MINING PLAN

INCLUDING PROGRESSIVE MINE CLOSURE PLAN

FOR

ROAD METAL,BUILDING STONE,GRAVEL,BUILDINGSTONE & GRAVEL

(Under Rule 7 A of APMMC Rules '1966 & Rule 23 (B) of MCDR 1988)

(FOR THE PLAN PERIOD 24-07-2009 TO 23-07-2019)

Over an extent of 1.809 Hectares in Sy. No. 26/2 of Loya (V), G.Konduru (M), Krishna District, Andhra Pradesh State

For

Smt CH.RAJESWARI,
w/o Shiva Sundara Rao,
Kondapalli Village,
Ibrahimpatnam Mandal,
Krishna District,
Andhra Pradesh.

By

P.V.SATYANARAYANA
Consultant Geologist & RQP

INTRODUCTION

Smt CH.RAJESWARI, w/o Shiva Sundara Rao**,** was granted of quarry lease for Road Metal,Building Stone,Gravel, over an extent of 1.809 Hectares in Sy. No. 26/2 of Loya (V),G.Konduru (M), Krishna District, Andhra Pradesh State, for a period of 5 years by the Deputy Director of Mines & Geology, Kakinada vide Proceedings No. 1272/Q3/2009 dated 29-04-2009.

The quarry lease deed was executed on 24-07-2009 by the Asst. Director of Mines & Geology, Vijayawada vide Proceedings No. 1299 / Q / 2009dated 06-12-2006 for a period of 10 years w.e.f. 24-07-2009 to 24-07-2009 (Annexure – I).

Smt CH.RAJESWARI, w/o Shiva Sundara Rao, approached **P.V.SATYANARAYANA,** Consultant Geologist and RQP (RQP / DMG / AP / 34 / 2017) for preparation of Mining Plan in the above mentioned area.

Accordingly this Mining Plan is prepared as per guidelines issued in Form-T in G.O.Ms.No.56, Industries & Commerce (M.II) Department dated 30-04-2016 under Rule 7 A of APMMC Rules '1966 and Progressive Mine Closure Plan under Rule 23 (B) of MCDR 1988 for the plan period 2014-15 to 2018-19.

1.0 GENERAL

1.1	**Name and Address of the lessee**	**Smt CH.RAJESWARI,** w/o Shiva Sundara Rao, Kondapalli Village, Ibrahimpatnam Mandal, Krishna District, Andhra Pradesh
1.2	**Status of the lessee**	Private Firm
1.3	**Mineral for which lessee intends to mine**	Road Metal,Building Stone,Gravel
1.4	**Name and Address of the RQP who prepared the Mining Plan**	**P.V.SATYANARAYANA ,** Lattice It, Aarya Castle, Door No: 8-5 / 2, Cherukuri Krishna Rao Gari Street, Sarakottu Center, Gollapudi, Vijayawada- 521225 Ph No-8610692941
	RQP Registration No. & Validity	RQP/ DMG / AP /34 / 2017 (Valid Up to 23rd March 2027)

1.5 LOCATION AND ACCESSIBILITY

1. Applied Area / Lease Details

<table>
<tr><td>1</td><td>Village</td><td>Loya</td></tr>
<tr><td>2</td><td>Mandal</td><td>G.Konduru</td></tr>
<tr><td>3</td><td>District</td><td>Krishna</td></tr>
<tr><td>4</td><td>State</td><td>Andhra Pradesh</td></tr>
<tr><td>5</td><td>Survey No.</td><td>26/2</td></tr>
<tr><td>6</td><td>Extent</td><td>1.809 Hectares</td></tr>
<tr><td>7</td><td>Ownership of Occupancy</td><td>Govt. Land</td></tr>
<tr><td>8</td><td>Geo Co-ordinates</td><td>The quarry lease area falls in the Survey of India, Toposheet No. 65 D / 10 (Scale 1 : 50,000) and is bounded
<table>
<tr><th>B.P No.</th><th>LATITUDE</th><th>LONGITUDE</th></tr>
<tr><td>1</td><td>16°40’04.11”N</td><td>80°31’33.91”E</td></tr>
<tr><td>2</td><td>16°39’59.68”N</td><td>80°31’31.53”E</td></tr>
<tr><td>3</td><td>16°40’04.92”N</td><td>80°31’32.55”E</td></tr>
<tr><td>4</td><td>16°40’06.33”N</td><td>80°31’38.80”E</td></tr>
<tr><td>5</td><td>16°40’03.70”N</td><td>80°31’38.34”E</td></tr>
<tr><td>6</td><td>16°40’02.48”N</td><td>80°31’33.66”E</td></tr>
</table></td></tr>
<tr><td>9</td><td>Location of the area and approach</td><td>The quarry lease area is located at the distance of 3.83 Km due West of Loya village. The quarry lease area can be approached from National Highway – 221. The location of the area is indicated in Key - Cum - Location Map (Plate - I).</td></tr>
</table>

The Cadastral Map certified by the Asst. Director of Mines & Geology, Vijayawada, in favour of **Smt CH.RAJESWARI,** is given as Plate No. II.

2. **Period of Quarry Lease granted = 10** years (24-07-2009 to 23-07-2019 upto end of lease period i.e. 23-07-2019)

3. Infrastructure and Communication

Availability of Water	The ground water level is about 15 – 45 M BGL at the foot hill. The agricultural fields in the surrounds of the quarry lease area are irrigated by ground water.
Availability of Electricity	Electricity is available in all the villages and in the nearby agricultural lands for borewells.
Communication Network	Tele Communications facility is available at the Loya Village.
Road Network	State Transport Bus Services ply from Hyderabad, Vijayawada & Intermitted towns pass through National Highway – 9.
Nearest Rail Head	Cheruvu Madhavaram Railway Station is 3.50 Km and Vijayawada Railway Station is 30 Km from the Site.
Port Facility	Kakinada Port is about 245 Km from the Site.
School	Primary School Education is available at G.Konduru Village. Higher Education is available at Vijayawada Town.
Medical Facility	Registered Medical Practioner is available at G.Konduru Village. Vijayawada Town is well placed for Doctors, Nursing Homes & Hospitals.

BOUNDARIES

North	Hill & Agricultural Land
South	Hill
East	Hill & Agricultural land
West	Hill

Further good potential exists for the employment of unskilled labour in the existing Granite Quarries and Allied Small-Scale Industries. The area experiences Semi - Arid Climatic Conditions with an average annual rainfall of 1000 mm. The local day temperature varies from 25° C in November to 48° C in April & May Months. The general wind direction reported is SW to NE and SE to NW.

PART – A

1.0 GENERAL DETAILS OF THE APPLIED AREA / QUARRY LEASE

1	Topography	The quarry lease area is located on a part of hill with a maximum elevation of 35 M above ground level within the quarry lease area with topo relief in NORTH direction. The lowest contour is 96 M and highest contour is 131 M in topo plan.
2	Drainage	Sub-Dendritic Pattern in SW – NE direction
3	Vegetation	Sparse with thorny bushes in the interstices of joints where soil is existing, areas around the barren rocky land are cultivation lands
4	Climate	Semi-Arid. The area is falling under semi-arid tropical zone. The area is having dry climate. The temperature recorded in this area is 25°C in winter and about 48°C in summer seasons. The wind direction is in SW to NE.
5	Rainfall	The average annual rainfall of the area is 1,000 mm.
6	Soil Type	Black Cotton Soil
7	Land Use Pattern	Agriculture and Cultivated lands

2.0 GEOLOGY AND EXPLORATION

a) Brief description of Regional Geology with reference to location of lease / applied area

Regional Geology

The quarry lease area constitutes a part of Granite and Granitic Gneissic terrain of Archean age. Pink and Grey Coloured Granites, Pink Alkali - Feldspar Granites are the important litho units in the area. Grano – Diorites with basic enclaves of Supra - Crystals like Horneblende Schists, Biotite Schists also occupy the area. These rock types are exhibiting various landforms like Domes, Inselbergs, Castle - Koppies, Whalebacks and Linear Ridges.

The geological succession of the area as worked out by GSI (1991) is as follows:

RECENT	**ALLUVIUM / SOIL COVER**
Younger	Quartz Veins, Pegmatites Dolerites, Gabbro, Pyroxenite Dykes Fine Grained Pink Alkali Feldspar Granite, Medium to Coarse Grained Pink Alkali Feldspar Granite Granite With Mega Crysts of K-Feldspar, very coarse grained Pink Alkali Feldspar Granite
Precambrian Granitiod - Migmatite Complex	Medium to Coarse Grained Pink Granite Migmatite II Fine grained Grey Alkali Feldspar Granite Medium to Coarse Grained Grey Alkali Feldspar Granite Very Coarse - Grained Grey Alkali Feldspar Granite Migmatite I Grano - Diorite

Pink Alkali Feldspar is the most dominant rock type in the area with variations in grain size, scattered outcrops of Migmatites containing Neosomes of medium to Coarse - Grained Grey Alkali Feldspar Granites occurs at many places. A number of Quartz, Grey and Pink Pegmatites and Epidote Veins Criss are crossing the host rock. Basic dykes of Dolerite, Gabbro & Pyroxenitic Composition traverse the granites in NW-SE, NNW-SSE, E-W & NE-SW directions. Thin veneer of alluvium is found limited to streams.

b) Detailed description of geology of lease area

The Quarry lease area is consisting of charnokite group of eastern ghat super group of rock with archean age with covering thin layer of gravel formation , which were varying from werst stde negligible (Nill) East side vary thick (2 mts thickness)

geologically gravel may be formed due to insite weathering of khondalite of rocks which is useful for formation of kaccha roads or filling purpose

The Charnokite Rise is Very strong in natured having predominant joints with irregularr direction i.e, shear in nature , which is useful for breaking and crushing purpose only ,these are utilize civil purpose

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c) Details of Quarry Lease holder

SMT CH.RAJESWARI,
w/o Shiva Sundara Rao
Kondapalli Village,
Ibrahimpatnam Mandal,
Krishna District,
Andhra Pradesh.

d) Details of prospecting carried out

No mining was carried out.

e) Surface Plan area on 1 : 1,000 or 1 : 2,000 Scale

Topographical Survey

Total Station (5 Cm accuracy) was deployed to capture the contours.

The BM is taken at Out Side of the quarry lease area with its value of 80 M.

The geo co-ordinates were fixed using the 440 channel Trimble SPS985 GNSS Receiver .

The Cadastral Map certified by the Asst. Director of Mines & Geology, Vijayawada, was stiched on the Surface Plan (Plate - III).

MAP DATUM : WGS – 84

Position Format	hddd – mm – ss.s
Map Datum	WGS – 84
Units	Metric
North Reference	True North
Variance	001^{o} W
Angle	Degrees

The features captured are drafted to prepare the Surface Plan on 1 : 1,000 Scale

f) Geological Plan prepared on a scale 1 : 1,000 or 1 : 2,000

The geological features captured are drafted to prepare the Geological Plan on 1 : 1,000 Scale (Plate – IV).

g) Geological Sections on natural scale at suitable interval across the lease area or applied area

Geological traverses in the quarry and the study exposures in the vicinity of quarries facilitated to access the shape and size of the deposit in the area. It is a part of hill rising 35M above ground level within the quarry lease area (The lowest contour is 90 M and highest contour is 132 M). The surface of sheet rock is wavy and irregular.

Method of Estimation of Reserves

The deposit is found to be irregular in shape. Hence cross sectional method adopted for Estimation of Geological Reserves. 2 Sections A-A1 & B-B1 were drawn at equal distance perpendicular to the trend direction of the formation to estimate the reserves (Plate – IV).

The cross sections were drawn perpendicular to the trend direction, the cross sectional area of the individual sections are calculated to arrive at sectional area, the area thus arrived is multiplied by the sectional influence of 40 M (average) to arrive the volume of Road Metal,Building Stone,Gravel.

h) Broadly indicate the future program of exploration with due justification taking into consideration the future tentative excavation programme planned in next three years

Year	No. of Boreholes (Core / RC / DTH)	Grid Interval	Total meterage	No. of Pits, Dimensions and Volume	No. of Trenches, Dimensions and Volume
1st (2017– 18)	N.A	-	-	N.A	N.A
2nd (2018 – 19)	N.A	-	-	N.A	N.A

Not applicable to the Road Metal,Building Stone,Gravel, Building Stone& Gravelquarries as the lease area is located on part of hill 56 m above the ground level.

i) Reserves and Resources as per UNFC. Detailed calculation of reserves shall be stated

The deposit upto RL 90 M i.e. 6 M below the surface is considered as Proved Reserves (Plate – III).

Hence, only G1 (Proved) scale category as (111) code is calculated. No resources are considered under G2 & G3 (Probable & Possible) scale of exploration.

As per UNFC guidelines the G3 (333) (Possible) category are not considered as they are not mineable unless proved by exploration on the continuation of the deposit.

1) TOTAL GEOLOGICAL RESERVES

Sections	Category & UNFC Code	Sectional Area (M^2)	Sectional Influence (M)	Volume (M^3)
A – A1	Proved (111)	7,326	40	2,93,040
B-B1		1,910	40	76,400
C-C1		1,213	40	48,520
D-D1		742	58	43,036
TOTAL				**4,60,996**

RESERVES IN UNFC CODE

S. No.	Category of Reserves	UNFC Code	Road Metal,Building Stone,Gravel, Building Stone& Gravel Reserves in M^3	Reserves in Million M^3
1	Proved	111	**4,60,996**	**0.460996**
2	Probable	122	Nil	Nil
3	Possible	333	Nil	Nil

RESERVES BLOCKED UNDER 7.5 M BUFFER ZONE

Sections	Category & UNFC Code	Sectional Area (M^2)	Sectional Influence (M)	Volume (M^3)
A – A1	Proved (111)	856	40	34,240
B-B1		413	40	16,520
C-C1		237	40	9,480
D-D1		238	58	13,804
TOTAL BLOCKED				**74,044**

+

RESERVES BLOCKED UNDER SAFETY SLOPES

Sections	Category & UNFC Code	Sectional Area (M^2)	Sectional Influence (M)	Volume (M^3)
A-A1	Proved (111)	2140	40	85,600
B-B1		497	40	19,880
C-C1		129	40	5,160
D-D1		124	58	7,192
TOTAL BLOCKED				**1,17,832**

RESERVES AVAILABLE FOR MINING

Total Geological Reserves	
Proved Reserves	4,60,996 M^3
Reserves Blocked under 7.5 M Buffer Zone	74,044 M^3
Reserves Blocked under Safety Slopes	1,17,832 M^3
Total Reserves Blocked	1,91,876 M^3
Reserves available for Mining	2,69,120 M^3
Extraction of Market Grade Reserves	
@ 100% Recovery	2,69,120 M^3
	2,69,120 M^3/ 47,950 M^3
	5.612 OR SAY 5 YEARS

j) Feasibility Report along with financial analysis per economic viability of the deposit

Enclosed as Annexure - II

k) Mineral Reserves

i) Mode of Mining, Recovery Factor, Mining Losses, Processing Losses etc.,
Open Cast Semi Mechanized Method with drilling and blasting

Quarrying Recovery Factor 100%

ii) Cut off Grade Not applicable

Ultimate Pit Limit RL 90 M (25 M below the surface)

iii) Mineral blocked due to presence of / maintenance of benches, barriers, internal roads, electrical lines etc.

Mineral blocked under 7.5 M Buffer Zone 74,044 M^3

Mineral blocked under Safety Slopes 1,17,832 M^3
The internal roads are of temporary in nature and suitable benches will be formed.

No Electrical Lines are passing over the subject area.

iv) Total Mineral Reserves / Resources

Category of Reserves	**Reserves / Resources (M^3)**	**Remarks**
Proved Reserves (111)	4,60,996	As per UNFC guidelines the G3 (333) (Possible) category are not considered as they are not mineable unless proved by exploration
Probable Resources (121)	Nil	
TOTAL	4,60,996	

3.0 MINING

a) Open Cast Mining

i) Description of existing / proposed method for excavation with all design parameters indicating on plans / sections.

The Road Metal,Building Stone,Gravel, the quarry lease area is exposed on the surface with sheet. Hence, it is proposed to quarry the sheet by Open Cast Semi

Mechanized Method by developing the benches of 6 M height and bench width of 6 M with drilling and blasting. The development of benches in the sheet rock will be maintained @ 60^{o} safety slopes.

b) Drilling

a) Drill holes of 6 m depth will be drilled in a staggered pattern at 3 m x 4 m interval :

i) Drill hole diameter : 54 mm up to 3 – 6.25 m long

ii) Depth and inclination of drill hole : Generally drilled vertically in an alignment

iii) Explosive type : ANFO + Booster & Detonator Fuse

ii) Indicate year wise tentative excavation in cubic meters indicating development, ROM, pit wise as in table

Year	Pit No	Total Tentative Excavation	Top Soil	OB / SB / IB	ROM from Mineralised Zone			ROM / Waste Ratio
					Clean Ore	Sub - Grade Ore	Mineral Rejects	
		(M^3)	(M^3)	(M^3)	(M^3)	(M^3)	(M^3)	
1	2	3	4	5	6	7	8	9
1st (2017 – 18)	C-C1	33,800	Nil	Nil	33,800	Nil	Nil	1 : 0
	D-D1	22,040	Nil	Nil	22,040	Nil	Nil	1 : 0
2nd (2018 – 19)	B – B1	40,040	Nil	Nil	40,040	Nil	Nil	1 : 0
TOTAL		**95,880**			**95,880**			
AVERAGE		**47,950**			**47,950**			

iii) Dump Management

Not applicable, no external dumps will be formed.

iv) Layout of Mine workings, pits, roads etc

a) Production Proposed for the last two years (2017 – 18 & 2018-19)

It is proposed to produce 95,880 M^3 of Road Metal,Building Stone,Gravel, Building Stone& aggregates during last two years plan period with an average annual production of 47,950 M^3. Benches of 6 M height and 6 M bench width will be developed during the plan period (Plate – VI).

Stock Yard

Temporary stocks will be maintained on day to day basis, entire ROM will be cleared within days (i.e. 4 to 5 days).

b. Quarrying Program for the last two years (2017 – 18 & 2018-19)

The lessee proposes to take up quarrying operations from Total of the quarry lease area between the grids N 00-200 & E 100 – 300 and between -Contour 111-RL 93.7 TO RL 90 M. The excavation activity will be taken up from EAST of the quarry lease area .

YEAR	ROAD METAL,BUILDING STONE,GRAVEL
1st (2017-2018)	**In the first year** the quarrying will continue the year of workings between the grids N00-200 TO E 100-300and between the COUNTOUR 111-RL93.7 to RL 90 M The quarrying advances the EAST direction An area of 1,225 M^2 will be excavated producing 33,800 of Road Metal,Building Stone,Gravel, Building Stone& Gravelwith a bench of 6 M will be form
2nd (2018-19)	**In the second year** the quarrying will continue the year of workings between the grids N00-150 TO E 00-151 and between the COUNTOUR 132 110.49 to RL 90 M The quarrying advances west of 1st year. An area of 1,001 M^2 will be excavated producing 40,040 of Road Metal,Building Stone,Gravel, a bench of 6 M will be forme

The year wise production proposed is shown in the following table.

YEAR WISE PRODUCTION FOR 2 YEARS (2017 – 18 TO 2018 – 19)				
Year	**Sections**	**Sectional Area**	**Sectional Influence**	**Volume**
		(M^2)	**(M)**	**(M^3)**
1st (2017 – 18)	C – C1	845.00	40	33800
	D-D1	380.00	58	22040
2nd (2018 – 19)	B – B1	1,001.00	40	40040
TOTAL				**95,880**
AVERAGE				**47,950**

Quantum of Excavation : A total of **89,004**M^3 of Road Metal,Building Stone,Gravel, will be produced and marketed during the last 2 years of plan period.

c) Production Schedule

The production of Road Metal,Building Stone,Gravel, continuous throughout year except during monsoon. That is 10 working months, 25 working days per month are considered. The average production of 47,950 M^3 per year (250 days @ 191.8 M^3 per day) can be easily achieved in a single shift with sufficient men and machinery.

d) Drilling and Blasting

54 mm hammer drilling will be employed for blasting holes in staggered pattern of 2 x 3 m with depth of 3 m. Each blast holed with yield 61 Tons (24.40 M^3).

Proposed Production Per Annum	=	47,950 M^3 (1,19,875.50 Tons) (Maximum Production)
Proposed Production Per Day (@ 250 working day per year)	=	191.8 M^3 (479.5 Tons)

Drilling Machine required with 54 mm drill rods

Bench Height	=	6.00 M
Spacing	=	3.00 M
Burden	=	4.00 M
Bulk Density (Insitu)	=	2.50
Depth of Drilling	=	6.25 M
Yield per meter of drilling	=	3.00 x 4.00 x 6.25 x 2.50 = 187.50 Tons (75 M^3)
	=	187.50 Tons / 6.25 M = 30 Tons (12 M^3)
Rate of drilling	=	6 m per hour

Drilling capacity per day with effective 6 hours = 6 x 6 = 36 m

Rate of production per day	= 1,080 Tons (432 M^3)
Requirement of drilling per day for 191.8 M^3 (479.5 Tons)	= 191.8 / 1,080 = 0.17 Or Say 1
No. of meters required	= 191.8 / 30 = 6.393 Mtrs
No. of Machines required per day considering 80% availability	= 0.17 / 36 = 0.21 Or Say 1 Machine

Extent of Mechanization

S.No.	Machinery	No's
1.	Excavator	1
2.	Drilling Machines	1
3.	Tractor with Trailers	2

e) Magazine Type and Capacity

Lessee will apply for the Explosive license for storing the explosives with 60 Kg Portable Magazine.

Alternatively engages a licensed blasting contractor for carrying out the drilling and blasting.

f) Description of Processing Plant

No processing is required. Only crushing of the rock and screening to the required sizes as per the market demand will be produced.

Under Ground Mining : Not Applicable

4.0 MINE DRAINAGE

a	Minimum and Maximum depth of water table	Shallow aquifers during monsoon period and canal flows. Depletion of water occurs during summer Water table depth ranges from 15 – 45 m below ground level
b	Indicate Maximum and minimum depth of workings	Contour 111-RL 93.7 TO RL 90 M
c	Quantity and Quality of water	Potable
d	Regional Drainage Pattern	Sub-Dendritic

5.0 STOCKING OF MINERAL REJECT / SUB GRADE MATERIAL AND DISPOSAL OF WASTE

Not applicable as no Mineral Rejects / Sub Grade material is anticipated

6.0 USE OF MINERAL AND MINERAL REJECT

The rock quarried out will be utilised for construction of structures and for formation of roads. No mineral rejects are anticipated

7.0 PROCESSING OF ROM AND MINERAL REJECT

The rock excavated in large sizes will be subjected to crushing and sizing to various sizes as suitable construction and road formation

8.0 OTHERS

a) SITE SERVICES

Temporary Office, Rest Rooms, First Aid Room, Shelters, Water for drinking will be provided in the quarry premises on make shift arrangement

b) EMPLOYMENT POTENTIAL

Man Power at Quarry

S.No.	Category	No. of Persons
1.	Mines Manager	1
2.	Mine Supervisor	1
3.	Skilled Workers	6
4.	Semi Skilled Workers	6
5.	Un-skilled	11

PART – B

PROGRESSIVE MINE CLOSURE PLAN

1.0 ENVIRONMENT BASE LINE INFORMATION

i	**Existing Land Use Pattern**	The quarry lease area is surrounded by barren lands and low level hillocks comprising Road Metal,Building Stone,Gravel, of good quality. The surrounding area of the quarry lease area are quarries for Road Metal,Building Stone,Gravel, and beyond are agricultural lands
ii	**Water Regime**	The subject area is part of hill and the surrounding areas around are agricultural lands. The ground water occurs under unconfined to confined conditions in both hard rock and alluvium which are shallow in nature. No impact on surface water or ground water is foreseen due to quarry operations.
iii	**Flora and Fauna**	The whole area is occupied by scattered sparse vegetation of thorny trees and small bushes. In the quarry lease area no wild animals are witnessed as per the statements collected from the local population, since 50 years
iv	**Quality of Air, Ambient Noise Level and Water**	• Air quality is good but at quarries it is filled with dust, due to haulage on the road, blasting etc. • The noise generated mostly due to blasting, drilling, vehicular traffic • Road Metal,Building Stone,Gravel, quarrying will not affect water quality.
v	**Climatic Conditions**	The area is falling under semi-arid tropical zone. The area is having dry climate. The temperature recorded in this area is 25°C in winter and about 48°C in summer seasons. The wind direction is in SW to NE. The average annual rainfall of the area is 1000 mm.

<table>
<tr><td>vi</td><td>Human Settlement</td><td>The nearest village Loya is situated 3.9 Km due EAST of the quarry lease area, having a population of 136. Agriculture and sheep breeding are important profession of the people living in the village besides involving themselves in quarrying activity.
Kattubadipalem (2 KM) , G Konduru (3 KM) , Chevuturu (5 KM) , Velagaleru (6 KM) , Kondapalli (7 KM) are the nearby Villages to Loya. Loya is surrounded by Ibrahimpatnam Mandal towards South, Mylavaram Mandal towards North, Vijayawada Rural Mandal towards South, and Thullur Mandal towards South.</td></tr>
<tr><td>vii</td><td>Public Buildings, Places & Monuments</td><td>A National Highway – 221 is passing at the distance of 3.7 Km due East of the quarry lease area.

South Central Railway Line is passing at the distance of 5.2 Km due NW of the quarry lease area.

No public buildings, important places and monuments are seen in and around the quarry lease area. The lessee will adopt the safety measures while conducting the quarry operations as per the Regulations of Metalliferrous Mines Regulation 1961</td></tr>
<tr><td>viii</td><td>Sanctuaries</td><td>No bird or animal sanctuaries are existing in 10 Km radius</td></tr>
<tr><td>ix</td><td>Eco-Sensitive Areas</td><td>No Eco Sensitive are existing in 10 Km radius</td></tr>
<tr><td>x</td><td>Afforestation</td><td>The lessee proposes for afforestation in the NE of the quarry lease area over an extent of 300 M^2 between the grids N 100-150 & E 00 - 150 in phased manner during the plan period with Neem plants (Plate – VI).

<table>
<tr><th>YEAR</th><th>AREA (M^2)</th><th>NO. OF PLANTS</th></tr>
<tr><td>1st (2017 – 18)</td><td>150.00</td><td>30</td></tr>
<tr><td>2nd 2018-2019)</td><td>150.00</td><td>30</td></tr>
<tr><td>TOTAL</td><td>300.00</td><td>60</td></tr>
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</td></tr>
</table>

2.0 ENVIRONMENTAL IMPACT ASSESSMENT

<table>
<tr><td>a</td><td>Landscape Changes</td><td>During the next 2 years 2,226 M^2 of the quarry lease area will be reduced by 28 M.</td></tr>
<tr><td>b</td><td>Air Quality</td><td>Air quality is good but at quarries it is filled with dust, due to haulage on the road, blasting etc. but it will be within the permissible limits by sprinkling water on roads and covering the drill rods with cloth. Air quality will not be disturbed, as the quarrying is very limited.
<table>
<tr><th>Base Level</th><th>Allowable Level</th></tr>
<tr><td>RSPM = 60$\mu g/m^3$</td><td>100$\mu g/m^3$</td></tr>
<tr><td>SO_2 = 20$\mu g/m^3$</td><td>80$\mu g/m^3$</td></tr>
<tr><td>NO_2 = 30$\mu g/m^3$</td><td>80$\mu g/m^3$</td></tr>
<tr><td>CO = 1000$\mu g/m^3$</td><td>2000$\mu g/m^3$</td></tr>
</table></td></tr>
<tr><td>c</td><td>Water Quality</td><td>The water environment will not be disturbed as the quarry is far off from the water courses.

The quarrying of Road Metal,Building Stone,Gravel, Building Stone& Gravelhas no adverse affect is anticipated on the water regime in the area</td></tr>
<tr><td>d</td><td>Noise Levels</td><td>The blasting and the haulage and the drilling of boreholes generate noise. However, the probable noise level will be within the permissible limits and will not cause harm. The lessee will provide suitable protective gear to the workers for minimizing the noise pollution and the machinery will be well maintained.

The noise levels for various activities are
<table>
<tr><td>1</td><td>Excavator</td><td>90 to 96 dB(A)</td></tr>
<tr><td>2</td><td>Compressor</td><td>84 to 98 dB(A)</td></tr>
<tr><td>3</td><td>Blasting</td><td>89 to 95 dB(A)</td></tr>
</table></td></tr>
<tr><td>e</td><td>Vibration Levels</td><td>It is proposed to use low explosives and less quantity to minimise the effects so that the vibration generated will be feeble within 8 Hz.</td></tr>
<tr><td>f</td><td>Water Environment</td><td>The water environment will not be disturbed as the quarry is far off from the water courses.</td></tr>
</table>

g	**Acid Mine Drainage**	No acids will be generated from Road Metal,Building Stone,Gravel.
h	**Surface Subsidence**	No subsidence is anticipated in this regime as the basement rock is massive and away from the seismic zone
i	**Socio economics**	The main occupation of villagers is agriculture and sheep raring. The commencement of quarrying activity in this area improved the socio-economic status of the local people by creation of employment and paying taxes to gram panchayath. The quarrying in this area does not involve any hazardous methods. The quarrying will be Open Cast Semi Mechanized Method. In this, the possibilities of small injuries is anticipated. The lessee is providing First Aid facilities at quarry site.
j	**Historical Monuments**	No historical monuments exist within 5 Km radius
k	**Bio-Diversity**	No impact will happen to the Mankind, Flora and Fauna by the quarry operations, excepting minor vibrations due to blasting, sound pollution and dust which will be under control and within the permissible limits.

3.0 PROGRESSIVE RECLAMATION PLAN

The quarry lease area is part of hill.

The pits will be utilized for water storage and water harvesting structure.

Year	Pit No.	Mined out area at the beginning (Ha)	Additional area proposed for working in the year (Ha)	Total Area (Ha)	Backfilling & Afforestation in the year (Ha)	Mined out area at the end of the year (Ha)
1st (2017 – 18)	-	1.8610	0.6081	2.4928	-	2.4928
2nd (2018 – 19)	-	2.4928	(west of 1st year)	2.4928	-	0.6318

4.0 MINED OUT LAND

Land Use Pattern of the quarry area

Area		M^2	Hectares
Active Mine Area	Broken	28,610	1.8610
	To be Broken	6,081	0.6081
TOTAL		**34,691**	**2.4928**
7.5 M Wide Safety Zone		1,814	0.1814
Infrastructure (Outside the quarry lease area)		-	-
Roads		(2010)	(2.010)
Dumps	Existing	Nil	Nil
	Proposed	Nil	Nil
TOTAL AREA UTILISED		**34691**	**0.6318**
TOTAL MINE LEASE AREA		**18,090**	**1.809**

The land that will be broken in the successive conceptual periods, the Life of the quarry is anticipated to be 8 years as of present).

5.0 TOP SOIL MANAGEMENT

Not applicable

6.0 TAILING DAM MANAGEMENT

Not applicable

7.0 DISASTER MANAGEMENT AND RISK ASSESSMENT

To mitigate the emergency, planning is the first & four most thing, i.e. recognizing the accident or possible, assessing the consequences of such possible accidents and deciding on emergency planning / procedures in advance both on site & off site that would necessary to be implemented in the event of emergency without any delay and confusion.

Proper bench design in mines and observing safety measures for transportation, storage, handling of explosives & fuels, etc, good maintenance of vehicles, roads, fire prevention measures shall go in preventing disaster / accidents.

Quarrying shall be carried out as per MMR 1961 & Rules and regulations applicable the project in charge is having a mobile communication for quick intimation of information if need arises.

The lessee is committed to identify the possible causes for potential disaster and draw a code of emergency measures and procedures to deal with such disasters, which is otherwise also advised by DGMS through their Circulars.

The quarry is having good communication like telephone & mobile facility. In case of any minor / major accidents within the quarry, the same will be communicated to the Agent by the Mines Manager and intern he will inform to the Revenue Authorities, Police, Fire Department, DGMS etc for action.

A vehicle is kept all the time at the quarry site for conveyance.

At quarry level first aid will provided and person(s) shall be shifted to nearby hospital at G.Konduru & Vijayawada which is having all basic amenities.

8.0 CARE AND MAINTENANCE DURING TEMPORARY DISCONTINUANCE

The quarry workers are taken on contract basis on need based orders, the workers always get Employment / Contract in similar quarries existing around. During monsoon these labour are busy with agricultural activities.

ITEM	DETAILS	PROPOSED	ACTUAL
Dump Management	Area afforested (Ha) 1. No. of saplings planted 2. Cumulative no of plants 3. Cost including watch and care during the year	Nil	Nil
Area afforested (ha) No. of saplings planted Cumulative no of plants Cost including watch and care during the year	1. Area available for rehabilitation (specify) 2. No of saplings planted in the year 3. Cumulative no of plants 4. Any other method of rehabilitation (specify) 5. Cost including watch and care during the year	Plantation is proposed all along the 7.5 M Buffer Zone	-

Reclamation and Rehabilitation by backfilling	1. Void available for backfilling (L x B x D) pit wise / stope wise Void filled by waste / tailings afforestation on the backfilled area 2. Rehabilitation by making water reservoir Any other means (specify)	No back filling is proposed as no considerable waste is anticipated to be generated	-
Rehabilitation of waste land within lease	1. Area available (Ha) 2. Area rehabilitated	No proposals are made	-

9.0 FINANCIAL ASSURANCE

Financial assurance can be submitted in any encashable from preferable a bank guarantee from a Scheduled Bank at the rates equivalent to rates prescribed in Rule 23 (F) (2) of Mineral Conservation Development Rules, 1988 for next 2 years period expiring at the end of validity of the document.

The proposed mining operations are by Open Cast Semi Mechanized Method and hence the cost of reclamation & rehabilitation is calculated as per the provisions of MCDR, 1988 @ Rs. 25,000/- per hectare or part thereof.

The same provisions are implied for calculation of areas utilized under various heads and arriving for Financial Assurance to be paid by the lessee.

This amount works out to be Rs. 45225/- for 1.809 Hectares area.

The minimum financial assurance in the form of Bank Guarantee for Rs. 2,00,000/- will have to be submitted to the Assistant Director, Department of Mines & Geology, Vijayawada.

10.0 FINANCIAL ASSURANCE PROFORMA

The details of area put to use and calculations there off for financial assurance are given in the proforma as below :

DETAILS OF AREA CONSIDERED FOR COMPUTATION OF FINANCIAL ASSURANCE

S.No.	Head		Area put on use at the start of plan (in Ha.)	Additional requirement during the plan period (in Ha.)	Total (in Ha.)	Area considered as fully reclaimed and rehabilitated (in Ha.)	Net area considered for calculation (in Ha.)
1	**2**		**3**	**4**	**5**	**6**	**7**
1	Area under Mining		1.8610	0.6081	2.4928	-	2.4928
2	Storage for Top Soil		Nil	N.A.	N.A.	-	N.A.
3	Overburden / Dump		Nil	Nil	Nil		Nil
4	Mineral Storage		Nil	Nil	Nil	-	Nil
5	Infrastructure (Workshop, Administrative Building etc.,)		Nil	Nil	Nil	Nil	-
6	Roads		Nil	(2.010)	(2.010)	-	(2.010)
7	Railways		Nil	N.A.	N.A.	-	N.A.
8	Green Belt		Nil	(300)	(300)	-	(300)
9	Tailing Pond		Nil	N.A.	N.A.	-	N.A.
10	Beneficiation Plant		Nil	-	-	-	-
11	Mineral Separation Plant		Nil	-	-	-	-
12	Township Area		Nil	N.A.	N.A.	-	N.A.
13	Others	Retaining Wall	Nil	Nil	Nil	Nil	-
		Fencing around the pit (included quarry area)	Nil	(0.1570)	(0.1570)	-	(0.1570)
	GRAND TOTAL		**A**	**B**	**C = (A + B)**	**D**	**E = (C-D)**
			1.8610	0.6081	2.4928	-	2.4928

11.0 CERTIFICATE

Certified that the above mentioned will be taken care in the Progressive Mine Closure Plan for Road Metal,Building Stone,Gravel, Building Stone & Gravel over an extent of 1.809 Hectares in Sy. No. 26/2 of Loya (V), G.Konduru (M), Krishna District, Andhra Pradesh State.

All statutory organizations, courts etc. have been taken into consideration and wherever any specific permission is required, the lessee will approach the concerned authorities.

All the measures proposed in this closure plan will be implemented in a time bound manner as proposed.

12.0 PLANS & SECTIONS

The plans and sections are enclosed.

LESSEE	RQP
Smt CH.RAJESWARI,	**(P.V.SATYANARAYANA)**