

**Draft EIA/EMP Report for Expansion of Secondary Metallurgical Processing Unit to produce Aluminum Ingots from 60,000 TPA to 2,47,000 TPA, Aluminum Extrusion from 12,000 TPA to 50,000 TPA along with Alloy Corrugated Product for 1,35,000 TPA from 1,95,000 TPA Aluminum Billet, Copper Ingots from 4,000 TPA to 5,950 TPA, Steel Forging from 8,100 TPA to 1,00,000 TPA with addition of Aluminum Cables of 50,000 TPA, Aluminum Flats of 50,000 TPA , Aluminum Strip Cast of 50,000 TPA, Ferro alloys production for 72,000 TPA & Hot Rolled Steel Products of 95,000 TPA, by installing 2x 30 T Induction Furnace (IF) , 8x10 MT Re-melting Furnaces, 4x10 MT Holding Furnaces along with LRF, CCMs, Extrusion / Anodizing Chamber, 2 x 0.5 T Crucible Furnace & 2x18 MVA SAF**

**Submitted By**



**M/s. Varron Autokast Limited**

**Survey No. 174, 175, 176/1, 176/2, 185, 186/2, 188, 189, 191, 196, 201/2, 201/3 & 201/5, Vill. Chimnazari, Taluka & District Nagpur. Maharashtra.**

**Prepared By**



**Ardra Consulting Services Pvt. Ltd.**

**BHUBANESHWAR, ODISHA**

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## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

M/s. Varron Autokast Limited (VAL) is incorporated on 5th August 2011. It is classified as Non-govt. Company and is registered at Registrar of Companies, Mumbai. The project site is located at Survey No. 174, 175, 176/1, 176/2, 185, 186/2, 188, 189, 191, 196, 201/2, 201/3 & 201/5, Vill. Chimnazari, Taluka & District Nagpur. Maharashtra.

It was involved manufacturer of Aluminum Alloy Ingots, Aluminum Extrusion, Steel Forging, and Copper Ingots in Central India. The company has a state-of-the-art manufacturing facility spread over approximately 84.26 acres of land located at Nagpur on the Nagpur-Hyderabad highway.

With an existing manufacturing capacity of 60,000 metric tons per year for Aluminum Ingots, 8,100 metric tons per year for Steel Forging & Machining, 12,000 metric tons per year for Aluminum Extrusion, and 4,000 metric tons per year for Copper Ingots.

The Proposed expansion project falls under Category 'A' of Schedule 3(a)- under (c)-Secondary Metallurgical Industries as per EIA Notification 2006 and further amendments.

The Project is categorized in violation category due to establishment of the industry without Prior Environment Clearance as per CTE of 2013.

M/s. Varron Autokast Ltd. has been taken over by New Management through NCLT, Mumbai Bench (NCLT Order Copy attached as Annexure 02). Old Management Started the Construction on the basis of Consent to Establish Format No. 1.0/BO/CAC-Cell/RO-Nagpur/17th CAC/CC/CAC-10119 dt 10/12/2013 but without obtaining Prior Environmental Clearance. The Project is categorized in violation category due to establishment of the industry without Environment Clearance as per CTE of 2013. This violation was identified during the application for EC for enhancement of production capacity. New Management has acknowledged this violation and agree to comply the SOP dated 07.07.2021 as prescribed by the Ministry of Environment, Forest & Climate Change for this project under violation. New Management is ready to pay penalty of 1% of Total Capital Investment in the Project and 0.25% of Total Turnover from the Project. In addition to this New Management is also ready to prepare Damage Assessment, Remedial Plan and Community Augmentation Plan. New Management is also ready to Submit Bank Guarantee equivalent to the amount of Remediation Plan and

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Natural & Community Resource Augmentation Plan with Maharashtra Pollution Control Board. M/s Varron Autokast Ltd. applied for ToR SEIAA Maharashtra for expansion and received ToR under File No. SIA/MH/IND1/404048/2022 Government of India State Level Environment Impact Assessment Authority Maharashtra. Later the Management decided to add ferro alloys, hence submitted letter to SEIAA Maharashtra for ToR withdrawal.

Expansion of existing Unit to produce Aluminum Ingots from 0.06 to 0.247 MTPA, Aluminum Extrusion from 0.012 to 0.050 MTPA, Corrugated Product for 0.135 MTPA, Copper Ingots from 0.004 to 0.00595 MTPA, Steel Forging from 0.0081 to 0.1 MTPA with addition of Aluminum Cables, Aluminum Flats, Aluminum Strip Cast from 0.195 MTPA Aluminum Billet, Ferro alloys production for 0.072 MTPA & Hot Rolled Steel Products of 0.095 MTPA.

For the proposed expansion VAL applied online on dated: 02/08/2023 for TOR at MOEFCC, File No. IA-J-11011/256/2023-IAII(IND-I) and Proposal No. IA/MH/IND1/434955/2023.

Further, MOEFCC appraised our case for TOR on 18-08-2023 and published Minutes of Meeting (MOM) on 29-08-2023, (Minutes of AGENDA FOR 42nd MEETING OF THE EXPERT APPRAISAL COMMITTEE -(INDUSTRY-1 SECTOR), SCHEDULED TO BE HELD ON 17th – 18th AUGUST, 2023 Expert Appraisal Committee meeting Industrial Projects – 1 held from 17/08/2023 to 18/08/2023).

As the most of the existing units in the plant were installed and operated without prior environmental clearance, the proposal attracts provisions of S.O. 804 (E) issued by MoEF&CC dated 14.03.2017 for the Units installed and under Violation.

## **IDENTIFICATION OF THE PROJECT**

M/s Varron Autokast Ltd. is venturing expansion for Secondary Metallurgical Processing Unit to manufacture Proposed Expansion of Secondary Metallurgical Processing Unit to produce Aluminum Ingots from 23250 TPA to 2,47,000 TPA, Aluminum Extrusion from 1000 TPA to 50,000 TPA along with Alloy Corrugated Product for 1,35,000 TPA from 1,95,000 TPA Aluminum Billet, Copper Ingots from 750 TPA to 5,950 TPA, Steel Forging from 3000 TPA to 1,00,000 TPA with addition of Aluminum Cables of 50,000 TPA, Aluminum Flats of 50,000 TPA , Aluminum Strip Cast of 50,000 TPA, Ferro alloys production for 72,000 TPA & Hot Rolled Steel Products of 95,000 TPA, by installing 2x 30 T Induction Furnace (IF) , 8x10 MT Re-melting Furnaces, 4x10 MT Holding Furnaces along with LRF, CCMs, Extrusion /

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Anodizing Chamber, 2 x 0.5 T Crucible Furnace & 2x18 MVA SAF by M/s. Varron Autokast Ltd, at Survey No. 174, 175, 176/1, 176/2, 185, 186/2, 188, 189, 191, 196, 201/2, 201/3 & 201/5, Vill. Chimnazari, Taluka & District Nagpur, Maharashtra, over an area of 84.26 Acre/ 34.10 Ha., as a brown field project.

The project area is bounded by Coordinates of Latitude & Longitude 20°49' 17.76" N & 78° 57' 32.25" E respectively and is part of SOI Toposheet No. F44S13. The nearest railway station is Borkhedi Railway station, which is at a distance of 5.1 Km. The Road connectivity is through NH-44 located at distance of 0.025 Km (E) from the plant. All amenities and facilities are available at Chimanzari such as Hospitals and Dispensaries, District Headquarters, Police Station, Schools, Colleges and Technical Institutes.

The major raw materials are Aluminum Scrap, Aluminum Billets, Quartzite, Coal, Lam Coke, Mn Ore/ Chrome Ore, Dolomite, Silico Manganese & Carbon Electrode. All the materials are sourced from MIDC Butibori (Local Market). Total Power required for proposed project is 58 MW. Electric power will be sourced from MSEDCL. The total requirement of water for the proposed project will be 54670 KLD (Fresh water: 3132 KLD & Makeup Water: 51538 KLD) and which will be sourced from Ground water. The proposed project will create direct 1200 people and indirect employment to 3000 people. The estimated project cost is about Rs 721.54 Crores. The capital cost for Environment Management Cost is Rs. 14.81 Crores and estimated damage assessment cost is Rs. 3.32 Crores.

## **PROJECT DESCRIPTION**

The project falls under category A, section 3 (a) of EIA Notification 14th September 2006 and amendment thereof vide Notification no. S.O 3067 (E) dated 1st December 2009. The capacity of the existing plant and proposed expansion project is given in the table.

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**Table 1: Existing & Proposed Configurations with Capacity**

S.N.	Products	Existing Configuration	Existing Capacity in TPA as per CTO	Proposed Configuration	Proposed Capacity in TPA	Total Capacity in TPA
1	Aluminum Ingots	2 x 10 MT Skelnar Furnace	23250	8 x 10 MT melting Furnace & 4 x 10 MT Holding Furnace	223750	247000
2	Copper Ingots	1 x 0.5 MT Copper Melting Furnace	750	2 x 0.5 MT Crucible/ Induction Furnace	5200	5950
3	Steel Forging with Machining	Induction Heater & 1 Hammer	3000	10 hammers and 10 Presses	97000	100000
4	Aluminum Extrusion	18 MN Extrusion Press 10,18, 27.5	1000	Extrusion Presses from 5" to 12" log thickness	49000	50000
5	Alloy Corrugated Products	-	-	Corrugated Chamber	135000	135000
6	Aluminum Cables	-	-	4 x 10 T holding furnace Continuous Aluminum strip caster, Cold Rolling Mill	50000	50000
7	Aluminum Flats	-	-	CCM	50000	50000

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8	Aluminum Strip Cast	-	-	CCM	50000	50000
9	Ferro alloys	-	-	2 x 18 MVA SAF	72000	72000
10	Hot Rolled Steel Products	-	-	2 x 30 T Induction Furnace	95000	95000

*Sources: Project Proponent*

## DESCRIPTION OF THE ENVIRONMENT

The environmental study majorly constitutes air (both meteorological study and air quality assessment), water, noise, soil quality assessment, land use, description of ecology, socio-economic studies, hydro-geological studies and traffic study.

The climatic conditions of Nagpur are tropical in nature. In winter, there is much less rainfall than in summer. The Köppen-Geiger climate classification is Aw. The temperature here averages 27.0 °C /80.7 °F. About 1128 mm (44.4 inch) of precipitation falls annually.

The hot season lasts for 2.0 months, from April to June , with an average daily high temperature above 103°F. The hottest month of the year in Nagpur is May, with an average high of 108°F and low of 83°F. The cool season lasts for 2.9 months, from November to February , with an average daily high temperature below 87°F. The coldest month of the year in Nagpur is December, with an average low of 57°F and high of 83°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Nagpur varies very significantly throughout the year. The wetter season lasts 3.5 months, from June to September, with a greater than 32% chance of a given day being a wet day. The month with the wet days in Nagpur is July, with an average of 18.1 days with at least 0.04 inches of precipitation. The drier season lasts 8.5 months, from September to June. The month with the fewest wet days in Nagpur is December, with an average of 1.0 days with at least 0.04 inches of precipitation. Among wet days, we distinguish between those that experience rain alone, snow alone, or a mixture of the two. The month with the most days of rain alone in Nagpur is July, with an average of 18.1 days. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability



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of 61% on July end.

The humidity comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body. Lower dew points feel drier and higher dew points feel more humid. Unlike temperature, which typically varies significantly between night and day, dew point tends to change more slowly, so while the temperature may drop at night, a muggy day is typically followed by a muggy night. Nagpur experiences extreme seasonal variation in the perceived humidity. The muggier period of the year lasts for 5.3 months, from May to November, during which time the comfort level is muggy, oppressive, or miserable at least 27% of the time. The month with the most muggy days in Nagpur is August, with 31.0 days that are muggy or worse. The month with the fewest muggy days in Nagpur is January, with 1.2 days that are muggy or worse.

The meteorological data recorded during survey period is very useful for proper interpretation of the baseline information as well as for input, to predictive models for air quality impacts. For collection of Primary data an Automatic Weather Station was installed at the plant site for three months (1<sup>st</sup> Mar-2023 to 31<sup>st</sup> May-2023) and it recorded hourly observations for the parameters like Maximum and minimum Temperatures (°C), Relative Humidity (%), Wind Speed (m/s), Wind direction and Rainfall.

### **Ambient Air Quality**

In order to identify the background air quality data and also to represent the interference from various industrial and local activities, screening techniques have been used for identification of air quality stations in the study areas. The following points have been considered for the selection of air quality monitoring stations.

- Predominant wind directions
- Topography of the study area
- Terrain and sensitive areas
- Populated areas near to the project area
- Magnitude of the surrounding industries

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For selection of Air quality Monitoring station following factor were considered viz. sources and emissions, health status, demography, population growth, land use pattern, epidemiological studies. Primarily as the IMD based on annual wind rose diagram indicates the resultant wind blowing from NNE to SSW direction, therefore three locations were chosen in the lee ward side of the project location and eight locations were chosen in 120<sup>0</sup> angle distribution and cross wind within 5-8 km radius distance from the project boundary. Further as because the immediate 1km radius is an industrial complex of Steel & Allied Manufacturing units, the windward locations distributed in 120<sup>0</sup> angle to the resultant wind direction is expected to carry the total pollution load from the industrial complex.

The due consideration during the selection of sampling locations was given to the likely affected zones during construction and operation of the plant. The location of human habitation and other sensitive areas within the study area were also considered in selection of ambient air quality monitoring locations. Eleven (11) numbers of monitoring stations were set up to assess the present air quality of the study area. Two station was located inside the proposed project site (core zone) and the Nine others, outside (buffer zone) the proposed project site. The locations of the monitoring stations were based on the frequent wind directions in order to site the stations as close as feasible to the anticipated maximum pollutant deposition areas, moreover, duly considering human habitation and proximity to sensitive zones within the study area. Logistic considerations as ready accessibility, security, availability of reliable power supply etc. were examined while finalizing the monitoring locations.

**Table 2: Air Quality Monitoring Locations with Justification**

Location Code	Location Type	Location Name	Direction w.r.t the Project Site	Distance from the Project Site in Km	Latitude	Longitude
AAQ1	Core	Project site	-	-	20°49'5.62"N	78°57'15.10"E
AAQ2	Core	Chimnazari village)			20°49'22.85"N	78°57'19.73"E
AAQ3	Buffer	Katwtha village	W	2.19	20°48'36.41"N	78°55'41.76"E



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AAQ4	Buffer	Sai temple (Sindi town ship)	W	6.47	20°48'31.39"N	78°53'11.23"E
AAQ5	Buffer	Tembhari village	E	2.4	20°49'11.56"N	78°58'55.56"E
AAQ6	Buffer	Alagondi village	NE	3.18	20°50'17.14"N	78°59'1.67"E
AAQ7	Buffer	Chichkotha village	SE	2.27	20°48'11.03"N	78°58'18.70"E
AAQ8	Buffer	Vasant hotel (Near NH Chandrapur to Nagpur Road)	S	2.77	20°47'27.90"N	78°57'26.34"E
AAQ9	Buffer	Mohgaon Village	S	1.55	20°48'13.45"N	78°56'50.65"E
AAQ-10	Buffer	Dudha Village	NW	3.27	20°50'40.46"N	78°55'50.69"E
AAQ-11	Buffer	Bamhani Village	N	2.07	20°50'24.14"N	78°57'40.63"E

*Source: Toposheet No. F44S13 & Google Image for the area with Site reconnaissance and the Annual IMD Wind Rose*

Ambient Air Quality Monitoring reveals that the concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> NO<sub>x</sub>, & CO for all the 11 AAQM stations. PM<sub>10</sub> is a measure of particles in the atmosphere with a diameter of less than 10 micron. PM<sub>10</sub> is particulate matter with an aerodynamic diameter of up to 10 µm, i.e., the fine and coarse particle fractions combined. Out of the eleven sampling locations the minimum concentration for PM<sub>10</sub> was observed as 30.2 µg/m<sup>3</sup> recorded at Roof top in road site house near Kautha village (A3) and with the maximum concentration observed as 57.2 µg/m<sup>3</sup> at Bamhani village (A11) during study period. PM<sub>2.5</sub> particles are known to produce respiratory and cardiovascular illness. Out of the eleven sampling locations the

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minimum concentration for PM<sub>2.5</sub> was observed as 12.5 µg/m<sup>3</sup> recorded at Gat Gram panchayat Office (Alagondi village) (A6) and with the maximum concentration observed as 32.2 µg/m<sup>3</sup> at Bamhani Village (A11) during study period. The concentrations of SO<sub>2</sub> , NO<sub>x</sub> & CO were found to be in range of 7.3 to 18.4 µg/m<sup>3</sup> and 11.2 to 24.8 µg/m<sup>3</sup> and 0.1 to 0.9 mg/m<sup>3</sup> respectively. Also, this location to has collectively impact of the traffic and its adjacent railway line in Cross wind direction. The concentrations of SO<sub>2</sub> and NO<sub>x</sub> were comparatively high at Location 7 due operational activities of existing plants. The plant will result in increase in ambient concentration due to increase in fugitive emissions during construction phase and it will be confined within plant boundaries. During operation phase, the movement of men, material and plant operations will result in increase of fugitive emissions and vehicular emissions and in turn increase in PM, SO<sub>2</sub> and NO<sub>x</sub> concentrations. The ambient air quality monitored in the season is within the prescribed limits of NAAQS.

**Noise Environment:**

The noise quality was monitored at seven (7) locations in the study area during the study period.

**Table 3: Noise Monitoring Locations with Justification**

Location Code	Location Type	Location Name	Direction w.r.t the Project Site	Distance from the Project Site in Km	Latitude	Longitude
NQ-1	Core	Project site Main gate	-	-	20°49'12.89"N	78°57'31.78"E
NQ-2	Buffer	Bamhani Village	N	2.06	20°50'24.16"N	78°57'39.59"E
NQ-3	Buffer	Tembhari Chowk	E	2.41	20°49'10.48"N	78°58'55.43"E
NQ-4	Buffer	Chichkotha Chowk	SE	2.12	20°48'10.61"N	78°58'18.99"E
NQ-5	Buffer	Vasant hotel ( Near N.H Chandra pur to Nagpur road)	S	2.8	20°47'27.64"N	78°57'26.47"E
NQ-6	Buffer	Katwtha Chowk	SW	2.14	20°48'36.59"N	78°55'43.41"E
NQ-7	Buffer	Sindi town ship Chowk	W	6.48	20°48'33.09"N	78°53'10.56"E

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*Source: Toposheet No. F44S13 & Google Image for the area with Site reconnaissance and Annual Wind Rose of IMD*

Recorded Noise Levels in the core & buffer zone of proposed project site, are in the range of 34.1(night time) to 57.4 dB (A) (day time) at all seven monitoring stations. Maximum levels of noise have recorded in day hours which are natural as our most of activities have done in day hours. The noise levels at the Location 2 are on the higher side, it may be due to transportation as the project site is located adjacent to the highway and industrial activity (crushing) and this is a location to have collectively impact of the traffic and town ship area. Its adjacent railway line in U/W direction.

#### **Water Environment:**

Six surface water samples and Six Ground water sample were collected from the study area for physical, chemical and bacteriological analysis.

**Table 4: Details of Surface Water Sampling Station with Justification**

Location Code	Location Type	Location Name	Direction w.r.t the Project Site	Distance from the Project Site in Km	Latitude	Longitude
SW1	Core	Project Site	-	-	20°49'0.97"N	78°57'24.28"E
SW2	Buffer	Ram Dam	E	7.06	20°50'1.51"N	79° 1'30.34"E
SW3	Buffer	Vena River	SE	6.85	20°48'4.97"N	79° 1'15.15"E
SW4	Buffer	Nala Near Sindi Twp	SW	6.04	20°48'17.71"N	78°53'29.45"E
SW5	Buffer	Vaghi Nala	S	3.88	20°46'56.95"N	78°56'45.78"E
SW6	Buffer	Nala Near Mohgaon	S	1.19	20°48'24.40"N	78°56'53.04"E

*Source: Toposheet No. F44S13 & Google Image for the area with Site reconnaissance*

The pH of water sample was 7.1 to 7.6 showing fair neutrality of surface water. The Dissolved

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Oxygen was 5.2 to 6.8 mg/l which is above oligotrophic water, favorable for aquatic organisms for survival. This showed that the physical quality of water sample was good. The values of BOD ranged from 2 to 3.2 mg/l; COD was 10.6 to 16 mg/l showing indicating no pollution level of surface water samples. The total hardness values were 204 to 452 mg/l which indicate hard water with fair concentration of dissolved minerals. The alkalinity was 154 to 305 mg/l showing medium buffering capacity, and rich in mineral nutrients. The Fluoride concentration ranged from 0.1 to 0.6 mg/l. The value of conductivity was 510 to 830 µs/cm which is high due to the presence of ions and minerals in the water bodies.

**Table 5: Details of Ground Water Sampling Station with Justification**

Location Code	Location Type	Location Name	Direction w.r.t the Project Site	Distance from the Project Site in Km	Latitude	Longitude
GW1	Core	Project site	-	-	20°49'17.36"N	78°57'26.01"E
GW2	Core	Tubell in Zilla Parishad Primary School (Chimanzari Village)	N	0.19	20°49'23.01"N	78°57'19.64"E
GW3	Buffer	Open Well in Khwtha Village	W	1.97	20°48'35.64"N	78°55'50.24"E
GW4	Buffer	Tubell in Mangli Village	NW	2.46	20°49'35.55"N	78°55'31.45"E
GW5	Buffer	Tubell in Tembhari Village	E	2.42	20°49'12.33"N	78°58'55.92"E
GW6	Buffer	Open well in Sonegaon Village	S	2.65	20°47'34.85"N	78°57'27.20"E

*Source: Toposheet No. F44S13 & Google Image for the area with Site reconnaissance*

The physico-chemical analysis of groundwater samples was compared with Drinking Water Standard (IS: 10500-2012) as the groundwater is expected to be good and is utilized for domestic purpose and for irrigation purpose. The pH of the groundwater samples ranged from 7.1 to 7.5 which is within the permissible limit. The total dissolved solids ranged from 406 to 486 mg/l indicating medium mineral nutrients. This observation is supported by moderate values of total hardness (286 to 344 mg/l) and total alkalinity (272 to 320 mg/l). The groundwater samples were less polluted as indicated by the medium values of chlorides (25.8 mg/l to 77.2 mg/l). The Fluoride concentration (0.2 to 0.4 mg/l) was optimum for all villages. Based on the conductivity values, the groundwater samples are good for irrigation purpose.

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The sodium (25.4 to 62.7 mg/l) and potassium (4.8 to 13.3 mg/l) concentration are low indicating absence of pollution of groundwater samples.

### Soil Environment:

Six soil samples were collected from the study area and analysed.

**Table 6: Location of the Soil Monitoring Station**

Location Code	Location Type	Location Description	Direction w.r.t the Project Site	Distance from the Project Site in Km	Latitude	Longitude
S-1	Core	Chimnazari village (Agriculture Land)	N	0.16	20°49'23.62"N	78°57'22.09"E
S-2	Buffer	Chicholi Village	W	1.03	20°48'50.77"N	78°56'18.98"E
S-3	Buffer	Sonegaon Village	S	1.87	20°48'0.26"N	78°57'27.87"E
S-4	Buffer	Chichkotha Village	SE	1.81	20°48'21.47"N	78°58'12.98"E
S-5	Buffer	Tembhari Village	E	2.67	20°49'16.12"N	78°59'3.74"E
S-6	Buffer	Near Back Side K S Metals & Mining Industries Pvt Ltd	NE	1.79	20°50'0.26"N	78°58'14.14"E

*Source: Toposheet No. F44S13 & Google Image for the area with Site reconnaissance*

The characteristics of the soil sample were compared with different depths for respective parameters. The observations of soil characteristics are discussed parameter wise below;

Texture of all soil samples are Silty-loam, Sandy and Loamy in Texture Classification. Color of soil samples from agriculture and waste land is Grey in color. The bulk density of soil samples is in the range of 1.45 to 1.72 gm/cc. The pH values between 7.8 to 8.4. which

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indicating nature of soil samples as between slightly neutral to alkaline. The conductivities value between 0.086 to 0.160  $\mu\text{s}/\text{cm}$ . Available Organic Matter (0.5-0.87%) was medium to high, available Potassium (186-320.3 Kg/ha) was high, available Nitrogen (151-196 kg/ha) was low, and available Phosphorus (79.6-114.1 kg/ha.) was high in nature. The soil samples were not affected by the anthropogenic activity. The soils are of medium fertility and may require addition of fertilizers during plantation and green belt development.

### **Ecological Environment:**

Biological data has been collected through secondary sources and by site visits. The tree species Neem, Babul, Ber, Gulmohar, Lime, Jamun, Peepal and Mango etc are the dominant plant species of the study area. Mongoose, Rat, Chameleon, Stripped Squirrel, Frog, cat, cobra, krait, snakes, hare, Buffalo, Fox, Dog & pigeon and variety of birds are the common animals of the study area. No endangered species of plants and animals are found in the study area, so no impact on ecological environment. No ecologically sensitive area like biosphere reserve, tiger reserve, and migratory corridors of wild elephant, wetland, national park and wildlife sanctuary are present in the study area.

### **Traffic Scenario**

Traffic survey was conducted at Five major intersections within the study area for assessing the traffic density. The traffic movement was monitored once in both directions at the aforesaid locations continuously for 24 hours. The monitored vehicles were categorized into two wheelers, three wheelers, cars, heavy vehicles, etc. The volume of vehicles moving through the roads of the project site were estimated as PCUs and compared with the level of service based on IRC guidelines. The average traffic volume was 6309 PCU/Day at TD1, 6538 PCU/Day at TD2, 564 PCU/Day at TD3 & 3612 PCU/day at TD4 respectively.

### **Socioeconomic Condition**

SIA project area covers villages like Chimanzari, Mangli, Chicholi, Bamhani, Mohgaon and Tembhari. As per the census 2011 the total households are 7480 with the total population of 32220 from which male population is 16641 and female population is 15579. In Ridhora highest numbers of households are 842 and highest numbers of peoples are 3595 and in Pipardol lowest number HHs are 11 and lowest number populations are 39. The female



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population dominates male population. The Schedule Caste (SC) population is 4169 (12.94 %), Schedule Tribe population (ST) is 6167 (19.14 %) and OBC/ GC population are 21884 (67.9 %).

## **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

For new installations, during construction, the activities related to land de-weeding, leveling of site and construction of building structures and installation of machineries and equipment will lead to fugitive dust emission. Construction activities during this stage will temporarily alter the environment of the nearby area due to movement of heavy machineries and vehicles.

### ***Construction Phase***

The construction phase of the proposed project will be of short duration for about 10-12 months. The potential impacts will be localized, limited and temporary. Fugitive dust, noise due machine operation, surface water runoff, etc are expected during this phase. Water spray will be done to control fugitive dust. Excavation will be limited during day time by properly serviced machines.

### ***Operation Phase***

The process involved in the production process has varying impacts on the different components of the environment. All these impacts will be considered for impact assessment and accordingly the mitigation measures will be adopted. The design basis for all process units will lay special emphasis on measures to minimize the impact at source itself.

### **Air Environment**

Ferro alloys plant, Induction furnace of SMS plant, rolling mill, Holding furnace, Crucible Furnace and Melting furnace, hammers, presses. sets are the chief sources of air pollution. Apart from this, raw material handling, crushing, storage, loading and unloading, transportation activities will contribute to fugitive emissions.

Air quality modelling was conducted to know the incremental values of gaseous pollutants using AERMOD Cloud software. As per AP42 documentation, the max. Incremental Values (IV) obtained for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO are 10 µg/m<sup>3</sup>, 5 µg/m<sup>3</sup>, 0.8 µg/m<sup>3</sup>, 0.7

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$\mu\text{g}/\text{m}^3$  and  $0.005 \text{ mg}/\text{m}^3$  respectively. As per CPCB Norms, the max. Incremental Values (IV) obtained for  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$ ,  $\text{SO}_2$ ,  $\text{NO}_x$  are  $5 \mu\text{g}/\text{m}^3$ ,  $3 \mu\text{g}/\text{m}^3$ ,  $1 \mu\text{g}/\text{m}^3$ ,  $0.003 \mu\text{g}/\text{m}^3$  respectively.

### **Mitigation Measures:**

- Bag filters will be installed at emitting sources.
- Adequate stack heights will be provided for proper dispersion of pollutant.
- Fuel having low levels of ash and sulfur will be selected for combustion.
- Water sprinkling (10 nos.) will be carried out wherever necessary.
- All the conveyer systems will be covered with G. I. sheet.
- Vehicular speed will be limited to  $<25 \text{ kmph}$ .
- Vehicles carrying the material will be covered with tarpaulins.
- Dedicated roads will be provided for vehicles carrying raw material and product.
- Approach roads and internal roads will be repaired and maintained periodically.
- Proper maintenance of vehicles and machineries will be done and combustion efficiency of vehicles and machineries will be tested regularly.
- Adequate plantation will be undertaken at the plant boundary and along the internal roads. Green belt of at least 33 % of the total area will be developed.

### **Noise Environment**

- Noise will be generated from various operation activities such as crushers, Forging section, Corrugated chamber, Extrusion presses, melting and holding furnace, rolling mill, cooling systems, boilers, turbines, induction furnace, pumps, compressors, raw material transfer points and movement of vehicles, loading and unloading activities, DG sets etc.

### **Mitigation Measures:**

- Provision of silencers/enclosures/barriers/insulators will be installed wherever possible. Preventive maintenance of machinery/equipment and vehicles.
- Providing ear plugs to the employees and labour at noise prone areas.
- Vehicle speed limit will be restricted to  $< 25 \text{ kmph}$
- Unnecessary idling/ horn of vehicles will be avoided.
- Proposed green belt will act as a barrier for noise propagation.

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### **Water Environment**

The total requirement of water for the proposed project will be 54670 KLD (Fresh water: 3132 KLD & Makeup Water: 51538 KLD) and which will be sourced from Ground water.

As this plant is based on Zero Effluent Discharge, 100% recycling of waste water will be done in the process. Further details of the water requirement are given Chapter - II of this EIA / EMP Report.

The effluents, cooling water generated during steel process, if not treated properly and discharged carelessly on ground, soil or water bodies can enter into ground water through leaching. Surface water bodies are affected as it causes harm the biota to a lethal extent as the pollutants will have the tendency to increase TSS, TDS, silting due to suspended solids, taste and odor problems, temperature rise affecting DO, formation of oil slicks etc. It will result is loss of aquatic fauna and long-term change in characteristics of water bodies present in the vicinity. The discharge will also harm the soil flora and fauna and result in reduction of fertility of soil.

### **Mitigation Measures**

- Project will be completely based on Zero Liquid Discharge.
- No burden on ground water resources is envisaged as river water will be used and the company will be carrying out rainwater harvesting.
- Waste water generated from the different areas of the plant will be treated in suitable treatment facilities and recycled back to the process to attain 'zero' discharge, facilitating adequate re -use of water in the respective recirculating systems and economizing on the make-up water requirement.
- The supernatant water will be utilized in low end application such as sprinkling, gardening etc.
- Oil and grease trap will be provided in plant drainage lines to prevent contamination by accidental oil spillage.
- Waste water generated from the domestic activities will be treated in STP (Capacity: 1 x 60 KLD).
- Rainwater Harvesting will be practiced within the plant premises.

### **Soil Environment**



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The soil of the area may get affected due to operational activities, if proper care is not taken.

- Changes in soil texture due to settling of air borne dust or due to wash off of solid particulates by surface or ground water. This will lead to change in porosity, permeability & other such physical characteristics of soil of the area.
- Changes in soil chemistry due to addition of foreign material from polluted air and water due to existing plant activities in the area.
- Due to accumulation of solid or hazardous waste or discharge of waste water on soil environment, the top soil will be affected and leaching can cause harmful effects to ground water as well as soil characteristics gradually.

**Mitigation Measures:**

- A horticulturist will be engaged to ensure soil quality improvement in the plant area, by adequate manuring and fertilizing.
- Besides, soil samples will be collected and tested at regular intervals from the nearby areas. This helps in mitigation of any harmful impact on soil due to the operational activity, if any.
- No solid or liquid discharge will be disposed off in soil.

The common anticipated solid wastes are slag from Induction Furnace, SAF, mill scale from casting machine and rolling mill, Dross and scrap from Aluminium Ingots/ Billets/ Extrusion and Copper ingots, dust from corrugated chamber etc.

**Mitigation Measures**

The quantities of solid wastes generated from proposed plant and their mode of disposal is listed below.

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**Table 7: Solid Waste & Hazardous Waste Generation & Disposal Inventory**

<b>Induction Furnace</b>		
<b>Solid Waste Generation</b>	<b>Quantity (TPA)</b>	<b>Method of Disposal</b>
Slag_IF	17,600	Slag-Crusher unit will be installed. After Crushing slag will be used for Internal Road Construction as well as Village roads' development and rest will be sold to brick manufacturing units as they use it after grinding as replacement of sand.
Tailing cutting as Scrap	18500	Will be reused in Induction Furnace as scrap.
<b>Ferro Alloys Division</b>		
Slag_SAF	54750	After TCLP Test, the slag will be crushed and used for construction material.
Flue Gas Residue	17510	Will be used up in own ancillary Briquette Plant.
<b>Aluminum Ingots/Billets/Extrusion and Copper Ingots &amp; Forging Section</b>		
Aluminum Dross	8500	Sale to authorized re-cycler /re-processor
Aluminum Scrap	9000	Will be reused in Remelting Furnace as scrap/In-house recycling in Aluminum Melting Shop.
Scrap from Forging section	950	Sale to authorized re-cycler /re-processor
Dust from Corrugation Chamber	10000	Sale to authorized re-cycler or reuse as a raw material in SMS/SAF

**Hazardous Waste**

Only used /waste oil shall generate during maintenance and overhauling and will be sold to registered oil vendors only.

**Table 8: Hazardous Waste Inventory**

<b>S.N.</b>	<b>Type of Waste</b>	<b>Quantity</b>	<b>Treatment/Disposal</b>
1.	Used/Waste Oil	4 kg/day	Authorized Re processor

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### **Ecological Environment:**

The predicted pollution load after the proposed project will be within the stipulated standards and therefore there will be minimum or no disturbance to surrounding habitat.

### **Mitigation Measures:**

- Strengthening of proposed greenbelt.
- Causality replacement and gap plantation to be taken up.
- Developing avenue plantation.

### **Traffic Scenario**

During the proposed project an addition of proposed volume due to projects is 266 PCU/day envisaged. The impact on the existing access roads due to this addition trips were carried out by accessing the level of service. The modified level of service will continue to be reasonably free flow as per the IRC guidelines. Traffic will continue to run smoothly without congestion and no widening of road is required.

### **Mitigation Measures:**

- Plant to operate an automated scheduling system which aims to eliminating waiting times and improving efficiency of trucks accessing the plant.
- Provision of adequate truck parking facility.
- Vehicle carrying raw materials will be covered with tarpaulin sheets to prevent dust emission during transportation.
- As per motor vehicles act vehicles used in transportation will comply the norms.
- Repairing and maintenance of vehicles will be taken care.
- Greenbelt shall be provided around the plant area.
- Water sprinkling facilities shall be enhanced in raw material handling area, finished product handling area and also in haulage road.
- The end products are transported through road in truck covered with tarpaulin.

### **Socio – Economic Environment**



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The proposed project is planned within the Chimanzari Village. So, no R&R is involved. This proposed project will generate local direct & indirect employment in terms of contracts, truck transport related activities etc. Therefore, impact on employment generation aspect is seen as positive.

### **Occupational Health and Safety**

The major hazard is mainly with working within proper tools, poor illumination, poor ventilation, ladle movement, working without safety equipment, PPEs. Violation of safety protocols and shut down procedures etc. are also cause of hazards. There will be impact on person engaged for plant operations due to pollutants like, Noise, air emission, effluent from process etc. Following measure shall be taken for mitigation of same.

### **Mitigation Measures:**

- In accordance to factory and electrical inspectorate layout of equipments/ machinery shall be done.
- All shield guards shall be provided at all belts, pulleys, gears and other moving parts.
- Employees will be provided helmets, safety boots, fire resistant gloves, ear plugs, spectacles etc.
- Investigating of all type of big or small accidents and implementing corrective measures.
- Regular review safety meeting shall be held with department head, where investigations of various incidents are also to be discussed.
- Fire safety measures will be taken within the factory premises. All the fire extinguishing media such as water, dry chemicals, CO<sub>2</sub>, sand, dolomite, foam etc will be kept in vital location.
- Safety precaution will be displayed around the premises on the board etc.

### **ALTERNATIVE ANALYSIS**

Alternative analysis is the process of analyzing the proposed location for suitability for basic necessities to operate the plant safely and for any alternate technology. This analysis also covers the environmental aspect of pollution prevention and improvement in quality of life in the project vicinity. The project alternative is the course of action in place of another, that would meet the

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same purpose and need, but which would avoid or minimize negative impacts and enhance project benefits. Such projects may result in specific impacts which can be avoided or mitigated by adherence to certain predetermined performance standards, guidelines or design criteria. Alternative approaches may therefore be more effective in integrating environmental and social concerns into the project planning process.

No alternate sites have been considered; as we have been allotted the Plant with machineries, piece of land by NCLT after successful bidding.

### **ENVIRONMENTAL MONITORING PROGRAMME**

Environmental monitoring program is a vital process of any management plan. This helps in providing an early warning of any undesirable changes or trends in the natural environment that could be associated with industrial and allied activities and will allow for early implementation of effective corrective measures. In order to monitor the environmental managements an exclusive environmental cell will be actively operated.

- As per the NAAQs Standard and CPCB guidelines monitoring Air, Water, Noise, Soil environmental parameter a plan is being defined in tabular form below and the locations of monitoring stations shall be decided based on local PCB officials and shall be intimated to all respective Statutory authorities.
- Periodic maintenances of pollution equipment's and WTP/ETP/STP shall be carried out with maintenance of monitoring logbook by EHS Department.
- On a yearly basis water and energy audit shall be carried out to understand the usage and justified optimization as a conservative measure.
- Annual environmental audit and hazardous audit before the end of the financial year & shall be reported along with the annual environment status report.
- Proper Coordination between Operation, maintenance and EHS Department shall be done and overseen by the management in order to identify in errors, errors or any statutory violations to be reported for immediate action.
- All departmental heads shall be responsible for Housekeeping of their respective area of operations and report to the higher hierarchy for any fallouts or deviations.

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- Online Monitoring Systems shall be implemented of all stacks and two permanent ambient air, quality stations shall be fixed within premises. One is inward & other is windward direction based on annual wind rose diagrams.
- EHS Department will initiate, guide, implement and monitor the green belt development program on a monthly basis.
- Production department shall keep daily record of waste generation along with product and the waste shall be dealt as per the proposed environment management plan.
- EHS Department shall be responsible for timely compliances all statutory for timely compliances all statutory conditions and report the status on a quarterly basis to the management along with PCB/MOEFCC RO/dept. of Environmental & Forest govt. of Maharashtra/Regional Officers PCB/Local Industry Development.
- Flow meter shall be installed at all usage points or nodes for measuring the water usage, effluent generation, treatment and optimization water usage.
- Regular Safety training and evolving guidelines shall be carries out in monthly basis for all workers including contractual labours as well as Departmental Heads.
- All internal roads will either be concretized/ tar folded with shrub planted on either side followed by 2 layers of tall trees all along the plant area.
- Any complete or Grievances from any layers of hierarchy shall be held by its sphere and subsequently in upper hierarchy until the resolution is implemented. Based on such compliance it necessary respective SOP and all corporate polices may be revised as an when required.
- Last but not the list the Public Hearing commitments and commitments through corporate environmental responsibilities shall be implemented in consumption with the management, HR Dept., Environment EHS Department, Local Administration along with people's representatives from the nearby areas.

Environmental Monitoring includes;

- Monitoring of installed PCEs and their efficiency.
- Creating an Environmental Cell to monitor the PCEs, Accidents, improvisation of process, Plantation Program, Incident recording, Statutory reporting collaboration with and Salutation provides.

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- Periodic monitoring of environmental components in conjunction with PCB officials.
- Liaising with local bodies, Govt. Organization, management for CSR implementation and monitoring.

## ENVIRONMENTAL MANAGEMENT PLAN

Environment Management Plan describes the processes that an organization will follow to maximize its compliance and minimize harm to the Environment. A full-fledged environmental monitoring programme and Environmental Management Cell will be formed at M/s. Varron Autokast Ltd. For efficient execution of environmental protection measures. It is unlikely that the entire monitoring programme shall be carried out effectively through a contract with an external agency on a part time basis. However, casual labourers etc. shall be employed for plantation, drain cleaning etc. as and when required.

EMC shall be headed by a senior officer, designated as Manager, Pollution Control. In his day-to-day work he is/shall be assisted by Operational supervisors and assistants. He shall be directly Reporting to the Operation Director and the Management in the cases of Emergency or in any Statutory NCs.

**Table 9: Cost of Environment Management Plan**

S.N.	Description	Estimated Capital Cost, Rs. Lakhs	Recurring cost as per annum, Rs. Lakhs
1	Emission Control Engineering / Air Pollution Control System running	625	75
2	Water & Waste Water Management	275	30
3	Solid Waste Handling	75	15
4	Fugitive Dust Control Measures	25	6
5	Green Belt Maintenance	59.8	10.2
6	Environmental Monitoring (Online Monitoring System)	168	15
7	Environmental Cell & PR	0	30

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8	Others (Rain water harvesting, safety, security etc)	85	10
9	Safety & Occupational Health	45	10
10	Quality Control Lab	124	45
11	Based on the PH outcomes, the compliance measures are to be taken in the areas of Environment, Employment & CSR activities.	0	0
<b>Total</b>		<b>1481.8</b>	<b>246.2</b>

**Table 10 : Damage Assessment Estimated Cost**

S.No.	Aspects	Budget (Rs.)
1.	Estimated Cost on remediation plan based on the damage assessment due to violation	1,88,38,500
2.	Natural resource augmentation plan for 3 years	105,00,000
3.	Community resource augmentation plan for 3 years	39,00,000
<b>Total</b>		<b>3,32,38,500</b>

### PROJECT BENEFITS

Different benefits like physical infrastructure, social infrastructure, employment generation, and livelihood generation have been discussed in the report. Under the Corporate Social Responsibilities, **M/s Varron Autokast Ltd.** shall be devoted to social commitments and will continue to do the same as per the needs of nearby village people. For Corporate Social Responsibility, Various Programs/ Projects related to social & economic development of surrounded area has been planned, which are as follows, planned for providing water purifier for village people, conducting medical camps for Cataract operation, senior citizen check-up, deputing teacher for literacy development to Senior Citizens. Moreover, education, development of technologies, improvement of health care and improvement of quality of living will also take care of.

- Project invests Rs. 721.54 Cr. in the area of production of Aluminum Products.
- 200 or more families get direct or indirect employment.

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- Various secondary and tertiary livelihood supports things shapes, services and goods transactions.
- Along with the economic development the social, health & educational awareness and developments shall enrich the value of life.
- Total living structured will be upgraded.
- With production of goods and materials, exchanger is benefited might to nation and hence attributes to GDP and national income.

Along with the environmental protection measures through direct and indirect employment around 200 families shall be benefited from the projects, which not only cater to the employability of the area but also add revenue to the exchequer towards National GDP. The production of steel shall marginally cater to the gap in existing internal steel demand of India. A balance between environment and productivity shall bring sustainable development of the area.

## **CONCLUSION**

M/s Varron Autokast Ltd. is Aluminum Plant for Secondary Metallurgical Processing Unit to produce Aluminum Ingots from 60,000 TPA to 2,47,000 TPA, Aluminum Extrusion from 12,000 TPA to 50,000 TPA along with Alloy Corrugated Product for 1,35,000 TPA from 1,95,000 TPA Aluminum Billet, Copper Ingots from 4,000 TPA to 5,950 TPA, Steel Forging from 8,100 TPA to 1,00,000 TPA with addition of Aluminum Cables of 50,000 TPA, Aluminum Flats of 50,000 TPA , Aluminum Strip Cast of 50,000 TPA, Ferro alloys production for 72,000 TPA & Hot Rolled Steel Products of 95,000 TPA, by installing 2x 30 T Induction Furnace (IF) , 8x10 MT Re-melting Furnaces, 4x10 MT Holding Furnaces along with LRF, CCMs, Extrusion / Anodizing Chamber, 2 x 0.5 T Crucible Furnace & 2x18 MVA SAF by M/s. Varron Autokast Ltd, at Survey No. 174, 175, 176/1, 176/2, 185, 186/2,188, 189, 191, 196, 201/2, 201/3 & 201/5, Vill. Chimnazari, Taluka & District Nagpur. Company has committed to implement all the pollution control measures to protect the surrounding environment. The project can definitely improve the regional, state and national economy. The implementation of this project will definitely improve the physical and social infrastructure of the surrounding area.