M/S. GRASIM INDUSTRIES LIMITED

Form – 1 for Environmental Clearance for proposed Greenfield Integrated Paint Manufacturing facility at Plot No. H3, H4, H5 – Vidyasagar Industrial Park of WBIDC, Village Baradiha & Gholagere, Taluka Kharagpur, District Paschim Medinipur, West Bengal

MAY 2022

Kadam
Environmental Consultants
www.kadamenviro.com

Environment *for* Development

E: kadamenviro@kadamenviro.com; T:+91-265-6131000

ACCREDITATION DETAILS

NABET Certificate No. NABET/EIA/1922/RA 0138 valid from 05-08-2019 up to 25-05-2022;
NABET Certificate No. NABET/EIA/2023/SA 0164 valid from 19-04-2022 up to 19-03-2023

M/S. GRASIM INDUSTRIES LIMITED

Form-1 for Environmental Clearance for proposed Greenfield Integrated Paint Manufacturing facility at Plot No. H3, H4, H5 – Vidyasagar Industrial Park of WBIDC, Village Baradiha & Gholagere, Taluka Kharagpur, District Paschim Medinipur, West Bengal

QUALITY CONTROL							
Name of Publication	Form-1 for Environmental Clearance for proposed Greenfield Integrated Paint Manufacturing facility at Plot No. H3, H4, H5, Vidyasagar Industrial Park of WBIDC, Village Baradiha & Gholagere, Taluka Kharagpur, District Paschim Medinipur, West Bengal						
Project Number	2150352306	**Issue No.**	01	**Revision No.**	00	**Released**	May, 2022

TABLE OF CONTENTS

LIST OF ANNEXURES

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AAQ	:	Ambient Air Quality
CO	:	Carbon Monoxide
CPCB	:	Central Pollution Control Board
CTE	:	Consent To Establish
CTO	:	Consent To Operate
EHS	:	Environment Health and Safety
EIA	:	Environment Impact Assessment
EMS	:	Environment Management System
ETP	:	Effluent Treatment Plant
FG	:	Finished Goods
GPS	:	Global Positioning System
HWM	:	Hazardous Waste Management
Kg	:	Kilo Gram
KLD	:	Kilo Litre Per Day
KLPA	:	Kilo Litre Per Day
KVA	:	Kilo Volt Ampere
MEE	:	Multiple Effect Evaporator
MLPA	:	Million Litre Per Annum
MoEF&CC	:	Ministry of Environment, Forest and Climate Change
MOU	:	Memorandum Of Understanding
MSIHC	:	Manufacture, storage, and import of hazardous chemicals
N.A.	:	Not Applicable
NAAQM	:	National Ambient Air Quality Monitoring
NABET	:	National Accreditation Board for Education and Training
NO_X	:	Oxide of Nitrogen
OH	:	Occupational Health
PPE	:	Personal protective equipment
RM	:	Raw Material
RO	:	Reverse Osmosis
SO_2	:	Sulphur Dioxide
SPCB	:	State Pollution Control Board
STP	:	Sewage Treatment Plant
TOR	:	Terms of Reference
TPA	:	Tonnes Per Annum
TSDF	:	Treatment Storage and Disposal Facility
VOC	:	Volatile Organic Compound
WBIDC	:	West Bengal Industrial Development Corporation
WBPCB	:	West Bengal Pollution Control Board
WBSEDCL	:	West Bengal State Electricity Distribution Company
ZLD	:	Zero Liquid Discharge

1 SCOPING

The scoping for the project has been done based on FORM 1, as per EIA Notification, dated September 14, 2006 amended as on date. The scoping details are as follows:

I. Basic Information

S. No.	Item	Details
1	Name of the Project/s	**Proposed Greenfield Integrated Paint Manufacturing Facility at Plot No. H3, H4, H5, Vidyasagar Industrial Park of WBIDC, Village Baradiha & Gholagere, Taluka Kharagpur, District Paschim Medinipur, West Bengal by M/s. Grasim Industries Limited**
2	S. No. in the Schedule	Project Category '5(h)', Integrated Paint Industry
3	Proposed capacity / area / length / tonnage to be handled/ command area / lease area / no. of wells to be drilled	**Total plot Area of the proposed project:** • 85.79 Acres i.e. 3,47,106 m^2 or 34.7 Hectare **Proposed Products with production capacity:** • Paint: 3,60,000 KL/Annum • Resin & Emulsion/ Water Based Polymers: 1,60,000 KL/Annum
4	New / Expansion / Modernization	New
5	Existing Capacity / Area etc.	Not Applicable since this is a greenfield project
6	Category of Project (A or B)	Category – B
7	Does it attract the general conditions? If yes, please specify.	No
8	Does it attract specific condition? If yes, please specify	No
9	**Location**	
	Plot Survey / Khasra No.	Plot no. H3, H4, H5, Vidyasagar Industrial Park of WBIDC
	Village	Baradiha & Gholagere
	Tehsil / Taluka / Mandal	Kharagpur
	District	Paschim Medinipur
	State	West Bengal
10	Nearest railway station / airport / along with distance in km.	**Nearest Railway Station:** Jakpur Railway Station: ~ 1.3 km in E direction, Kharagpur Junction Railway Station: ~ 4.9 km in WSW direction **Nearest Airport:** Netaji Subhash Chandra Bose International Airport, Kolkata: ~ 115 km in ENE direction
11	Nearest town, city, district headquarters along with distances in km	Kharagpur: ~ 5.50 km in WSW direction, Medinipur: ~ 8.38 km in NNW direction, Paschim Medinipure District Collectorate, District office: ~ 8.6 km in NNW direction
12	Village Panchayat, Zila Parisad, Municipal Corporation, Local Body (complete postal address with telephone nos. to be given)	**Kharagpur Municipality**: Municipal Department Communication, Joy Shree, Midnapore, West Bengal-721301 (096365 25652, kharagpurmunicipality.org) **Kharagpur-I B.D.O. Office, Paschim Medinipur**: State Government office, National Highway 60, Block Development Office, Kharagpur, West Bengal 721305 (03222 291 032) **Paschim Medinipore District Collectorate - District office:** Collectorate Compound, Hussain Rd, Near Vidyasagar Statue, Midnapore, West Bengal 721101 (03222 275 571)
13	Name of the applicant	**Grasim Industries Limited**
14	Registered address	Grasim Industries Ltd, Birlagram Industrial area, Nagda,

S. No.	Item	Details
		Madhya Pradesh, 456331
15	**Address for correspondence**	
	Name	Mr. Arjun Kumar
	Designation	Vice President
	Address	A-2, Aditya Birla Centre, S.K. Ahire Marg, Worli Mumbai
	Pin Code	400030
	E-mail	*arjun.k@adityabirla.com*
	Telephone no.	9996672182
	Fax no.	022-24995114
16	Details of alternative sites examined, if any. Location of these sites should be shown on the Toposheet	Following Alternative sites were examined: 1. Panagarh Industrial Park, Panagarh, Burdwan 2. Jangal Sundaru Karmanagari Phase-I, Purulia, Durgapur 3. Jangal SUndari Karmanagari Phase-II, Purulia, Durgapur 4. Haldia Industrial Park, Haldia, Purba Medinipur 5. Falta Industrial Park, Falta, Kolkata 6. Vidyasagar Industrial Park, Sector E, Paschim Medinipur 7. Vidyasagar Industrial Park, Sector H, Paschim Medinipur The chosen project site at Vidyasagar Industrial area, Sector H is having advantage of being located in Industrial area developed by WBIDC (West Bengal Industrial Development Corporation), which has all the infrastructure in place and better site connectivity. Refer ***Annexure 2*** for the details of examined alternative sites.
17	Interlinked Projects	No
18	Whether separate application of interlinked project has been submitted?	Not Applicable
19	If yes, date of submission	Not Applicable
20	If no, reason	Not Applicable
21	Whether the proposal involves approval / clearance under: if yes, details of the same and their status to be given: The Forest (Conservation) Act, 1980 The Wildlife (Protection) Act, 1972 The C.R.Z Notification, 1991	Not Applicable
22	Whether there is any Government order / policy, relevant / relating to the site	No
23	Forest land involved (ha.)	Not Applicable
24	Whether there is any litigation pending against the project and / or land in which the project is proposed to be set up? Name of the Court Case No. Order / directions of the Court, if any and its relevance with the proposed project	There is no litigation against the project.

II. Activity

1. Construction, operation or decommissioning of the project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	The project site is in Vidyasagar Industrial Park of WBIDC (West Bengal Industrial Development Corporation). Total area of the project is 85.79 Acres i.e. 3,47,106 m^2 or 34.7 Ha, which is allotted to M/s. Grasim Industries Limited on a long term lease for development of proposed integrated paint

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			manufacturing facility. Land-use of the site is industrial. Change in land cover and topography will occur due to development of the proposed industry. Provisional Letter of Intent (LOI), *Possession certificate from WBIDC* for land allotment for the proposed project is attached at ***Annexure 16.***
1.2	Clearance of existing land, vegetation and buildings?	Yes	Clearance of vegetation wherever required will be carried out in pre-construction phase. Suitable prior permission will be sought from concerned authorities, if necessary. There is no building or any structure at project site.
1.3	Creation of new land uses?	No	Please refer Point 1.1 above
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	The geotechnical investigation (soil investigation) will be carried out.
1.5	Construction works?	Yes	Admin building, Factory building (inclusive of processing & packing block, storage areas for raw material, packing material and finished goods), Utility block, STP, ETP, Security cabins, etc. will be constructed.
1.6	Demolition works?	No	Not envisaged
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Basic facilities such as rest shelters, sanitation facilities, drinking water etc. will be provided.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Construction of manufacturing plants and related ancillary facilities will be carried out. Above ground building, pipeline corridor, structure construction works are envisaged. Site Plot/Layout Plan is provided at ***Annexure 7.***
1.9	Underground works including mining or tunnelling?	No	Underground work will not be carried out.
1.10	Reclamation works?	No	Reclamation work is not envisaged.
1.11	Dredging?	No	Not Applicable
1.12	Offshore Structure?	No	Not Applicable
1.13	Production and manufacturing processes?	Yes	Details of production and manufacturing processes along with flow diagram & material balance are given in ***Annexure 9.***
1.14	Facilities for storage of goods or materials?	Yes	Storage details of raw materials & products are given in ***Annexure 10.*** In addition, other non-hazardous material in day to day requirement/usage may also be stored.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	**Industrial Effluent** **Quantity:** 90 KLD (after recycle/reused in process) **Treatment Facilities:** The waste water generated from the plant (90 KL/Day) would be treated in proposed ETP (100 KLD) with primary, two stage biological and tertiary treatment followed with advance tertiary treatment like RO (100 KLD) & MEE (15 KLD). The treated effluent from the ETP will be recycled and reused in process within plant premises. **Domestic Effluent** **Quantity:** 27 KLD **Treatment Facilities:** Domestic sewage will be treated in the proposed 30 KLD capacity sewage treatment plant and the treated water will be reused for Horticulture purposes. Details of ETP & STP are provided in ***Annexure 12.*** **Solid & Hazardous Waste** Solid & Hazardous waste management will be as per Hazardous and Other Wastes (Management and

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			Transboundary Movement) Rules, 2016. Details of solid & Hazardous waste generation & Management are provided in ***Annexure 13.***
1.16	Facilities for long term housing of operational workers?	No	The employees will be hired from nearby areas and they will commute from their homes.
1.17	New road, rail or sea traffic during construction or operation?	No	The proposed project location has good infrastructure like road & rail close to the proposed project site. Further, final connectivity from existing roads to the factory gates will require to be provided as a part of the proposed project.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports, etc.?	No	The industrial park is well established with infrastructure like approach roads, by-pass roads, storm water channel/ drainage, water pipeline and electricity etc. Internal roads of 6 m & 7 m wide within the plant premises will be constructed for smooth traffic movement within premises. No additional transport infrastructure is required to set up for the proposed greenfield project.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not envisaged.
1.20	New or diverted transmission lines or pipelines?	Yes	LT electrical line is passing through the project site, which will be diverted by WBIDC/WBSEDCL in due course of time.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	Not envisaged.
1.22	Stream crossings?	No	Not envisaged.
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Water supply source will be WBIDC fresh water supply system (surface water from Kansabati River) and/ or Bore well with prior permission from competent authority. Provisional Letter of Intent (LOI), Possession certificate from WBIDC for land allotment and for water supply for the proposed project is attached at ***Annexure 16.***
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	The site will be levelled & filled properly in the construction phase. General storm water flow pattern will be maintained as far as possible. Surface run off from site will be channelized through storm water drains, hence no change in drainage pattern is envisaged. Facilities for suitable reuse of rainwater/storm water will be delineated in the EIA report.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	All transportation of material and personnel during construction as well as operation phase will be done by existing approach roads to the proposed project site. Internal roads will be developed for smooth traffic flow during operation phase within plant.
1.26	Long-term dismantling or decommissioning or restoration works?	No	Not Envisaged.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	Not envisaged.
1.28	Influx of people to an area either temporarily or permanently?	Yes	**Construction Phase:** ~ 1500 workers will be employed temporarily. **Operation Phase:** ~ 200 permanent employee & ~ 400 contractual employees will be hired.

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
1.29	Introduction of alien species?	No	Not envisaged
1.30	Loss of native species or genetic diversity?	No	Not envisaged
1.31	Any other actions?	No	Not envisaged

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	Yes	Presently the land is undeveloped. The land is located in Vidyasagar Industrial Park of WBIDC (West Bengal Industrial Development Corporation) and is allotted to M/s. Grasim Industries Limited on a long term lease for development of proposed Integrated Paint Manufacturing facility. Provisional Letter of Intent (LOI), Possession certificate for land allotment for the proposed project from WBIDC is attached at ***Annexure 16***.
2.2	Water (expected source & competing users) unit: KLD	Yes	• **Source of water**: WBIDC fresh water supply system (surface water from Kansabati River) and / or Bore well with prior permission from competent authority. • **Permission of fresh water supply**: 1200 KLD • **Fresh water requirement**: 1177 KLD • **Recycled water from RO & MEE:** 88 KLD • **Recycled water from STP:** 26 KLD (reused in green belt) Details of Water consumption, waste water generation with water balance diagram are provided in ***Annexure 11.*** Provisional Letter of Intent (LOI) from WBIDC for land allotment & for water supply, possession certificate for the proposed project from WBIDC is attached at ***Annexure 16.***
2.3	Minerals (MT)	No	Not applicable
2.4	Construction material stone, aggregates, sand / soil (expected source, MT)	Yes	Construction materials like stones, aggregates, sand, bricks, steel, cement, rubble, etc. will be procured from the local market of the region.
2.5	Forests and timber (source, MT)	No	Timber will not be used.
2.6	Energy including electricity and fuels (source, competing users) unit: fuel (MT), energy (MW)	Yes	**<u>Construction phase</u>:** • **Source**: West Bengal State Electricity Distribution Company (WBSEDCL)/ West Bengal State Electricity Transmission Company Limited (WBSETCL) • **Power requirement**: 750 KVA • **Power Backup**: 5 nos. of DG sets of 500 kVA capacity, in absence of Grid power • **Fuel type & Consumption:** HSD/LPG/CNG for DG sets @ 100 LPH per D.G. set **<u>Operation Phase</u>:** • **Source**: West Bengal State Electricity Distribution Company (WBSEDCL)/ West Bengal State Electricity Transmission Company Limited (WBSETCL) • **Power requirement**: 8200 KVA • **Power backup**: DG sets: 3 x 2000 KVA (2W+1S) and 2 x 1010 KVA (1W+1S) capacity during power failure & emergency use • **Fuel type & Consumption**: HSD/LPG/CNG for DG sets @ 1700 LPH Details of Fuel consumption are provided in ***Annexure 14.*** Provisional Letter of Intent (LOI) from WBIDC for land

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			allotment & power supply, Possession certificate for the proposed project from WBIDC is attached at ***Annexure 16.***
2.7	Any other natural resources (use appropriate standard units)	No	N.A

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S. No.	Information / Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	All the solvents and chemicals will be handled & stored as per MSIHC Rules. Use, storage, transport and handling will be done carefully by qualified and trained persons. The storage capacity will not exceed the quantity mentioned in schedule of MSIHC Rules.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Suitable OH & EMS, proper drainage and waste management measures will be adopted in plant, which will restrict the growth and reproduction of disease vectors.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	The project will be improved the local economy in the study area & increasing economic opportunity by providing direct-indirect employment depending upon their skills.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	Not envisaged
3.5	Any other causes	No	Not envisaged

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
4.1	Soil, overburden or mine wastes	Yes	The excavated soil from foundation will be reused for the backfilling within premises and the topsoil shall be stockpiled and stored properly within project site and reused for green area development.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Canteen waste will be composted using Vermi-compost system/Organic waste convertor (OWC) and used as manure for green belt development. Other municipal waste, if any, will be properly collected and disposed-off as per the provision of Solid Waste Management Rules, 2016.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Details of solid & Hazardous waste generation & Management is provided in ***Annexure 13.***
4.4	Other industrial process wastes	Yes	As above S. No. 4.3
4.5	Surplus product	No	Since, production will be done as per plan based on market demand, usually there will not be generation of surplus product. In case, there will be generation of off specification products, the same will be mostly reused. Otherwise, they will be managed as per HW Rules.
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Sewage sludge will used as a manure whereas ETP sludge will be packed in bags within the facility and disposed-off through TSDF/ as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
4.7	Construction or demolition wastes	Yes	Minimal quantity of debris, scrap, excavated soil, used cement bags, iron/steel scrap and cardboard waste could be generated during construction. Top soil will be reused for greenbelt. Demolition activity is not envisaged. Construction

S. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			and Demolition Waste Management Rules, 2016 will be followed.
4.8	Redundant machinery or equipment	No	Not envisaged
4.9	Contaminated soils or other materials	No	Not Applicable in normal operations. However, in case of abnormal events, relevant regulations will be followed.
4.10	Agricultural wastes	No	Not Applicable
4.11	Other solid wastes	Yes	Solid waste like wooden scrap, MS scrap, packaging material, bag and container etc. will be sold to authorized recyclers. Details of Non-Hazardous waste generation & Management is provided in ***Annexure 13.***

5. Release of pollutants or any hazardous, toxic or noxious substances to air (kg/hr.)

S. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	**Construction phase:** Minimum consumption of fossil fuels will be undertaken. Efforts will be made to ensure that all vehicles have PUC certificates from the competent authority. Also, equipment will be maintained as per the operation manuals of the same. **Operation Phase**: Stack with adequate height will be provided for all proposed boilers in order to disperse the flue gases effectively. The ambient air quality and stack emission quality will be maintained as per WBPCB/CPCB norms. Periodical monitoring of the same will be done along with regular report submission to WBPCB. Details of fuel consumption is provided in ***Annexure 14*** and details of Air emission with stack details & Air pollution control measures are given in ***Annexure 15.*** Note: Details are provided are tentative and will be finalised in EIA report.
5.2	Emissions from production processes	Yes	Details of emission from production process/process vents are given in ***Annexure 15.*** (Note: Details provided are tentative and will be finalized in EIA report.)
5.3	Emissions from materials handling including storage or transport	Yes	Emission of dust will arise during material handling and transportation. Dust will be controlled by slow movement of vehicles, covering the materials properly & by periodical water spraying. Line source emissions from truck movement will be studied and impacts of the same will be reported in the EIA report.
5.4	Emissions from construction activities including plant and equipment	Yes	Construction works will be carried out using well maintained equipment. Dust may be generated during construction, which will be controlled by periodic water sprinkling and other methods. For minimizing the dust transmitted during construction works, a 3 m tall peripheral barrier shall be provided along construction area.
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	Yes	**Dust:** Dust will be generated during handling of construction materials; these will be controlled by regular sprinkling of water. **Odor:** There will not be any odors from sewage & waste. Adequate sanitation facilities will be provided for proper disposal of sewage.
5.6	Emissions from incineration of waste	No	Not envisaged.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Not envisaged.
5.8	Emissions from any other sources	No	-

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	All the equipment would be designed as enclosure type so that noise level will be restricted within the permissible limit of exposure.
6.2	From industrial or similar processes	Yes	The other sources of noise will be large rotating machines (e.g., compressors, turbines, pumps, electric motors, coolers, etc.). Regular maintenance of the equipment will help in reducing these noise levels to acceptable standards. Acoustic enclosures & anti-vibration pads will be provided. Necessary PPEs will be provided to employees. Green belt is proposed at the periphery of the plant to reduce noise levels.
6.3	From construction or demolition	Yes	**Construction stage:** The noise level would be kept within the permissible limit. **Demolition:** No such activity is envisaged.
6.4	From blasting or piling	No	Not envisaged
6.5	From construction or operational traffic	No	There will be noise from the traffic during both construction & operation phases. It is expected that such noise will not lead to any exceedance of background noise levels beyond level specified by the Competent Authority.
6.6	From lighting or cooling systems	Yes	Noise will be generated from operation of cooling towers. It is expected to be within norms specified by relevant Rules.
6.7	From any other sources	No	Not Anticipated

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	Occasional & minor spillage of fuel or other material may occur. This will not cause any impact on water or land due to adoption of adequate spill control measures.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	**Treated Effluent:** The waste water generated from the plant will be treated in proposed ETP (100 KLD) with primary, two stage biological and tertiary treatment followed with advance tertiary treatment like RO (100 KLD) & MEE (15 KLD). The treated effluent from the ETP will be recycled and reused in process within plant premises. Thus, the wastewater treatment system zero liquid discharge (ZLD). **Treated Sewage:** Sewage will be treated in STP (30 KLD) and treated sewage will be reused in gardening.
7.3	By deposition of pollutants emitted to air into the land or into water	Yes	Adequate stack height and good engineering practices by provision of Air Pollution Control Equipment will ensure decrease in emission of pollutants which leads to minimal deposition to air, similarly into the land or into water.
7.4	From any other sources	No	None identified
7.5	Is there a risk of long term build-up of pollutants in the environment from these sources?	No	Adequate mitigation measures, monitoring and periodic maintenance of equipment's will ensure no risk of long term build-up of pollutants in the environment.

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc. from storage, handling, use or production of	Yes	The associated hazards from the plant may be fire/explosion. These hazards can take place due to process upsets,

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
	hazardous substances		leakages, equipment and hardware failures, loss of containment, human failures etc. Adequate safety measures will be provided to prevent risk of explosions, spillages, fires etc.
8.2	From any other causes	Yes	Common risks in factories such as, Fire, Electric Shock, Hit by Objects, Fall/Slips, Hot Work such as Welding and Cutting.
8.3	Could the project be affected by natural disasters causing environmental damage e.g. floods, earthquakes, landslides, cloudburst etc.)?	Yes	• **Earthquakes**: The area comes under the Zone III - Moderate Damage Risk Zone, as per the Seismic Zonation of Earthquake Hazard Map of West Bengal, India (by BMTPC). Suitable seismic coefficients in horizontal and vertical directions will be adopted while designing the structures. • **Floods**: The project area is not liable to floods as per flood Hazard Map (BMTPC). • **Landslide**: Project site is not located in landslide prone area as landslide incidence map (BMTPC). • **Cloudburst**: Not a known feature in the study area. • **Cyclone**: The area comes under very High Damage Risk Zone-B (Basic wind speed V_b=50 m/s) as per wind hazard map (BMTPC) & maximum sustained wind (MSW) recorded in the region is 91 or more knots as per Cyclone Occurrence Map-Coastal India (BMTPC). **BMTPC: Building Material & Technology Promotion Council*

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes / No?	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.), housing development, extractive industries, supply industries, other	No	The proposed project site is located in Vidyasagar Industrial Park by WBIDC with well laid roads, water & electricity supply, storm water channel etc. No housing development is proposed.
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Not envisaged
9.3	Set a precedent for later developments	Yes	The proposed project will set a positive precedent of high standard process safety & environmental excellence.
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	Yes	The cumulative effects due to existing industries within Vidyasagar industrial park of WBIDC will be captured during baseline monitoring for EIA study.

III. Environmental Sensitivity

S. No.	Information/Checklist confirmation	Yes / No?	Aerial distance (within 15 km.) of Proposed Project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	-
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or	Yes	**Forest:** • Gopegarh Eco park: ~ 10.5 km in NW direction

S. No.	Information/Checklist confirmation	Yes / No?	Aerial distance (within 15 km.) of Proposed Project location boundary
	other water bodies, coastal zone, biospheres, mountains, forests		• Bhadutola Reserve Forest, Midnapore: ~ 18.9 km in NW direction • Gurguripal Scrub Forest, Lalitasol: ~ 18.22 km in WNW direction • Hijli Forest: ~ 8.63 km in SW direction • Protected Forest near Sola Dahar Village: ~ 7.35 km in SW direction **Water Bodies/Water courses:** • Kansabati River: ~ 3.5 km in N direction • Baradiha Pond: ~ 0.47 km in SSW direction
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	Interaction will be carried out with forest authorities to identify any other locations within study area.
4	Inland, coastal, marine or underground waters	No	**Water Bodies/Water courses:** • Kansabati River: ~ 3.5 km in N direction • Baradiha Pond: ~ 0.47 km in SSW direction
5	State, National boundaries	No	• Jharkhand state Boundary: ~ 50.25 km in W direction • Odisha State Boundary: ~ 48.0 km in SW direction
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Yes	• NH-60 (New no. NH-16) (Chennai-Kolkata Highway/ Kharagpur Bypass): Adjacent to site in E direction • NH-49 (Mumbai-Kolkata Highway/Kharagpur Bypass): ~ 1.81 km in NW direction • Jakpur Railway Station: 1.3 km in E direction • Kharagpur Junction railway station: ~ 4.9 km in WSW direction • Netaji Subhash International Airport: 114.19 km in ENE direction • Haldia Port: ~ 82 km in SE direction
7	Defense installations	Yes	• Kalalikunda Air Force Station: 15.24 km in WSW direction • Air Force Station, Salua - Air force base: ~ 13.0 km in SW direction
8	Densely populated or built-up area	No	**The nearest densely populated areas are:** • Baradiha Village: ~ 0.15 km in S direction • Kharagpur: ~ 5.5 km in WSW direction • Medinipur: ~ 8.38 km in NNW direction
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	**Hospital**: • Kharagpur Sub-Division Hospital: 6.76 km in WSW direction • South Eastern Railway Main Hospital, Kharagpur Division - Government hospital: ~ 6.30 km in WSW direction **School/College**: • Khargeswar Primary School: ~ 3.5 km in WSW direction • Kishalay Skhikha Niketan School: ~ 4.5 km in SW direction • Gholagerya Prathamik Vidyalaya: ~ 0.5 km in E direction • Jafala Adarsha Vidyayatan (H.S) - Higher secondary school: ~ 1.36 km in WSW direction • Don Bosco School: ~ 5.0 km in WNW direction • Indian Institute of Technology Kharagpur – University: ~ 7.94 km in SW direction **Religious Places**: • Baradiha Shiv Temple: ~ 0.35 km in SSW direction • Jai Baba Saareshwar Dham, Japhala: ~ 0.48 km in SSE direction • Ma Manasa Mandir: ~ 3.8 km in ENE direction • Gholageria Raksha Kali Mandir: ~ 0.45 km in ENE direction

S. No.	Information/Checklist confirmation	Yes / No?	Aerial distance (within 15 km.) of Proposed Project location boundary
			• Iskon Temple: ~ 4.49 km in SSE direction • Maa Hidimbeswari Temple: ~ 3.41 km in WSW direction • Sacred Heart Catholic Church: ~ 5.6 km in SW direction • Pathra Temple: ~ 6.5 km in NE direction • Balihati Masjid: ~ 3.05 km in NNE direction **Fire-Fighting station**: • Kharagpur Fire station: ~ 5.54 km in SW direction • Midnapur Fire Station: ~ 8.5 km in NNW direction **Community Facilities** • Nehru Museum of Science & Technology: ~ 7.2 km in SW direction • Keshpal Kansabati river front: ~ 5.4 km in NW direction
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Yes	These will be covered in EIA report. Some of these are already discussed in this section. Land use studies will be carried out as part of EIA studies to determine any other sensitive land uses.
11	Areas already subjected to pollution or environmental damage. (Those where existing legal environmental standards are exceeded)	No	None identified
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	Yes	• **Earthquakes**: The area comes under the Zone III - Moderate Damage Risk Zone, as per the Seismic Zonation of Earthquake Hazard Map of West Bengal, India (by BMTPC). Suitable seismic coefficients in horizontal and vertical directions will be adopted while designing the structures. • **Floods**: The project area is not liable to floods as per flood Hazard Map (BMTPC). • **Landslide**: Project site is not located in landslide prone area as per landslide incidence map (BMTPC). • **Cloudburst**: Not a known feature in the study area. • **Cyclone**: The area comes under very High Damage Risk Zone-B (Basic wind speed V_b=50 m/s) as per wind hazard map (BMTPC) & maximum sustained wind (MSW) recorded in the region is 91 or more knots as per Cyclone Occurrence Map-Coastal India (BMTPC). **BMTPC: Building Material & Technology Promotion Council*

"I hereby given undertake that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance given, if any project will be revoked at our risk and cost."

Date: 25/05/2022

Place: Mumbai

Mr. Arjun Kumar
(Vice President – Projects)
A-2, Aditya Birla Centre,
S.K. Ahire Marg,
Worli, Mumbai

2 PROPOSED TERMS OF REFERENCES

5(h): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR INTEGRATED PAINT INDUSTRY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT

5 (h): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR INTEGRATED PAINT INDUSTRY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT				
A	**STANDARD TERMS OF REFERENCE**			**Remarks**
1	**Executive summary**			
	i.	Giving a prima facie idea of the objectives of the proposal, use of resources, justification, etc. In addition, it should provide a compilation of EIA report including EMP and the post-project monitoring plan in Brief.		
2	**Introduction**			
	i.	Details of the EIA Consultant including NABET accreditation		
	ii.	Information about the project proponent		
	iii.	Importance and benefits of the project		
3	**Project description**			
	i.	Cost of project and time of completion.		
	ii.	Products with capacities for the proposed project.		
	iii.	If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.		Not applicable as it is a greenfield project
	iv.	List of raw materials required and their source along with mode of transportation.		
	v.	Other chemicals and materials required with quantities and storage capacities		
	vi.	Details of Emission, effluents, hazardous waste generation and their management.		
	vii.	Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract)		
	viii.	Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided		
	ix.	Hazard identification and details of proposed safety systems.		
	x.	Expansion/modernization proposals:		
		a.	Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SEIAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment and Forests as per circular dated 30th May, 2012 on the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to Operate for the ongoing /existing operation of the project from SPCB shall be attached with the EIA-EMP report.	Not applicable as it is a greenfield project
		b.	In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.	Not applicable as it is a greenfield project
4	**Site Details**			
	i.	Location of the project site covering village, Taluka/Tehsil, District and State, Justification for selecting the site, whether other sites were considered.		
	ii.	A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places)		
	iii.	Details w.r.t. option analysis for selection of site		
	iv.	Co-ordinates (lat-long) of all four corners of the site.		
	v.	Google-Earth downloaded map of the project site.		
	vi.	Layout maps indicating existing unit as well as proposed unit indicating storage area,		

5 (h): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR INTEGRATED PAINT INDUSTRY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT			
		plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.	
	vii.	Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.	
	viii.	Land use break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies, settlements, etc. shall be included. (not required for industrial area)	
	ix.	A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area	
	x.	Geological features and Geo-hydrological status of the study area shall be included.	
	xi.	Details of Drainage of the project up to 5 km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)	
	xii.	Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.	
	xiii.	R&R details in respect of land in line with state Government policy.	Not applicable not applicable as the project land falls in Vidyasagar Industrial Park of WBIDC and thus there is no displacement of local habitants is involved.
5	**Forest and wildlife related issues (if applicable):**		Not applicable – No forest land involved
	i.	Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable)	
	ii.	Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha)	
	iii.	Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.	
	iv.	The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden-thereon.	
	v.	Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area	
	vi.	Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife	
6	**Environmental Status**		
	i.	Determination of atmospheric inversion level at the project site and site-specific micro – meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.	
	ii.	AAQ data (except monsoon) at 8 locations for PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.	
	iii.	Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAAQM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.	
	iv.	Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF&CC guidelines.	

5 (h): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR INTEGRATED PAINT INDUSTRY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT			
	v.	Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF&CC, if yes give details.	
	vi.	Ground water monitoring at minimum at 8 locations shall be included.	
	vii.	Noise levels monitoring at 8 locations within the study area.	
	viii.	Soil Characteristic as per CPCB guidelines.	
	ix.	Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.	
	x.	Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.	
	xi.	Socio-economic status of the study area.	
7	**Impact and Environment Management Plan**		
	i.	Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.	
	ii.	Water Quality modelling - in case of discharge in water body	Not applicable as proposed facility will be ZLD (Zero liquid discharge unit)
	iii.	Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor- cum rail transport shall be examined.	
	iv.	A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.	
	v.	Details of stack emission and action plan for control of emissions to meet standards.	
	vi.	Measures for fugitive emission control	
	vii.	Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle/reuse/recover techniques, Energy conservation, and natural resource conservation.	
	viii.	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.	
	ix.	Action plan for the green belt development plan in 33 % area i.e. land with not less than 1,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.	
	x.	Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.	
	xi.	Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.	
	xii.	Action plan for post-project environmental monitoring shall be submitted.	
	xiii.	Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster	

5 (h): STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR INTEGRATED PAINT INDUSTRY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT			
		management plan should be linked with District Disaster Management Plan.	
8	**Occupational health**		
	i.	Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers	
	ii.	Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre-placement and periodical examinations give the details of the same.	
		Details regarding last month analysed data of above mentioned parameters as per age, sex, duration of exposure and department wise.	Not applicable as it is a greenfield project
	iii.	Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved,	
	iv.	Annual report of health status of workers with special reference to Occupational Health and Safety.	Not applicable as it is a greenfield project
9	**Corporate Environment Policy**		
	i.	Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.	
	ii.	Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.	
	iii.	What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.	
	iv.	Does the company have system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism shall be detailed in the EIA report	
10	**Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.**		
11	**Enterprise Social Commitment (ESC)**		
	i.	Adequate funds (at least 2.5 % of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be included. Socio-economic development activities need to be elaborated upon.	Adequate funds will be allocated as per MoEF&CC Notification & based on Public Hearing.
12	**Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.**		Not applicable, there is no litigation against the project.
13	**A tabular chart with index for point wise compliance of above TOR.**		
B	**SPECIFIC TERMS OF REFERENCE FOR EIA STUDIES FOR INTEGRATED PAINT INDUSTRY**		
	1.	Details on requirement of raw materials (binders, solvents, pigments, additives, resin, driers etc.), their source and storage at the plant.	
	2.	Whether any of the material content lead if so details thereof.	Not Applicable. Any material content lead will not be used.
	3.	Details on solvent management including loss accounting.	
	4.	Details on composition, generation and utilization of waste from the plant-left out raw materials, paint sludge, filter cartridges, off-specification paint, etc.	
	5.	Existing ambient air quality for expected emissions (VOCs, pigment dust, etc.) from paint industry.	

3 ANNEXURE

Annexure 1: Production Details

Table 3-1: Details of Products with production capacity

S. No.	Name of Products/ Intermediates	Production capacity (KL/Annum)
1.	Paints	3,60,000
2.	Resin & Emulsion/Water Based Polymers (Intermediates)	1,60,000
	Total	**5,20,000**

Annexure 2: Environmental Analysis for alternative Sites for proposed project

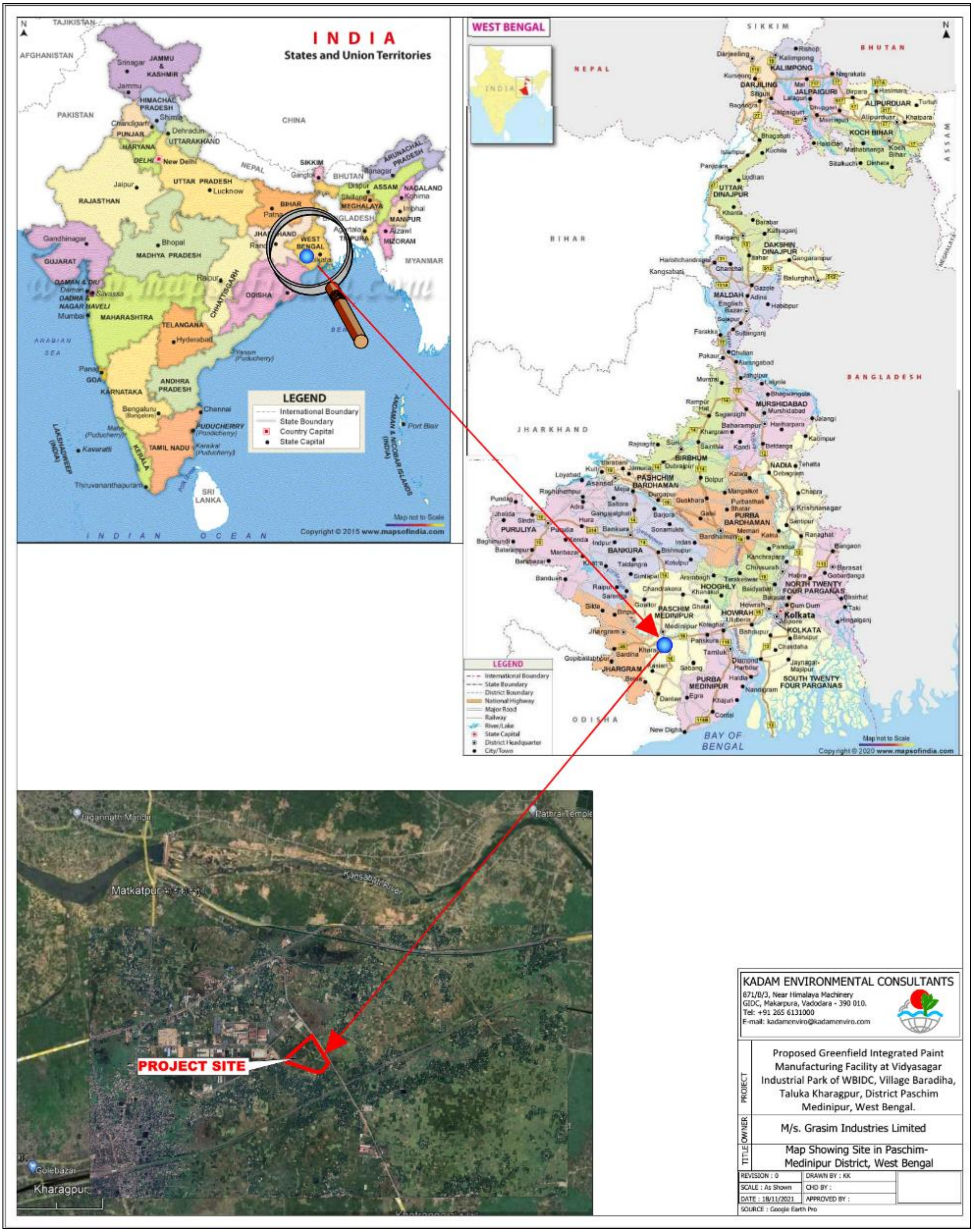
Following Alternative sites were examined:

Table 3-2: Environmental Analysis for alternative sites for proposed project

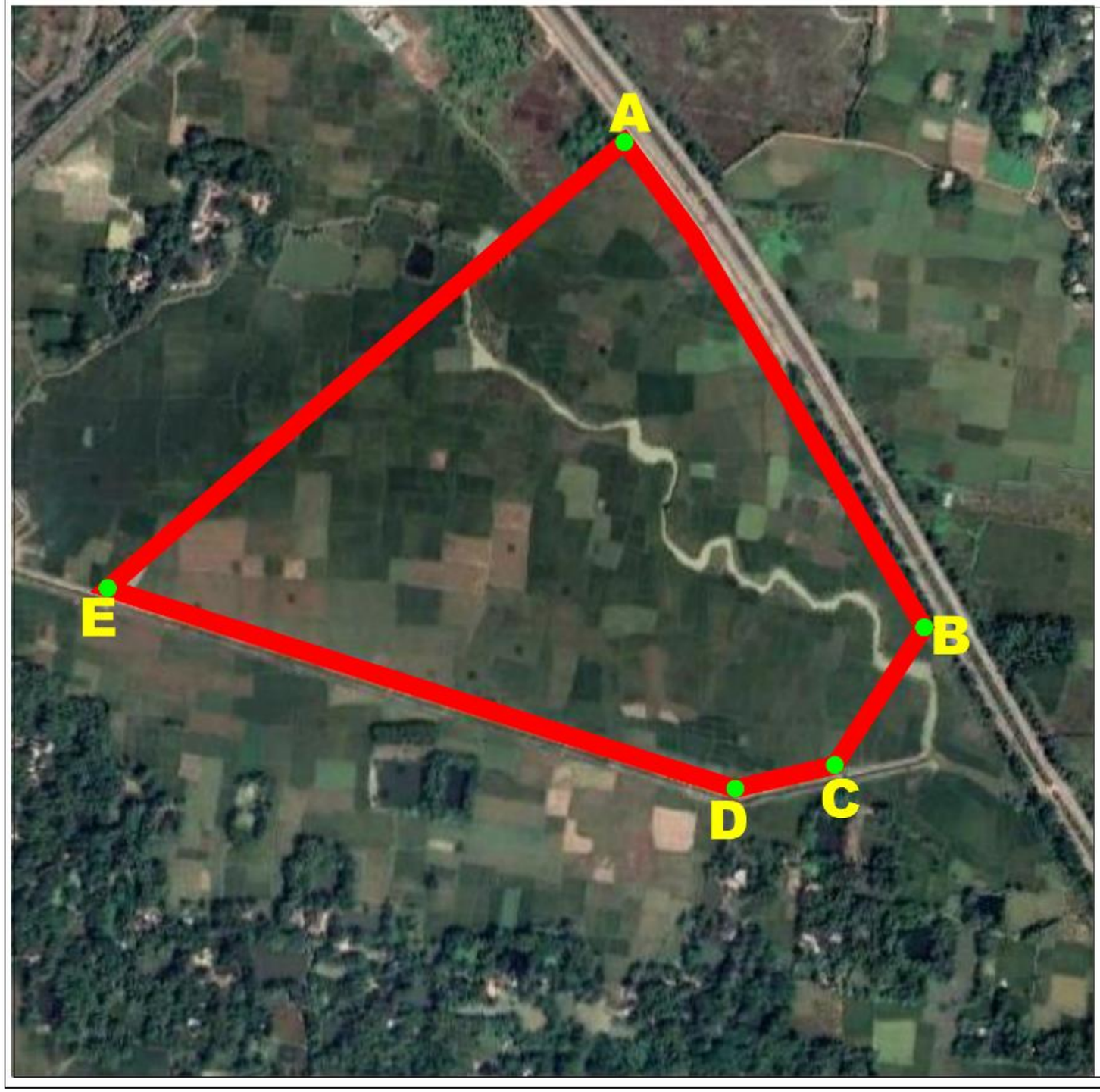
Sr. No.	Industrial Area	Location	Nearby City	Distance from nearest City	State	Plot size in Acre	Infrastructure status (Road/ water/ power/ SWD)	Recommendation	Remarks
1.	Panagarh Industrial Park Panagarh, Burdwan	Panagarh	Durgapur	40 Km	West Bengal	24.139	Developed	Plot area is very small	Not ok
2.	i. Jangal Sundari Karmanagari Phase-I ii. Jangal Sundari Karmanagari Phase-II	Purulia	Durgapur	120 Km	West Bengal	100	Not developed	Lack in basic infrastructure	Not ok
3.	Haldia Industrial Park Haldia, Purba Medinipur	Haldia	Haldia	60 Km	West Bengal	100	Developed	Land cost high	Not ok
4.	Falta Industrial Park	Falta	Kolkata	60 Km	West Bengal	100	Developed	Single Approach road from City; highly congested and narrow width and multiple passage to densely populated area; will create problem in logistics	Not OK
5.	Vidyasagar Industrial Park, Kharagpur, Paschim Medinipur, Sector E	Kharagpur	Kolkata	120 Km	West Bengal	84	Developed	220 KV HT line passing along the plot, near to Kharagpur town	Not Ok
6.	**Vidyasagar Industrial Park, Kharagpur, Paschim Medinipur, Sector H**	**Kharagpur**	**Kolkata**	**120 Km**	**West Bengal**	**85.79**	**Developed**	**Suitable for project**	**Ok**

Conclusion/Recommendation: Vidyasagar Industrial Park (Proposed Site) emerges as chosen alternative due to land's topographical and geographical features, closeness to NH-60 (New no. NH-16) (Chennai-Kolkata road/Kharagpur bypass road).

Annexure 3: General Location Map



Annexure 4: Project site boundary with coordinates



N
W E
S

LEGEND

PROJECT SITE BOUNDARY

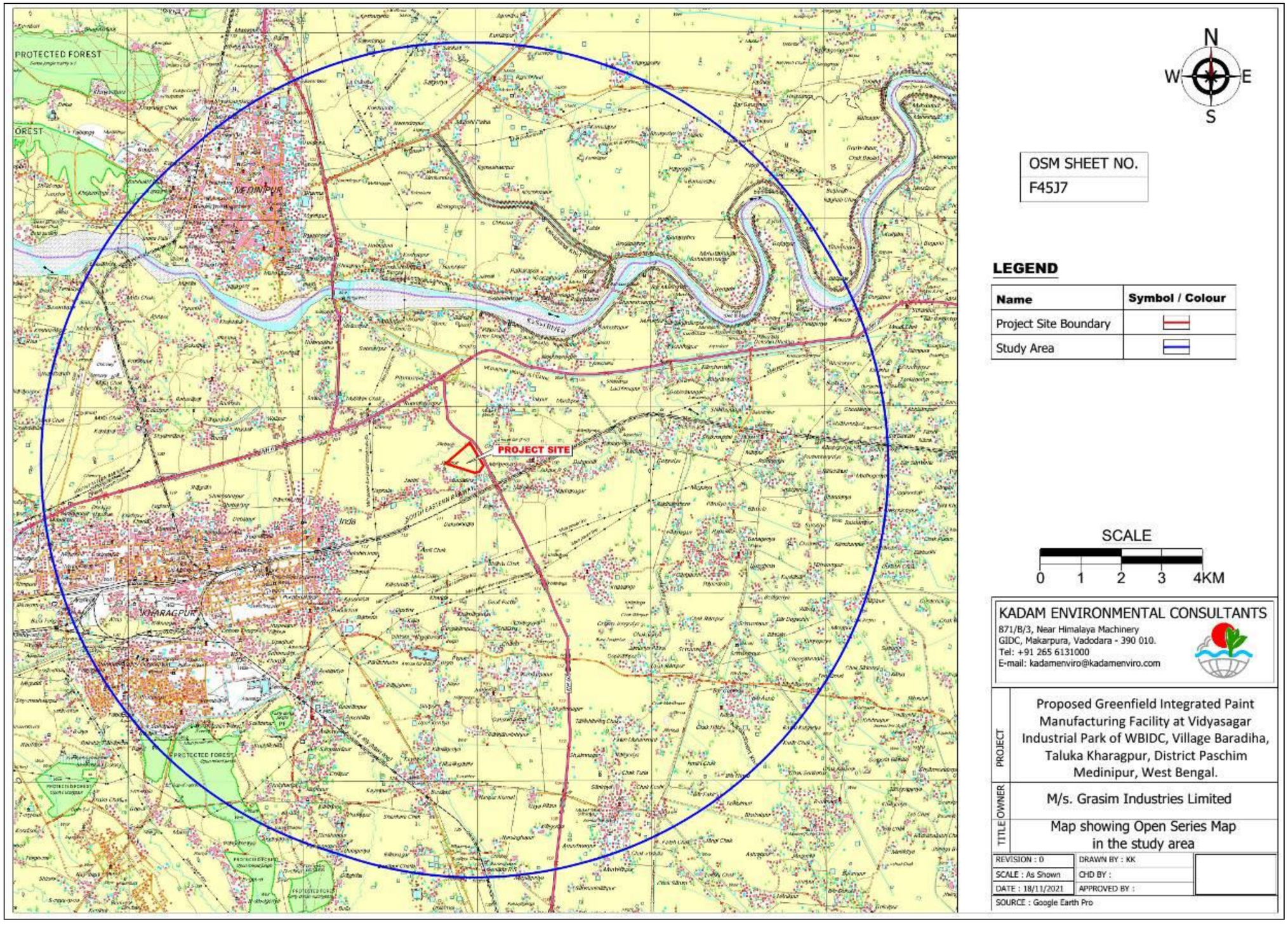
	Latitude	Longitude
A	22°22'1.51"N	87°22'25.16"E
B	22°21'43.64"N	87°22'36.93"E
C	22°21'38.68"N	87°22'33.45"E
D	22°21'37.78"N	87°22'29.44"E
E	22°21'45.15"N	87°22'4.68"E

KADAM ENVIRONMENTAL CONSULTANTS
871/B/3, Near Himalaya Machinery
GIDC, Makarpura, Vadodara - 390 010.
Tel: +91 265 6131000
E-mail: kadamenviro@kadamenviro.com

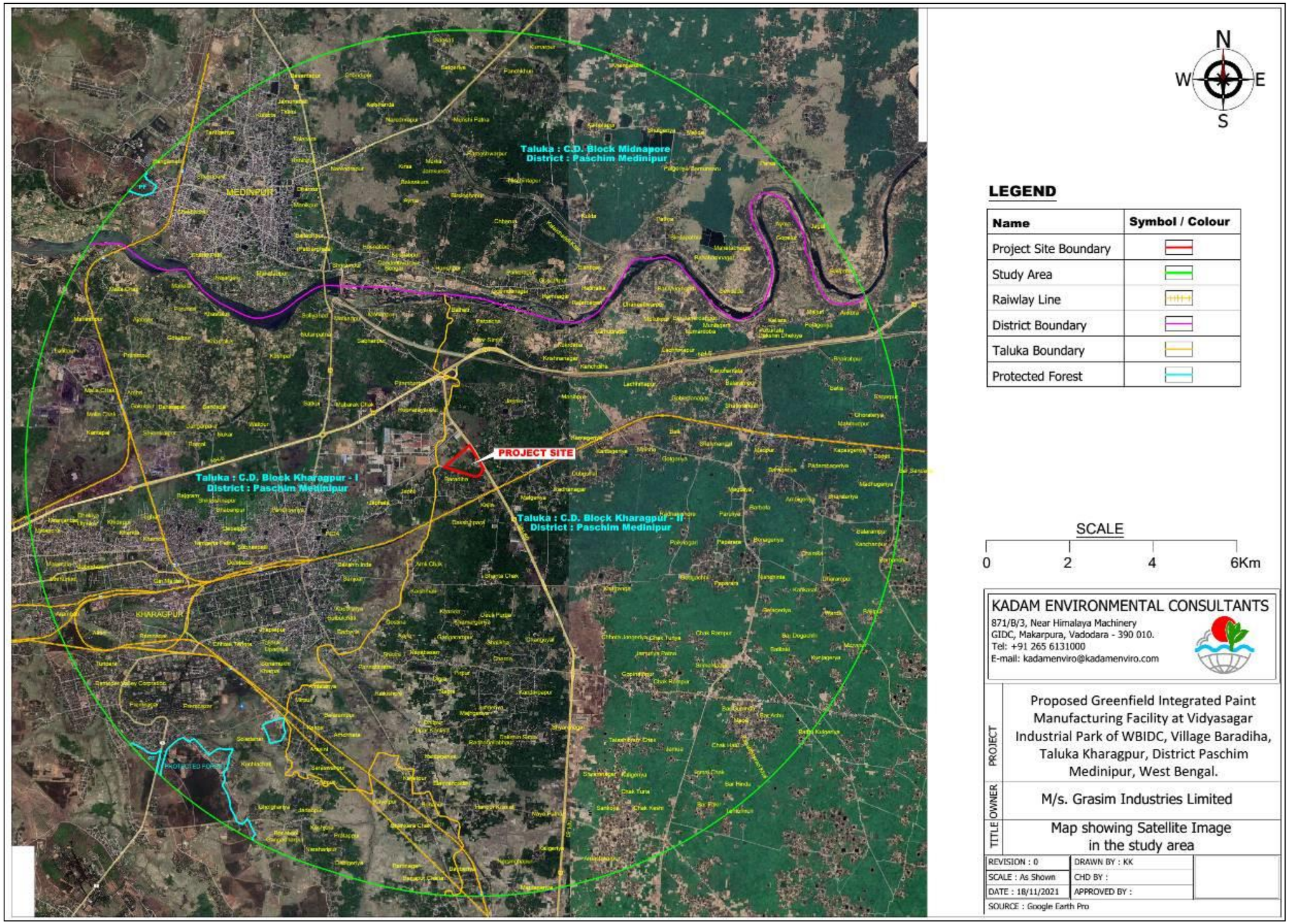
PROJECT	Proposed Greenfield Integrated Paint Manufacturing Facility at Vidyasagar Industrial Park of WBIDC, Village Baradiha, Taluka Kharagpur, District Paschim Medinipur, West Bengal.
OWNER	M/s. Grasim Industries Limited
TITLE	Site Boundary Map

REVISION : 0	DRAWN BY : KK	
SCALE : As Shown	CHD BY :	
DATE : 18/11/2021	APPROVED BY :	
SOURCE : Google Earth Pro		

Annexure 5: Location of project site on Open Series Map (OSM)

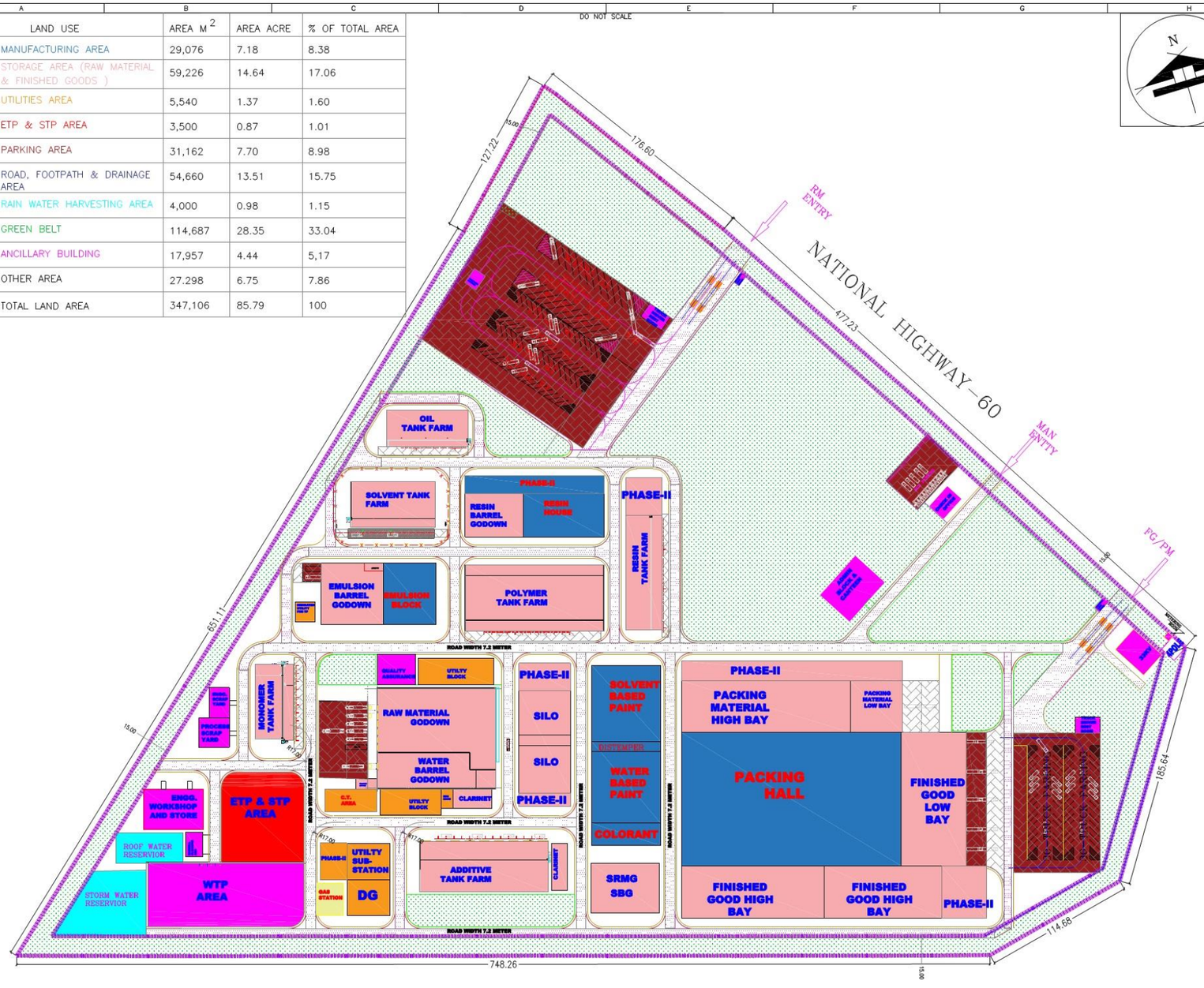


Annexure 6: Satellite Image of 10 km Study area of the project site



Annexure 7: Project Site Layout Map

SR.NO.	LAND USE	AREA M^2	AREA ACRE	% OF TOTAL AREA
1	MANUFACTURING AREA	29,076	7.18	8.38
2	STORAGE AREA (RAW MATERIAL & FINISHED GOODS)	59,226	14.64	17.06
3	UTILITIES AREA	5,540	1.37	1.60
4	ETP & STP AREA	3,500	0.87	1.01
5	PARKING AREA	31,162	7.70	8.98
6	ROAD, FOOTPATH & DRAINAGE AREA	54,660	13.51	15.75
7	RAIN WATER HARVESTING AREA	4,000	0.98	1.15
8	GREEN BELT	114,687	28.35	33.04
9	ANCILLARY BUILDING	17,957	4.44	5,17
10	OTHER AREA	27.298	6.75	7.86
	TOTAL LAND AREA	347,106	85.79	100



***Note**: Details may have some smaller changes based on actual detailed engineering design*

The land use planning at project site with area breakup for each section area:

Table 3-3: Total Land use Area Break-up of project site

S. No.	Title	Area, m^2	Area in Acre	% of total Area
1.	Manufacturing Area	29,076	7.18	8.38
2.	Storage Area (Raw Material & Finished Goods)	59,226	14.64	17.06
3.	Utilities Area	5,540	1.37	1.60
4.	ETP & STP Area	3,500	0.87	1.01
5.	Parking Area	31,162	7.70	8.98
6.	Roads, Footpath & Drainage area	54,660	13.51	15.75
7.	Rain water Harvesting Area	4,000	0.98	1.15
8.	Greenbelt	1,14,687	28.35	33.04
9.	Ancillary Building	17,957	4.44	5.17
10.	Other Area	27,298	6.75	7.86
	Total	**3,47,106**	**85.79**	**100 %**

***Note**: Details may have some smaller changes based on actual detailed engineering design*

Annexure 8: List of Main Equipment to be installed

Table 3-4: List of Main equipment

Sr. No.	Equipment & Machineries	Quantity (Nos.)
1	Disperser	16
2	Mixer	77
3	Reactor	17
4	Blender	10
5	Packing Machine	27
6	Grinding Mill	13
7	Pug Mill	4

Note: Details may have some smaller changes based on actual detailed engineering design

Annexure 9: Manufacturing Processes

Following types of paints and intermediates shall be manufactured in the proposed unit.

- Paints (Water Based Paints & Solvent Based Paints)
- Resin & Emulsion/Water Based Polymers (Intermediates)

The description of brief process to be used for manufacturing of each type of paint is given below:

1. Water Based Paints

The Water based paints manufacturing process consists mainly of dispersion of Pigments (mainly TiO_2) and extenders (e.g. Talc, $CaCO_3$, clay, etc.) in water under vigorous agitation in High Speed Disperser (HSD). The slurry is diluted by adding emulsion, water & thickeners to get the required physical parameters. The final paint is filled in containers and dispatched. The process steps consist of:

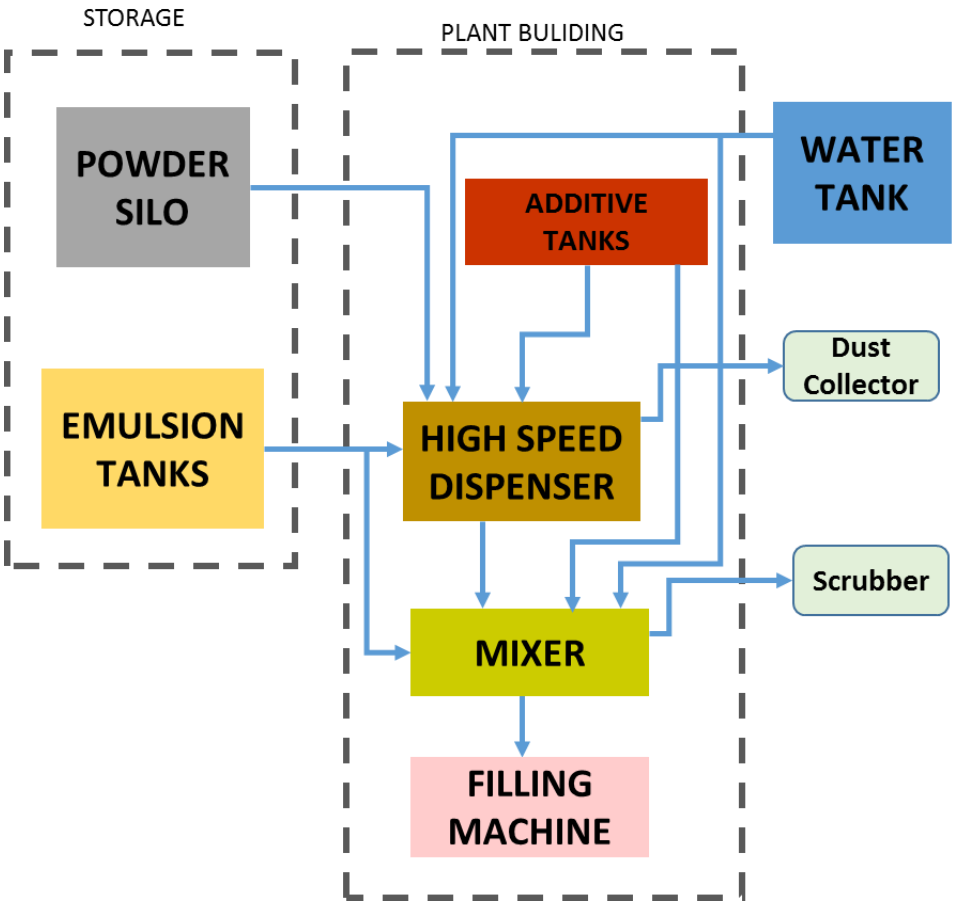
Dispersion: Pigments powders are wetted with optimum quantity of water along with wetting agents. This is done in the equipment called High Speed Disperser (HSD).

Mixing & Testing: Slurry is transferred to Mixing vessel. The slurry is thinned by adding emulsion, thickener and water as per the recipe, to get desirable physical properties.

Filling and Packing: Filling is carried out in Bulk packs (10, 20L) or small packs (1, 4L). Automatic filling machines are used for filling the final product. Small packs containers are packed in cartons. Packed containers / cartons are sent for storage and onward dispatch.

Schematic flow diagram for water based paint manufacturing process is as presented in ***Figure 3-1.***

Figure 3-1: Schematic flow diagram for Water Base Paints manufacturing process



Material Balance for Water Based Paint Manufacturing process is as given in ***Table 3-5.***

Table 3-5: Material balance for Water Based Paints

S. No.	Input/MT of Product	
	Raw Materials	**Quantity (MT/MT)**
1	Pigment	0.19
2	Extender	0.21
3	Additive	0.05
4	Emulsion intermediate	0.30
5	Water	0.25
Total		**1.00**

S. No.	Output/MT of Product						Remark
	Product	**Liquid Effluent**	**Air Emission**	**Recovery/ Product**	**Incineration Waste**	**Land fillable Waste**	
1	Waste powder	-	-	0.003	-	-	Waste
2	Incinerable /Co-processing/ Reusable waste	-	-	0.002	-	-	Reused either in product or low grade paint
3	Water effluent	0.005	-	-	--	-	Treatment in ETP
4.	Product - Water based paint	--	--	0.99	--		Product
Total		**1.0**					

Note: *Details may have some smaller changes based on actual detailed engineering design.*

2. Solvent Based Paints

Solvent based decorative paints, also called as enamels are made by dispersing pigments and extenders in a base of resins (acting as binders). It is diluted to the required viscosity and various physical and application properties are adjusted by special additives. Basic process consists of:

Premixing: Pigment powders are wetted with optimum quantity of resin / solvents. This is done in high speed dispensers.

Grinding: The slurry is ground in high speed grinding mills to achieve the desired particle size, which is at micron levels.

Blending: Adjustments with remaining resins, solvents, additives etc. to achieve desired physical properties like viscosity, sp. gravity, drying properties, etc. Dry film properties like elasticity, strength, scratch resistance, etc. also adjusted.

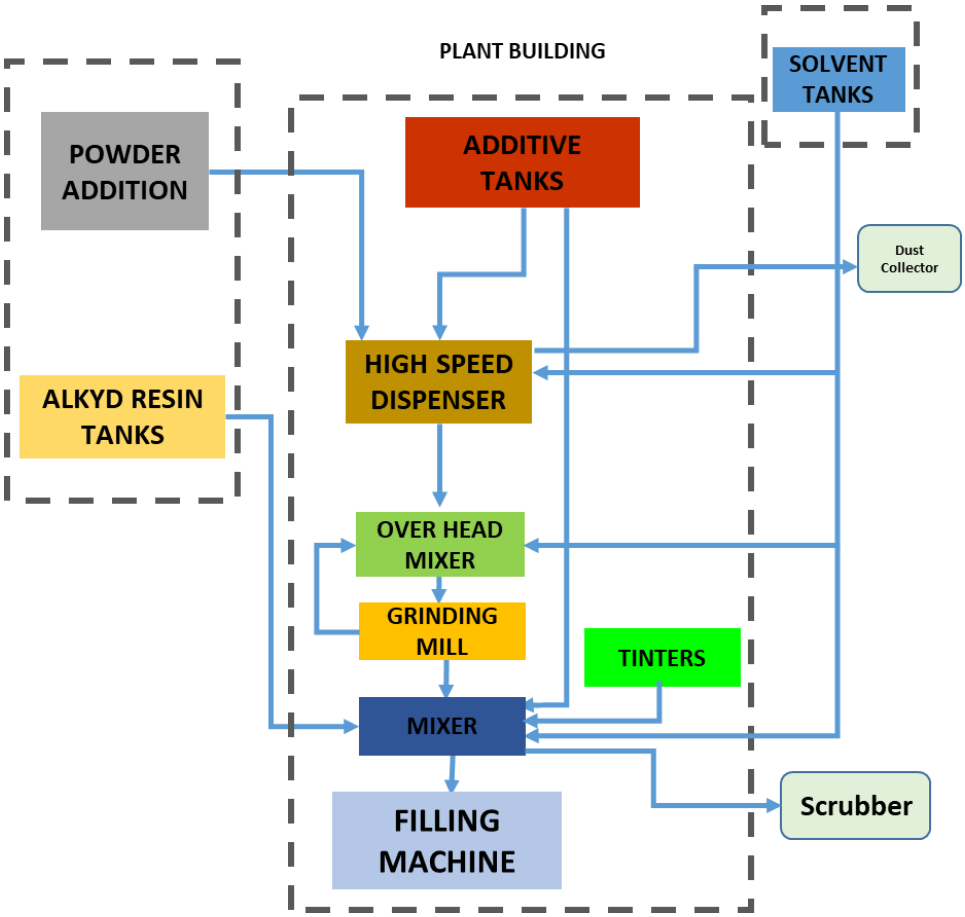
Tinting: Tinting is done by adding various strainers / pigment concentrates to bring the product to the desired shade.

Filtration: Final product is filtered through fine filters before filling in specified containers.

Filling: Final product is filled in required pack sizes, carbonized, palletized and sent to warehouse for storage and dispatch.

Schematic flow diagram for Solvent based paint manufacturing process is as presented in ***Figure 3-2***.

Figure 3-2: Schematic flow diagram for Solvent Base Paints



Material Balance for Water Based Paint Manufacturing process is as given in ***Table 3-6.***

Table 3-6: Material balance for Solvent Based Paints

S. No.	Input/MT of Product	
	Raw Materials	**Quantity (MT/MT)**
1	Binder (Alkyd resin)	0.600
2	wetting & dispersing agent	0.005
3	Rheological additive clay type	0.007
4	TIO_2	0.210
5	Spacer extender	0.030
6	Solvents	0.100
7	Drier	0.040
8	Anti-skinning agent	0.001
9	Tinter	0.007
Total		**1.000**

S. No.	Output/MT of Product						Remark
	Product	**Liquid Effluent**	**Air Emission**	**Recovery/ Product**	**Incineration Waste**	**Land fillable Waste**	
1	Waste powder	-	-	0.003	-	-	To be evaluated in low grade paint
2	Incinerable /Co-processing waste/ Reusable product	-	--	0.005	--	-	Reused either in product or low grade paint
3.	Water effluent	0.002	-	-	-	-	Treatment in ETP
4.	Product - Solvent based Paint	--	--	0.99	--	-	Final Product
Total		**1.00**					

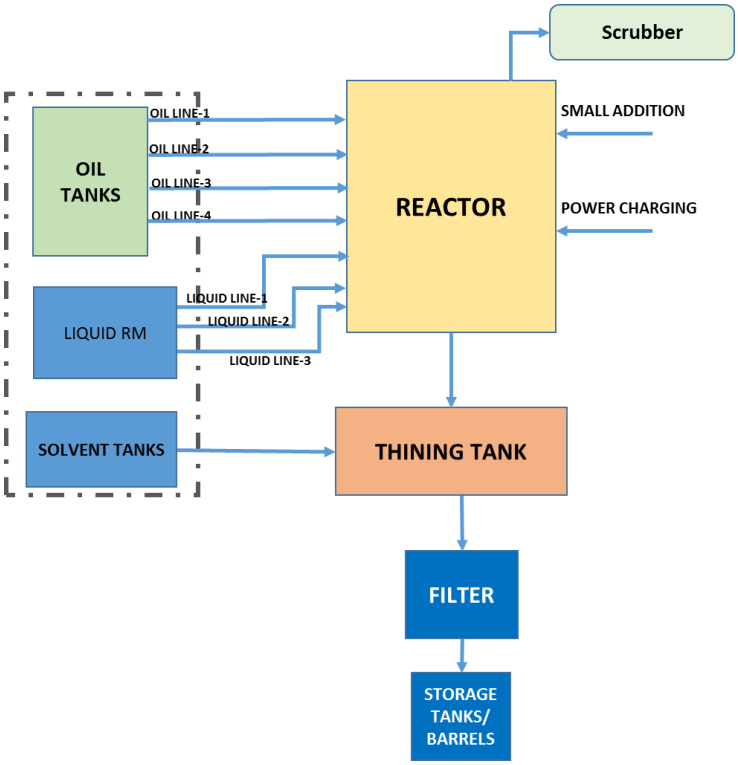
Note: *Details may have some smaller changes based on actual detailed engineering design*

3. Alkyd Resin

Synthetic resins of alkyd type are manufactured by chemical reactions of polyol, oil and polyacid in presence of catalyst and certain additives in thermic fluid heated reaction vessel. The reaction is monitored by checking temperature, viscosity, acid value and percent solids. Time required for reaction varies from 18 hr to 48 hr. This is followed by thinning in blender with solvents to the desired percentage solids and filtration take place in a plate type pressure filter and after filtration the product is pumped into storage tanks.

Schematic flow diagram for Alkyd Resin manufacturing process is as presented in ***Figure 3-3.***

Figure 3-3: The schematic flow diagram for Alkyd Resin



Material Balance for Alkyd Resin Manufacturing process is as given in ***Table 3-7.***

Table 3-7: Material balance for Alkyd Resin

S. No.	Input/MT of Product	
	Raw Materials	**Quantity (MT/MT)**
1	Catalyst	0.00063
2	Additive	0.00063
3	Solvent	0.39432
4	Poly Basic Acid	0.14196
5	Oils	0.35142
6	Polyols	0.11104
Total		**1.00**

S. No.	Output/MT of Product						Remark
	Product	**Liquid Effluent**	**Air Emission**	**Recovery/ Product**	**Incineration Waste**	**Land fillable Waste**	
1	Effluent (WOR)	0.024	-	-	--	-	Liquid effluent To ETP
2.	Incinerable / Co-processing waste	-	-	-	0.001	-	Incineration
3.	Reusable product	-	-	0.015	-	-	Reused either in product or low grade paint
4.	Alkyd Resin	--	--	0.96	--		Final Product
Total		**1.00**					

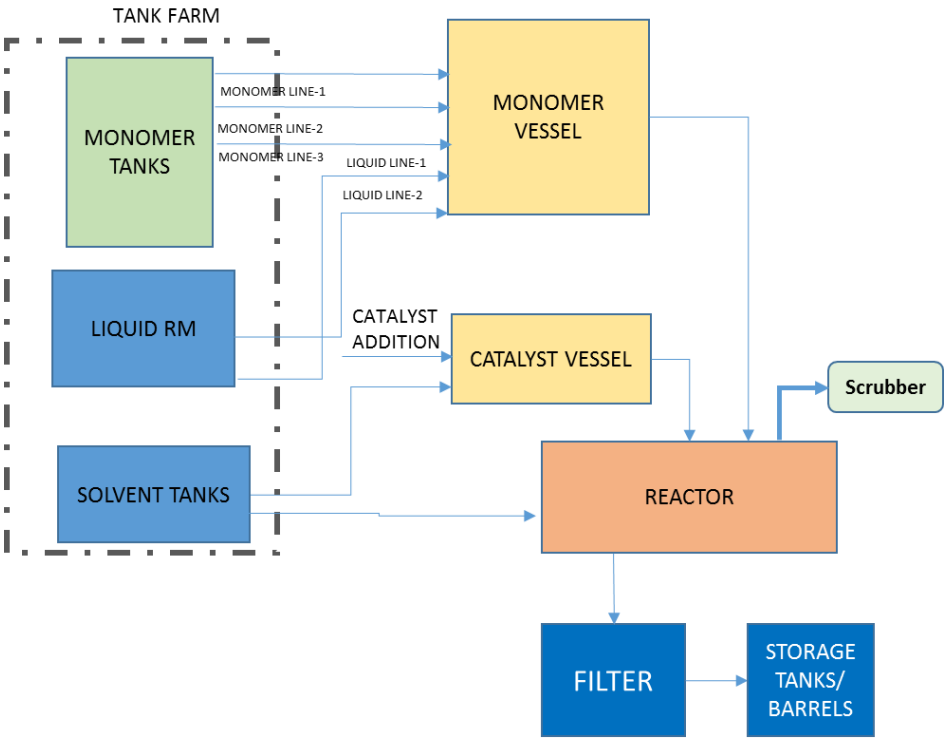
Note: *Details may have some smaller changes based on actual detailed engineering design*

4. Acrylic Resin

Synthetic resins of acrylic type are manufactured by chemical reactions of individual monomer particles in solvent media in presence of catalyst at elevated temperatures in steam heated reaction vessel. The reaction is monitored by checking constant flow rates of monomer and catalyst solutions and reactor temperatures. Time required for reaction varies from 8-12 hrs. Usually these resins doesn't require thinning, but if small adjustment need to be done for viscosity and solids, is done by adding solvent in reactor/blender and the adjusted material is filtered on a depth filter and after filtration the product is pumped into either storage tanks or filled in barrels.

Schematic flow diagram for Acrylic Resin manufacturing process is as presented in ***Figure 3-4.***

Figure 3-4: The schematic flow diagram for Acrylic Resin



Material Balance for Acrylic Resin Manufacturing process is as given in ***Table 3-8.***

Table 3-8: Material Balance for Acrylic Resin

S. No.	Input/MT of Product						
	Raw Materials			Quantity (MT/MT)			
1	Catalyst			0.025			
2	Solvent			0.4			
3	Monomer			0.575			
4	Filter Aid (Consumable)			0.0015			
Total				**1.0015**			
S. No.	**Output/MT of Product**						**Remark**
	Product	**Liquid Effluent**	**Air Emission**	**Recovery/ Product**	**Incineration Waste**	**Land fillable Waste**	
1.	Effluent	-	-	-	-	-	
2.	Incinerable / Co-processing waste	-	-	-	0.0178	-	For Incineration
3.	Land fillable waste	-	-	-	-	-	-
4.	Product	-	-	0.9837	-	-	For Paint process
Total		**1.0015**					

Note: *Details may have some smaller changes based on actual detailed engineering design*

5. Emulsion/Water based Polymers

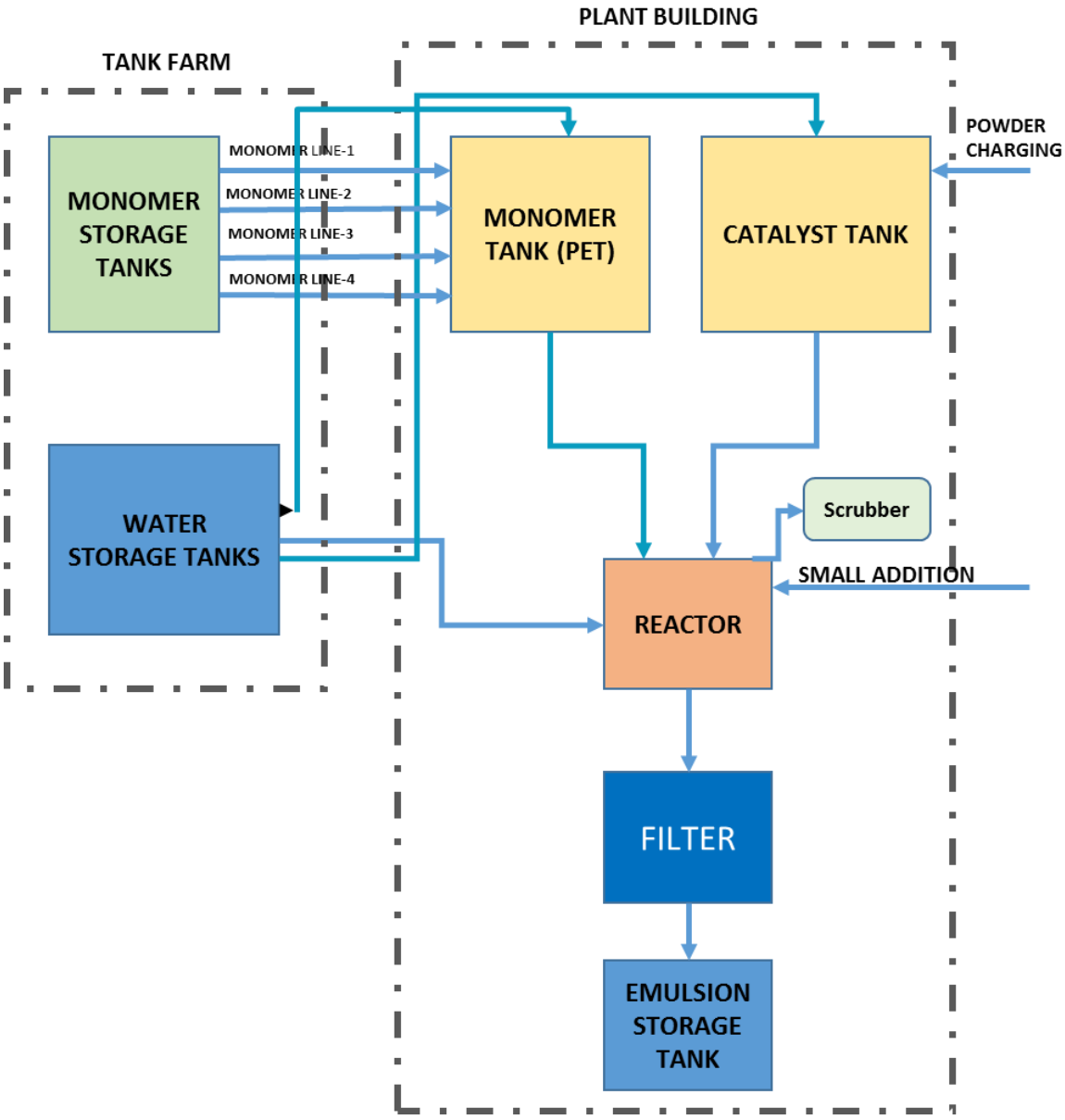
Emulsion is basically manufactured through a polymerization of monomers at low temperatures in the water as media. Following steps are involved in manufacturing process:

- Water and surfactants are taken to the reactor and heated to specified temperature.
- On achieving desired temperature, initiator catalyst is added. The temperature of the contents is controlled to 75-85 Deg. C.
- Monomers are added continuously to the reactor under continuous stirring.
- On completion of monomer addition, digestion catalyst is added to the reactor.
- The reactor is maintained at around 80°C for specified time to ensure complete polymerization.

Typical monomers are Methyl Methacrylate, 2-Ethyl Hydroxy Acrylate, Hydroxy Ethyl Metha acrylate (imported), Butyl Acrylate, Vinyl Acetate, Styrene, etc. There is no generation of by-product. The emulsion is diluted with water, filtered and stored in tanks. This is used as intermediate for manufacturing of water-based paints.

Schematic flow diagram for Emulsion/Water based polymers manufacturing process is as presented in ***Figure 3-5.***

Figure 3-5: Schematic flow diagram for Emulsion/Water based Polymers



Material Balance for Emulsion/Water based Polymers Manufacturing process is as given in ***Table 3-9.***

Table 3-9: Material balance for Emulsion / Water Based Polymers

S. No.	Input/MT of Product	
	Raw Materials	**Quantity (MT/MT)**
1	Monomer	0.470
2	Water	0.480
3	Initiator	0.005
4	Emulsifier	0.029
5	Buffer	0.005
6	Neutralizer	0.010
7	Defoamer	0.001
Total		**1.00**

S. No.	Output/MT of Product						Remark
	Product	**Liquid Effluent**	**Air Emission**	**Recovery/ Product**	**Incineration Waste**	**Land fillable Waste**	
1.	Effluent from process scrubber	0.001	-	-	-	-	Liquid effluent To ETP
2.	Incinerable / Co-processing waste	-	-	-	0.004	-	Solid waste To TSDF
3.	Landfillable waste	-	-	-	-	-	-
4.	Product		--	0.995	0.004		
Total		**1.0**					

Note: *Details may have some smaller changes based on actual detailed engineering design*

Annexure 10: Storage & Transportation details of Raw Material and Products

Table 3-10: Raw Materials Storage & Transportation details

Sr. No.	Raw materials	Storage Quantity at a time (MT)	Storage mode	Specific hazard	Mitigation Measures	Sourcing	Mode of Transport
1.	Pigments	4350	Silos / Hoppers/ Bags/ Barrel	Non- flammable	Closed loop system/ Dust collection system	Indian Domestic Market/ Import	Truck / Bulk Containers (By Road) /Ship
2.	Extenders	11000	Silos / Hoppers/ bags	Non-flammable	Closed loop system/ Dust collection system/Flame Proof fittings	Indian Domestic Market/ Import	Truck / Bulk Containers (By Road) /Ship
3	Solvents	1200	Tanks	Flammable	Closed loop system/ Flame proof fittings/ Earth rite system/Foam pouring system/Safety valve cum breather valve	Indian Domestic Market / Import	Tanker / Truck (By Road) /Ship
4	Additives	8000	Tanks/ Barrels	Flammable	Closed loop system/ Flame proof fittings/ Earth rite system/Foam pouring system/Safety valve cum breather valve	Indian Domestic Market / Import	Tanker / Truck (By Road) /Ship
5	Monomers	2700	Tanks	Flammable	Closed loop system/Flame proof fittings/Earth rite system/Foam pouring system/Safety valve cum breather valve	Import	Ship /Tanker Truck (By road)
6	Oils	1800	Tanks	No Specific Hazard	Closed loop system	Indian Domestic Market	Tanker/ Truck (By Road)

Note: *Details may have some smaller changes based on actual detailed engineering design*

Table 3-11: Storage details of products

Sr. No.	Product / Intermediate Name	State	Hazard Involved	Means of Storage	Operating Condition (Storage)		Capacity of Vessel / Bag	No. of Vessels /bag	Storage Capacity
					Press Kg/Cm^2	Temp ^oC			
1	Emulsion – Intermediate	Liquid	-	SS Tanks	Ambient	Ambient	50 – 200 KL	22	2050 m^3
2	Resins – Intermediate	Liquid	-	SS Tanks	Ambient	Ambient	50 – 250 KL	40	3050 m^3
3	Solvent Based Paint	Liquid	High flammability	FG In ASRS	Ambient	Ambient	0.5 L to 20 L	NA	1605 KL
4	Water Based Paint	Liquid	-	FG In ASRS	Ambient	Ambient	1 L to 20 L	NA	6801 KL

Table 3-12: Transportation details of products

S. No.	Chemical	State	Means of Transportation	End User
1	Water Based Paint	Liquid	Truck	Customer
2	Solvent Based Paint	Liquid	Truck	Customer
3	Alkyd Resins	Liquid	Truck	Customer

Annexure 11: Water Consumption and Waste Water Generation Details

Water supply source: WBIDC water supply system (Surface water from Kansabati River) and/or Bore well (with prior permission from competent authority).

Table 3-13: Water Consumption and Waste Water Generation Details

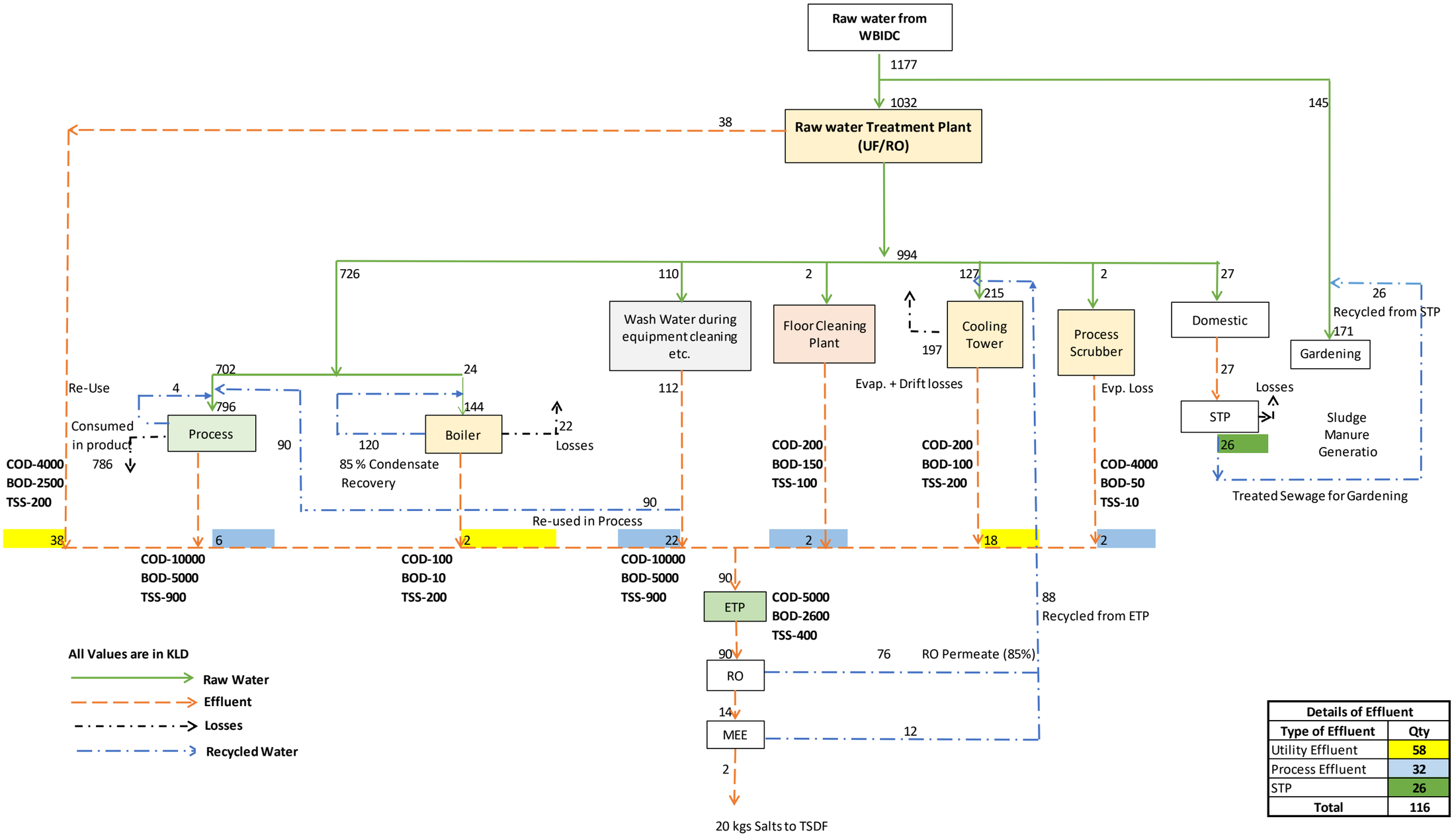
S. No	Description	Water Requirement (KLD)	Losses (KLD)	Total wastewater Generation (KLD)	Reused in Process (KLD)	Wastewater inlet to ETP/ STP (KLD)	Recycled Water (KLD)	Treatment & Disposal Facility	Re-use / Recycle	Remark
A	**Domestic requirement**	**27**	**0**	**27**	**0**	**27**	**26**	**STP**	**In Gardening**	**30 KLD - STP design**
B	**Industrial**									
1	Process	702	0	10	4	6	0	ZLD (ETP-RO-MEE)	Process/ Utilities	**Design Capacities ETP: 100 KLD, RO: 100 KLD, MEE: 15 KLD**
2	Wash Water (Process)	110	0	110 + 2 (sticking losses)	90	22	0			
3	Wash Water (Floor Cleaning)	2	0	2	0	2	0			
4	Cooling tower	127	197	18	0	18	88			
5	Boiler	24	22	122	120	2	0			
6	Scrubber	2	0	2	0	2	0			
7	WTP	0	-	38	0	38	0			
	Total Industrial (B)	**967**	**219**	**304**	**214**	**90**	**88**			
C	**Green belt**	**145**	**-**	**-**	**-**	**-**	**-**	**-**	**26 KL recycle water from STP to gardening**	
Total Raw Water Requirement (A + B+C)		**1139**	**219**	**331**	**214**	**117**	**114**	**-**	**-**	
Recycled Water from RO and MEE		**88**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Fresh Water Consumption (from WBIDC: 1200 KLD)		**1177 (1139 KLD Total Raw Water Requirement + 38 KLD WW from WTP-to ETP & recycled)**								

There will be ~ 90 KLD industrial effluent generation and ~ 27 KLD domestic sewage generation from the proposed industrial developments.

Mode of Disposal

- There will be ~ 90 KLD industrial effluent generation (from process, wash water & utilities) and ~ 27 KLD domestic sewage generation from the proposed plant.
- Industrial wastewater from Process & utilities blow downs along with wash water will be treated in proposed ETP (100 KLD capacity) followed with RO (100 KLD capacity) & MEE (15 KLD capacity). The treated effluent from the ETP will be recycled and reused in process within plant premises.
- Domestic sewage (27 KLD) will be separately treated in STP (capacity 30 KLD) and treated sewage will be reused in gardening/flushing.
- Thus, the wastewater treatment system zero liquid discharge (ZLD).

Figure 3-6: Water Balance Diagram



Details of Effluent	
Type of Effluent	**Qty**
Utility Effluent	**58**
Process Effluent	**32**
STP	**26**
Total	**116**

Annexure 12: Details of ETP & STP

- During paint manufacturing process, various effluent streams will be generated at various sources viz., effluent streams are generated from manufacturing of water based paint, Resin & Water Based Polymer/ Emulsions, during activities such as cleaning of mixers, cleaning of resin reactor and blender, during calibration of vessels, cleaning of barrels and containers.
- The various process water and washing streams along with utilities blow downs, regeneration and backwash water is treated combined in proposed ETP consisting of primary, secondary and tertiary treatment.
- The treated water after passing through sand filter & carbon filter are combined and further treated in RO and reject is passed through MEE.
- The domestic waste water i.e. sewage water from various blocks such as administration building, canteens, toilets & washrooms for truck drivers & cleaners etc. is treated separately in proposed STP of 30 KLD capacity.

Effluent Treatment Plant (100 KLD)

- A 100 KLD capacity, Effluent Treatment Plant is proposed and will be installed before the trial production. The proposed ETP comprises of primary, two stage biological and tertiary treatment followed with advance tertiary treatment like RO (100 KLD) & MEE (15 KLD).
- The treated effluent from the ETP will be recycled and reused in utilities like cooling tower / Chillers.
- The system has been designed in accordance to compliance of ZLD – Zero Liquid Discharge

Design base inlet & outlet characteristics of ETP

Design base inlet and outlet characteristics of wastewater is as given in ***Table 3-14.***

Table 3-14: Design base effluent inlet & outlet characteristics

Sr. No.	Parameter	Unit	Stoichiometric Inlet to ETP	Design Basis for ETP - Inlet	Outlet of ETP as per WBPCB
	Flow		**90**	**100**	**100**
1	pH	-	7.7	6.5 – 8.0	5.5 - 9
2	BOD3	mg/l	2580	3200	30
3	COD	mg/l	4802	10000	250
4	TSS	mg/l	400	700	100
5	TDS	mg/l	1300	2500	2100
6	Oil & Grease	mg/l	7	15	10

List of ETP Units

The list of treatment units of the proposed ETP are as given in ***Table 3-15.***

Table 3-15: List of ETP Units

S. No.	Treatment Stage	Units
1	Primary Treatment	1) Equalization Tank 2) Flash Mixer 3) Flocculator 4) Primary Settling Tank 5) Dissolved Air Floatation (DAF)
2	Secondary Biological Treatment	6) Aeration Tank –I 7) Biological Clarifier -I 8) Aeration Tank -II 9) Biological Clarifier – II 10) Tertiary Clarifier
3	Tertiary Treatment	11) Pressure Sand Filter 12) Activated Carbon Filter
4	Sludge Handling	13) Sludge Collection Sump 14) Screw Press

S. No.	Treatment Stage	Units
5	RO/MEE system/ Advance Tertiary Treatment for recycling and reuse	15) RO Feed Tank 16) RO Permeate Tank 17) RO Reject Tank 18) MEE Feed Tank

Process Description of ETP Units

For the wastewater treatment, ETP is proposed with primary, two stage biological and tertiary treatment followed with advance tertiary treatment like RO & MEE. RO & MEE will run during peak monsoon season only.

The process description of proposed ETP is described below:

Equalization Tanks: The combined effluent from the washings, utilities blow downs will be taken to the Equalization tank. The prime purpose of these tanks is for collection and storage of effluents generated and to have proper equalization of effluents in order to have constant load onto the further treatment units. The equalized effluent will be further transferred to the flash mixer.

Flash Mixer: After equalization, effluent is pumped to flash mixer. Lime and alum dosing will be carried out in flash mixer. The purpose of the flash mixers is better mixing of wastewater with alum, which helps in better flock formation by bringing down the pH of wastewater up to 7 to 7.5.

Flocculator: Wastewater from Flash mixer overflows to a flocculator where polyelectrolyte will be added for agglomeration and flocculation. Slow speed paddle type flocculator mechanism will be provided in this tank for gentle mixing and flocc formation. Flocculated effluent will go to primary settling tank under gravity.

Primary Settling Tank: The precipitated effluent will be further transferred to primary settling tank for settlement and removal of chemical sludge. Settled sludge will be taken to sludge collection sump under gravity. Clear effluent will be then overflow to the 1st stage aeration tank for biological treatment.

Dissolved Air Flotation (DAF): The overflow from the primary settling tank will send to Dissolved Air Flotation (DAF). DAF is a water treatment process that clarifies wastewaters by the removal of suspended matter such as oil or solids. The removal is achieved by dissolving air in the wastewater under pressure and then releasing the air at atmospheric pressure in a flotation tank basin. The released air forms tiny bubbles which adhere to the suspended matter causing the suspended matter to float to the surface of the water where it will be removed by a skimming device. The clear effluent then transferred to the aeration tank-1 for biological treatment and sludge will be collected in sludge collection sump.

Aeration Tank-I: Aeration Tank-I will be provided for biological treatment of combined effluent. Overflow from primary settling tank will go to Aeration Tank-I. MLSS concentration up to 3000 – 3500 mg/l will be maintained in Aeration Tank. Diffuser with blower will be provided to suffice oxygen requirement of biomass. Overflow from 1st stage aeration tank will be taken to the secondary settling tank under gravity for sludge settlement. Some quantity of settled biomass will be recirculated back to Aeration Tank to maintain MLSS level in aeration tank.

Secondary Clarifier: The treated effluent from 1st stage aeration tank will be taken to secondary clarifier under gravity. Clear effluent will overflow to 2nd stage aeration tank for further treatment. The settled sludge will be collected into sludge collection sump and leachate will be re circulated to 1ststage aeration tank.

2nd Stage Aeration Tank-II: 2nd stage Aeration Tank will be provided for further biological treatment. MLSS concentration up to 3000 – 3500 mg/l will be maintained in Aeration Tank. Diffuser with blower will be provided to suffice oxygen requirement of biomass. Overflow from 2nd stage aeration tank will be taken to the final settling tank under gravity for sludge settlement. Some quantity of settled biomass will be recirculated back to Aeration Tank to maintain MLSS level in aeration tank.

Final Settling Tank: The treated effluent from 2nd stage aeration tank will be taken to final settling tank under gravity. The biological sludge will settle here. Clear effluent will overflow to intermediate collection tank for further

treatment. The settled sludge will be collected into sludge collection sump and leachate will be re-circulated into 2nd stage aeration tank.

Intermediate Collection Tank: Intermediate collection tank will be provided for collection of supernatant from final settling tank. NaOCl dosing will be carried out in this tank for disinfection. The effluent from the intermediate collection tank will be passed through Pressure Sand Filter & Activated Carbon Filter for polishing of biologically treated effluent.

Pressure Sand Filter (PSF): Pressure Sand Filter will be provided as a form of tertiary treatment for removal of residual suspended solids. The filter consists of different gradations of gravel & sand bed. The filter will be provided with necessary valve arrangements for inflow and outflow and backwashing of the system. The backwash water of the system shall be taken to the Equalization tank/Primary Settling Tank for retreatment.

Activated Carbon Filter (ACF): Activated Carbon Filter will be provided as a form of tertiary treatment for removal of residual organics, odour and colour. The filter consists of gradations of gravel & sand sub bed and over which is provided activated carbon of high iodine value. The filter will be provided with necessary valve arrangements for inflow and outflow and backwashing of the system. The backwash water of the system shall be taken to the Equalization tank/Primary Settling Tank for retreatment.

Final Collection Tank: The outlet of PSF & ACF will be taken to the final collection tank. Minimum one-day retention time will be provided for final collection tank. From this final collection tank, the treated wastewater can be further treated in tertiary advance treatment i.e. Recycling RO and MEE system.

Sludge Collection Sump: Primary chemical sludge from primary settling tank and secondary biological sludge from secondary settling tank will be taken to sludge collection sump and then to filter press for further drying of sludge. Dried sludge will be packed in HDPE/LDPE bags & will be stored in hazardous waste storage area for final disposal in TSDF. Leachate generated will be recycled back into aeration tank.

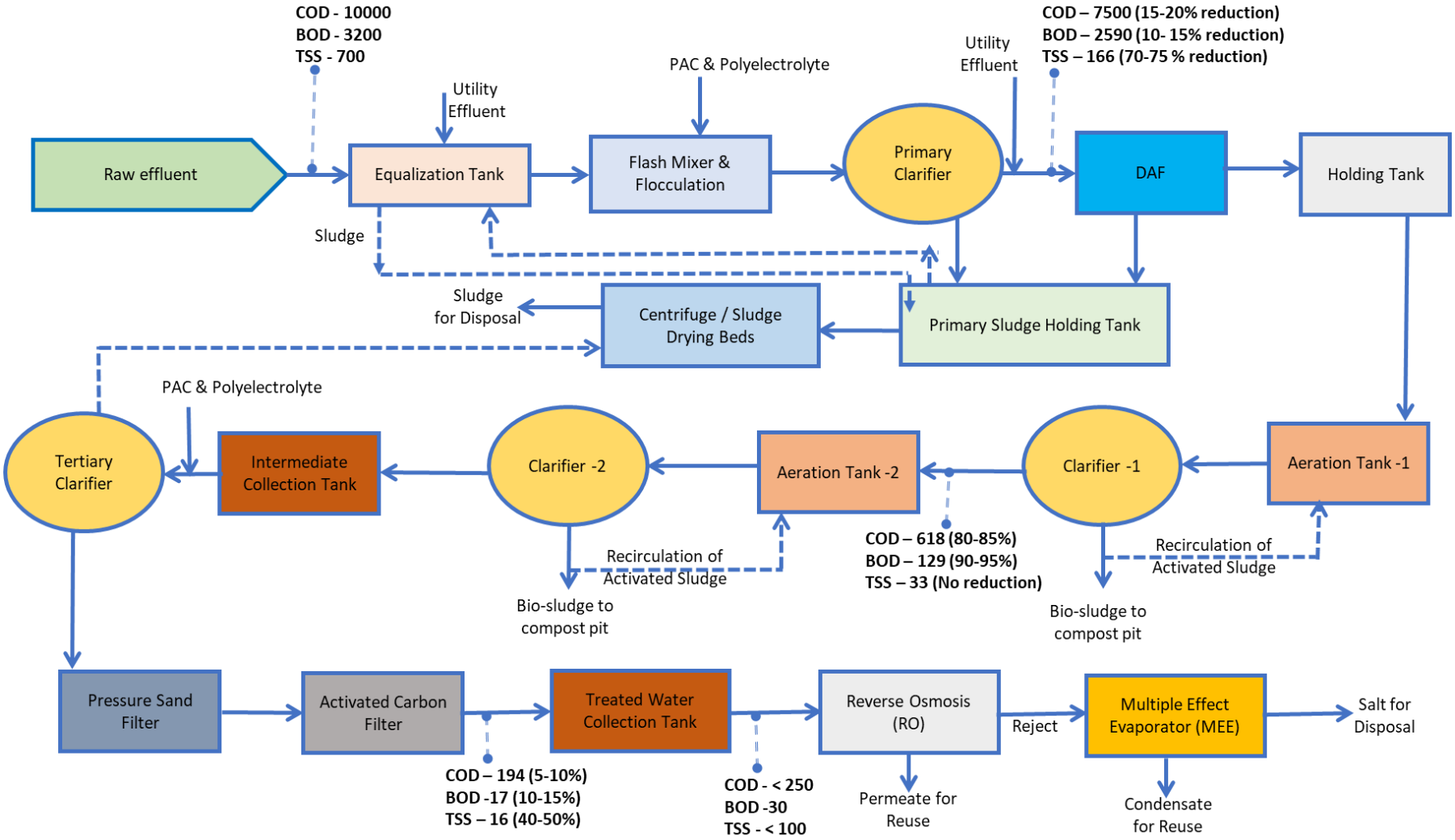
Tertiary Recycling RO System: The treated waste water from the ETP will be taken to RO feed tank. Two stage RO is proposed. The Permeate water from the RO will be recycled into plant area and reject water from RO will transferred to MEE for further evaporation and removal of salts form the water.

MEE Feed Tank: The RO reject water will collect into MEE feed tank. MEE will be proposed for the concentration of aqueous solutions. Evaporation is carried out by supplying heat to the solution to vaporize the solvent. The heat is supplied basically to provide the latent heat of vaporization and by adopting methods for recovery of heat from the vapour, it has been possible to achieve great economy in heat utilization.

The condensate from MEE will be recycled and reused in plant while salts from the MEE will be disposed into TSDF after passing from ATFD (Agitated Thin Film Drier).

The process block diagram of Proposed ETP is presented in ***Figure 3-7.***

Figure 3-7: Flow diagram for ETP



Sizing of ETP Units (100 KLD capacity)

Details of size of ETP units of 100 KLD capacity is as given in ***Table 3-16.***

Table 3-16: ETP unit sizing for 100 KLD design capacity

Sr. No.	ETP Treatment Units	No of Units	Sizing of Units (in m)			Volume (cu. m)	Total Volume (cu. m)
			L	B	H		
1	Equalization Tanks	3	4.0	4.0	3.2	51	154
2	Flash Mixer	1	1	1	1.2	1.2	1.2
3	Flocculator	1	1.2	1.2	1.4	2	2
4	Primary Tube settler tank	1	3.5	Dia.	3.0	29	29
5	DAF Tank	1	2.5	2	2.5	13	13
6	Aeration Tank I (1st Stage)	1	15	7.5	4.5	506	506
7	Secondary Settling Tank	1	3.5	Dia.	3.0	29	29
8	Aeration Tank II (2nd Stage)	1	11	5.5	4.5	272	272
9	Final Settling Tank	1	3.5	Dia.	3.0	29	29
10	Filter Feed Tank	1	3.5	Dia.	3.0	29	29
11	Final Collection Tank	2	3.5	3.5	4.5	55	110
12	Sludge Collection Sump	1	2.0	2.0	2.5	10	10

Adequacy of proposed ETP

Details of adequacy of proposed ETP of 100 KLD capacity is as given in ***Table 3-17.***

Table 3-17: Adequacy of Proposed 100 KLD capacity ETP

Sr. No.	ETP Treatment Units	No. of Units	Sizing of Units (in m)			Volume (cu. m)	Total Volume (cu. m)	Flow (m^3/day)	Retention time (hrs.)	Retention time (min)	Retention time (day)
			L	B	H						
1	Equalization Tanks	3	4.0	4.0	3.2	51	154	100	37	-	1.5
2	Flash Mixer	1	1	1	1.2	1.2	1.2	100	0.3	17	-
3	Flocculator	1	1.2	1.2	1.4	2	2	100	0.5	29	-
4	Primary Tube settler tank	1	3.5	Dia.	3.0	29	29	100	7	-	-
5	DAF Tank	1	2.5	2	2.5	13	13	100	3	-	-
6	Aeration Tank I (1st Stage)	1	15	7.5	4.5	506	506	100	122	-	5.1
7	Secondary Settling Tank	1	3.5	Dia.	3.0	29	29	100	4	-	-
8	Aeration Tank II (2nd Stage)	1	11	5.5	4.5	272	272	100	65	-	2.7
9	Final Settling Tank	1	3.5	Dia.	3.0	29	29	100	7	-	-
10	Filter Feed Tank	1	3.5	Dia.	3.0	29	29	100	7	-	-
11	Final Collection Tank	2	3.5	3.5	4.5	55	110	100	26	-	1.1
12	Sludge Collection Sump	1	2.0	2.0	2.5	10	10	10	24	-	1

Performance evaluation of proposed ETP

Stage wise reduction in effluent characteristic for ETP is ***Table 3-18.***

Table 3-18: Stage wise reduction in effluent characteristic for ETP

Sr. No.	Stages of Treatment	COD (mg/l)			BOD (mg/l)			TSS (mg/l)		
		Inlet	Outlet	% Reduction	Inlet	Outlet	% Reduction	Inlet	Outlet	% Reduction
1.	Inlet	10000			3200			700		
2.	Primary Treatment	10000	7500	25	3200	2590	19	700	166	76
3.	Secondary Biological Treatment	7500	210	97	2590	58	95%-1st Stage 90%-2nd Stage 85%	166	166	0
4.	Tertiary Treatment	210	194	8	20	17	10	166	16	90
	Limit as per WBPCB	**250**			**30**			**100**		

Sewage Treatment Plant (STP – 30 KLD)

Sewage Treatment Plant of capacity 30 KLD is proposed for treatment of 27 KLD domestic sewage generation.

Inlet and Outlet effluent characteristics for STP design basis is given ***Table 3-19.***

Table 3-19: Stage wise Inlet /Outlet Characteristics

Parameter	Unit	Raw Sewage	Treated Sewage
Flow	**m^3/d**	**30**	**26**
PH	--	7.0 – 8.0	6.5 – 8.5
COD	mg/l	600	< 100
BOD3	mg/l	300	< 30
TSS	mg/l	200	< 50
TDS	mg/l	500	< 2100
Oil & Grease	mg/l	20	< 10

Process Description of STP Units

The unit wise process description is given below:

Screen Chamber:

The sewage will be conveyed through the Sewage Network pipeline into Screen Chamber. Screen Chamber is provided to remove the bigger size solid particles from the sewage. Screen is proposed in the screen chamber. From this Screen Chamber Sewage will be transferred to oil and grease tank via gravity.

Equalization Tank:

The prime purpose of this tank is to collect and store the sewage. Air will be supplied through aeration grid provided at the bottom of tank. This will reduce foul smell and will ensure constant load onto the further treatment units. From this tank the sewage will be further transferred to the tank for biological treatment.

Aeration Tank:

The sewage water from the equalization tank will be passed to the Aeration tank for biological treatment. Diffuser with blower will be provided to suffice oxygen requirement of biomass. Overflow from the aeration tank will be taken to the settling tank for sludge settlement to maintain MLSS level in aeration tank.

Secondary Settling Tank:

The secondary settling tank is provided for settlement of secondary sludge solids. Biologically treated sewage transferred to the settling tank via gravity. The sludge settled at the bottom shall be collected in sludge drying beds. Secondary Tube Settler is provided with the Tube Settler Media for increasing the surface area to increasing the settling time. The clear effluent from top of media will be transferred to intermediate collection tank.

Intermediate Collection Tank:

An intermediate tank is proposed to store secondary treated sewage for tertiary disinfection treatment. The clear sewage from the settling tank shall be collected in an intermediate collection tank. In this tank liquid chlorine in form of Sodium Hypochlorite (NaOCl) will be mixed using aeration grid provided at the bottom of the tank. The aeration will help to achieve effective mixing of chlorine solution with dosage of NaOCl. The sewage is then pumped to dual media filter for tertiary treatment.

Pressure Sand Filter:

Pressure Sand Filter will be provided as a form of tertiary treatment for removal of residual suspended solids. The filter consists of different gradations of gravel & sand bed. The filter will be provided with necessary valve arrangements for inflow and outflow and backwashing of the system. The backwash water of the system shall be taken to the Equalization tank for re treatment.

Activated Carbon Filter:

Activated Carbon Filter will be provided as a form of tertiary treatment for removal of residual organics, odour and colour. The filter consists of gradations of gravel & sand sub bed and over which is provided activated carbon of high iodine value. The filter will be provided with necessary valve arrangements for inflow and outflow and backwashing of the system. The backwash water of the system shall be taken to the Equalization tank for re treatment.

Micron Cartridge Filter:

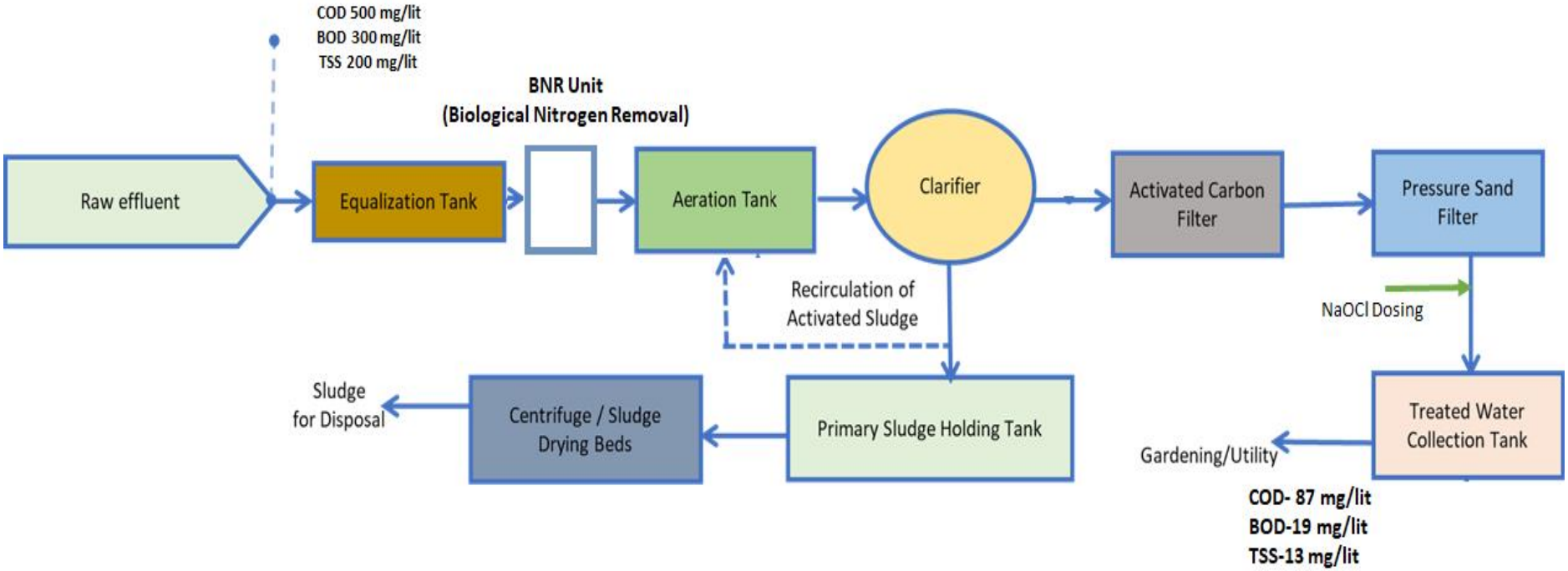
Micron cartridge filter is an essential filter, to remove turbidity and give clear water. Very fine suspended impurities, colloidal matter, etc., which escape untapped in sand filter, are easily separated in these filters. Outlet from the micron cartridge filter will be send to final collection tank.

Final Collection Tank:

Outlet from Micro Cartridge Filter will be collected in a Final Collection Tanks, where the treated sewage will be stored. From this tank the treated sewage will be reused in gardening.

The process block diagram of Proposed STP is presented in ***Figure 3-8.***

Figure 3-8: Flow diagram for STP



Capacity of proposed wastewater treatment facility along with proposed effluent load is given in ***Table 3-20***.

Table 3-20: Capacity of Wastewater Treatment Facility with Effluent Load

Sr. No.	Area of waste water generation	Waste water generation Qty., (KLD)	Name of Waste water Treatment facility	Capacity of wastewater Treatment (Cum./day)	Remarks
1	Industrial	90	ETP	100	Adequate
2		90	RO	100	Adequate
3		14	MEE	15	Adequate
4	Domestic	27	STP	30	Adequate

Annexure 13: Solid & Hazardous Waste Generation and Disposal Management

Quantification, Classification, Source, Collection, Transportation, Treatment & Disposal of Solid/ Hazardous Waste

The hazardous waste will be collected and temporarily stored in Hazardous Waste Storage area as per hazardous waste rules within the plant premises.

Details of the Solid & Hazardous waste generation, Quantification, Classification, Collection, Transportation and method of collection & treatment/disposal for proposed project are as given in ***Table 3-21.***

Table 3-21: Hazardous Waste Generation and Disposal

S. No.	Process as per HW Rules 2016	Type of Waste	Hazardous Waste Category	Quantity per Year	Source	Treatment / Disposal
1	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	cargo residue and sludge containing chemicals	3.2	10 MT/Annum	Sludge Containing Chemicals	Collection, Storage, Disposal and Transportation to TSDF/ co-processing
2	Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications	Used or Spent Oil	5.1	20 MT/Annum	DG set, Compressor, gear box	Collection, Storage and sale to authorised recycler
3	Production and/or industrial use of solvents	Contaminated aromatic, aliphatic or naphthenic solvents may or may not be fit for reuse	20.1	40 MT/Annum	Manufacturing process/Solvents may not fit for reuse	Collection, Storage and sale to authorised recycler/ TSDF/ Co-processing
4		Distillation Residues	20.3	65 MT/Annum	Solvent recovery plant	Collection, Storage, Disposal and to TSDF/ co-processing
5	Production and /or industrial use of glues, organic cements, adhesive and resins	Wastes or residues (not made with vegetable or animal materials)	23.1	50 MT/Annum	Paint Manufacturing process -(Wastes or residues such as filter aid	Collection, Storage, Disposal and Transportation to TSDF as Co-processing / Sale to authorised recycler
6	Handling of hazardous chemicals and wastes	Empty barrels/containers/ liners contaminated with hazardous chemicals /wastes	33.1	100 MT/Annum	Discarded Container/ Drum (Metal)	Sale to authorised recycler
7			33.1	80000 Nos./ Annum	Discarded containers / barrels /liners contaminated with hazardous wastes / chemicals (HDPE/Pails etc.)	Sale to authorised recycler
8	De-contamination of barrels / containers used for handling of hazardous wastes/chemicals	Chemical-containing residue arising from decontamination	34.1	30 MT/Annum	Barrel Decontamination	Collection, Storage, Disposal and Transportation to TSDF/ Co-processing
9	Production and/or industrial use of paints,	Process wastes, residues and sludges	21.1	90 MT/Annum	Process wastes, residue and	Collection, Storage, Disposal and

S. No.	Process as per HW Rules 2016	Type of Waste	Hazardous Waste Category	Quantity per Year	Source	Treatment / Disposal
	pigments, lacquers, varnishes and inks				sludge (Filter Residue)	Transportation to TSDF/ co-processing
10	Purification and treatment of exhaust air/gases, water and waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	Exhaust Air or Gas cleaning residue	35.1	2 MT/Annum	Flue gas cleaning from stacks	Collection, Storage, Disposal and Transportation to TSDF
11		Spent Ion Exchange Resin containing toxic metals	35.2	15 MT/Annum	Resin Beeds	Collection, Storage, Disposal and Transportation to TSDF
12		Chemical sludge from waste water treatment	35.3	150 MT/Annum	Sludges from treatment plants	Collection, Storage, Disposal and Transportation to TSDF/ co-processing
13		Oil and Grease skimming	35.4	15 MT/Annum	Floating oil from effluent treatment	Collection, Storage, Disposal and Transportation to active TSDF/ co-processing
14	Purification process for organic compounds/solvents	Spent carbon or filter medium	36.2	15 MT/Annum	Used carbon granules from common scrubbers & STP/ETP	Return to supplier for regeneration/ TSDF/Co-processing/
THE BATTERIES (MANAGEMENT AND HANDLING) RULES, 2001						
1	THE BATTERIES (MANAGEMENT AND HANDLING) RULES, 2001	Lead Acid Batteries	Schedule III, Part A, Basel No. A1160	200 No/Annum	Used /Waste lead acid batteries	Sale back to supplier/ SPCB Authorized recyclers

Note: *Details may have some smaller changes based on actual detailed engineering design*

Non-Hazardous Waste (Quantification, Source, Collection & Treatment/Disposal)

Non-Hazardous solid wastes like wooden, MS scrap, plastic & Gunny bags, paper bags and miscellaneous garbage will be collected in scrap yard and will be sold to authorised recyclers.

Details of non-hazardous solid waste generation quantity & method of collection & treatment/ disposal area s given in ***Table 3-22.***

Table 3-22: Non-Hazardous Solid Waste Generation & management

S. No.	Type of waste	Quantity	Treatment / Disposal
1	Paper Waste	1600 MT/Annum	Disposed through SPCB authorized recyclers
2	Plastic Waste	500 MT/Annum	
3	Metal Waste	200 MT/Annum	
4	Plastic RM containers	53000 Nos./Annum	Sent to suppliers / SPCB authorized recyclers
5	Metal RM containers	14100 Nos./Annum	
6	Powder waste	210 MT/Annum	
7	Wooden waste	1950 MT/Annum	Will be sent to SPCB authorized recyclers
8	Miscellaneous (cartons/ sample tins/ cans)	240 MT/Annum	Sent to suppliers/recyclers
9	Organic	1170 Kg/Day	Will be composted and used as manure for green belt development

Other Solid Wastes Identification & Management

Bio-medical Waste

Occupational health centre will be provided at site. It will be managed by qualified Doctor and Nursing staff round the clock. Very small quantity of waste comprises of discarded medicines, solid waste such as dressing, bandages and material contaminated with blood will be generated. The generated waste will be periodically handed over to nearest authorized vendors as per SPCB regulations and Bio-Medical Waste Management Rules, 2016. Bio-medical waste will be disposed at nearest common biomedical waste management facility with prior permission from concerned authority.

Electronic Waste

E-Waste comprises of discarded computers, copiers, fax machines, inverters, cell phones, CD's, LAN Cables, Keyboards, Mouse, SMPS, Fuses, Data cables, mobile/laptop peripherals like earphones, chargers, circuit boards, printer cartridges etc. will be mainly generated from the computer lab and administrative buildings. E-wastes will be disposed as per the provisions of the E-Wastes (Management and Handling) Rules, 2016 and till amendment.

Annexure 14: Details of Fuel Consumption

The proposed plant will have 4 nos. of boilers of capacity 2 TPH (3 Working + 1 Standby) & 1 no. of boiler (MEE) of 0.5 TPH capacity to produce steam for process requirement.

Presently, the boilers are designed to use HSD/LPG/LNG/CNG as prime fuel source and based on the availability of green fuel the options will be accommodated.

Table 3-23: Details of Fuel Consumption

Sr. No.	Stack Attached to	Capacity	Type of Fuel used	Fuel consumption	Nos. of working hour
Construction Phase					
1	DG Set - 1	500 KVA	HSD/ LPG/ CNG	HSD@100 LPH per DG set	Continuous/ during power failure
2	DG Set - 2	500 KVA			
3	DG Set – 3	500 KVA			
4	DG Set – 4	500 KVA			
5	DG Set – 5	500 KVA			
Operation Phase					
1	DG Set - 1	2000 kVA	HSD/LPG/CNG	HSD@1700 LPH	During power failure
2	DG Set – 2	2000 kVA			
3	DG Set – 3 (Standby)	2000 kVA			
4	DG Set - 4	1010 KVA			
5	DG Set – 5 (Standby)	1010 KVA			
6	Boiler – 1	2 TPH	HSD/LPG/CNG / LNG	HSD@2000 LPD	Continuous process
7	Boiler – 2	2 TPH		HSD@2000 LPD	
8	Boiler – 3	2 TPH		HSD@2000 LPD	
9	Boiler – 4 (Standby)	2 TPH		HSD@2000 LPD	
10	Boiler – 5 (MEE)	0.5 TPH		HSD@500 LPD	As & when required
11	Thermo pack – 1	20 Lakh KCal.	HSD/LPG/CNG/ LNG	HSD@1800 LPD	Continuous process
12	Thermo pack – 2	20 Lakh KCal.		HSD@1800 LPD	
13	Thermo pack – 3	20 Lakh KCal.		HSD@1800 LPD	
14	Thermo pack – 4 (Standby)	20 Lakh KCal.		HSD@1800 LPD	

Note: *Details may have some smaller changes based on actual detailed engineering design*

Annexure 15: Air emission details with stack details & Air pollution control measures

Table 3-24: Details of Flue Gas Stacks

Sr. No.	Stack Attached to	Capacity	Stack Height	Stack top Diameter, m	APCM
Construction Phase					
1	DG Set - 1	500 KVA	4.5	0.18	Stack height as per CPCB
2	DG Set - 2	500 KVA	4.5	0.18	
3	DG Set – 3	500 KVA	4.5	0.18	
4	DG Set – 4	500 KVA	4.5	0.18	
5	DG Set - 5	500 KVA	4.5	0.18	
Operation Phase					
1	DG Set – 1	2000 kVA	30	0.30	Stack height as per CPCB
2	DG Set – 2	2000 kVA	30	0.30	
3	DG Set – 3 (Standby)	2000 kVA	30	0.30	
4	DG Set – 4	1010 KVA	30	0.30	
5	DG Set – 5 (Standby)	1010 KVA	30	0.30	
6	Boiler – 1	2 TPH	30	0.55	Stack height as per CPCB
7	Boiler – 2	2 TPH	30	0.55	
8	Boiler – 3	2 TPH	30	0.55	
9	Boiler – 4 (Standby)	2 TPH	30	0.55	
10	Boiler – 5 (MEE)	0.5 TPH	12	0.18	Stack height as per CPCB
11	Thermo pack – 1	20 Lakh Kcal.	30	0.55	Stack height as per CPCB
12	Thermo pack – 2	20 Lakh Kcal.	30	0.55	
13	Thermo pack – 3	20 Lakh Kcal.	30	0.55	
	Thermo pack – 4 (Standby)	20 Lakh Kcal.	30	0.55	

****Note:** DG Sets will be used only during Power failure. Details may have some smaller changes based on actual detailed engineering design*

Table 3-25: Details of Process Vents

Sr. No.	Stack Attached to	Nos. of Vents	Stack Height in m	Pollutants Emitted	Air Pollution Control Measures Attached
1	Water Based Block	2	20 m from ground level	NH_3	Counter Current Wet Scrubbers
2	Solvent Based block	2	20 m from ground level	VOC/ Hydrocarbons	Two stage activated carbon Bed Scrubber
3	Resin Block	2	30 m from ground level	VOC/ Hydrocarbons	Vent condenser followed by two stage Activated Carbon Bed scrubber
4	Emulsion Block	2	20 m from ground level	NH_3/ VOC/ Hydrocarbons	Counter Current wet Scrubber cum two stage activated carbon bed scrubber
5	Dust Collectors – bulk powder handling area	35	20 m from ground level	PM	Cartridge/ Bag Filter – Reverse flow pulse cleaning
6	Dust Collectors with silo	50	30 m from ground level	PM	Bag Filter/Reverse Jet Filters

***Note:** Details may have some smaller changes based on actual detailed engineering design*

Details of Air Pollution Control Measures

Stack emission from emergency backup DG sets, Boilers & Thermic Fluid Heaters

- The control of air pollution from stacks of diesel generators, steam boilers, Thermo pack will be proposed by providing adequate stack height to attain maximum dispersion of flue gases containing SPM, SO_2, NO_X and CO.

Gas & Dust emission from process reactor vessels, mixers, condensers, blenders, chargers etc.

- During charging, dust collection & fine particle filtration systems will be installed to trap the particulate matter thus allowing only clean air to be discharged into the atmosphere.

Emission from Process gas stacks/ Vents

- Process Stacks/vents with height of 3 m above roof top level will be provided.
- Necessary APCMs to control of air emission of pollutants NH_3/VOC/Hydrocarbons from process stacks/vents will be provided in respective blocks i.e. counter current wet scrubber in water based block, two stage activated carbon bed scrubber in solvent based block, Vent condenser & two stage activated carbon bed scrubber in Resin block and counter Current Wet Scrubber cum Two Stage Activated Carbon Bed Scrubber in Emulsion blocks.
- To control PM emissions, Cartridge/ bag filters - reverse flow pulse cleaning will be attached to dust collector in bulk powder handling area and bag filter/reverse jet filter will be attached to dust collector with silos.
- Apart from these, GIL will carry out ambient air quality & stack monitoring on regular basis to ensure that there will be no emission that exceed the prescribed standard limits of regulatory authorities.
- Ambient air quality monitoring for fugitive emissions (total dust emissions) at different work zone areas of the plant will also be carried out regularly.

Annexure 16: Land allotment & Land possession certificate from WBIDC for the proposed project

Provisional Letter of Intent (LOI) from WBIDC for land allotment for the proposed project

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

No. WBIDC/VIP/GIL/21-22/1944 **15th March 2022**

To

M/s. Grasim Industries Limited
Birlagram, Nagda, Ujjain
Madhya Pradesh – 456 331.

Sub: Revised Allotment of Plot measuring 85.79 acres (Plot No.H3,H4,H5) at Vidyasagar Industrial Park, Kharagpur, Paschim Medinipur for setting up of an Integrated Paint Manufacturing Unit.

Ref: Your application for allotment dated 29.07.2021.
Our allotment letter no. WBIDC/VIP/GIL/21-22/1528 dated 01.02.2022.
Your Letter no. Nil dated 07.02.2022.

Sir,

With reference to reference above and in suppression of the earlier allotment letter issued on 01.02.2022, the revised allotment letter is as follows :

Apropos the captioned subject and reference for allotment of plot at Vidyasagar Industrial Park, Kharagpur, Paschim Medinipur, we are pleased to inform that the competent authority of WBIDC is agreeable 'in-principle' to allot you plot measuring more or less **85.79 acres** at Vidyasagar Industrial Park, Kharagpur, Paschim Medinipur for setting up of an **"Integrated Paint Manufacturing Unit",** subject to terms and conditions given hereunder. This letter to be considered as provisional letter of intent (LOI).

1. You will have to deposit **Rs. 51,50,13,000.00 (Rupees Fifty One Crore Fifty Lakh Thirteen Thousand) only** towards premium for total cost of land including administrative cost, proportionate cost of land utilized for common infrastructural facilities within 30 (Thirty) days from the date of issuance of this letter. In case the payment is made after expiry of thirty days then the total amount will stand as **Rs. 53,29,62,000.00 (Rupees Fifty Three Crore Twenty Nine Lakh and Sixty Two Thousand) only**. This offer is valid for **60 (sixty)** days from the date of issuance of this letter.

Page **1** of **5**

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

1.1. The validity of this offer may be extended for a maximum period of another 60 (sixty) days at the discretion of WBIDC on payment of a penal interest @15% p.a. on the lease premium payable.

Pricing break up is as follows :

a	Price of land(in Lakh/acre) [Base Price(38.04) + Infrastructural Cost (20.28)]	58.320
b	Additional 10% for plots adjoining Arterial road (Lakh/acre) [=10% of Base Price]	3.804
c	**Total cost of land (a+b) (in Lakh/acre)**	**62.124**
d	**Total allotted Land (In acres)**	**85.790**
A. Total Cost of Plot if paid after 30 days & within 60days of this offer		
h	Total cost of land (Rs. in Lakhs)	532962000
i	Deposited token application money in lakh	0
A	**Total payable amount (h-i) (if paid after 30 days & within 60 days of this offer)**	**532962000**
B. Discounted Price if paid within 30 days of this offer :		
j	5% discount on 'd'	17949000
B	**Total payable amount (h-i-j) (if paid within 30 days of this offer)**	**515013000**

2. Other Terms and Conditions for Allotment of plot of land in above mentioned Industrial Park developed by WBIDC are as follows:-

2.1. Nature of Allotment

2.1.1. Aforesaid plot of the land is allotted on a long term lease basis for a period of 99 (ninety nine) years from date of the possession on receipt of lease premium. Possession of the plot followed by formal lease in the prescribed form will be completed shortly after full payment.

2.1.2. The demise of the plot of land is strictly for implementation of the Project submitted to WBIDC.

2.1.3. Based on the approval of 10th Meeting of Standing Committee of the Cabinet on Industry, Infrastructure & Employment held on 09.10.2021, the plot has been allotted for setting up of Paints manufacturing unit. The proposed manufacturing unit will be based on water based and solvent based decorative paints which comes under category – B under WBPCB Act.

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

2.2 Payment Terms

2.2.1. Total price of the plot of land is the sum of cost of land, cost of development of common infrastructural facilities including cost of land utilized for common infrastructure, administrative cost etc. An early bird rebate @5% of the base price of land is allowed in case the full payment is deposited within 30 days. The price is payable within 60 days from the date of issue of the provisional letter of intent (LOI).

2.2.2. Lease Rent:

Lease rent payable from the date of possession @ Rs. 500/- per year per acre for plot of land which is subject to increase at the end of every 5th year @10% of the last rent paid of the plot within 31st May of the year in which the rent becomes due. In case of delay the period may be extended till 21 days from the due date together with an interest @13% p.a. calculated on daily basis.

2.2.3. Operation & Maintenance Charges :

Payment for the security & surveillance of the Park and operation & maintenance of common services such as roads, drainage system, lighting, water in the Park shall be paid on monthly basis to WBIDC or SPV/Association formed by the allottees for the said purpose.

2.2.4. Statutory Dues, Levies, Charges:

The Company shall be liable to pay all Taxes, Khaznas, cess, dues, land revenues and all other impositions and charges as may be levied under any statute in connection with the land/module by any local, state statutory or authorized and competent authority.

2.3. Other Terms and Conditions:

2.3.1. Mortgage:

The leasehold rights in Plot of land/module may be allowed to be mortgaged in favour of any financial institution or scheduled commercial bank, Non-Banking Financial Companies, Government Institutions, L.I.C, Security Trustees, Debenture Trustees as security for raising funds required for the purpose of setting up and development of the Project on the plot of land/module with the prior written permission of the lessor.

2.3.2 **Assignment/Transfer:**

The Plot of land/module or any part thereof is not assignable or transferable without obtaining prior approval and/or consent in writing from WBIDC. Such permission may be granted by the Lessor

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

after payment of transfer fees as applicable and the concerned assignee shall hold the same on the same terms and conditions as in the original lease and to such other terms and conditions as may be imposed by WBIDC while granting such approval.

2.3.3. Ownership/ Shareholding:

In case of transfer, which affects the ownership and control of the Company, prior permission has to be taken from WBIDC. The same may be allowed after payment of transfer fees as applicable. In case of merger, amalgamation, acquisition etc of company prior permission has to be taken from WBIDC. It may be allowed after payment of transfer fees as applicable.

2.3.4. Business/Commercial Operation:

The allottee has to commence the construction work within 1 (one) year and start commercial operation/production as per the implementation schedule provided by the company.

2.3.5 Statutory Clearances/ Licences/Permissions/financial closure.

It will be the sole responsibility of the allottee to obtain all statutory clearances /licenses/ permissions/financial closure from authorities such as WBPCB, Ministry of Environment & Forests, Fuel and water linkages, Banks or other Financial Institutions etc. as may be required for the implementation and conduct of the Project within a stipulated time frame. The Company will be responsible for compliance with all statutory payments/liabilities such as local taxes and any other charges, cess, duty, taxes etc. payable in respect of /for use of plot. In case allottee fails to obtain statutory clearances and fails to commence commercial operation within stipulated time frame as per schedule of implementation then the said allotment will stand cancelled and amount so received will be refunded after deduction of 10% of the land premium.

2.3.6. Compliance of all statutory laws, rules and Regulations:

The allottee shall abide by all laws, rules, regulations affecting the conduct of business as are made or amended from time to time by WBIDC and/or the panchayet and/or the State Government and/or the local authorities and/or any other competent authorities including Anti-Pollution laws and Industrial Laws and regulations. The Company shall submit plans for construction of its unit or modifications to local bodies giving details of various services etc. and obtain permission from them before commencement of work with copies forwarded to WBIDC.

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

2.3.7. Entitlement Relating to Certain Facilities:

2.3.7.1. Water: Surface water will be made available within 15 months of period and same may be used by paying the user charges. However, the allottee has the option of utilizing the ground water for industrial use subject to necessary permission from concerned authority for the time interval.

2.3.7.2. Electricity: Temporary power connection can be taken from WBSEDCL/WBSETCL for construction purpose only. However for commercial operation; the company will have to apply to WBSEDCL/WBSETCL. Power will be supplied directly by WBSEDCL and to be taken through underground cable.

2.3.7.3. Land Filling: The allottee shall make necessary arrangements for land filling of the plot allotted at his own cost as per level of filling provided by WBIDC. Company has to maintain a radius of curvature at the corner point and side clearance during constructing his boundary wall.

2.3.7.4. Drainage: Invert level of the internal drainage system should match with the invert level of drainage of the park.

2.3.7.5. Boundary Wall: The allottee shall make necessary arrangement for boundary wall around the plot allotted at his own cost.

2.3.7.6. Other Terms.

i. The Company shall bear and pay the stamp duty, registration charges and related charges in connection with registration of Lease Deed.

ii. The Company will not be permitted to use the common area in the park for conducting any form of business or for storage purposes. Common areas shall not be blocked or encroached upon in any way whatsoever.

iii. WBIDC reserves the right to amend, alter, modify or revoke any or all of these conditions at any time at its sole discretion.

We request you to kindly confirm your acceptance of the offer within 7 days.

Yours faithfully,

V. Yadav

(Vandana Yadav)
Managing Director

Page **5** of **5**

Payment receipt for land allotment from WBIDC

wbidc

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.

(A GOVERNMENT OF WEST BENGAL UNDERTAKING)

23, ABANINDRANATH THAKUR SARANI, KOLKATA – 700 017

POST BOX 649, TELEGRAM: IDCOB, TELEPHONE: 2255 3850

SL No. : 05/2022-23

Date: 18th May, 2022

Received from: *Grasim Industries Ltd.*

Cheque/Draft/NEFT/RTGS/Cash: *NEFT/RTGS* **Dated:** *11.05.2022*

Rupees Fifty Three Crore Twenty Nine Lakh Sixty Two Thousand only

On account of: *Lease Premium for allotment of plot no. H3, H4 & H5 at Vidyasagar Industrial Park, Kharagpur*

Rs. 53,29,62,000.00

For WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LIMITED

Receiver's Signature: Maitreya Dutta
On behalf of
Grasim Industries Ltd.

Assistant/Manager/Dy.Manager (F&A)

This receipt is valid subject to realization of Cheque/RTGS/NEFT

Land Posession Certificate from WBIDC

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LTD.
(A GOVERNMENT OF WEST BENGAL UNDERTAKING)
"PROTITI", 23, Abanindranath Thakur Sarani (Camac Street), Kolkata - 700 017
Phone : +91 33 2255 3700-705, Fax : +91 33 2255 3737
E-mail : wbidc@wbidc.com Web : www.wbidc.com
Corporate Identity Number : U75142WB1967SGC026988

No. WBIDC/IP-KGP/PP/10-11/380 19th May 2022

POSSESSION CERTIFICATE

I, Sri P. Kamalakanth, Executive Director, West Bengal Industrial Development Corporation Limited, 'PROTITI' 23, Abanindranath Tagore Sarani, Kolkata – 700 017 do hereby hand over the possession of **85.79 acres** of land as per schedule below on this date, to **M/s. Grasim Industries Limited, Birlagram, Nagda, Ujjain, Madhya Pradesh – 456331.,** for setting up of an **"Integrated Paint Manufacturing Unit"**, as per their application dated 29.07.2021.

LOCATION

Vidyasagar Industrial Park, PS: Kharagpur, District: Paschim Medinipur.

Index Map attached, Sector Map, Mouja Map & Land Schedule attached.

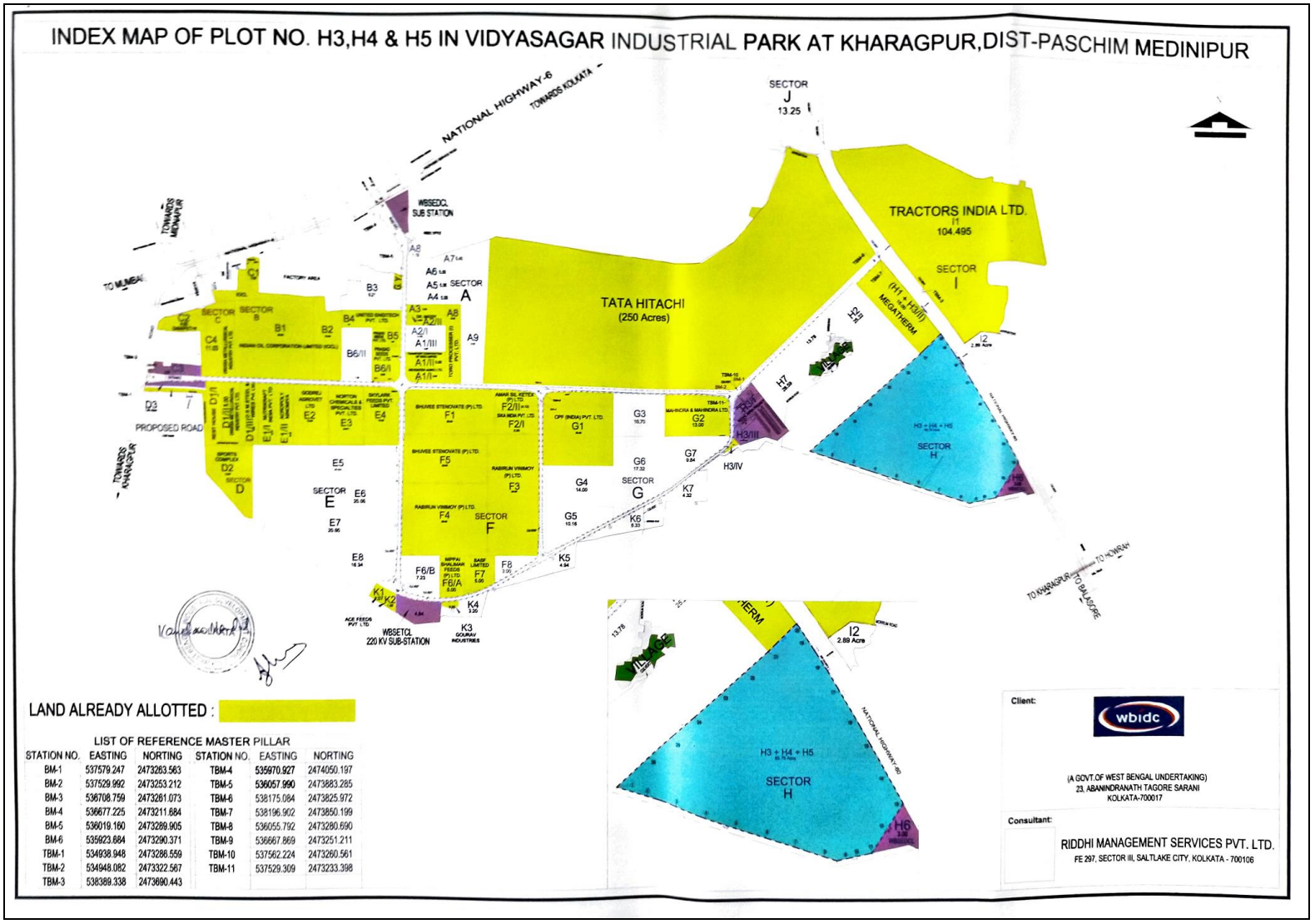
SCHEDULE

Plots : "H3, H4 & H5"

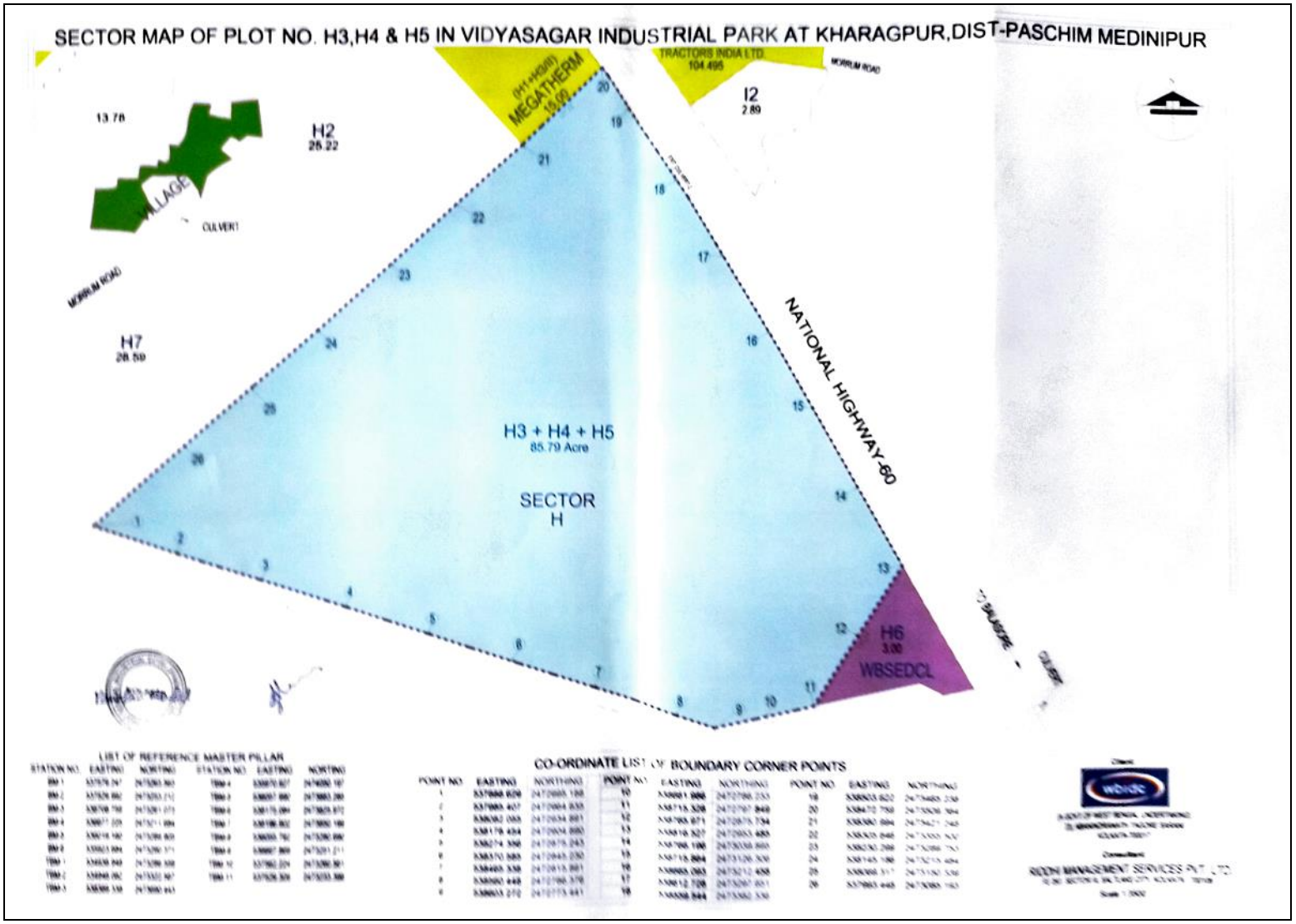
Area : 85.79 acres.

Possession of 85.79 acres of land as per schedule above delivered to **M/s. Grasim Industries Limited, Birlagram, Nagda, Ujjain, Madhya Pradesh – 456331** by me today.	Possession of 85.79 acres of land as per schedule above received by me today.
P. Kamalakanth 19.05.2022	19.05.22
(P. Kamalakanth) Executive Director West Bengal Industrial Development Corporation Limited. 'PROTITI' 23, Abanindranath Tagore Sarani, Kolkata – 700 017	AVIJIT GHOSH (CA. G.M. - PROJECTS) **M/s. Grasim Industries Limited, Birlagram, Nagda, Ujjain, Madhya Pradesh – 456331**

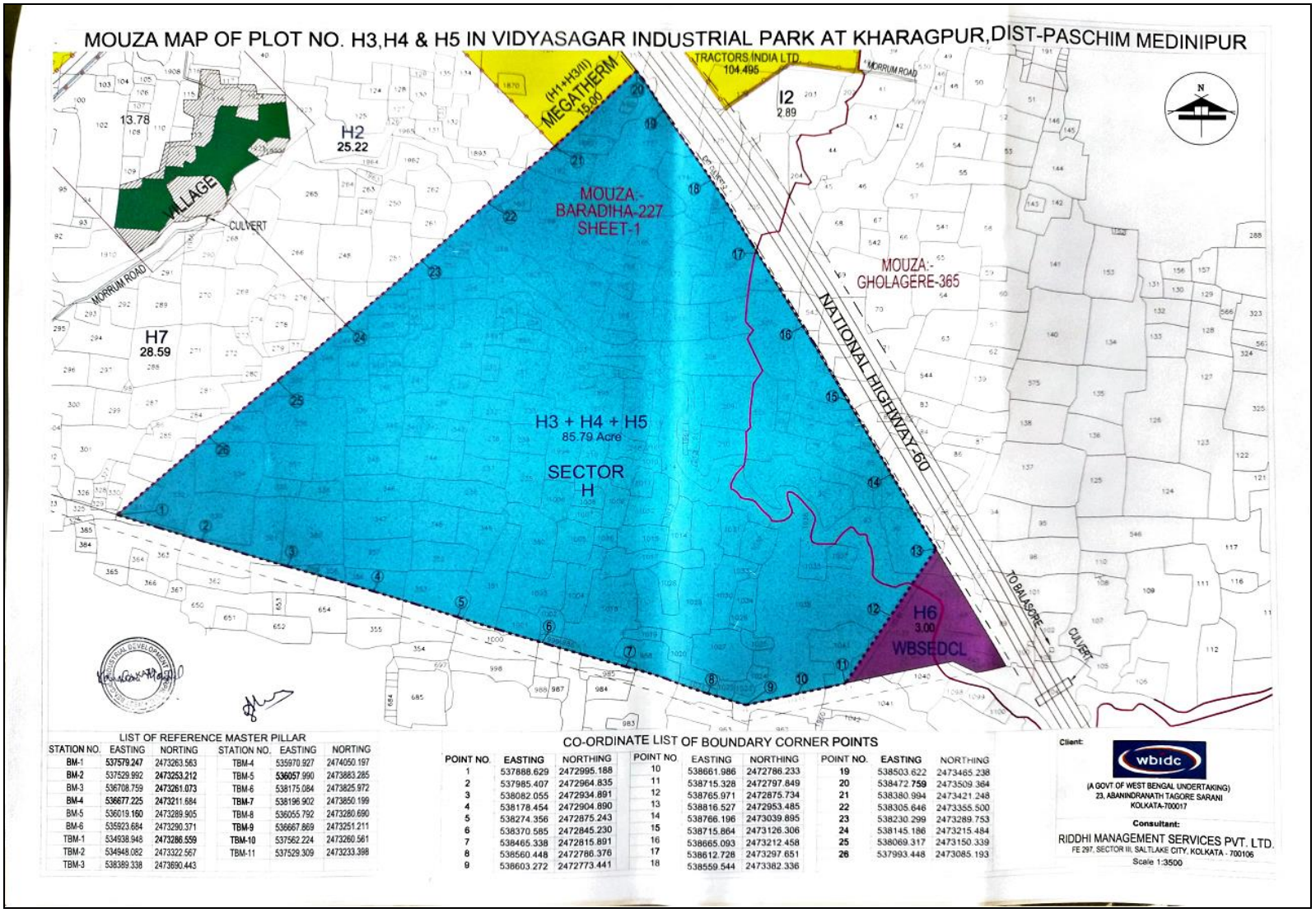
Map of Vidyasagar Industrial Park showing location of proposed project site at plot no. H3, H4, H5



Sector map of plot no. H3, H4, H5



Mouza Map of plot no. H3, H4, H5, Vidyasagar Industrial Park, Kharagpur for Project site land area

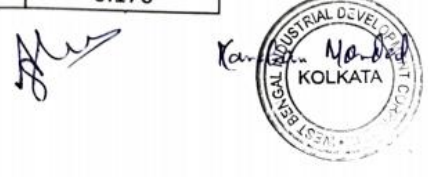


STATION NO.	EASTING	NORTING	STATION NO.	EASTING	NORTING
BM-1	537579.247	2473263.563	TBM-4	535970.927	2474050.197
BM-2	537529.992	2473253.212	TBM-5	536057.990	2473883.285
BM-3	536708.759	2473261.073	TBM-6	538175.084	2473825.972
BM-4	536677.225	2473211.684	TBM-7	538196.902	2473850.199
BM-5	536019.160	2473289.905	TBM-8	536055.792	2473280.690
BM-6	535923.684	2473290.371	TBM-9	536667.869	2473251.211
TBM-1	534938.948	2473286.559	TBM-10	537562.224	2473260.561
TBM-2	534948.082	2473322.567	TBM-11	537529.309	2473233.398
TBM-3	538389.338	2473690.443			

POINT NO.	EASTING	NORTHING	POINT NO.	EASTING	NORTHING	POINT NO.	EASTING	NORTHING
1	537888.629	2472995.188	10	538661.986	2472786.233	19	538503.622	2473465.238
2	537985.407	2472964.835	11	538715.328	2472797.849	20	538472.759	2473509.364
3	538082.055	2472934.891	12	538765.971	2472875.734	21	538380.994	2473421.248
4	538178.454	2472904.890	13	538816.527	2472953.485	22	538305.646	2473355.500
5	538274.356	2472875.243	14	538766.196	2473039.895	23	538230.299	2473289.753
6	538370.585	2472845.230	15	538715.864	2473126.306	24	538145.186	2473215.484
7	538465.338	2472815.891	16	538665.093	2473212.458	25	538069.317	2473150.339
8	538560.448	2472786.376	17	538612.728	2473297.651	26	537993.448	2473085.193
9	538603.272	2472773.441	18	538559.544	2473382.336			

Schedule of 85.76 Acres of land at plot no. H3, H4, H5 of Vidyasagar Industrial Park, Kharagpur

SCHEDULE OF 85.79 ACRES OF LAND (PLOT NO. H3,H4 & H5) OF VIDYASAGAR INDUSTRIAL PARK, KHARAGPUR			
MOUZA	DAG NO	PART/FULL	AREA (Acre)
BARADIHA-227	159	Part	0.670
BARADIHA-227	160	Full	0.070
BARADIHA-227	162	Part	0.480
BARADIHA-227	163	Full	0.160
BARADIHA-227	164	Full	3.550
BARADIHA-227	165	Full	1.670
BARADIHA-227	166	Full	0.580
BARADIHA-227	167	Full	0.130
BARADIHA-227	168	Full	0.300
BARADIHA-227	169	Full	0.620
BARADIHA-227	170	Full	0.210
BARADIHA-227	171	Full	0.740
BARADIHA-227	172	Full	0.830
BARADIHA-227	173	Full	0.310
BARADIHA-227	174	Part	0.700
BARADIHA-227	174/1926	Part	0.120
BARADIHA-227	177	Part	1.170
BARADIHA-227	205	Part	0.050
BARADIHA-227	206	Part	0.830
BARADIHA-227	207	Full	0.490
BARADIHA-227	208	Full	1.130
BARADIHA-227	209	Full	0.890
BARADIHA-227	210	Full	0.560
BARADIHA-227	211	Full	0.170
BARADIHA-227	212	Full	0.030
BARADIHA-227	213	Part	2.100
BARADIHA-227	214	Full	1.330
BARADIHA-227	215	Full	0.090
BARADIHA-227	216	Full	0.080
BARADIHA-227	217	Full	0.640
BARADIHA-227	218	Full	0.260
BARADIHA-227	219	Full	0.470
BARADIHA-227	220	Full	1.420
BARADIHA-227	221	Full	0.120
BARADIHA-227	222	Full	0.140
BARADIHA-227	223	Full	0.640
BARADIHA-227	224	Full	0.100
BARADIHA-227	225	Full	0.190
BARADIHA-227	226	Full	0.270
BARADIHA-227	227	Full	0.730
BARADIHA-227	228	Full	1.260
BARADIHA-227	229	Full	0.190
BARADIHA-227	230	Full	0.170



BARADIHA-227	231	Full	0.900
BARADIHA-227	232	Full	0.330
BARADIHA-227	233	Full	0.430
BARADIHA-227	234	Full	0.380
BARADIHA-227	235	Full	0.660
BARADIHA-227	236	Full	0.800
BARADIHA-227	237	Full	0.420
BARADIHA-227	238	Full	0.570
BARADIHA-227	239	Full	0.610
BARADIHA-227	240	Full	0.320
BARADIHA-227	241	Full	0.260
BARADIHA-227	242	Full	0.120
BARADIHA-227	243	Full	0.600
BARADIHA-227	244	Full	0.200
BARADIHA-227	245	Part	0.330
BARADIHA-227	246	Part	0.250
BARADIHA-228	251	Part	0.020
BARADIHA-227	252	Part	0.540
BARADIHA-227	253	Full	0.300
BARADIHA-227	254	Full	0.120
BARADIHA-227	255	Full	0.240
BARADIHA-227	256	Full	0.060
BARADIHA-227	257	Full	0.070
BARADIHA-227	258	Full	0.030
BARADIHA-227	259	Full	0.350
BARADIHA-227	260	Part	0.420
BARADIHA-227	282	Part	0.460
BARADIHA-227	283	Part	0.430
BARADIHA-228	331	Part	0.240
BARADIHA-227	332	Part	0.710
BARADIHA-227	333	Full	1.060
BARADIHA-227	334	Full	1.090
BARADIHA-227	335	Full	0.260
BARADIHA-227	336	Full	0.290
BARADIHA-227	337	Full	0.590
BARADIHA-227	338	Full	1.670
BARADIHA-227	339	Full	0.680
BARADIHA-227	340	Full	0.570
BARADIHA-227	341	Full	0.120
BARADIHA-227	342	Full	0.220
BARADIHA-227	343	Full	0.150
BARADIHA-227	344	Full	0.870
BARADIHA-227	345	Full	0.540
BARADIHA-227	346	Full	0.730
BARADIHA-227	347	Full	0.930
BARADIHA-227	348	Full	0.620
BARADIHA-227	349	Full	0.640

BARADIHA-227	350	Full	0.930
BARADIHA-227	351	Part	0.840
BARADIHA-227	352	Full	0.630
BARADIHA-227	353	Part	0.710
BARADIHA-227	356	Part	0.400
BARADIHA-227	357	Full	0.770
BARADIHA-227	358	Part	0.120
BARADIHA-227	359	Part	0.050
BARADIHA-227	360	Full	1.290
BARADIHA-227	361	Part	0.690
BARADIHA-227	363	Part	0.050
BARADIHA-227	968	Part	0.550
BARADIHA-227	986	Part	0.070
BARADIHA-227	999	Part	0.070
BARADIHA-227	1001	Part	0.320
BARADIHA-227	1002	Full	0.200
BARADIHA-227	1003	Full	0.770
BARADIHA-227	1004	Full	0.530
BARADIHA-227	1005	Full	0.510
BARADIHA-227	1006	Full	0.380
BARADIHA-227	1007	Full	0.190
BARADIHA-227	1008	Full	0.190
BARADIHA-227	1009	Full	0.380
BARADIHA-227	1010	Full	0.410
BARADIHA-227	1011	Full	0.190
BARADIHA-227	1012	Full	0.500
BARADIHA-227	1013	Full	0.150
BARADIHA-227	1014	Full	0.370
BARADIHA-227	1015	Full	0.410
BARADIHA-227	1016	Full	0.140
BARADIHA-227	1017	Full	0.600
BARADIHA-227	1018	Part	1.210
BARADIHA-227	1019	Full	0.160
BARADIHA-227	1020	Full	0.470
BARADIHA-227	1021	Part	0.100
BARADIHA-227	1022	Full	0.090
BARADIHA-227	1023	Full	0.080
BARADIHA-227	1024	Full	0.100
BARADIHA-227	1025	Full	0.140
BARADIHA-227	1026	Full	0.020
BARADIHA-227	1027	Full	0.790
BARADIHA-227	1028	Full	0.400
BARADIHA-227	1029	Full	1.850
BARADIHA-227	1030	Full	0.560
BARADIHA-227	1031	Full	0.340
BARADIHA-227	1032	Full	0.400
BARADIHA-227	1033	Full	0.020

BARADIHA-227	1034	Full	0.380
BARADIHA-227	1035	Full	0.320
BARADIHA-227	1036	Full	0.220
BARADIHA-227	1037	Full	0.220
BARADIHA-227	1038	Part	4.300
BARADIHA-227	1041	Part	0.730
BARADIHA-227	1892	Part	0.280
BARADIHA-227	1894	Full	0.780
BARADIHA-227	1895	Full	0.030
BARADIHA-227	1896	Full	0.320
BARADIHA-227	1897	Full	0.110
BARADIHA-227	1925	Full	0.390
BARADIHA-227	1961	Full	0.060
GHOLAGRYA-365	72	Part	0.050
GHOLAGRYA-365	73	Part	0.660
GHOLAGRYA-365	74	Full	0.360
GHOLAGRYA-365	75	Full	0.180
GHOLAGRYA-365	76	Full	0.090
GHOLAGRYA-365	77	Full	0.370
GHOLAGRYA-365	78	Full	0.230
GHOLAGRYA-365	79	Part	0.005
GHOLAGRYA-365	80	Part	0.080
GHOLAGRYA-365	85	Part	0.530
GHOLAGRYA-365	90	Part	0.770
GHOLAGRYA-365	91	Part	0.220
GHOLAGRYA-365	92	Full	1.240
GHOLAGRYA-365	93	Part	1.150
GHOLAGRYA-365	526	Full	1.390
GHOLAGRYA-365	527	Part	1.085
GHOLAGRYA-365	528	Part	0.220
GHOLAGRYA-365	543	Part	0.020
		TOTAL =	**85.790**

Kadam

Environmental Consultants

www.kadamenviro.com

Environment *f*or Development

CONTACT DETAILS

Vadodara (Head Office)

871/B/3, GIDC Makarpura, Vadodara, India – 390 010.

E: kadamenviro@kadamenviro.com; T: +91-265-6131000

Delhi / NCR

Spaze IT Park, Unit No. 1124, 11th Floor, Tower B-3, Sector 49, Near Omaxe City Center Mall, Sohna Road, Gurgaon, India – 122 002

E: delhi@kadamenviro.com; T: 0124-424 2430-436