project Cost (excluding EMP)  EMP cost  CER Cost  Validity:  This Environmental Clearance is according Rough Stone & 46736m³ of Gravel up mining plan and is valid as per the according to the second content of the second c			

# The Proponent has furnished affidavit stamp paper attested by the Notary stating that

I, P. Soma Sekhar Reddy, S/o. Narayana Reddy, aged about 49 years, Partner of M/s. Naveen Enterprises, registered office at, Side Portion, No.2/141-4, Udayar Street, Meenampalli, Namakkal Taluk and District, Tamilnadu State- 637019 and I had applied for Environmental Clearance to SEIAA, Tamil Nadu for Patta-Ryotwari land in rough stone and gravel quarry lease at S.F.No's: 37/I, 37/23(Part), 37/24(Part), 37/25(Part) and 37/26(Part), over an extent of 2.83.20hectares of Nallamur Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu State.

- 1. I swear to confirm that within 10km radius, from the quarry site none of the following is situated.
  - There is no protected area notified under the wild life (Protection) Act, 1972.
  - b) No critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act 1974.
  - No eco-Sensitive areas as notified around 10km radius.

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- d) There is no interstate within 10km radius from the boundary of the proposed site.
- e) The Bay of Bengal is situated about 17.95km away on the eastern side of the proposed site and this project site doesn't attract CRZ Notification, 2019.

2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	CER Cost
Government Higher Secondary School, Polan	nbakkam Village
Laboratoy Chemicals, Instruments	1,00,000/-
Incinerator	20,000/-
Plantation in School Ground	30,000/-
Painting for budlings	3,00,000/-
RO Water Facility	50,000/-
Environment Related Books	20,000/-
BLDC Ceiling Fan, Steel Buero, Chair	80,000/-
Total Cost Allocation	Rs. 6,00,000/-

3. Details of quarry located within 500m radius from the periphery.

# i) Existing Quarries:

S.No	Name of the Lease / Permit Holder	Name of the Mineral	Taluk& Village	S.F.No's	Extent (In hects)	Lease period	Remarks
Ĺ	Tvl. Triway Ware House & Holdings Pvt. Ltd., No:14, Jaffer Street, Chennai -600001	Stone & Gravel	Maduranthakam & Netrambakkam	13/2	2.02.50	03.10.2019 To 02.10.2024	
				Total	2.02.50		

# ii) Abandoned Quarries:

S. No	Name of the Lease / Permit Holder	Name of the Mineral	Taluk & Village	S.F. Nos	Extent (in hect.)	Lease period
			Nil			

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# iii) Proposed Quarries:

S. No	Name of the Lease/ Permit / Holder	Name of the Mineral	Taluk & Village	S.F. No	Extent (in hect)	Remark s
1.	Tvl. Naveen Enterprises, Side Portion, No.2/141-4, Udayar Street, Meenampalli, Namakkal Taluk and District- 637019	Rough stone & Gravel	Maduranthagam & Nallamur	37/1, 37/23 (P), 37/24 (P), 37/25 (P) & 37/26 (P)	2.83.20	Under Processin g Present Applicati on
				Total	2.83.20	

- 4. There will not be hindrance or disturbance to the people living no enrooted / nearby our quarry site while transporting the mineral our material and due to quarrying activities.
- 5. There is no approved habitation within 300m radius from the periphery of our quarry lease area.
- I swear that afforestation will be carried out during the course of quarrying operation and maintained.
- 7. The required insurance will be taken in the name of the laborers working in our quarry lease area.
- The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone and gravel.
- I will not engage any child labor in our quarry site and we aware that engaging child labor is punishable under the law.
- All types of safety/ protective equipment will be provided to all the laborers working in our quarry site.
- No permanent structures, temples etc., are located within 500m radius from the periphery of our quarry lease area.

I ensure to do all the social and Environment commitment as mentioned in the Mining plan to the best of our knowledge.

# Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from Assistant Director (i/c), Department of Geology & Mining, Chengalpattu District in his letter Roc.No.2185/Mines/2022, dt:

19.10.2022 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

### **Existing Quarries:** i)

S. No	Name of the Lease / Permit Holder	Name of the Mineral	Taluk& Village	S.F.No's	Extent (In hects)	Lease period	Remarks
1.	Tvl. Triway Ware House & Holdings Pvt. Ltd., No:14, Jaffer Street, Chennai -600001	Stone & Gravel	Maduranthakam & Netrambakkam	13/2	2.02.50	03.10.2019 To 02.10.2024	
_				Total	2.02.50		

# ii) Abandoned Quarries:

S. No	Name of the Lease / Permit Holder	Name of the Mineral	Taluk & Village	S.F. Nos	Extent (in hect.)	Lease period
		1	Nil			

# iii) Proposed Quarries:

S. No	Name of the Lease/ Permit / Holder	Name of the Mineral	Taluk & Village	S.F. No	Extent (in hect)	Remarks
1.	Tvl. Naveen Enterprises, Side Portion, No.2/141-4, Udayar Street, Meenampalli, Namakkal Taluk and District- 637019	Rough stone & Gravel	Maduranthagam & Nallamur	37/1, 37/23 (P), 37/24 (P), 37/25 (P) & 37/26 (P)	2.83.20	Under Processing Present Application
		1		Total	2.83.20	

EC Identification No. - EC23B001TN185072 File No. - 9600 Date of Issue EC - 25/04/2023

# Appraisal by SEAC:-

Proposed Rough Stone and Gravel Quarry lease over an extent of 2.83.20Ha at S.F.No.37/1, 37/23(P), 37/24(P), 37/25(P) & 37/26 (P), Nallamur Village, Maduranthagam Taluk, Chengalpattu District by M/s.Naveen Enterprises - for Environmental Clearance. (SIA/TN/MIN/407621/2022, dt 23.11.2022)

The proposal was placed in 363<sup>rd</sup> SEAC meeting held on 14.03.2023. The project proponent gave detailed presentation. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

# The SEAC noted the following:

- 1.The Project Proponent, M/s.Naveen Enterprises has applied for Environmental Clearance for the proposed Rough Stone and Gravel Quarry lease over an extent of 2.83.20Ha at S.F.No.37/1, 37/23(P), 37/24(P), 37/25(P) & 37/26 (P), Nallamur Village, Maduranthagam Taluk, Chengalpattu District, Tamil Nadu.
- The proposed quarry/activity is covered under Category "B2" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
- 3. As per mining plan, the lease period is 5 years. The mining plan is for the period of 5 years & the production should not exceed 386964m³ of Rough Stone & 46736 m³ of Gravel. The annual peak production shall not exceed 78855 m³ of Rough Stone (4th Year) & 21010 m³ of Gravel (2nd Year). The ultimate depth 25m BGL.

Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Environmental Clearance for the production of 386964m<sup>3</sup> of Rough Stone & 46736 m<sup>3</sup> of Gravel with the annual peak production shall not exceed 78855 m<sup>3</sup> of Rough Stone & 21010 m<sup>3</sup> of Gravel keeping the ultimate pit depth of 40 m. subject to the standard conditions as per the **Annexure I** of this minutes & normal conditions stipulated by MOEF &CC, in addition to the following specific conditions:

- The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of thirty years, whichever is earlier vide MoEF&CC Notification S.O, 1807(E) dated 12.04.2022.
- The PP shall inform the notice of opening of the quarry to the Director of Mines Safety (DMS)/Chennai Region and get the necessary statutory permission under the MMR 1961

- pertaining to the mine working operations in the proposed quarry from the DMS, Chennai before obtaining the CTO.
- The mine manager and other statutory competent persons such as blaster (or) mine mate shall be appointed as per the provisions of Mines Act 1952 and Metalliferous Mines Regulations, 1961 before the obtaining the CTO from the DEE/TNPCB.
- 4. The proponent shall maintain the 'S3 (or) G2' type of fencing all around the boundary of the proposed working quarry with gates for entry/exit before the commencement of the operation as recommended in the DGMS Circular, 11/1959 and shall furnish the photographs showing the same before obtaining the CTO from TNPCB.
- Further, the PP shall maintain the garland drain with proper size, gradient and length along
  the boundary of the pit leaving behind the mandatory safety zone of 7.5 / 10 m as it is designed
  to take care of run-off water (size, gradient and length) before obtaining the CTO from
  TNPCB.
- The PP shall ensure that the benches & haul road are properly designed and formed in accordance with the provisions of MMR 1991.
- The Project Proponent shall furnish slope stability action plan to the concerned AD (Mines)
  for the planned working by maintaining appropriate benches incorporating the haul road with
  proper gradient, before obtaining CTO from TNPCB.
- 8. However, the Project Proponent shall carry out the scientific studies to assess the slope stability of the benches of the benches made in this quarry during 3rd year of operation, by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal and Anna University CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance.
- 9. The PP shall carry out maximum of TWO rounds of controlled blast per day, restricted to the maximum of 50 to 60 number of holes per round with maintaining maximum charge per delay in such a manner that the blast-induced ground vibration level (Peak Particle Velocity) measured in the houses/structures located at a distance of 300 m shall not exceed 2.0 mm/s and no fly rock shall travel beyond 20 m from the site of blasting. The PP shall also ensure that the blasting operation shall be carried out once in 2 days to reduce the environmental impacts effectively.

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- 10. Since few structures are located at 300-400 m from the site, within six months from the commencement of mining operations, the PP shall carry out the scientific studies on 'Design of Blast parameters for reducing the impact of blast-induced ground/air vibrations and fly rock caused due to operation of the quarry by adopting appropriate controlled blasting techniques', by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal and Anna University CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance.
- 11. No 'Deep-hole large diameter drilling and blasting' is permitted in the proposed quarry.
- 12. The PP shall use the jack hammer drill machine fitted with the dust extractor for the drilling operations such that the fugitive dust is controlled effectively at the source.
- 13. The PP shall ensure that the blasting operations are carried out by the blaster/Mine Mate/Mine Foreman employed by him in accordance with the provisions of MMR 1961 and it shall not be carried out by the persons other than the above statutory personnel.
- 14. The PP shall ensure that the blasting operations shall be carried out during a prescribed time interval with a prior notice to the habitations situated around the proposed quarry after having posted the sentries/guards adequately to confirm the non-exposure of public within the danger zone of 500 m from the boundary of the quarry.
- 15. Within two year from the commencement of mining operations, the Project Proponent shall carry out the hydrological studies on 'Cumulative Impacts of the quarrying operations on the water bodies located in the surrounding villages', by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, University of Madras Dept of Geology, and Anna University CEG Campus Dept of Geology. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance
- The PP shall meticulously carry out the mitigation measures as spelt out in the revised EMP.
- 17. The Project Proponent shall ensure that the funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the MoEF& CC Ministry and its Integrated Regional Office (IRO) located in Chennai.

- 18. The Project Proponent shall send a copy of the clearance letter marked to concerned Panchayat from whom any suggestion/representation has been received while processing the proposal.
- As per the MoEF& CC Office Memorandum F.No. 22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall adhere EMP furnished.
- 20. As accepted by the Project proponent the CER cost is Rs. 6 Lakhs and the amount shall be spent for the Government Higher Secondary School, Polambakkam Village as committed, before obtaining CTO from TNPCB.

## ANNEXURE-I

- The proponent shall mandatorily appoint the required number of statutory officials and the competent persons in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations, 1961.
- The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit before the commencement of the operation and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
- Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required in connection with the concerned Govt. Authority.
- 4. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form of Short Term Permit (STP), Query license or any other name.
- 5. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued

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- by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
- 6. The proponent shall ensure that the slope of dumps is suitably vegetated in scientific manner with the native species to maintain the slope stability, prevent erosion and surface run off. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps.
- 7. Perennial sprinkling arrangement shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.
- 8. The Project Proponent shall carry out slope stability study by a reputed academic/research institution such as NIRM, IIT, Anna University for evaluating the safe slope angle if the proposed dump height is more than 30 meters. The slope stability report shall be submitted to concerned Regional office of MoEF&CC, Govt. of India, Chennai as well as SEIAA, Tamilnadu.
- 9. The Proponent shall ensure that the Noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction measures undertaken accordingly. The report on the periodic monitoring shall be submitted to TNPCB once in 6 months.
- 10. Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
- 11. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
- 12. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper escapements as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.
- 13. Noise and Vibration Related: (i) The Proponent shall carry out only the Controlled Blasting operation using NONEL shock tube initiation system during daytime. Usage of other initiation systems such as detonating cord/fuse, safety fuse, ordinary detonators, cord relays, should be

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avoided in the blasting operation. The mitigation measures for control of ground vibrations and to arrest fly rocks should be implemented meticulously under the supervision of statutory competent persons possessing the L/II Class Mines Manager / Foreman / Blaster certificate issued by the DGMS under MMR 1961, appointed in the quarry. No secondary blasting of boulders shall be carried out in any occasions and only the Rock Breakers (or) other suitable non-explosive techniques shall be adopted if such secondary breakage is required. The Project Proponent shall provide required number of the security sentries for guarding the danger zone of 500 m radius from the site of blasting to ensure that no human/animal is present within this danger zone and also no person is allowed to enter into (or) stay in the danger zone during the blasting. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.

- Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
- 15. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management" and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.
- The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
- 17. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the quarried rough stones; and transport of rough stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.
- 18. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
- 19. After mining operations are completed, the mine closure activities as indicated in the mine closure plan shall be strictly carried out by the Proponent fulfilling the necessary actions as assured in the Environmental Management Plan.

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- 20. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.
- 21. The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
- 22. The project proponent shall ensure that the provisions of the MMRD, 1956, the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are compiled by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
- 23. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB)and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.
- 24. The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
- 25. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
- 26. All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.
- 27. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
- 28. The Project proponent shall install a Display Board at the entrance of the mining lease area/abutting the public Road, about the project information as shown in the Appendix –II of this minute.

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# Appendix -I List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	Aegle marmelos	Vilvam	ഖ്യിസ്ബഥ
2	Adenaanthera pavonina	Manjadi	மஞ்சாடி. ஆளைக்குன்றிமணி
3	Albizia lebbeck	Vaagai	வாகை
4	Albizia amara	Usil	உசிஸ்
5	Bauhinia purpurea	Mantharai	மந்தாரை
6	Bauhinia racemosa	Aathi	ஆத்தி
7	Baultinia tomentos	Iruvathi	இருவாத்தி
8	Buchanania axillaris	Kattuma	<b>காட்டுமா</b>
9	Borassus flabellifer	Panai	LISTISTE
10	Butea monosperma	Murukkamaram	முருக்கமரம்
11	Bobax ceiba	Ilavu, Sevvilavu	<b>®</b> €€€
12	Calophyllum inophyllum	Punnai	্রকাজনা
13	Cassia fistula	Sarakondrai	சரக்கொன்றை
14	Cassia roxburghii	Sengondrai	செங்கொன்றை
15	Chloroxylon sweitenia	Purasamaram	புரசு மரம்
16	Cochlospermum religiosum	Kongu, Manjalllavu	கோங்கு, மஞ்சள் இலவு
17	Cordia dichotoma	Naruvuli	நருவுளி.
18	Creteva adansoni	Mavalingum	மாவிலங்கம்
19	Dillenia indica	Uva, Uzha	₽_#1
20	Dillenia pentagyna	SiruUva, Sitruzha	சிறு உசா
21	Diospyro sebenum	Karungali	கருங்காலி
22	Diospyro schloroxylon	Vaganai	வாகணை
23	Ficus amplissima	Kalltchi	கல் இச்சி
24	Hibiscus tiliaceou	Aatrupoovarasu	ஆற்றுப்புவரசு
25	Hardwickia binata	Aacha	ஆச்சா
26	Holoptelia integrifolia	Aavili	ஆபா மரம். ஆயிலி
27	Lannea coromandelica	Odhiam	<b>ி</b> ஆரார்
28	Lagerstroemia speciosa	Poo Marudhu	ர் மடுதி
29	Lepisanthus tetraphylla	Neikottaimaram	நெப் கொட்டடை மரப்
30	Limonia acidissima	Vila maram	விலா மரம்
31	Litsea glutinos	Pisinpattai	அரம்பா. பிசின்பட்டை
32	Madhuca longifolia	Illuppai	இலுப்பை
33	Manilkara hexandra	UlakkaiPaalai	உலக்கை பாலை
34	Mimusops elengi	Magizhamaram	कश्रीकर्षाक
35	Mitragyna parvifolia	Kadambu	<b>கடம்பூ</b>
36	Morinda pubescens	Nuna	Please
37	Morinda citrifolia	Vellai Nuna	வெள்ளை நுணா
38	Phoenix sylvestre	Eachai	# <i>ச்ச</i> மரம்
39	Pongamia pinnat	Pungam	புங்கம்

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40	Premna mollissima	Munnai	ഗ്രത്തത
41	Premna serratifolia	Narumunnai	ந்று முன்னன
42	Prenna tomentosa	Malaipoovarasu	மலை பூரைக
43	Prosopis cinerea	Vanni maram	வன்னி மரம்
44	Pterocarpus marsupium	Vengai	வேங்கை
45	Pterospermum canescens	Vennangu, Tada	வெண்ணாங்கு
46	Pterospermum xylocarpum	Polavu	Hanest
47	Puthranjiwa roxburghi	Karipala	கறியாலா
48	Salvadora persica	Ugaa Maram	MAT LOO
19	Sapindus emarginatus	Manipungan, Soapukai	மணிப்புங்கன் சோப்புக்காய்
50	Saraca asoca	Asoca	அசோகா
51	Streblus asper	Piray maram	பிராய் மரம்
52	Strychnos nuxvomic	Yetti	எட்டி
53	Strychnos potatorum	Therthang Kottai	தேத்தான் கொட்டை
54	Syzygium camini	Naval	நாவல்
55	Terminalia belleric	Thandri	தான்றி
56	Terminalia arjuna	Ven marudhu	வெண் மருது
57	Toona ciliate	Sandhana vembu	சந்தன வேம்பு
58	Thespesia populnea	Puvarasu	riente
59	Walsuratrifoliata	valsura	வாஸ்கரா
60	Wrightia tinctoria	Veppalai	வெப்பாலை
61	Pithecellobium dulce	Kodukkapuli	கொடுக்காப்புளி

# Appendix –II Display Board

### (Size 6' x5' with Green Background and White Letters)

காங்கள்களம்) குவார் செயல்பாடுகளுக்கான கற்றுக்குழல் அனுமது கீழ்கண்ட நியந்தனைகளுக்கு உட்பட்டு வழங்கப்பட்டுள்ளது நடி/\_\_\_\_ தேதியிடப்பட்டு சுற்றுச்துழல் அனுக்கு \_\_\_\_ தேதி வரை செல்லத்தக்கதாக உள்ளது குவாரியின் எல்லையைச் கற்றி வேலி அமைக்க வேண்டும் பச்சைய பக்கி வாள்ச்சி பேய்பாட்டுக்கான கரங்கத் திட்டம் காங்கப்பாளதமின் அழம் நனமட்டத்தியி<u>ருந்து</u> பிட்டருத்து மிகாறல் இருக்க வேண்டும் காற்றில் மாக ஏற்படாதவாறு கரங்க பணிகளை மேற்கோள்ள வேண்டும் வாகனங்கள் செலலும் பாளதயில் மாக ஏற்படாத அளவிற்கு தண்ணீரை முறையாக தண்ணி) வாரிகளின் முலமாக அவ்வப்போது தெளிக்க வேண்டும் பராமரிக்கப்படவேண்டிய மரங்கள் இரைச்சல் அளமையும் ஓரசி மாகபாட்டையும் குறைப்பதற்காக குவாரியின் எல்ன erententisens: கற்றி அடர்த்தியான பகனம் பகுதியை ஏற்படுத்த வேண்டும். கரங்கத்தில் பெடி வைக்கும்பொழுது நிலகுதிரவுகள் ஏற்படாதவாறும் மற்றும் சுற்கள் பறக்காதவாகும் பாதுகாட்டி து. வடிக்கைகளை உள்ளிப்பாக செயல்படுத்தப்பட வேண்டும் கரங்கத்தில் இருந்து ஏற்படும் இனர்ச்சல் அனவு 85 டேசிபல்ஸ் (dex.) அளவிற்கு மேல் ஏற்படாதவாறு துதந்த கட்டுப்பாடுகளை பேறு கொள்ள வேண்டும். கரங்க சட்ட விதிகள் பணன் கீழ் கரங்கத்தில் உள்ள பணியார்களுக்கு நடுத்த பாதுகாப்பு கருவிகள் வழங்கவதோடு கைநப்புமுன்ன கழிப்பறை வசநிகளை செய்து நர வேண்டும். லாமை அன்றது பஞ்சாயத்து வழியாக வாகளங்கள் செல்லும் சாலையாய் தொடற்து நன்கு. மார்வரிக்க வேண்டும். கரங்கப்பணிகளால். அருகில் உள்ள விவசாயப் பணிகள் மற்றும் நீர்நிலைகள் பாதிக்கப்படக் கூடாது. நிற்றுகைகள் பாதிக்கப்படாமல் இருப்பாரு உறுதி செய்யும் வளகமில் நிலத்துடி நிரின் தரத்தினை தொடர்ந்து கண்களணிக்க மேண்டும் ளுக்கதிலிருந்து களிம் பொருட்களை எழுத்துச் செல்வது கிராம மக்களுக்கு எந்நத் சிரமத்தினையும் ஏற்படுத்தாதவாறு பாதுகாப்போடும். மற்றும் சுற்றுத்தும் பாதிக்கவாத வண்ணம் வாகனங்களை இயக்க வேண்டும். uscundled முடிக்கப்பட்டவுடன் காங்க மூடல் நீட்டத்தில் உள்ளவாறு கரங்கத்தினை மூட வேண்டும் வரங்க நடவடிக்கைகளை முடித்தபின்னர் கரங்கப் பத்தி மற்றும் கரங்க நடவடிக்கைகளால் இடையூறு ஏற்படக்கூடிய மேறு எந்தப் புத்தியையும் மறுகட்டுமானம் செய்து நாவரங்கள் விலங்குகள் ஆகியவற்றின் வளர்ச்சிக்கு ஏற்ற வகையில ம்.இன்மம் கக்நமத்த பண்டுதுப்பளைய முழுமையான நிடந்தனைகளை அடுய பாநிவேஷ் (ஊ.//purvesh.ec.in) என்றெ இணையத்தைய பாந்கையிடவும். மேலும் எந்தவித சற்றதும். சாந்த புகாந்களுக்கு சென்னையில் உள்ள கற்றுச்துமுல் மற்றும் வன அமைச்சகத்தின் ஒருங்கினைந்த வட்டா அழுவைகம் 644 – 2022225 (அல்லது) தமிழ்தாடு மகை கட்டும்பாடு வாரியத்தின் மாவட்ட சற்றுச்துமுல் பொறியாளனர் அனுகவும்

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# Discussion by SEIAA and the Remarks:-

The subject was placed in 609th authority meeting held on 10.04.2023. The authority noted that the subject was appraised in 363rd meeting of SEAC held on 14.03.2023. SEAC has furnished its recommendations for granting Environmental Clearance subject to the conditions stated therein.

After detailed discussions, the Authority taking into account the safety aspects and to ensure sustainable, scientific and systematic mining decided to grant Environmental Clearance for the quantity of 328324 m3 of Rough Stone & 46736 m3 of Gravel by restricting the depth of mining upto 20m BGL as per the mine plan approved by the Department of Geology & Mining. This is also subject to the standard conditions as per Annexure - (I) of SEAC minutes, other normal conditions stipulated by MOEF&CC & all other specific conditions as recommended by SEAC in addition to the following conditions and the conditions in Annexure 'A' of this minutes.

- Keeping in view of MoEF&CC's notification S.O.1533(E) dated.14.09.2006 and S.O. 1807(E) dated 12.04.2022, this Environmental Clearance is valid as per the approved mine plan period.
- 2. The EC granted is subject to review by District Collector, Mines Dept. and TNPCB on completion of every 5 years till the project life. They should also review the EC conditions to ensure that they have all been adhered to and implemented.
- The project proponent shall furnish a Certified Compliance Report obtained from MoEF&CC while seeking a renewal of the mining plan to cover the project life.
- 4. The progressive and final mine closure plan including the green belt implementation and environmental norms should be strictly followed as per the EMP.
- As per the OM vide F. No. IA3-22/1/2022-IA-III [E- 172624] Dated: 14.06.2022, the Project Proponents are directed to submit the six-monthly compliance on the environmental conditions prescribed in the prior environmental clearance letter(s) through newly developed compliance module in the PARIVESH Portal from the respective login.
- 6. The project proponent shall store/dump topsoil generated within the earmarked area of the project site and the utilize the same for mine closure as per the approved mine closure plan.
- The project proponent shall spend EMP cost of Rs. 181.534 Lakhs/10 Years as committed.
- 8. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 accepted by the Project proponent, the revised CER cost is Rs. 6 Lakhs and the amount shall be spent for the Government Higher Secondary School, Polambakkam Village as committed, before obtaining CTO from TNPCB.

Annexure-'A'

### **EC** Compliance

- I. The Environmental Clearance is accorded based on the assurance from the project proponent that there will be full and effective implementation of all the undertakings given in the Application Form, Pre-feasibilty Report, mitigation measures as assured in the Environmental Impact Assessment/ Environment Management Plan and the mining features including Progressive Mine Closure Plan as submitted with the application.
- All the conditions as presented by the proponent in the PPT during SEAC appraisal should be addressed in Full.
- The proponent shall submit Compliance Reports on the status of compliance of the stipulated EC conditions including results of monitored data. It shall be sent to the respective Regional Office of Ministry of Environment, Forests and Climate Change, Govt. of India and also to the Office of State Environment Impact Assessment Authority (SEIAA).
- Concealing the factual data or submission of false/fabricated data and failure to comply
  with any of the conditions mentioned above may result in withdrawal of this clearance and
  attract action under the provisions of Environment (Protection) Act, 1986.

### Applicable Regulatory Frameworks

5. The project proponent shall strictly adhere to the provisions of Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter

### Safe mining Practices

The AD/DD, Dept. of Geology & Mining shall ensure operation of the proposed quarry
after the submission slope stability study conducted through the reputed research &
Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR
Laboratories etc.

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- 7. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
- 8. A minimum buffer distance specified as per existing rules and statutory orders shall be maintained from the boundary of the quarry to the nearest dwelling unit or other structures, and from forest boundaries or any other ecologically sensitive and archeologically important areas or the specific distance specified by SEIAA in EC as per the recommendations of SEAC depending on specific local conditions.

# Water Environment - Protection and mitigation measures

- The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and groundwater, nor cause any pollution, to water sources in the area.
- 10. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighboring open wells and bore wells. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
- Water level in the nearest dug well in the downstream side of the quarry should be monitored regularly and included in the Compliance Report.
- Quality of water discharged from the quarry should be monitored regularly as per the norms
  of State Pollution Control Board and included in the Compliance Report.
- 13. Rain Water Harvesting facility should be installed as per the prevailing provisions of TNMBR/TNCDBR, unless otherwise specified. Maximum possible solar energy generation and utilization shall be ensured as an essential part of the project.
- 14. Regular monitoring of flow rates and water quality upstream and downstream of the springs and perennial nallahs flowing in and around the mine lease area shall be carried out and reported in the compliance reports to SEIAA.
- 15. Regular monitoring of ground water level and water quality shall be carried out around the mine area during mining operation. At any stage, if it is observed that ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.

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Date of Issue EC - 25/04/2023 191 A 16. Garland drains and silt traps are to be provided in the slopes around the core area to channelize storm water. De-silting of Garland canal and silt traps have to be attended on a daily basis. A labour has to be specifically assigned for the purpose. The proponent shall ensure the quality of the discharging storm water as per the General Effluent Discharge Standards of CPCB.

# Air Environment - Protection and mitigation measures

- 17. The activity should not result in CO<sub>2</sub> release and temperature rise and add to micro climate alternations.
- 18. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
- 19. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.

### Soil Environment - Protection and mitigation measures

- 20. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
- 21. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
- 22. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health.
- 23. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.
- 24. The proponent shall ensure that the mine restoration is done using mycorrizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.
- 25. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
- 26. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.
- 27. The top soil shall be temporarily stored at earmarked place (s) and used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. At critical points, use of

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geotextile shall be undertaken for stabilization of the dump. Protective wall or gabions should be made around the dump to prevent erosion / flow of sediments during rains. The entire excavated area shall be backfilled.

# Noise Environment - Protection and mitigation measures

- 28. The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
- 29. The sound at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Hence, the PP shall ensure that the biological clock of the villages are not disturbed because of the mining activity.

# Biodiversity - Protection and mitigation measures

- 30. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
- 31. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem. The proponent shall ensure that the activity does not result in invasion by invasive alien species. The proponent shall ensure that the activities do not disturb the resident and migratory birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around.
- 32. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms. Actions to be taken to promote agroforestry, mixed plants to support biodiversity conservation in the mine restoration effort.
- 33. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
- 34. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.

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### Climate Change

- 35. The project activity should not in any way impact the climate and lead to a rise in temperature.
- 36. There should be least disturbance to landscape resulting in land use change, contamination and alteration of soil profiles leading to Climate Change.
- 37. Intensive mining activity should not add to temperature rise and global warming.
- Operations should not result in GHG releases and extra power consumption leading to Climate Change.
- 39. Mining through operational efficiency, better electrification, energy use, solar usage, use of renewable energy should try to decarbonize the operations.
- 40. Mining Operation should not result in droughts, floods and water stress, and shortages, affecting water security both on site and in the vicinity.
- 41. Mining should not result in water loss from evaporation, leaks and wastage and should support to improve the ground water.
- 42. Mining activity should be flood proof with designs and the drainage, pumping techniques shall ensure climate-proofing and socio-economic wellbeing in the area and vicinity.

### Reserve Forests & Protected Areas

- 43. The activities should provide nature based support and solutions for forest protection and wildlife conservation.
- 44. The project activities should not result in forest fires, encroachments or create forest fragmentation and disruption of forest corridors.
- 45. There should be no disturbance to the freshwater flow from the forest impacting the water table and wetlands.
- 46. The project proponent should support all activities of the forest department in creating awareness to local communities on forest conservation.
- 47. The project activities should not alter the geodiversity and geological heritage of the area.
- 48. The activities should not result in temperature rise due to increased fossil fuels usage disrupting the behaviour of wildlife and flora.
- 49. The activities should support and recognise the rights and roles of indigenous people and local communities and also support sustainable development.
- 50. The project activities should support the use of renewables for carbon capture and carbon storage in the project site and forest surrounds.

51. The project activities should not result in changes in forest structure, habitats and genetic diversity within forests.

# Green Belt Development

- 52. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) are planted.
- 53. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).

### Workers and their protection

- 54. The project proponent is responsible for implementing all the provisions of labour laws applicable from time to time to quarrying /Mining operations. The workers on the site should be provided with on-site accommodation or facilities at a suitable boarding place, protective equipment such as ear muffs, helmet, etc.
- 55. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
- 56. The workers shall be employed for working in the mines and the working hours and the wages shall be implemented/enforced as per the Mines Act, 1952.

### Transportation

- 57. No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a bypass road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.
- 58. The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust

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generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.

### Storage of wastes

59. The project proponent shall store/dump the granite waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.

### CER/EMP

- The CER Should be fully Implemented and fact reflected in the Half-yearly compliance report.
- 61. The EMP Shall also be implemented in consultation with local self-government institutions.
- The follow-up action on the implementation of CER Shall be included in the compliance report.

### Directions for Reclamation of mine sites

- 63. The mining closure plan should strictly adhere to appropriate soil rehabilitation measures to ensure ecological stability of the area. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.
- 64. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
- 65. A crucial factor for success of reclamation site is to select sustainable species to enable develop a self-sustaining eco system. Species selected should easily establish, grow rapidly, and possess good crown and preferably be native species. Species to be planted in the boundary of project site should be un palatable for cattle's/ goats and should have proven capacity to add leaf-litter to soil and decompose. The species planted should be adaptable to the site conditions. Should be preferably pioneer species, deciduous in nature to allow maximum leaf-litter, have deep root system, fix atmospheric nitrogen and improve soil

MEMBER SECRETARY SEIAA-TN productivity. Species selected should have the ability to tolerate altered pit and toxicity of and site. They should be capable of meeting requirement of local people in regard to fuel fodder and should be able to attract bird, bees and butterflies. The species should be planted in mixed association.

- For mining area reclamation plot culture experiments to be done to identify/ determine suitable species for the site.
- 67. Top soil with a mix of beneficial microbes (Bacteria/Fungi) to be used for reclamation of mine spoils. AM Fungi (Arbuscular mycorrhizal fungi), plant growth promoting Rhizo Bacteria and nitrogen fixing bacteria to be utilized.
- 68. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site.
- 69. Top soil is most important for successful rehabilitation of mined sites. Topsoil contains majority of seeds and plant propagation, soil microorganism, Organic matter and plant nutrients. Wherever possible the topsoil should be immediately used in the area of the for land form reconstruction, to pre mining conditions.
- 70. Over burdens may be analyzed and tested for soil characteristics and used in the site for revegetation. Wherever possible seeds, rhizome, bulbs, etc of pioneering spices should be collected, preserved and used in restoring the site.
- 71. Native grasses seeds may be used as colonizers and soil binders, to prevent erosion and allow diverse self- sustaining plant communities to establish. Grasses may offer superior tolerance to drought, and climatic stresses.
- 72. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoils should have necessary physical, chemicals, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil should be stabilized using grasses to protect from wind. Seeds of various indigenous and local species may be broad casted after topsoil and treated overburden are spread.
- 73. Alkaline soils, acidic soils, Saline soils should be suitably treated/amended using green manure, mulches, farmyard manure to increase organic carbon. The efforts should be taken to landscape and use the land post mining. The EMP and mine closure plan should provide adequate budget for re-establishing the site to pre-mining conditions. Effective steps should be taken for utilization of over burden. Mine waste to be used for backfilling, reclamation, restoration, and rehabilitation of the terrain without affecting the drainage and water

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- regimes. The rate of rehabilitation should be similar to rate of mining. The land disturbed should be reshaped for long term use. Mining should be as far as possible be eco-friendly. Integration of rehabilitation strategies with mining plan will enable speedy restoration.
- 74. Efforts should to taken to aesthetically improve the mine site. Generally, there are two approaches to restoration i.e Ecological approach which allows tolerant species to establish following the succession process allowing pioneer species to establish. The other approach i.e plantation approach is with selected native species are planted. A blend of both methods may be used to restore the site by adding soil humus and mycorrhiza.
- 75. Action taken for restoration of the site should be specifically mentioned in the EC compliances.

### Part-A: Conditions to be Complied before commencing mining operations:-

- The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
  - The project has been accorded Environmental Clearance.
  - Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
  - III. Environmental Clearance may also be seen on the website of the SEIAA.
  - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
- Mining activity should be reviewed by the District Collector after three years and decide for further extension.
- NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
- The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil
  Nadu Minor Minerals Concession Rules 1959.
- 5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.

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- 6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
- 7. The proponent shall ensure that First Aid Box is available at site.
- The excavation activity shall not alter the natural drainage pattern of the area.
- The excavated pit shall be restored by the project proponent for useful purposes.
- 10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
- 11. The quarrying operation shall be restricted between 7AM and 5 PM.
- 12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
- 13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
- Depth of quarrying should be as per approved mining plan.
- 15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
- 16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
- 17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
- 18. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
- 19. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
- 20. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, Gol on 16.11.2009.
- 21. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
  - Roads shall be graded to mitigate the dust emission.

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- Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
- 22. The following measures are to be implemented to reduce Noise Pollution
  - i. Proper and regular maintenance of vehicles and other equipment
  - ii. Limiting time exposure of workers to excessive noise.
  - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
  - Speed of trucks entering or leaving the mine is to be limited to moderate speed of kmph to prevent undue noise from empty trucks.
  - All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
- 23. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed levels.
- 24. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
- Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project,
- 26. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
- 27. The following measures are to be adopted to control erosion of dumps:
  - i. Retention/ toe walls shall be provided at the foot of the dumps.
  - Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
- 28. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
- 29. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- 30. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.

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- 31. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
- 32. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
- No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
- 34. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
- 35. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
- 36. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
- Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
- Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
- 39. Bunds to be provided at the boundary of the project site.
- 40. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.

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- 41. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
- The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
- 43. The Project Proponent shall provide solar lighting system to the nearby villages.
- 44. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
- Safety equipments to be provided to all the employees.
- 46. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
- 47. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
- 48. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
- 49. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
- 50. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
- 51. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
- 52. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
- 53. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
- 54. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
- 55. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
- 56. All the commitment made by the project proponent in the proposal shall be strictly followed.

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- 57. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
- The Project proponent has to strictly comply the outcome/direction of the Hon'ble NGT, Principle Bench, New Delhi in the O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016 (M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/ 2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).

# Part B: General Conditions:

- EC is given only on the factual records, documents and the commitment furnished in non
  judicial stamp paper by the proponent.
- The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.
- No change in mining technology and scope of working should be made without prior approval
  of the SEIAA, Tamil Nadu.
- No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- 5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- A berm shall be left from the boundary of adjoining field having a width equal to at least half
  the depth of proposed excavation.
- Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
- . 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.

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- 11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
  - 12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
  - 13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
  - 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
  - 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
  - 16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
  - 17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
  - 18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
  - 19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
  - 20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
  - 21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the

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Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

- 22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
- 23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
- 24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.

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### Copy to:

- 1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- The Additional Chief Secretary to Government, Environment and Forests Department, Tamil Nadu.
- 3. The Additional Chief Secretary to Government, Industries Department, Tamil Nadu.
- The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1<sup>st</sup>& 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
- The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
- The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
- 7. The District Collector, Chengalpattu District
- The Commissioner of Geology and Mines, Guindy, Chennai-32
- El Division, Ministry of Environment & Forests, ParyavaranBhawan, New Delhi.
- 10. File Copy





TC-9583

### PRIVATE LIMITED

### **TEST REPORT**

A. A. S. A.	4 5 1 5 1 R. 1 Sep 1 Sep 1					
Report No	EHS360/TR/2024-25/001	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE & F	HOLDINGS PVT. LTD.,				
Site Location Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3						
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/001			
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good			
Sampling Location AAQ1 Core zone – Project area 12°25'11.00"N 79°55'34.14"E						

Date	Period. hrs	PM10(µg/m3)	PM2.5(μg/m3)	SO2 (µg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	43.2	22.4	7.4	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	41.4	21.6	6.2	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	44.6	23.7	8.2	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	42.8	21.7	6.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	44.4	23.6	7.2	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	45.1	21.2	6.8	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	43.4	23.9	7.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	45.1	21.8	6.4	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	42.6	22.5	7.9	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	41.9	23.4	8.5	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	44.5	21.9	6.3	23.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	42.4	22.5	8.9	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.7	21.3	7.2	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	42.1	21.9	6.8	25.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	44.5	23.7	7.4	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	42.4	22.4	6.6	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	43.1	22.6	8.1	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	44.6	23.4	7.5	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	42.7	21.8	6.2	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	41.5	22.6	7.6	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	42.8	23.7	8.9	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	43.6	22.4	6.4	20.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	44.5	21.6	8.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	42.7	23.8	7.3	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	43.3	21.8	6.8	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	44.7	22.6	8.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	tandard	<100	<100	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Shyk

Page 1 of 47

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



### **TEST REPORT**

Report No	EHS360/TR/2024-25/001	Report Date	10-06-2024					
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,							
Site Location	Rough Stone And Gravel Quarry, S.F							
	Netrampakkam Village, Maduranthan	gam Taluk, Chengalpattu D	ist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory					
Sample Name	Air	Sample Code	EHS360/001					
Sample Description	Ambient Air Quality Monitoring	Sample Condition Good						
Sampling Location	ation AAQ1 Core zone – Project area 12°25'11.00"N 79°55'34.14"E							

Date	Period. hrs	SPM (μg/m³)	As (ng/m³)	C6H6 (µg/m³)	Bap (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	67.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	60.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	67.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	61.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	68.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	61.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	60.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	67.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St		<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*\*End of Report\*\*\*\*\*\*

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





#### TC-9583

### PRIVATE LIMITED

### **TEST REPORT**

Report No	EHS360/TR/2024-25/002	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE 8	R HOLDINGS PVT. LTD.,				
Site Location Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3						
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/002			
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good			
Sampling Location AAQ 2 – Near Project Area- 12°25'33.11"N 79°55'50.81"E						

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	46.2	23.6	6.4	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	42.5	21.4	7.2	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	44.9	22.8	6.6	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	43.5	24.9	6.4	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	42.8	25.2	7.5	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	44.4	21.3	6.5	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	48.1	23.4	7.8	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	47.6	22.8	6.6	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	46.2	24.4	7.1	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	44.5	23.6	6.8	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	45.9	22.8	6.9	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	44.2	23.4	7.5	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.9	24.5	6.6	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	42.7	23.6	7.2	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	43.8	22.7	6.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	44.4	24.9	6.9	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	45.8	23.6	6.7	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	47.7	21.7	6.5	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	43.5	22.8	6.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	42.1	23.5	7.8	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	43.9	24.6	6.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	42.8	23.8	7.2	19.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	43.2	22.4	6.9	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	44.6	23.2	7.4	25.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	45.8	21.1	6.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	43.7	23.9	7.4	23.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	tandard	<100	<100	<60	<80	<80	<100	<400

Note: BDL: Below Detection Limit; DL: Detection Limit Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by



\*\*\*\*End of Report\*\*\*\*\*\* CHENNAL 600 083

**Authorised Signatory** Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



### **TEST REPORT**

Report No	EHS360/TR/2024-25/002	Report Date	10-06-2024			
M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,						
Site Location	tion Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/002			
Sample Description	Ambient Air Quality Monitoring	Sample Condition Good				
Sampling Location AAQ 2 – Near Project Area- 12°25'33.11"N 79°55'50.81"E						

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St		<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*

Verified by

Selyk

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

Report No	EHS360/TR/2024-25/003	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE &	HOLDINGS PVT. LTD.,				
Site Location	Site Location Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/003			
Sample Description	Ambient Air Quality Monitoring	Sample Condition Good				
Sampling Location	Sampling Location AAQ3 – Pazhuvur- 12°23'3.54"N 79°53'45.63"E					

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	46.2	21.6	6.6	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	40.5	20.4	5.1	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	41.9	24.3	7.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	48.2	22.6	6.2	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	43.6	23.8	6.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	44.2	21.5	5.9	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	45.1	25.2	7.3	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	43.8	21.9	5.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	40.1	24.5	6.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	48.7	23.6	7.7	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	47.6	24.7	6.5	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	46.6	23.2	5.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.2	22.6	6.2	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	45.9	20.4	7.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	44.1	21.6	5.3	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	42.8	23.4	5.8	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	43.8	22.8	6.9	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	43.7	22.1	5.4	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	42.5	25.6	7.1	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	43.6	24.3	6.5	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	41.8	23.8	5.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	42.9	21.9	6.3	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	44.8	22.7	5.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	46.6	25.6	7.9	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	45.8	23.4	5.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	44.7	21.1	6.2	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	tandard	<100	<100	<60	<80	<80	<100	<400

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by



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Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/003	Report Date	10-06-2024			
M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,						
Site Location	Rough Stone And Gravel Quarry, S.	F.Nos.: 14/1A, 14/1B, 14/2	& 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nad					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/003			
Sample Description	Ambient Air Quality Monitoring Sample Condition Good					
Sampling Location	on AAQ3 – Pazhuvur- 12°23'3.54"N 79°53'45.63"E					

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (μg/m³)	Bap (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	(DL:1.0) BDL (DL:1.0)		BDL (DL:0.1)
13.03.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St	andard	<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Selyk

Page 1 of 1

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

Report No	EHS360/TR/2024-25/004	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE &	R HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F	F.Nos.: 14/1A, 14/1B, 14/2 &	15/3				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu						
Sampling Method	IS 5182	Sample Drawn by	Laboratory				
Sample Name	Air	Sample Code	EHS360/004				
Sample Description	Ambient Air Quality Monitoring	Ambient Air Quality Monitoring Sample Condition Good					
Sampling Location	Location AAQ4 – Vellikadu- 12°26'49.42"N 79°58'18.90"E						

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	44.5	22.5	7.4	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	42.7	21.4	6.2	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	43.5	23.9	7.5	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	45.9	21.8	8.4	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	42.7	22.6	6.8	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	43.3	23.7	6.3	25.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	44.6	22.4	6.7	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	45.9	21.8	7.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	42.8	22.5	8.4	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	43.5	23.4	6.9	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	44.6	22.1	7.4	25.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	45.6	23.6	6.3	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.3	21.8	7.8	23.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	44.5	22.5	6.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	45.8	23.6	8.1	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	44.2	21.5	7.5	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	43.5	22.8	6.2	23.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	42.6	23.4	7.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	44.8	25.2	6.8	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	42.9	21.6	7.9	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	45.6	22.6	6.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	43.4	24.7	7.4	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	42.5	23.4	6.5	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	44.8	25.5	7.1	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	45.1	22.6	6.5	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	43.3	23.4	7.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	Standard	<100	<100	<60	<80	<80	<100	<400

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report\*\*\*\*\*\*\*\*

Verified by

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

CHENNAL

600 083

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/004	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,						
Site Location	Rough Stone And Gravel Quarry, S.	.F.Nos.: 14/1A, 14/1B, 14/2	<b>!</b> & 15/3				
Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil							
Sampling Method	IS 5182	Sample Drawn by	Laboratory				
Sample Name	Air	Sample Code	EHS360/004				
Sample Description	Ambient Air Quality Monitoring Sample Condition Good						
Sampling Location	ampling Location AAQ4 – Vellikadu- 12°26'49.42"N 79°58'18.90"E						

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	61.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	61.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Sta		<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Suyk

Page 1 of 14 CHENNAI G00 083

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





Report No	EHS360/TR/2024-25/005	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE 8	HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F	.Nos.: 14/1A, 14/1B, 14/2 &	15/3				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu						
Sampling Method	IS 5182	Sample Drawn by	Laboratory				
Sample Name	Air	Sample Code	EHS360/005				
Sample Description	Ambient Air Quality Monitoring Sample Condition Good						
Sampling Location							

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	42.5	23.8	7.2	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	44.6	23.4	5.8	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	43.8	22.9	6.9	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	41.7	23.4	5.3	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	45.5	24.5	6.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	42.8	23.9	5.8	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	43.9	22.5	6.6	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	44.6	23.7	7.2	22.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	41.5	22.5	6.4	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	42.8	23.4	5.8	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	44.5	22.6	7.8	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	45.6	23.4	8.5	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	42.7	23.8	6.3	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	43.8	22.9	7.8	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	44.1	23.7	6.9	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	45.6	22.5	7.4	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	42.8	23.1	8.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	41.1	22.6	7.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	44.2	24.8	8.6	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	41.8	23.9	5.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	44.6	22.7	6.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	45.2	24.8	7.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	46.8	23.4	8.1	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	46.1	22.2	7.4	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	44.3	23.9	5.9	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	46.8	24.6	7.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	tandard	<100	<100	<60	<805	<80	<100	<400

Note: BDL: Below Detection Limit; DL: Detection Limit Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

\*End of Report\*\*\*\*\*\*\* CHENNAL 600 083

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/005	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE & HOLD	DINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.:	14/1A, 14/1B, 14/2 &	15/3				
	Netrampakkam Village, Maduranthangam T	aluk, Chengalpattu Dis	st, Tamil Nadu				
Sampling Method	IS 5182	Sample Drawn by	Laboratory				
Sample Name	Air	Sample Code	EHS360/005				
Sample Description	Ambient Air Quality Monitoring	ent Air Quality Monitoring Sample Condition Good					
Sampling Location	AAQ5 – Onampakkam-12°23'2.68"N 79°57'56.73"E						

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	С6H6 (μg/m³)	Bap (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	62.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	60.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St		<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit; DL: Detection Limit Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

CHENNAL 600 083

**Authorised Signatory** 

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

Report No	EHS360/TR/2024-25/006	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE 8	HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry, S.F	F.Nos.: 14/1A, 14/1B, 14/2 &	15/3			
	Netrampakkam Village, Maduranthan	gam Taluk, Chengalpattu D	ist, Tamil Nadu			
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/006			
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good			
Sampling Location	AAQ 6 - Puliyurankottai- 12°28'28.50"N 79°55'18.88"E					

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	44.2	24.6	6.6	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	40.5	21.5	7.8	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	41.8	22.9	6.5	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	42.9	23.7	8.1	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	43.4	21.5	6.4	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	41.5	22.8	7.3	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	42.6	23.4	6.5	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	43.7	22.6	8.9	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	44.8	20.5	8.1	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	45.6	21.7	7.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	44.8	24.8	6.4	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	45.2	23.2	7.5	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.8	22.9	8.2	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	41.5	21.4	6.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	42.9	20.6	7.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	40.6	23.8	8.9	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	42.8	22.5	6.3	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	43.8	23.7	7.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	42.7	21.6	8.9	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	43.5	23.4	7.4	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	44.1	22.8	6.6	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	43.5	24.9	7.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	44.6	25.6	7.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	42.8	23.4	8.9	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	43.4	24.8	6.3	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	41.7	23.2	7.0	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S		<100	<100	<60	<80	<80	<100	<400

Note: BDL: Below Detection Limit; DL: Detection Limit

**Remarks:** The values observed for the pollutants given above are within the CPCB standards.

Verified by

Page 1 of 4

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>3.</sup> Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/006	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Madurantha	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu				
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/006			
Sample Description	Ambient Air Quality Monitoring Sample Condition Good					
Sampling Location AAQ 6 - Puliyurankottai- 12°28'28.50"N 79°55'18.88"E						

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	Bap (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	67.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	68.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St		<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

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Page 1 of 4

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

	·						
Report No	EHS360/TR/2024-25/007	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,						
Site Location	Rough Stone And Gravel Quarry, S.F	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu						
Sampling Method	IS 5182	Sample Drawn by	Laboratory				
Sample Name	Air	Sample Code	EHS360/007				
Sample Description	Ambient Air Quality Monitoring Sample Condition Good						
Sampling Location AAQ 7 – Polambakkam - 12°25'39.71"N 79°52'59.57"E							

Date	Period. hrs	PM10(μg/m3)	PM2.5(μg/m3)	SO2 (μg/m3)	NO2 (μg/m3)	O3 (μg/m3)	NH3 (μg/m3)	CO (mg/ m3)
06.03.2024	7:00-7:00	44.2	24.6	6.6	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.03.2024	7:15-7:15	40.5	21.5	7.8	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
13.03.2024	7:00-7:00	41.8	22.9	6.5	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:15-7:15	42.9	23.7	8.1	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.03.2024	7:00-7:00	43.4	21.5	6.4	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:15-7:15	41.5	22.8	7.3	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.03.2024	7:00-7:00	42.6	23.4	6.5	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:15-7:15	43.7	22.6	8.9	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.04.2024	7:00-7:00	44.8	20.5	8.1	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:15-7:15	45.6	21.7	7.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.04.2024	7:00-7:00	44.8	24.8	6.4	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:15-7:15	45.2	23.2	7.5	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.04.2024	7:00-7:00	43.8	22.9	8.2	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:15-7:15	41.5	21.4	6.3	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.04.2024	7:00-7:00	42.9	20.6	7.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:15-7:15	40.6	23.8	8.9	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
01.05.2024	7:00-7:00	42.8	22.5	6.3	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:15-7:15	43.8	23.7	7.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.05.2024	7:00-7:00	42.7	21.6	8.9	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:15-7:15	43.5	23.4	7.4	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.05.2024	7:00-7:00	44.1	22.8	6.6	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:15-7:15	43.5	24.9	7.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.05.2024	7:00-7:00	44.6	25.6	7.4	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:15-7:15	42.8	23.4	8.9	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.05.2024	7:00-7:00	43.4	24.8	6.3	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:15-7:15	41.7	23.2	7.0	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* S	tandard	<100	<100	<60	<80	<80	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

**Authorised Signatory** Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*\*End of Report\*\*\*\*\*

CHENNAL

600 083

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/007	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 5182	Sample Drawn by	Laboratory			
Sample Name	Air	Sample Code	EHS360/007			
Sample Description	Ambient Air Quality Monitoring Sample Condition Good					
Sampling Location AAQ 7 – Polambakkam - 12°25'39.71"N 79°52'59.57"E						

Date	Period. hrs	SPM (μg/m³)	As (ng/m³)	С6H6 (µg/m³)	Bap (ng/m³)	Pb (μg/m³)	Ni (ng/m³)
06.03.2024	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.03.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
13.03.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:15-7:15	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.03.2024	7:00-7:00	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.03.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:15-7:15	67.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.04.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.04.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.04.2024	7:00-7:00	68.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
01.05.2024	7:00-7:00	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.05.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.05.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:15-7:15	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.05.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.05.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* St	andard	<200	<200	<100	<60	<80	<80

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

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Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*End of Report\*\*\*\*\*

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

お: 大阪(A/(A/(A)を)さいた(200) 200(A)	ARRIVE IN THE SEC.					
Report No	EHS360/TR/2024-25/ 008	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S	.F.Nos.: 14/1A, 14/1B, 14/2 &	15/3			
	Netrampakkam Village, Madurantha	angam Taluk, Chengalpattu D	ist, Tamil Nadu			
Sampling Method	IS 9989 Sample Drawn by Laboratory					
Sample Name	Noise Level Monitoring Sample Code EHS360/ 00					
Sample Description	Ambient Noise	Sample Collected Date	31-05-2024			

Location	N1 – Project Ai 12°25'19.91"N7			N2 – Near Projec	t Area- 12°25'31.39	"N 79°55'52.65
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	38.6	44.4	42.4	38.6	44.4	42.4
07:00-08:00	40.8	46.2	44.3	37.5	42.5	40.7
08:00-09:00	37.2	42.5	40.6	35.5	41.2	39.2
09:00-10:00	36.7	42.8	40.7	36.7	42.8	40.7
10:00-11:00	40.7	46.8	44.7	40.7	46.8	44.7
11:00-12:00	39.4	45.9	43.8	37.4	41.5	39.9
12:00-13:00	40.1	46.5	44.4	38.1	43.4	41.5
13:00-14:00	39.4	45.6	43.5	39.4	45.6	43.5
14:00-15:00	39.5	46.4	44.2	37.5	42.5	40.7
15:00-16:00	40.5	45.6	43.8	40.5	45.6	43.8
16:00-17:00	38.7	45.1	43.0	38.7	45.1	43.0
17:00-18:00	40.9	46.7	44.7	40.9	46.7	44.7
18:00-19:00	42.1	47.1	45.3	38.7	43.1	41.4
19:00-20:00	40.4	46.5	44.4	36.5	41.5	39.7
20:00-21:00	39.4	45.2	43.2	39.4	45.2	43.2
21:00-22:00	40.5	46.1	44.1	40.5	46.1	44.1
22:00-23:00	38.4	43.5	41.7	38.4	43.5	41.7
23:00-00:00	34.5	40.4	38.4	33.4	39.5	37.4
00:00-01:00	32.8	39.5	37.3	35.4	41.1	39.1
01:00-02:00	33.4	35.4	34.5	36.4	41.7	39.8
02:00-03:00	32.5	38.2	36.2	36.4	41.2	39.4
03:00-04:00	34.5	40.8	38.7	34.5	40.8	38.7
04:00-05:00	30.2	40.3	37.7	34.2	40.3	38.2
05:00-06:00	32.1	39.5	37.2	30.4	37.4	35.2
	Day N	Лeans	43.5	Day I	Means	41.4
Result	Night	Means	37.2	Night	Means	36.8

**Note:** CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.

Verified by

Shyk

Page 1 of 4

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





### **TEST REPORT**

Report No	EHS360/TR/2024-25/ 009	Report Date	10-06-2024				
	M/S. TVL. TRIWAY WAREHOUSE	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3					
	Netrampakkam Village, Madurantha	angam Taluk, Chengalpattu Di	st, Tamil Nadu				
Sampling Method	IS 9989	Sample Drawn by	Laboratory				
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 009				
Sample Description	Ambient Noise	Sample Collected Date	31-05-2024				

Location	N3 – Pazhuvur	- 12°23'1.49	9"N 79°53'45.78"E	N4 – Vellikad	lu- 12°26'50.4	7"N 79°58'18.86"E
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	33.2	39.4	37.3	32.1	39.4	37.1
07:00-08:00	37.5	42.5	40.7	35.1	41.1	39.1
08:00-09:00	34.4	40.1	38.1	34.4	40.1	38.1
09:00-10:00	36.7	42.8	40.7	36.7	42.8	40.7
10:00-11:00	38.4	44.5	42.4	38.4	44.5	42.4
11:00-12:00	37.4	41.5	39.9	34.5	40.1	38.1
12:00-13:00	38.1	43.4	41.5	36.4	41.5	39.7
13:00-14:00	35.4	41.5	39.4	35.4	41.5	39.4
14:00-15:00	37.5	42.5	40.7	35.8	41.2	39.3
15:00-16:00	36.4	41.8	39.9	36.4	41.8	39.9
16:00-17:00	38.7	45.1	43.0	35.4	41.1	39.1
17:00-18:00	36.2	41.7	39.8	36.2	41.7	39.8
18:00-19:00	35.4	41.9	39.8	35.4	41.9	39.8
19:00-20:00	36.5	41.5	39.7	34.1	40.2	38.1
20:00-21:00	39.4	45.2	43.2	39.4	45.2	43.2
21:00-22:00	35.4	41.3	39.3	35.4	41.3	39.3
22:00-23:00	34.6	40.5	38.5	34.6	40.5	38.5
23:00-00:00	29.5	35.1	33.1	30.1	35.1	33.3
00:00-01:00	30.2	36.4	34.3	29.5	35.2	33.2
01:00-02:00	32.4	38.4	36.4	30.5	36.7	34.6
02:00-03:00	31.4	37.8	35.7	29.4	35.1	33.1
03:00-04:00	33.1	39	37.0	30.1	36.4	34.3
04:00-05:00	32.5	38.1	36.1	29.4	44.6	41.7
05:00-06:00	30.4	37.4	35.2	28.5	34.2	32.2
	Day Means		40.2	Day M	1eans	39.5
Result	Night Me	eans	35.4	Night I	Means	34.6

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.

\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*

CHENNAL

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Page

Verified by

Authorised Signatory

Name : Santhosh Kumar A Designation : Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 010	Report Date	10-06-2024		
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu				
Sampling Method	IS 9989 Sample Drawn by Laboratory				
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 010		
Sample Description	Ambient Noise	Sample Collected Date	31-05-2024		

Location	N5 – Onampa 79°57'56.67"E	akkam 12°23'2.: E	27"N	N6 – Puliyur 79°55'18.22"	ankottai- 12°28 E	8'30.09"N
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	32.1	39.4	37.1	32.1	39.4	37.1
07:00-08:00	30.1	36.2	34.1	33.4	39.5	37.4
08:00-09:00	34.4	40.1	38.1	34.4	40.1	38.1
09:00-10:00	31.8	36.9	35.1	33.8	39.8	37.8
10:00-11:00	35.4	41.5	39.4	35.4	41.5	39.4
11:00-12:00	34.5	40.1	38.1	34.5	40.1	38.1
12:00-13:00	30.2	36.1	34.1	34.9	40.9	38.9
13:00-14:00	35.4	41.5	39.4	35.4	41.5	39.4
14:00-15:00	35.8	41.2	39.3	35.8	41.2	39.3
15:00-16:00	33.8	39.2	37.3	34.9	40.5	38.5
16:00-17:00	30.6	35.7	33.9	35.7	40.6	38.8
17:00-18:00	31.2	37.4	35.3	36.9	42.7	40.7
18:00-19:00	33.4	39.1	37.1	33.4	39.1	37.1
19:00-20:00	34.1	40.2	38.1	34.1	40.2	38.1
20:00-21:00	35.2	41.5	39.4	36.7	41.5	39.7
21:00-22:00	35.4	41.3	39.3	35.4	41.3	39.3
22:00-23:00	32.8	38.1	36.2	32.8	38.1	36.2
23:00-00:00	33.5	39.2	37.2	30.8	36.5	34.5
00:00-01:00	32.5	37.1	35.4	32.5	37.1	35.4
01:00-02:00	30.5	36.7	34.6	30.5	36.7	34.6
02:00-03:00	31.7	38.4	36.2	31.7	38.4	36.2
03:00-04:00	32.6	38.7	36.6	30.5	36.4	34.4
04:00-05:00	33.2	40.1	37.9	33.2	40.1	37.9
05:00-06:00	31.8	37.1	35.2	31.8	37.1	35.2
	Day N	⁄leans	37.1	Day N	/leans	38.5
Result	Night	Means	36.2	Night	Means	35.5

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.

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\*\*\*\*\*\*End of Report\*\*\*\*\*\*

Verified by

Selyk

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





## **TEST REPORT**

F 355(0)(455), 30) 10.1/1110 (1.10) 10.						
Report No	EHS360/TR/2024-25/ 011		Report Date	10-06-2024		
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3 Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu					
Sampling Method	IS 9989 Sample Drawn by Laboratory					
Sample Name	Noise Level Monitoring	Sample C	ode	EHS360/ 011		
Sample Description	Ambient Noise	Sample C	Collected Date	31-05-2024		

Campic Description	7 (ITIDICITE 140ISC	Cample Conceted B	01-00-202 <del>4</del>			
Location	N7 – Polambakkam 12°25'39.40"N 79°52'59.61"E					
Parameter	Min	Max	Result			
Time	dB(A)	dB(A)	dB(A)			
06:00-07:00	38.2	41.2	40.0			
07:00-08:00	37.1	40.3	39.0			
08:00-09:00	36.5	42.1	40.1			
09:00-10:00	38.2	41.5	40.2			
10:00-11:00	37.1	40.2	38.9			
11:00-12:00	36.6	43.3	41.1			
12:00-13:00	34.2	41.1	38.9			
13:00-14:00	37.1	40.3	39.0			
14:00-15:00	38.2	41.2	40.0			
15:00-16:00	36.4	38.6	37.6			
16:00-17:00	35.6	39.1	37.7			
17:00-18:00	32.1	37.2	35.4			
18:00-19:00	33.1	35.6	34.5			
19:00-20:00	35.6	38.6	37.4			
20:00-21:00	34.2	36.1	35.3			
21:00-22:00	36.2	38.2	37.3			
22:00-23:00	33.2	37.6	35.9			
23:00-00:00	31.2	35.4	33.8			
00:00-01:00	32.1	37.6	35.7			
01:00-02:00	34.5	37.2	36.1			
02:00-03:00	36.6	38.1	37.4			
03:00-04:00	33.5	36.2	35.1			
04:00-05:00	32.2	35.6	34.2			
05:00-06:00	35.4	38.2	37.0			
	Day	Means	38.1			
Result	Nigh	t Means	35.6			

Verified by



Page 9 of 4

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





## **TEST REPORT**

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Report No	EHS360/TR/2024-25/ 012	Report Date	10-06-2024			
	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quarry		•			
	Netrampakkam Village, Maduran					
Sampling Method	SOP Method	Sample Drawn by	Laboratory			
Sample Name	Soil	Sample Code	EHS360/ 012			
Sample Description	Soil 1	Sample Collected Date	31-05-2024			
Qty. of Sample	2.40	Sample Bessived On	01-06-2024			
Received	2 KG	Sample Received On				
Sample Condition	Good	Test Commenced On	01-06-2024			
Sampling Location	Project Area					

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.25
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	405 μmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.9 %
04	Bulk Density	By Cylindrical Method	1.01 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	46.9 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 :	45 mg/kg
07	Magnesium as Mg	2018	31.6 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	50.7 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0012 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	6.54 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	380.2 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.71 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.99 %

\*\*\*\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*\*\*\*\*





Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>3.</sup> Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 012	Report Date	10-06-2024		
M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,					
Site Location	Rough Stone And Gravel Quar				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Na				
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Soil	Sample Code	EHS360/ 012		
Sample Description	Soil 1	Sample Collected Date	31-05-2024		
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024		
Sample Condition	Good	Test Commenced On	01-06-2024		
Sampling Location	Project Area				

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay		32.2 %
	Sand	Gravimetric Method	30.0 %
	Silt		37.8 %
15	Manganese as Mn		11 mg/kg
16	Zinc as Zn		3.09 mg/kg
17	Boron as B		3.15 mg/kg
18	Potassium as K		20 mg/kg
19	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		2.19 mg/kg
23	Iron as Fe		3.44 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	40.8 meq/100g of soil

Verified by





Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





## **TEST REPORT**

Damant Na	ELIO000/TD/0004 05/ 040	Dament Data	40.00.0004	
Report No	EHS360/TR/2024-25/ 013	Report Date	10-06-2024	
	JSE & HOLDINGS PVT. LT			
Site Location	Rough Stone And Gravel Quarr	y, S.F.Nos.: 14/1A, 14/1B, 1	4/2 & 15/3	
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nad			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Soil	Sample Code	EHS360/ 013	
Sample Description	Soil 2	Sample Collected Date	31-05-2024	
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024	
Sample Condition	Good	Test Commenced On	01-06-2024	
Sampling Location	Soil – 2 Pazhuvur			

S. No	Test Parameters Protocols		Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.88
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	502 μmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.2 %
04	Bulk Density	By Cylindrical Method	1.05 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	46.1 %
06	Calcium as Ca	Food and Agriculture organization of the	66.8 mg/kg
07	Magnesium as Mg	united Nation Rome 2007 : 2018	41 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 CI B	30.5 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0017 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.41 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	450 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.12 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.23 %

Verified by





Authorised Signatory

A-L
Name: Santhosh Kumar A

Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 013	Report Date	10-06-2024		
	M/S. TVL. TRIWAY WAREHOU	M/S. TVL. TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nad				
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Soil	Sample Code	EHS360/ 013		
Sample Description	Soil 2	Sample Collected Date	31-05-2024		
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024		
Sample Condition	Good	Test Commenced On	01-06-2024		
Sampling Location	Soil – 2 – Pazhvur				

S. No	Test Parameters	Protocols	Results			
14	Texture:					
	Clay		32.3 %			
	Sand	Gravimetric Method	28.4 %			
	Silt		39.3 %			
15	Manganese as Mn		22.5 mg/kg			
16	Zinc as Zn		9.54 mg/kg			
17	Boron as B		6.21 mg/kg			
18	Potassium as K		36.5 mg/kg			
19	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL: 1.0 mg/kg)			
20	Total Chromium as Cr		BDL (DL: 1.0 mg/kg)			
21	Copper as Cu		BDL (DL: 1.0 mg/kg)			
22	Lead as Pb		1.01 mg/kg			
23	Iron as Fe		4.4 mg/kg			
24	Cation Exchange Capacity	USEPA 9080 – 1986	37.1 meq/100g of soil			

\*\*\*\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*\*

Verified by



**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





## **TEST REPORT**

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	<u> </u>		10-3363		
Report No	EHS360/TR/2024-25/ 014	Report Date	10-06-2024		
	M/S. TVL. TRIWAY WAREHOUS	E & HOLDINGS PVT. LT	D.,		
Site Location	Rough Stone And Gravel Quarry,	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu				
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Soil	Sample Code	EHS360/ 014		
Sample Description	Soil 3	Sample Collected	31-05-2024		
Sample Description		Date	31-05-2024		
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024		
Sample Condition	Good	Test Commenced On	01-06-2024		
Sampling Location Soil – 3 Vellikadu					

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.03
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	449 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.5 %
04	Bulk Density	By Cylindrical Method	0.99 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	49.4 %
06	Calcium as Ca	Food and Agriculture organization of the	45.5 mg/kg
07	Magnesium as Mg	united Nation Rome 2007 : 2018	31 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 CI B	22.5 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0032 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.16 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	615 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.24 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.72 %

Verified by

Shyk

Authorised Signatory

A-L
Name: Santhosh Kumar A

Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*End of Report\*\*\*\*\*\*\*

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 014	Report Date	10-06-2024	
	M/S. TVL. TRIWAY WAREHOU	JSE & HOLDINGS PVT. LTI	D.,	
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Soil	Sample Code	EHS360/ 014	
Sample Description	Soil 3	Sample Collected Date	31-05-2024	
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024	
Sample Condition	Good	Test Commenced On	01-06-2024	
Sampling Location Soil – 3 Vellikadu				

S.No	Test Parameters	Protocols	Results			
14	Texture:					
	Clay		27.6 %			
	Sand	Gravimetric Method	33.5 %			
	Silt		38.9 %			
15	Manganese as Mn		26 mg/kg			
16	Zinc as Zn		2.06 mg/kg			
17	Boron as B		6.15 mg/kg			
18	Potassium as K		7.02 mg/kg			
19	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)			
20	Total Chromium as Cr		2.05			
21	Copper as Cu		BDL (DL : 1.0 mg/kg)			
22	Lead as Pb		1.19 mg/kg			
23	Iron as Fe		1.01 mg/kg			
24	Cation Exchange Capacity	USEPA 9080 – 1986	45.5 meq/100g of soil			

Verified by

Selyk

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*End of Report\*\*\*\*\*

CHENNAL

600 083

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.



Report No	EHS360/TR/2024-25/ 015	Report Date	10-06-2024		
	M/S.TVL.TRIWAY WAREHOUSE	& HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3				
	Netrampakkam Village, Madurant	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu			
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Soil	Sample Code	EHS360/ 015		
Sample Description	Soil 4	Sample Collected Date	31-05-2024		
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024		
Sample Condition	Good	Test Commenced On	01-06-2024		
Sampling Location Soil – 4 Onampakkam					

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.75
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	345 μmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.8. %
04	Bulk Density	By Cylindrical Method	1.05 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	47.7 %
06	Calcium as Ca	Food and Agriculture organization of	66 mg/kg
07	Magnesium as Mg	the united Nation Rome 2007 : 2018	53.1 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 CI B	43 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0025 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	4.23 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	470.5 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.81 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.05 %

Verified by



Authorised Signatory

A-L
Name: Santhosh Kumar A

Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*\*End of Report\*\*\*\*\*\*\*

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





Report No	EHS360/TR/2024-25/ 015	Report Date	10-06-2024	
	M/S.TVL.TRIWAY WAREHOUS	SE & HOLDINGS PVT. LTD.	,	
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Soil	Sample Code	EHS360/ 015	
Sample Description	Soil 4	Sample Collected Date	31-05-2024	
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024	
Sample Condition	Good	Test Commenced On	01-06-2024	
Sampling Location	g Location Soil – 4 Onampakkam			

S. No	Test Parameters	Protocols	Results		
14	Texture :				
	Clay		30.2 %		
	Sand	Gravimetric Method	31.9 %		
	Silt		37.9 %		
15	Manganese as Mn		7.05 mg/kg		
16	Zinc as Zn		6.5 mg/kg		
17	Boron as B		3.15 mg/kg		
18	Potassium as K		27 mg/kg		
19	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)		
20	Total Chromium as Cr		10.6		
21	Copper as Cu		BDL (DL : 1.0 mg/kg)		
22	Lead as Pb		2.17 mg/kg		
23	Iron as Fe		5.1 mg/kg		
24	Cation Exchange Capacity	USEPA 9080 – 1986	35.5 meq/100g of soil		

Verified by





Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 016	Report Date	10-06-2024		
	M/S.TVL.TRIWAY WAREHOUSE	& HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3				
	Netrampakkam Village, Madurant	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu			
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Soil	Sample Code	EHS360/ 016		
Sample Description	Soil 5	Sample Collected Date	31-05-2024		
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024		
Sample Condition	Good	Test Commenced On	01-06-2024		
Sampling Location Soil – 5 – Puliyurankottai					

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.59
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	412 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.8 %
04	Bulk Density	By Cylindrical Method	1.12 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	48.2 %
06	Calcium as Ca	Food and Agriculture organization of the	58.5 mg/kg
07	Magnesium as Mg	united Nation Rome 2007 : 2018	32.1 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	21 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0015 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.02 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	400 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.99 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.16 %

Verified by



Authorised Signatory

A-L

Name: Santhosh Kumar A

Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*End of Report\*\*\*\*\*\*\*\*

CHENNAL

600 083

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.



Report No	EHS360/TR/2024-25/ 016	Report Date	10-06-2024
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry	y, S.F.Nos.: 14/1A, 14/1B, 14	4/2 & 15/3
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 2	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	01-06-2024
Sampling Location	cation Soil – 5 – Puliyurankottai		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay		29.7 %
	Sand	Gravimetric Method	32.6 %
	Silt		37.7 %
15	Manganese as Mn		11.2 mg/kg
16	Zinc as Zn		3.15 mg/kg
17	Boron as B		3.12 mg/kg
18	Potassium as K		19 mg/kg
19	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		4.31
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		2.16 mg/kg
23	Iron as Fe		5.43 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	40 meq/100g of soil

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Selyk

Page 1 of 49 CHENNAI 600 083

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





## PRIVATE LIMITED TEST REPORT

Report No	EHS360/TR/2024-25/ 017	Report Date	10-06-2024
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3 Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 6	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	01-06-2024
Sampling Location	Soil – 6 Polambakkam		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.16
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	387 μmhos/cm
03	Water Holding Capacity	By Gravimetric Method	49.0 %
04	Bulk Density	By Cylindrical Method	1.06 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	47.8 %
06	Calcium as Ca	Food and Agriculture	51.4 mg/kg
07	Magnesium as Mg	organization of the united Nation Rome 2007 : 2018	27 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 CI B	47 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0015 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	7.01 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	409 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.51 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.46 %

Verified by



Authorised Signatory

A- \_\_\_\_

Name: Santhosh Kumar A

Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*End of Report\*\*\*\*\*\*\*\*

CHENNAL

600 083

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/ 017	Report Date	10-06-2024	
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nac			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Soil	Sample Code	EHS360/ 017	
Sample Description	Soil 6	Sample Collected Date	31-05-2024	
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024	
Sample Condition	Good	Test Commenced On	01-06-2024	
Sampling Location	Soil – 6 Polambakkam			

S. No	Test Parameters	Protocols	Results			
14	Texture :					
	Clay		33.8 %			
	Sand	Gravimetric Method	30.9 %			
	Silt		35.3 %			
15	Manganese as Mn		18 mg/kg			
16	Zinc as Zn		4.26 mg/kg			
17	Boron as B		1.01 mg/kg			
18	Potassium as K	USEPA 3050 B – 1996	22 mg/kg			
19	Cadmium as Cd	&	BDL (DL : 1.0 mg/kg)			
20	Total Chromium as Cr	USEPA 6010 C - 2000	11.56			
21	Copper as Cu		BDL (DL : 1.0 mg/kg)			
22	Lead as Pb		1.05 mg/kg			
23	Iron as Fe		4.01 mg/kg			
24	Cation Exchange Capacity	USEPA 9080 – 1986	37.6 meq/100g of soil			

Verified by

Selyk

Page 1 of 1

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





Report No	EHS360/TR/2024-25/ 018	Report Date	10-06-2024
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,		
Site Location	Rough Stone And Gravel Q	uarry, S.F.Nos.: 14/1A, 14/1I	3, 14/2 & 15/3
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/018
Sample Description	Surface Water (SW-1)	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024
Sampling Location	Netrambakkam Tank		

S.No.	Parameters	Test Method	RESULTS			
	Discipline: Chemical					
1	Colour	IS 3025 Part 4:1983	10 Hazen			
2	Odour	IS 3025 Part 5:2018	Agreeable			
3	pH at 25°C	IS 3025 Part 11:1983	7.15			
4	Conductivity @ 25°C	IS 3025 Part 14:2013	790 µmhos/cm			
5	Turbidity	IS 3025 Part 10:1984	4.3 NTU			
6	Total Dissolved Solids	IS 3025 Part 16:1984	466 mg/l			
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	162.93 mg/l			
8	Calcium as Ca	IS 3025 Part 40:1991	30.2 mg/l			
9	Magnesium as Mg	IS 3025 Part 46:1994	21.3 mg/l			
10	Total Alkalinity as CaCO₃	IS 3025 Part 23:1986	160 mg/l			
11	Chloride as Cl	IS 3025 Part 32:1988	91.1 mg/l			
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	48 mg/l			
13	Iron as Fe	IS 3025 Part 53:2003	0.23 mg/l			
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)			
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.15 mg/l			
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	10.2 mg/l			

Verified by



\*\*\*\*\*End of Report\*\*\*\*\*\* CHENNAL 600 083

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

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<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



Report No	EHS360/TR/2024-25/018	Report Date	10-06-2024
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,		
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3 Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nac		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/018
Sample Description	Surface Water (SW-1)	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024
Sampling Location	Netrambakkam Tank		

18 M 19 M 20 Ca 21 Se 22 Al 23 Le 24 Zi 25 Tc 26 Bc 27 M 28 Pf	Copper as Cu Manganese as Mn Mercury as Hg Cadmium as Cd Selenium as Se Aluminium as Al Lead as Pb Cinc as Zn Total Chromium as Cr Boron as B	IS 3025 Part 65:2014  IS 3025 Part 65:2014  USEPA 200.8  IS 3025 Part 65:2014  IS 3025 Part 65:2014  IS 3025 Part 65:2014  IS 3025 Part 65:2014 (Reaff:2019)  IS 3025 Part 65:2014 (Reaff:2019)  IS 3025 Part 65:2014 (Reaff:2019)  IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)  BDL (DL:0.02 mg/l)  BDL (DL:0.0005 mg/l)  BDL (DL:0.001 mg/l)  BDL (DL:0.005 mg/l)  BDL (DL:0.005 mg/l)  BDL (DL:0.005 mg/l)  BDL (DL:0.005 mg/l)
19 M 20 Ca 21 Se 22 Al 23 Le 24 Zi 25 To 26 Bo 27 M 28 Pi	Mercury as Hg Cadmium as Cd Selenium as Se Aluminium as Al Lead as Pb Zinc as Zn Total Chromium as Cr	USEPA 200.8 IS 3025 Part 65:2014 IS 3025 Part 65:2014 IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.0005 mg/l) BDL (DL:0.001 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l)
20 Ca 21 Se 22 Al 23 Le 24 Zi 25 To 26 Bo 27 M 28 Pf	Cadmium as Cd Selenium as Se Aluminium as Al Lead as Pb Zinc as Zn Total Chromium as Cr	IS 3025 Part 65:2014 IS 3025 Part 65:2014 IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l)
21 Se 22 Al 23 Le 24 Zi 25 To 26 Bo 27 M 28 Pi	Selenium as Se Aluminium as Al Lead as Pb Zinc as Zn Total Chromium as Cr	IS 3025 Part 65:2014 IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL(DL: 0.05 mg/l)
22 Al 23 Le 24 Zi 25 Tc 26 Bc 27 M 28 Pi	Aluminium as Al Lead as Pb Zinc as Zn Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l) BDL (DL:0.005 mg/l) BDL(DL: 0.05 mg/l)
23 Le 24 Zi 25 Tc 26 Bc 27 M 28 Pi	Lead as Pb Zinc as Zn Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019) IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l) BDL(DL: 0.05 mg/l)
24 Zi 25 To 26 Bo 27 M 28 Pt	Zinc as Zn Fotal Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25 To 26 Bo 27 M 28 Pt	Total Chromium as Cr	· · · · · · · · · · · · · · · · · · ·	
26 Bo 27 M 28 Pt		IS 3025 Part 65:2014 (Reaff:2019)	
27 M 28 Pt	Boron as B		BDL(DL: 0.02 mg/l)
28 Pt		IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL: 0.01 mg/l)
29 Ar	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30 Cy	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31 B0	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	9.8 mg/l
32 CI	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	50 mg/l
	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.5 mg/l
	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35 Ar	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.8 mg/l
36 St	Sulphide as H <sub>2</sub> S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37 M	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38 To	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	18 mg/l
Di	Discipline: Biological	Group: Water	
40 To	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	510 MPN/100ml
41 Es	+	APHA 23 <sup>rd</sup> Edn. 2017:9221F	140 MPN/100ml





CHENNAL Authorised Signatory 600 083 Name: Santhosh Kumar A

Designation: Quality Manager

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<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





#### TC-9583

## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 019	Report Date	10-06-2024
	M/S.TVL.TRIWAY WAREH	OUSE & HOLDINGS PVT. L	TD.,
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3 Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-2)	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024
Sampling Location	Mambakkam Lake		

S.No.	Parameters	Test Method	RESULTS			
	Discipline: Chemical					
1	Colour	IS 3025 Part 4:1983	5 Hazen			
2	Odour	IS 3025 Part 5:2018	Agreeable			
3	pH at 25°C	IS 3025 Part 11:1983	7.88			
4	Conductivity @ 25°C	IS 3025 Part 14:2013	776 µmhos/cm			
5	Turbidity	IS 3025 Part 10:1984	6.2 NTU			
6	Total Dissolved Solids	IS 3025 Part 16:1984	458 mg/l			
7	Total Hardness as CaCO₃	IS 3025 Part 21:2009	202.12 mg/l			
8	Calcium as Ca	IS 3025 Part 40:1991	35.2 mg/l			
9	Magnesium as Mg	IS 3025 Part 46:1994	27.8 mg/l			
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	170 mg/l			
11	Chloride as Cl	IS 3025 Part 32:1988	71 mg/l			
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	35.5 mg/l			
13	Iron as Fe	IS 3025 Part 53:2003	0.11 mg/l			
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)			
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.22 mg/l			
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	7.5 mg/l			

Verified by



**Authorised Signatory** Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*\*\*End of Report\*\*\*\*\*\*

CHENNAL

600 083

<sup>3.</sup> Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/019	Report Date	10-06-2024	
- 1	USE & HOLDINGS PVT. LTD.,			
Site Location		arry, S.F.Nos.: 14/1A, 14/1B, 14/		
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil N			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Water Sample Code EHS		EHS360/019	
Sample Description	Surface Water (SW-2) Sample Collected Date 31-05-202		31-05-2024	
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024	
Sample Condition	Fit for Analysis Test Commenced On 01-06-2024		01-06-2024	
Sampling Location	Mambakkam Lake			

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	7.4 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	30 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.3 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.0 mg/l
36	Sulphide as H₂S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	9.45 mg/l
	Discipline: Biological	Group: Water	
40	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	455 MPN/100ml
41	Escherichia coli	APHA 23 <sup>rd</sup> Edn. 2017:9221F	100 MPN/100ml

\*\*\*\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*\*\*

Verified by

Selyk

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 020	Report Date	10-06-2024	
	OUSE & HOLDINGS PVT.	LTD.,		
Site Location	Rough Stone And Gravel Qu	uarry, S.F.Nos.: 14/1A, 14/	1B, 14/2 & 15/3	
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nad			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Water	Sample Code	EHS360/020	
Sample Description	Ground Water (WW-1)	Sample Collected Date	31-05-2024	
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024	
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024	
Sampling Location	Near Project Area			

S.No.	Parameters	Test Method	RESULTS		
	Discipline: Chemical				
1	Colour	IS 3025 Part 4:1983	5 Hazen		
2	Odour	IS 3025 Part 5:2018	Agreeable		
3	pH at 25°C	IS 3025 Part 11:1983	7.51		
4	Conductivity @ 25°C	IS 3025 Part 14:2013	927 µmhos/cm		
5	Turbidity	IS 3025 Part 10:1984	1.1 NTU		
6	Total Dissolved Solids	IS 3025 Part 16:1984	547 mg/l		
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	197.47 mg/l		
8	Calcium as Ca	IS 3025 Part 40:1991	39.1 mg/l		
9	Magnesium as Mg	IS 3025 Part 46:1994	24.3 mg/l		
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	200 mg/l		
11	Chloride as Cl	IS 3025 Part 32:1988	122 mg/l		
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	52 mg/l		
13	Iron as Fe	IS 3025 Part 53:2003	0.33 mg/l		
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)		
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.21 mg/l		
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	6.44 mg/l		

Verified by

Selyk

**Authorised Signatory** 

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*\*\*End of Report\*\*\*\*\*\*\*

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<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 020	Report Date	10-06-2024
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			_TD.,
Site Location	Rough Stone And Gravel Q	uarry, S.F.Nos.: 14/1A, 14/1	B, 14/2 & 15/3
	Netrampakkam Village, Mac	duranthangam Taluk, Cheng	alpattu Dist, Tamil Nadu
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/020
Sample Description	Ground Water (WW-1)	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL: 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL: 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Sulphide as H₂S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	BDL (DL:0.0005 mg/l)
	Discipline: Biological	Group: Water	
40	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	150 MPN/100ml
41	Escherichia coli	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*

Verified by

Shyk

Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 021	Report Date	10-06-2024
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Qu	uarry, S.F.Nos.: 14/1A, 14/1B	3, 14/2 & 15/3
	Netrampakkam Village, Mac	duranthangam Taluk, Cheng	alpattu Dist, Tamil Nadu
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/021
Sample Description	Ground Water (WW-2)	Sample Collected Date	31-05-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis Test Commenced		01-06-2024
Sampling Location	Pazhuvur		

S.No.	Parameters	Test Method	RESULTS		
	Discipline: Chemical				
1	Colour	IS 3025 Part 4:1983	5 Hazen		
2	Odour	IS 3025 Part 5:2018	Agreeable		
3	pH at 25°C	IS 3025 Part 11:1983	7.02		
4	Conductivity @ 25°C	IS 3025 Part 14:2013	797 µmhos/cm		
5	Turbidity	IS 3025 Part 10:1984	1.2 NTU		
6	Total Dissolved Solids	IS 3025 Part 16:1984	470 mg/l		
7	Total Hardness as CaCO₃	IS 3025 Part 21:2009	187.18 mg/l		
8	Calcium as Ca	IS 3025 Part 40:1991	33.0 mg/l		
9	Magnesium as Mg	IS 3025 Part 46:1994	25.5 mg/l		
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	172 mg/l		
11	Chloride as Cl	IS 3025 Part 32:1988	100 mg/l		
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	55.3 mg/l		
13	Iron as Fe	IS 3025 Part 53:2003	0.21 mg/l		
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)		
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.15 mg/l		
16	Nitrate as NO₃	IS 3025 Part 34:1988	5.01 mg/l		

Verified by

Selyk

**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

End of Report\*\*\*\*\*\*\*\*

CHENNAL

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<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

FRUYETE CIMITIED				
Report No	EHS360/TR/2024-25/ 021	Report Date	10-06-2024	
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Quarry,	S.F.Nos.: 14/1A, 14/1B, 14/2 &	<b>&amp;</b> 15/3	
	Netrampakkam Village, Madurant	hangam Taluk, Chengalpattu [	Dist, Tamil Nadu	
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Water	Sample Code	EHS360/021	
Sample Description	Ground Water (WW-2)	Sample Collected Date	31-05-2024	
Qty. of Sample	2 Litres	Sample Received On	01-06-2024	
Received	2 Lilles	Sample Received On		
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024	
Sampling Location	ling Location Pazhuvur			

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL: 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL: 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL: 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL: 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H <sub>2</sub> S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	Group: Water	
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	181 MPN/100ml
38	Escherichia coli	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by





Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





Report No	EHS360/TR/2024-25/ 022		10-06-2024	
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,			
Site Location	Rough Stone And Gravel Q	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3		
	Netrampakkam Village, Mad	duranthangam Taluk, Chenga	lpattu Dist, Tamil Nadu	
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Water	Sample Code	EHS360/022	
Sample Description	Ground Water (BW-1)	Sample Collected Date	31-05-2024	
Qty. of Sample	2 Litres	Sample Received On	01-06-2024	
Received	2 Littes	Sample Received On		
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024	
Sampling Location	Near Project Area			

S.No	Parameters	Test Method	RESULTS			
	Discipline: Chemical					
1	Colour	IS 3025 Part 4:1983	5 Hazen			
2	Odour	IS 3025 Part 5:2018	Agreeable			
3	pH at 25°C	IS 3025 Part 11:1983	7.67			
4	Conductivity @ 25°C	IS 3025 Part 14:2013	806 µmhos/cm			
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU			
6	Total Dissolved Solids	IS 3025 Part 16:1984	475 mg/l			
7	Total Hardness as CaCO₃	IS 3025 Part 21:2009	194.22 mg/l			
8	Calcium as Ca	IS 3025 Part 40:1991	31.7 mg/l			
9	Magnesium as Mg	IS 3025 Part 46:1994	28 mg/l			
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	148 mg/l			
11	Chloride as Cl	IS 3025 Part 32:1988	82.2 mg/l			
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	61 mg/l			
13	Iron as Fe	IS 3025 Part 53:2003	0.22 mg/l			
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)			
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.24 mg/l			
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	5.05 mg/l			

Verified by



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**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.



## **TEST REPORT**

Report No	EHS360/TR/2024-25/ 022	Report Date	10-06-2024		
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry,	S.F.Nos.: 14/1A, 14/1B, 14/2 &	§ 15/3		
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil I				
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Water	Sample Code	EHS360/022		
Sample Description	Ground Water (BW-1)	Sample Collected Date	31-05-2024		
Qty. of Sample	2 Litres	Sample Bessived On	01-06-2024		
Received	2 Littes	Sample Received On			
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024		
Sampling Location Near Project Area					

S.No.	Parameters	Test Method	RESULTS	
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)	
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)	
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)	
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)	
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)	
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)	
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)	
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL: 0.05 mg/l)	
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)	
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)	
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)	
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)	
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)	
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)	
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)	
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)	
33	Sulphide as H <sub>2</sub> S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)	
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)	
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)	
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)	
	Discipline: Biological	Group: Water		
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	110 MPN/100ml	
38	Escherichia coli	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml	

Verified by

Authorised Signatory

Name: Santhosh Kumar A Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

\*\*\*End of Report\*\*\*\*\*\*\*

CHENNAL

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.





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Report No	EHS360/TR/2024-25/ 023	Report Date	10-06-2024		
	M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3				
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu				
Sampling Method	SOP Method	Sample Drawn by	Laboratory		
Sample Name	Water	Sample Code EHS360/023			
Sample Description	Ground Water (BW-2)	Sample Collected Date 31-05-2024			
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024		
Sample Condition	Fit for Analysis Test Commenced On 01-06-2024				
Sampling Location	Vellikadu				

S.No.	Parameters	Test Method	RESULTS		
	Discipline: Chemical				
1	Colour	IS 3025 Part 4:1983	5 Hazen		
2	Odour	IS 3025 Part 5:2018	Agreeable		
3	pH at 25°C	IS 3025 Part 11:1983	7.37		
4	Conductivity @ 25°C	IS 3025 Part 14:2013	1019 µmhos/cm		
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU		
6	Total Dissolved Solids	IS 3025 Part 16:1984	601 mg/l		
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	235.37 mg/l		
8	Calcium as Ca	IS 3025 Part 40:1991	41.6 mg/l		
9	Magnesium as Mg	IS 3025 Part 46:1994	32 mg/l		
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	209 mg/l		
11	Chloride as Cl	IS 3025 Part 32:1988	123 mg/l		
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	65.5 mg/l		
13	Iron as Fe	IS 3025 Part 53:2003	0.24 mg/l		
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)		
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.16 mg/l		
16	Nitrate as NO₃	IS 3025 Part 34:1988	7.2 mg/l		

\*\*\*\*\*\*\*\*\*\*\*\*End of Report\*\*\*\*\*\*\*\*

Verified by



Authorised Signatory

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

CHENNAL

600 083

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



## **TEST REPORT**

E INDUSTRIAL EDIMENTE D				
Report No	EHS360/TR/2024-25/ 023	Report Date	10-06-2024	
M/S.TVL.TRIWAY WAREHOUSE & HOLDINGS PVT. LTD.,				
Site Location	Rough Stone And Gravel Quarry, S.F.Nos.: 14/1A, 14/1B, 14/2 & 15/3			
	Netrampakkam Village, Maduranthangam Taluk, Chengalpattu Dist, Tamil Nadu			
Sampling Method	SOP Method	Sample Drawn by	Laboratory	
Sample Name	Water	Sample Code	EHS360/023	
Sample Description	Ground Water (BW-2)	Sample Collected Date	31-05-2024	
Qty. of Sample	2 Litres	Sample Received On	01-06-2024	
Received	2 Littles	Sample Received On		
Sample Condition	Fit for Analysis	Test Commenced On	01-06-2024	
Sampling Location	Vellikadu			

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL: 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL: 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL: 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff:2019)	BDL (DL: 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff:2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff:2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL (DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H₂S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff:2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff:2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological Group: Water		
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	200 MPN/100ml
38	Escherichia coli	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

Verified by

Shyk

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**Authorised Signatory** 

Name: Santhosh Kumar A
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.

<sup>4.</sup> Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.







# National Accreditation Board for Education and Training



## **Certificate of Accreditation**

## **Geo Exploration & Mining Solutions, Salem**

No. 17, Advaitha Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Costou Description	Sector (as per)		Cat.
	Sector Description		MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	Α
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	В
3	Building and construction projects	38	8(a)	В

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Saint.

Sr. Director, NABET Dated: Feb 20, 2023

Certificate No. NABET/EIA/2225/RA 0276

Valid up to August 06, 2025

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.

