Proposed New Specialty Chemicals Manufacturing Plant with Total Production Capacity of 72,740 MTPA at Mawal Taluka, Dist. Pune

ELANTAS Beck India Limited

Executive Summary

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EXECUTIVE SUMMARY

Introduction

M/s. ELANTAS Beck India Ltd. (hereinafter referred to as 'ELANTAS' or 'EBIL') is engaged in the business of manufacturing and marketing of Electrical Insulation Systems and Electronic and Engineering Materials having applications in Electrical Equipment, Power and Automotive Sectors.

ELANTAS Beck India Limited is part of ALTANA, an international speciality chemicals group, Headquartered in Wesel, Germany. The company has manufacturing plants at Pimpri in Pune, Maharashtra and Ankleshwar in Bharuch, Gujarat. EBIL now intends to establish the speciality chemical manufacturing plant in Integrated Industrial Area (IIA) located villages Navlakh Umbre & Badhalwadi, Taluka Mawal, District Pune.

Project Description

EBIL proposes to manufacture the speciality chemicals as given in *Error! Reference source not found.*.

Table 1 List of Proposed Products/ By-Product

S.N.	Name of the Product/ By-Product	Production Capacity (MTPA)	End Use
1	Enamels & Varnishes for Insulations & Coatings	45,000	Insulation & Coatings for substrates used in power, automotive, electronics & construction applications
2	Synthetic resins	10,000	
3	Thinners	6,000	
4	Enamelled Copper wire & copper scrap	50	
5	Enamelled Aluminium wire & aluminium scrap	50	
6	Polyamide & Organic Amine Hardeners	5,000	
7	Additives containing paraffin wax	500	
8	Hardeners having Organic peroxides	50	
9	Castor oil-based resins	300	
10	Hardeners with Polycarboxylic acids & anhydrides	300	
11	Hardeners with Isocyanates	50	
12	Diluents with cyclic hydrocarbons	400	
13	Products with Polyether alcohols	500	
14	Defoamer (Containing silicones)	2,500	
Total (Products)		**70,700**	
15	Methanol (By-Product)	2,040	Industrial use
Total (Products + By-Product)		**72,740**	

Project Location

The proposed area has been notified by Maharashtra Industrial Development Corporation (MIDC) as Integrated Industrial Area (IIA) to be developed by "Hindustan Electricity Generation Co. Pvt. Ltd. (HEGCPL)" [Now Talegaon Industrial Parks Pvt. Ltd. (TIPPL)] who has obtained prior Environmental Clearance (EC).

The Project site is connected with Talegaon MIDC road which further connects Old Mumbai-Pune Highway. Major industrial belts like Pimpri-Chinchwad Industrial Area, Talegaon MIDC and Chakan Industrial Area are directly connected to the IIA through a network of well-developed roads.

Project Type

The proposed Project activity falls under Schedule '5(f)' i.e. Synthetic Organic Chemicals Industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates) under Schedule of the EIA Notification. As per this notification, industries located in notified industrial area/estate are categorised as **Category 'B'** and hence, application is done to State Environment Impact Assessment Authority (SEIAA), Maharashtra.

The proposed Project has been granted Standard Terms of Reference (TOR) vide *File No.: SIA/MH/IND2/54748/2020 dated 24-07-2020* by the State Level Expert Appraisal Committee (SEAC), Maharashtra.

For conducting EIA as per the TORs, the project proponent EBIL has taken the services of M/s. ERM India Pvt. Ltd. who are NABET accredited EIA Consultant Organization for synthetic organic chemicals industry sector. Netel Labs (Accredited by NABL and MoEF&CC) has been utilized for various analytical activities of the EIA study.

Resource Requirement

- **Land:** The land required for the proposed Project is 8.24 hectares or ~83,365.24 m^2 (~20.36 acres) that will be developed for manufacturing of speciality chemicals including utilities, storages greenbelt etc. Land use of the site is classified as industrial zone as the proposed land is notified as IIA by MIDC. Presently, the Site is undeveloped.
- **Water:** Water requirement during construction phase is expected to be ~20 to 30 m^3/day that will be sourced from local water suppliers through tankers. Water requirement during operation phase for industrial and domestic purpose will be ~572 m^3/day of which fresh water consumption will be ~365 m^3/day and recycled water consumption will be ~207 m^3/day. The water source during operation phase will be through Maharashtra Jeevan Pradhikaran (MJP). There will not be any ground water abstraction in the proposed Project.
- **Power Requirement:** Total power requirement for the proposed Project will be ~2 MVA, which will be a grid supply by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL). For power back-up- two (02) diesel generator (DG) Sets of 1,000 kVA capacity each will be installed at Project Site. Roof top solar power panels on warehouse buildings and administration office of capacity 300 KW may be considered as a renewable energy source.
- **Fuel Requirement:** The fuel for the proposed Project will be Natural Gas (NG) for Boiler and Thermic Fluid Heater (TFH) depending upon its availability. Alternate fuels as as Light Diesel Oil (LDO) for Boiler and Briquette (bagass based) for TFH are also under consideration. High Speed Diesel (HSD) oil will be used as fuel for the standby DG Sets.
- **Raw Materials:** Raw material for the manufacturing of primary and secondary insulations, coatings and thinners will include various chemicals. The raw materials will be stored in tanks, drums, bags and containers. The raw materials required for the proposed production will be either imported or procured from the domestic market and will be transported by road to Project site. EBIL will comply with requirements of Manufacture, Storage and import of Hazardous Chemical (MSIHC) Rules, 1989 as amended in 2000 for handling and storage of hazardous chemicals as applicable.
- **Manpower Requirement:** The expected man-power to be employed at the proposed Project during construction and operation phases is ~200 & ~230 people respectively. It is envisaged that local labours from nearby villages will be given preference based on their skills

Project Schedule and Cost:

The estimated capital cost of the proposed Project is INR 365 Crores and will be implemented in a phased manner after obtaining all the necessary approvals. The tentative plan to start the project will be from the Financial Year 2021 - 2022. The various phases that will be commissioned are phase-01 and 02 by 2023, phase-03 by 2024, phase-04 by 2025 and phase-05 by 2026.

Description of Baseline Environmental Status

The primary baseline environment study was carried out for post monsoon season from 1st October 2020 to 30th December 2020. ERM India contracted the environmental baseline monitoring to M/s Netel India Pvt. Ltd, an accredited laboratory by National Accreditation Board for Testing and Calibration (NABL) and Ministry of Environment, Forests and Climate Change (MoEF&CC).

- **Topography:** Site is undulating, sloping east to west having a maximum elevation of ~747m amsl (above mean sea level) in east and lowest elevation of ~707m amsl in west. The topography of the study area (within 10 km from the Project Site) varies between ~560 m to ~1,230 m amsl. The site is located in the foothills of a mountain (at elevation of ~1,100 m amsl).
- **Geology:** The study area primarily falls into Indrayani formation of Lonavala sub-group having thickness of 125 m. Indrayani Formation is characterized by the presence of compact, massive, porphyritic basalt. Indrayani Formation lava flows are, generally jointed and highly weathered, occupy the low-lying flat plain areas and give rise to moderate to good aquifers.
- **Land Use Pattern:** The land use distribution of the study area indicates barren land (~46%), followed by agricultural lands (~21%) and hillocks (~13%) as the predominant land uses.
- **Seismic Zone:** The Project site falls under Zone III (moderate damage risk zone/ MSK VII) that indicates the risk of earthquake is anticipated to be 'Moderate'.
- **Meteorology:** The temperature during the study period varied from 9.2 °C (December) to 32.9 °C (October). The predominant wind directions were from North East (NE) to South East (SE), East (E) to West (W) and North (N) to South (S) with mean wind speed of 0.8 m/s and highest wind speed of 4.7 m/s. The total rainfall during the study period was ~303 mm with maximum rainfall during October (~292 mm).
- **Ambient Air Quality:** Ambient air quality monitoring was conducted for twice a week 24 hourly during the monitoring period of three months at eight (08) locations within the study area. The summary of ambient air quality is given in ***Table 2***.

Table 2 Summary of Ambient Air Quality during the Study Period

Parameters	Unit	Minimum	Maximum	Average	98th Percentile	NAAQS
PM_{10}	($\mu g/m^3$)	46.6	83.4	62.6	80.2	100.00
$PM_{2.5}$	($\mu g/m^3$)	13.0	35.2	22.1	32.3	60.00
SO_2	($\mu g/m^3$)	7.7	22.5	14.1	20.4	80.00
NO_2	($\mu g/m^3$)	9.8	30.3	18.5	26.6	80.00
CO	(mg/m^3)	0.35	1.14	0.7	1.09	2.00†
O_3	($\mu g/m^3$)	2.3	7.5	4.3	6.9	100.00†
NH_3	($\mu g/m^3$)	7.9	32.5	17.7	28.6	400.00
C_6H_6	($\mu g/m^3$)	BDL [DL– 1.0 $\mu g/m^3$]	4.0	2.23	3.71	5.00*
BaP	(ng/m^3)	BDL [DL – 0.5 $\mu g/m^3$]				1.00*
HC (Me)	ppm	0.6	6.3	2.9	5.4	NS
NMHC	ppm	BDL [DL – 0.5 ppm]				NS

Parameters	Unit	Minimum	Maximum	Average	98th Percentile	NAAQS
VOC	(µg/m^3)	0.7	12.1	6.4	11.5	NS

†8-hourly average; *Annual Average

- **Ambient Noise Quality**: The ambient noise monitoring was conducted at eight (08) stations within the study area. The noise levels in dB(A) were recorded for 24 hours with the noise values computed as Leq (Daytime) and Leq (Night time) for each location. The summary of noise levels observed in study area is given in *Error! Not a valid bookmark self-reference.*.

Table 3 Summary of Noise Levels in Study Area

Area	Leq, Day-Time (0600 to 2200 hours)	Leq, Night-Time (2200 to 06 000 hours)
Industrial (Project Site Boundary, Navlakh Umbre Industrial Area	56.3 dBA to 69.0 dBA	55.7 dBA to 62.0 dBA
Commercial (Navlakh Umbre	56.3 dBA	50.7 dBA
Residential (Badhalwadi, Navlakh Umbre, Waki Taraf Wada, Karanja Vihire, Ambale)	46.8 dBA to 51.4 dBA	40.5 dBA to 43.6 dBA

The equivalent noise levels were found to be within the prescribed limits for both day and night time at all locations.

- **Traffic Survey:** The traffic survey was conducted at three locations, Project site to Talegaon MIDC Road, Navlakh Umbre Village to Talegaon MIDC Road and Waki Tarf Wada to Karanja Vihire. The highest daily traffic load was observed on Talegaon MIDC road with 3,663 vehicles/day. The hourly traffic pattern at the surveyed location indicated peak vehicular traffic as 256 veh./hr on Talegaon MIDC road during 15:00 to 16:00 hrs. The traffic load was found to be comparatively low (max. 31 veh./hr & 35 veh./hr) at Karanja Vihire – Waki Tarf Wada road. The preference to Karanja Vihire – Waki Tarf Wada road connecting with Talegaon MIDC road approaching towards the Project Site should be given while accessing EBIL facility to avoid congestion
- **Surface and Groundwater Quality:** Samples for ground and surface water were collected from sixteen (16) locations in the study area and analysed for physico-chemical, heavy metals and bacteriological parameters to assess status of water quality. The surface water sample was collected from Bhama, Andhra, Indrayani and Sudha River, Navlakh Umbre Pond and Jhadarvadi, Bhama Ashkhed and Andhra dam. Parameters like Fluoride, Total Phosphate, Phenolic Compounds, Manganese, Cadmium, Lead, Zinc, Aluminium, Copper, Nickel, Arsenic Mercury , Carbonate), Hexavalent Chromium and Free Ammonia were found below detection limit at all the locations.
- The TDS of the ground water varies from 358 mg/L to 793 mg/L (Navlakh Umbre). Inorganic contents were well below the permissible limits for drinking water. Heavy metals were found in concentrations below detection limits which indicate absence of any metal contamination of groundwater by an external/ anthropogenic source. However, total coliform were detected at all locations except Ambale indicating non-conformance to drinking water standards.
- **Soil Quality:** Samples for soil quality monitoring were collected from eight (08) locations in the study area. Soil texture in samples from all locations was observed as sandy loam with pH ranging from 5.98 to 8.05 pH units. Permeability class was found as very rapid above 250 mm/hr at all the monitored locations. Iron content of the soil samples varied between 1.2 % w/w to 4.3 % w/w. Nickel, copper and zinc contents varied from 20.7 mg/kg to 32.4 mg/kg, 25.5 mg/kg to 44.5 mg/kg and 13.9 mg/kg to 21.6 mg/kg respectively. Arsenic, boron, cadmium and mercury content

were found to be below detection limits for all the samples. Soil quality of the area was found to be of low to medium fertility.

- **Ecology:** The flora of the study area belongs to Southern dry mixed deciduous forest and Babul forest. *Alstonia scholaris* (L.) R. Br., *Pongamia pinnata* (L.) Pierre, *Tectona grandis* L.f., *Polyalthia longifolia* (Sonn.) Thwaites, *Muntingia calabura* L., *Nerium oleander* L., etc., were some other common plant species used for the plantation in the study area (especially in the industrial area). Dense growth of *Acacia nilotica* (L.) Delile was observed in the patches along the Indrayani river. A total of ninety-two (92) floral species belonging to thirty-seven (37) families were observed from the study area. Fabaceae was the most dominating family in the area with 20 species of flora. None of the floral species identified in the area was endangered. Around 40 species of reptiles and amphibians have been reported from Pune Forest Division. Out of these, 17 herpetofaunal species have been reported and recorded from the Study area. None of the species reported/recorded from the Study area is categorized as IUCN Threatened or protected under Wildlife (Protection) Act, 1972, except Bengal Monitor (*Varanus bengalensis*) which is listed under Schedule I of Indian Wildlife (Protection) Act. A total of 93 avifaunal species have been reported and recorded from the Study area, out of which, six (6) were migratory and eighty seven (87) species were resident. Vulnerable (VU IUCN v. 2020-2) Asian Woollyneck (*Ciconia episcopus*) and two (2) Near Threatened (NT IUCN v. 2020-2) species viz. River Tern (*Sterna aurantia*) and Painted Stork (*Mycteria leucocephala*) have been reported and recorded from the Study area. Seven (7) species protected under Schedule I of Wildlife (Protection) Act 1972 viz. Black Kite (*Milvus migrans*), Black-winged Kite (*Elanus caeruleus*), Brahminy Kite (*Haliastur indus*), Indian Grey Hornbill (*Ocyceros birostris*), Oriental Honey Buzzard (*Pernis ptilorhynchus*), Shikra (*Accipiter badius*), and White-eyed Buzzard (*Butastur teesa*) have been reported from the Study area.
- **Socio-Economic:** The villages in the study area are characterized by a total population of 88,614 individuals. The village Sangavi has the highest population (7,331) and population density (~1,800 per sq. km), followed by Varale (7,202 and ~1,700/sq.km). The average literacy rate in the villages is ~68 percent that is lower than the state and National literacy rate. Of the villages, Jambhul has the highest literacy rate, followed by Sangavi. All the villages in the study area have access to electric power supply for domestic and agricultural use from the state and national grids. All villages have access to tap water supply. While most villages have access to treated water, Jadhavwadi, Mindewadi and Ambale have access to untreated tap water supply. Based on the review of secondary information, observations during site visit and stakeholder consultations, it is understood that the villages in the project footprint and surrounding area have witnessed differential growth patterns in the last few years. This is because of the establishment of the MIDC area, influx of industries and creation of income generating opportunities for the local community. However, based on the consultations undertaken during the site visit, it is understood that since the development of the MIDC area and the influx of industries, the availability of health infrastructure has greatly improved in the area although they are found to be restricted to the villages that were impacted by land take. This is not well captured in the present Census 2011 data. The institutional health infrastructure has also been supported in the previous years through the CSR initiatives by the industries in the area, in terms of organizing health camps, mobile health vans and ambulance services.

Emissions, Effluent Generation and Waste Generation

Atmospheric Emissions

The details of proposed flue gas and process gas stacks is given in **Table-4.**

Table 4 The details of proposed flue gas and process gas stacks

S.N.	Stack attached to	Stack Height (in m)	Fuel Quantity	Expected Pollutants and their Limits	Air Pollution Control Equipments (APCE)
Flue Gas Stacks					
1.	Thermic Fluid Heater (1 x 15 lakh kcal/hr.)	30	Natural Gas – 250 kg/hour Or LDO - 250 kg/hour	For LDO PM – 150 mg/Nm^3 SO_2 - 50 ppm NO_x – 50 ppm	As natural gas is planned to be used as a fuel. The flue gas parameters shall be within permissible limits.
2.	Thermic Fluid Heater (1 x 15 lakh kcal/hr.)	30	Briquettes – 1,200 kg/hour	PM – 150 mg/Nm^3 SO_2 - 50 ppm NO_x – 50 ppm	Cyclone Separator and Bag Filter
3.	Boiler (2 x 800 kg/hour)*	30	Natural Gas – 65 kg/hour or LDO-65 kg/hour	For LDO PM – 150 mg/Nm^3 SO_2 - 50 ppm NO_x – 50 ppm	As natural gas is planned to be used as a fuel, the flue gas parameters shall be within permissible limits.
4.	DG Set (1,000 kVA)	30	~400 Lit/hr for each DG Set	PM – 75 mg/Nm^3 SO_2 - 50 ppm, NO_x – 710 ppm CO-150 mg/Nm^3	Will be used only during emergency as back-up and adequate stack height will be provided.
5.	DG Set (1,000 kVA)	30			
Process Gas Stacks					
6.	Reactors & Diluters (3500 Nm^3/hour)	22	Not Applicable	VOC - Phenol, Cresol	Process vents will be connected to three dump tanks. Vent outlets of 3 dump tanks will be connected to one scrubber.
7.	Mixers (3500 Nm^3/hour)	22	Not Applicable	VOC - Phenol, Cresol	Process vents will be connected to one dump tanks. Vent outlets of this dump tank will be connected to one scrubber.
8.	For UP Resin Reactor (3,500 Nm^3/hour)	22	Not Applicable	VOC – Di Cyclo Pentadiene Vapours	Process vent of three reactor of UP resin will be connected to scrubber (LDO scrubber)
9.	QC Lab (Fume hoods and Enamelling oven) (500 Nm^3/hour)	11	Not Applicable	VOC - hydrocarbon solvents-white spirit, xylene etc.	All lab hoods and enamelling plant oven will be connected to the scrubber.

* One running and one stand-by arrangement having common stack

Fugitive Emissions

The source of fugitive emissions are due to the evaporation of raw material and solvents from storage tanks and wastewater treatment facility, the spills and leaks from storage tanks and drums, improper handling and transfer of chemicals, poor housekeeping and lack of proper maintenance. The fugitive emissions will be controlled by implementing mitigative measures and regular monitoring.

Wate Consumption and Wastewater Generation

The details of water consumption and wastewater generation is given in ***Table 5***

Table 5 Details of Water Consumption and Wastewater Generation

S.N.	Description	Water Consumption			Wastewater	
		Fresh Water (m^3/day)	Recycled / Reused Water (m^3/day)	Total Water (m^3/day)	Total Generation (m^3/day)	Remarks
1	Domestic	30	--	30	26	Treated in ETP and recycled/reused
2	Irrigation / Gardening	--	60	60	--	--
A.	**Total**	**30**	**60**	**90**	**26**	**--**
3	Process					
i.	WTP Loss Make-up	10	--	--	10	Treated in ETP and recycled / reused
ii.	Processing / Manufacturing Activity	144	53	197	152	Treated in ETP and recycled
iii.	Boiler	38	--	38	4	Blow down shall be treated in ETP and shall be recycled/reused
iv.	Cooling Tower	143	84	227	22	Treated in ETP and recycled/reused
iv.	Washing	--	30	30	30	
B.	**Total**	**335**	**167**	**492**	**218**	**--**
C.	**Total (A+B)**	**365**	**227**	**572**	**244**	**--**

The effluent generated of 244 m^3/day will be treated in Effluent Treatment Plant (ETP) of capacity 250 m^3/day consisting of primary, secondary and tertiary treatment. Out of 244 m^3/day of treated effluent, 192 m^3/day tertiary treated effluent will be directly reused for washing, landscaping, cooling tower and process and remaining 35 m^3/day after being treated in RO would be used in process. The RO rejects will be treated in Multiple Effective Evaporator (MEE).

Hazardous Waste Generation

The details of hazardous waste generated and it's management is given in **Table-6**

Table 6 Hazardous Waste Management

S.N .	Description	Category	Quantity	Source of Generation	Mode of Storage	Mode of Disposal
1	Process Waste	21.1	471 MTPA	From process	Stored in drums in hazardous waste storage area (shed with RCC flooring)	Collection, storage, transportation and disposal at CHWIF
2	Spent Solvent	20.2	1,420 MTPA	From process	Stored in drums in separate	Collection, storage, distillation and reuse within the process or

S.N .	Description	Category	Quantity	Source of Generation	Mode of Storage	Mode of Disposal
					storage area (shed with RCC flooring)	sold to authorized re-processors
3	ETP Sludge	35.3	180 MTPA	From ETP	Stored in Bags in hazardous waste storage area (shed with RCC flooring)	Collection, storage, transportation and disposal at Treatment Storage & Disposal Facility (TSDF)
4	MEE salt	37.3	90 MTPA	From MEE	Stored in drums in hazardous waste storage area (shed with RCC flooring)	Collection, storage, transportation and disposal at CHWIF
5	Used Oil	5.1	12 kL/annum	From machinery	Stored in drums in hazardous waste storage area (shed with RCC flooring)	Collection, storage, transportation and sent to registered refiners
6	Waste Oil	5.2	1.0 KL/Annum	From LDO Scrubber	Stored in drums in hazardous waste storage area (shed with RCC flooring)	Collection, storage, transportation and disposal at CHWIF
7	Discarded Containers	33.1	26,400 (i.e., ~528 MTPA)	From Raw material containers / bags	Stored in hazardous waste storage area (shed with RCC flooring)	Collection, storage, decontamination and disposal to authorized user or reuse within the premises
8	Discarded Bags /Liners		141 MTPA			

The unit will obtain the membership of **Maharashtra Enviro Power Limited (MEPL)** located at MIDC Ranjangaon for the disposal of process waste, ETP sludge and MEE salt.

Impact Assessment & Mitigation Measures for Construction Phase

a. **Impact on Land-use and Land / Soil:** The proposed Project site is located at Navlakh Umbre and Badhalwadi Villages which has been declared as Integrated Industrial Area (IIA) by the Chief Executive Officer, Maharashtra Industrial Development Corporation (MIDC). Currently the land is not being used for any agricultural or residential activity. Hence, there will be no change in the land-use of the site.

   Major source of impact on soil erosion and contamination will be site clearance, top soil removal, improper handling of construction materials and hazardous & non-hazardous wastes, spillage of hazardous chemicals, discharge of domestic effluent and oil leaks from construction machinery. The following mitigation measures will be implemented.

Mitigation Measures:

- Construction / Non-Hazardous / Hazardous waste generated during construction phase will be collected in a systematic manner and will be managed in line with Construction and Demolition Waste (Management & Handling) Rules, 2016, Solid Waste Management Rules 2016, Hazardous waste (Management, Handling and Transboundary Movement) Rules, 2016, Plastic Waste Management Rules 2016 and E-Waste Management Rules, 2016.

- All paints, oils and wastes will be stored in a dedicated area having impervious flooring and bund wall.
- All topsoil / excavated soil will be bunded and protected to minimize soil erosion through rain or wind and will be reused,
- Adequate provisions will be made for segregation of non-hazardous waste, storage and for easy access to the dustbins.
- Preventive maintenance of construction equipment and temporary storage areas, to prevent occasional leaks. Drip pans will be used to collect any oil drips; and
- EBIL will monitor and supervise their contractors for all construction activities to prevent any potential soil contamination.

Landuse of the Project Site is industrial land and there will be no change hence, impact assessed is 'Minor'. Impact on soil will be localized and temporary and hence with mitigation measures it is assessed as 'Negligible'.

b. **Impact on Air Environment:** Major source of dust and gaseous emissions during construction will be Site Development, construction works, loading, unloading and storage of construction material, transportation of construction material, labour and machineries and operation of construction machineries. Construction activity will be carried out within the project premises with proper mitigative measures as given below,

Mitigation Measures:

- Construction areas will be barricaded wherever required.
- Regular sprinkling of water will be carried out to keep dust under control.
- All construction material and waste storages areas will be adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust or particulate emissions;
- Maintenance of construction equipment and vehicles to minimize emissions.
- Standard operating procedures will be adopted for proper loading and unloading of construction materials.
- Covering of trucks carrying material in and out of site with tarpaulin sheet to prevent dust emissions.
- Reducing vehicle speed to reduce fugitive dust emissions. Speed bumps will be provided to reduce the speed of the vehicles.
- Fuel used for transportation of vehicles shall be low sulphur, clean fuel which will reduce emissions on-site and in surrounding residential areas;
- Vehicles having valid Pollution under Control (PUC) Certificate will only be allowed within premises.
- Idle running time of machines, equipment's and vehicles will be avoided.
- Provision of PPEs like nose masks & ear plugs to all workers working in dust prone areas; and
- Regular monitoring of ambient air quality will be carried out during construction phase.

The impact on air environment will be localized and temporary. With the implementation of mitigtive measures the impact assessed is 'Minor'

c. **Impact on Water Environment:** The water required for construction activity and domestic purpose will be 20-30 m^3/day. The water will be sourced from Maharashtra Jeevan Pradhikaran (MJP) connection upto TIPPL site whose source is Indryani River or private local water suppliers through tankers. TIPPL has obtained an allocation of 0.5 MLD from MJP. There will not be any

ground water abstraction during construction phase. There will not be any stress on existing water sources. The other sources which may impact on ground water will be due to disposal of untreated domestic wastewater on land, leachate percolation due to improper handling and storage of construction material, hazardous waste, hazardous chemicals, and solid waste. The mobile toilets and Package Sewage Treatment Plant (STP) shall be provided for treating the domestic wastewater or domestic wastewater shall be discharged into nearby STP through tankers. The treated water from STP willl be used for water sprinkling and package (STP) will be provided at site during construction phase.

Mitigation Measures:

- Optimized utilization of the water by adopting water conservation practices, regular awareness to Optimized utilization of the water by adopting water conservation practices, regular awareness to labourers.
- Avoid/minimise the loss during conveyance;
- Mobile toilets and adequate sanitation facilities will be provided thereby removing chances of water and soil pollution.
- Areas for storage and handling of construction / hazardous / waste materials will be impervious with a proper drainage system;
- Construction materials stored will be covered with tarpaulin sheets to avoid any carry away with water in case of unexpected rains.
- No excavation activity will be carried out during monsoons to prevent the carryover of dust along with surface run-off.
- Storm water run-offs during construction phase will be diverted to storm water drain planned within TIPPL area.
- EBIL will ensure regular cleaning and maintenance of the storm water drains.

The impact on water environment during construction phase will be localized and temporary and hence with implementation of mitigative measures the impact will be ‘Negligible’

d. **Impact on Noise Environment**: Potential impacts sources identified from construction activities related to proposed project on noise quality are site development, construction activity, transportation of material and operation of construction machineries. The impact of noise levels will be localized within the project site.

Mitigation Measures:

- Portable acoustic barriers will be placed near high noise generating areas at construction site, for the continuous noise sources operating for one hours and beyond with noise levels of more than 85 dB(A).
- Vehicular speed limit of 40 kmph will be maintained for heavy motor vehicles (HMVs) and 50 kmph of light motor vehicles (LMVs) thus to minimize any disturbance due to noise to any nearby settlements or ecology.
- Well-maintained construction equipment / machineries, which meets the regulatory standards for source noise levels, will be used.
- Noise attenuation will be practised for noisy equipments by employing suitable techniques such as acoustic controls, insulation and vibration dampers;
- Heavy construction activity will be preferred mostly during daytime to minimize the effect on the people residing in the nearby areas.
- Ear muffs and Ear plugs shall be provided to labourers and workers.

- Anti-honking signboards will be placed at entry/exit points.
- Ambient noise levels will be monitored at regular intervals during construction phase.

The impacts on Noise Environment will be 'Negligible' with implementation of adequate mitigative measures and will be localized and temporary in nature.

e. **Impact on Ecology:** The proposed Project site does not fall under any forest land or protected land. The Reserved Forest area is located at the immediate north of the Project boundary. There are ~350 trees of speices such as Lemon, Jammun, Babul, etc. at the Project site. As per the agreement signed between EBIL and TIPPL, the site would be provided free from any encumbrances. Therefore, TIPPL has obtained the permission for uprooting the trees. The uprooted trees will be transplanted to other areas within IIA or in green belt area as proposed in EBIL layout. There could be probable habitat disturbance due to site development, noise and dust emissions due to various construction activities and mortalities / road kills of animals due to transportation of material.

Mitigation Measures:

- ~~Any vegetation should be carefully removed, efforts for replantation of larger tree species will be explored.~~
- Opportunities for afforestation in and around the Project area will be explored. Regular monitoring of vegetation survival will be carried out.
- Training the workers to maintain better housekeeping;
- All the mitigation measures to control noise and air emissions will be implemented.

Proper driver training (defensive driving) to be provided to regular drivers to avoid any road kills, identification of regular road crossing areas along the route should further help in further minimizing the road kill events by installation of wildlife crossing road signs, a series of rumble strips on roads indicating drivers that they are entering a wildlife road kill prone areas.

The impact magnitude on the ecology with implementation of mitigation measures will be 'Minor'.

f. **Impact on Socio-Economic Environment:** There would be positive impact on the socio-economic environment due to employment generation for ~200 workers, increase in economic activities due to generation of ancillary businesses and income generation to local suppliers. There would be impact on the community health and safety due to vehicular movements and influx of labourers.

Mitigation Measures:

g. Appropriate awareness program on grievance redressal mechanism, will be designed and implemented for local community around Project site.
h. Concerns of local panchayat regarding any impact on their common property resources (like of use of village road, water resource etc.) due to project activities, should be proactively identified and addressed;
i. Labourers will be provided with basic amenities such as sanitation, water arrangement for drinking, rest rooms and sanitation facilities.

The impact assessed on socio-economic environment with implementation of mitigative measures are 'Minor'.

Impact Assessment & Mitigation Measures for Operation Phase

a. **Impact on Land / Soil Environment:** The spillages / leakages during handling, transportation and storage of hazardous materials, fuel, hazardous waste, wastewater, and products may result in land / soil contamination. The discharge of untreated or partially treated effluent on land for gardening may contaminate land / soil. The full-fledged Effluent Treatment Plant (ETP) will be

provided and treated effluent confirming to irrigation discharge standards by CPCB / MPCB will be used for landscaping.

Mitigation Measures:

- All the effluent treatment units will be above the ground and wastewater will be transferred by a closed pipe to avoid any spillages / leakages;
- Separate garland drains will be provided for the collection of leakages / spillages from the process areas, raw material and hazardous waste storage area;
- Above ground storage tanks will be provided for the storage of liquid raw materials.
- Raw material & hazardous waste will be stored on impervious flooring.
- The dyke & containment system will be provided in case of any spillages / leakages from the raw material tanks and hazardous waste storage area.

The impact assessed on Land / Soil Environment is 'Moderate', however, with implementation of mitigative measure it will reduce to 'Minor'.

b. **Impacts on Air Environment:** Major source of air emissions during operation phase is emissions of PM, SO_2 and NO_x from flue gas stacks, VOCs from process gas stacks, fugitive emissions and emission of greenhouse gases due to vehicular movements. Natural gas will be used as fuel for boiler and Thermic Fluid Heater (TFH) to reduce the flue gas emissions. Cyclone separator followed by Bag filter will be provided if briquettes is used as a fuel for TFH. Scrubber will be provided for all process gas stacks to capture VOCs. Adequate stack height will be provided for the dispersion of pollutants.

   In order to understand the impacts on air quality from the proposed project air modelling was carried out using air dispersion model AERMOD based on three months (October 2020 to December 2020) meteorological data by Lakes Environmental. The incemental 24-hourly ground level concentration (GLC) was predicted as 12.35 µg/m^3 for PM, 10.78 µg/m^3 for SO_2 and 7.82 µg/m^3 for NOx and 2.07 µg/m^3 for CO which are well below the National Ambient Air Quality Standards (NAAQS). The peak concentrations are attained at a distance ~1.8 km east of the Project Site all pollutants except CO (within premises). The incremental ground level concentrations of PM, CO, NOx and HC due to increase in vehicles for proposed Project was 0.04 µg/m^3 (obtained near the SW corner of the Site), 3.79, 2.14 and 0.19 µg/m^3 (near Talegaon MIDC road) respectively.

Mitigation Measures:

- All chemical storage areas will be well maintained to ensure eliminate fugitive emissions.
- The emissions from the point sources will be as per the norms stipulated by MPCB/ CPCB/ MoEF&CC;
- Performance evaluation of the air pollution control systems will be undertaken at planned intervals;
- Preventive maintenance of fuel firing system and optimization of air fuel ratio.
- Energy conservation projects /schemes to result into reduction in GHG shall be planned and implemented;
- Personnel working in chemical storage areas will be provided with protective gear like masks and aprons.
- Preventive maintenance of valves and other equipment's will be done regularly and records for the same shall be maintained;
- All roads, approaches and work areas will be paved to avoid dust formation caused by movement of vehicles.
- Speed restrictions for all vehicles entering/ exiting the site.

- Only PUC certified vehicles will be used for transportation of raw materials and finished products.
- Regular health check-ups of the workers will be carried out.
- Regular monitoring of ambient air quality, flue gas stack, process vents, fugitive emissions and work place monitoring to ensure compliance and corrective actions in case of any exceedances.

The impact assessed on Air Environment is 'Moderate', however, with implementation of mitigative measure it will reduce to 'Minor'.

c. **Impacts on Water Environment**: Major sources of impacts on water environment are stress on water resources due to water required for various industrial activity, contamination of ground water if untreated or partially treated wastewater is used for landscaping purpose, degradation of water quality of surface water bodies if surface run off mixed with chemical or waste is discharged. Total water requirement for proposed project is ~572 m^3/d out of which ~365 m^3/d will be fresh water and~ 227 m^3/d will be reuse of treated wastewter. The water will be obtained from the MJP tap-off who have allocated 0.5 MLD water to TIPPL. The water requirement is 7.3% of the water allocated to TIPPL. Hence, there would not be any stress on water resources. The effluent generated from process, boiler, cooling tower, domestic, washing, softner and demineralization plant will be treated in ETP consisting of primary, secondary, and tertiary treatment which will confirm to the MPCB standards. The 50 m^3/d of treated water will be passed through Reverse Osmosis (RO) for reuse in process. The RO rejects will be evaporated in Multiple Effective Evaporator (MEE) and salts will be dried in Agitated Thin Film Dryer (ATFD).

Mitigation Measures:

- EBIL will ensure optimized use of fresh water consumption.
- EBIL will maximise the usage of treated wastewater to ensure the conservation of fresh water resources.
- The rainwater during monsoon season will be stored in rain water tanks, which will be used for project activities.
- Water meters will be installed at major intake points within the plant premises to understand the actual water quantity being used at site.
- Regular operation and maintenance of water treatment plants and effluent treatment plant will be carried out.
- Regular Monitoring of effluent to evaluate the performance of ETP.
- The collection tank and treated water storage tanks will be provided for minimum 2 days detention time to store effluent in case of any breakdown in ETP.
- Provision of storm drainage system within the plant which will discharge into external drains provided by TIPPL.
- Implementation of storm water management plan during monsoon.
- Provision of screens or oil & grease traps in storm water drains.
- EBIL will ensure regular cleaning and maintenance of the storm water drains to avoid choking and overflowing which may result in water logging.
- EBIL will ensure regular cleaning and maintenance of the storm water drains to avoid choking and overflowing which may result in water logging.

The impact assessed on Water Environment is 'Moderate', however, with implementation of mitigative measure it will reduce to 'Minor'.

d. **Impacts on Noise Environment:** Potential impacts on noise quality due to proposed project will be operation of equipment and machineries, DG sets and vehicular movements. Prediction of

noise levels for the proposed project was undertaken using SoundPLAN 7.1. The modelling results indicate that the maximum noise levels from the proposed Project will not have any impact outside the EBIL premises and the noise levels will be within the prescribed limits. The resultant noise levels due to the project operations shall not exceed the prescribed noise standards for daytime and nighttime and will attain background levels at the receptor locations.

Mitigation Measures:

- Efficient engineering control during installation of equipment and machineries will be ensured to reduce noise emission levels at source.
- Maintaining adequate offset distances from noise generating equipments.
- The machinery deployed in the plant will be designed with the sufficient noise and vibration controls for minimizing noise at source and purchased through reputed manufacturers and vendors.
- Noise attenuation will be practiced for noisy equipment by employing suitable techniques such as acoustic controls, insulation and vibration dampers.
- DG sets will be provided with acoustic enclosures conform to the maximum permissible sound pressure level of 75 dB(A) at 1 m from the enclosure surface. The DG sets are also fitted with a proper exhaust muffler to ensure that an insertion loss of minimum 25 dB(A) is achieved to meet the requirements of The Environment (Protection) second Amendment Rules, 2002.
- The industry will take adequate measures to control the noise levels from its activities so as to maintain noise levels less than 75 dB(A) during day time and 70 dB (A) during night time at the fenceline.
- Preventive maintenance of equipment and machineries will be undertaken regularly.
- Personnel working in high noise generating areas will be provided with protective gear like earplugs, earmuffs, etc.
- Ambient noise levels will be monitored at regular intervals as per Environmental Monitoring Plan.
- Periodic audiometric tests for employees working close to high noise levels, such as compressors, DG sets, the loading and unloading sections will be conducted;
- Periodic job rotation will be provided to employees, who are working continuously in the high noise areas.
- Internal village road will not be used for transport of raw material and product; and
- Green belts and landscaping will be strengthened to act as an effective means to control noise pollution.

The impact assessed on Noise Environment is ‘Minor’, however, with implementation of mitigative measure it will reduce to ‘Negligible’.

e. **Impacts on Ecology:** As Project site lies in the vicinity of reserve forest areas which are in continuation with Western Ghats, there is likelihood of good amount of reptilian activity around the Project site. There could be minor impacts on the herpetofaunal species due to the probable instances of mortalities/road kills of such due to moving vehicles. Potential impacts of the project operation on terrestrial ecology includes noise and air pollution and disturbances generated by area lighting and traffic. There would be positive impact due to development of green belt within the project site.

Mitigation Measures:

- Green Belt of about 33% of the plot area will be developed along the periphery of the project site to enhance the ecology;

- Proposed site is adjacent to the forest area, forest personnel will be consulted for any issues related the wildlife management.
- Wildlife Conservation plan will be implemented.

The impact assessed on Biological Environment is 'Moderate', however, with implementation of mitigative measure it will reduce to 'Minor'.

f. **Impacts on Socio-Economic Environment:** In the operational phase, the Project will provide significant employment opportunities (skilled and unskilled workers) and approximately 230 personnel will be employed during operational phase. To the extent possible, local labour will be preferred for operations phase depending on their suitability. Opportunities for ancillary businesses as mechanical supplies, machinery services and repair work, spare parts and accessories supplies, canteen services and supplies, housekeeping, security, green belt maintenance, contractual labour for packaging and other activities. There would be upgradation in living standards of the people. There would be minor negative impact on community health & safety due to transportation of vehicles, labour influx and manufacturing activities. However, this would be short term

Mitigation Measures:

- Establish a grievance redressal mechanism in place, to allow local community to report any concern or grievance related to work activities.
- Put in place a traffic management plan which would put in place the routes to be taken for the transportation of goods, the protocol to be followed in terms of traffic rules and measures for passer-by safety and the documentation of any incidents;
- All vehicle drivers and transporters will be provided with a training on the traffic management plan.
- As part of the stakeholder engagement activities, inform the community of the potential risks related to transportation of goods and the measures put in place for the prevention of the same;
- Undertake traffic risks awareness campaigns with the local community to make them aware of the general risks associated with the movement of large vehicles and other road related risks such as over speeding, importance of seat belts and helmets etc. and the steps to be taken by the local community to protect themselves from this risk
- The employees migrating from outside will be educated and counselled to become part of the prevailing society and respect the cultural aspects as well as follow and comply with administrative structure. The company's HR department shall take care that harmony is established between such groups and resolves disputes and disposition if such arises.
- Mitigation measures suggested in above sections for wastewater discharge, water consumption, noise and air emissions and traffic congestions will be followed to reduce impact on community health and safety.

The impact assessed on Socio-Economic Environment is 'Moderate', however, with implementation of mitigative measure it will reduce to 'Minor'.

Environment Monitoring Program

The environmental monitoring for water, air, noise and soil will be carried out during construction phase to monitor the change in the baseline quality if any. The monitoring will be carried out monthly for water, air and noise.

Environmental Monitoring programme in terms of in-house as well as third party monitoring, covering periodic monitoring and analysis of effluent samples, stack emissions, ambient air quality, work place

monitoring and noise level measurements within and around the factory premises will be carried out during operation stage.

Environment Management Plan

- To manage all the pollutants as air emissions, liquid effluent and hazardous waste which contribute to the degradation of environment with appropriate technology.
- Creation of Environment Management Cell and allocating the responsibility to manage all environmental issues and compliances.
- To comply with all the regulations stipulated by central / state pollution control boards related to air, water, noise, hazardous waste and non-hazardous waste.
- Ensure optimized use of raw material, water, energy and fuel.
- Ensure the conservation practices for water, energy and fuel.
- To create good working conditions for the employees.
- To avoid / reduce fire and accident hazards.
- Ensure that storm water management plan, odour control plan, waste management plan and green belt development plan is implemented.
- Budgeting and allocation of funds for environmental management systems and CSR activities.
- Continuous development and innovative technologies for betterment of environment.
- To adopt cleaner technologies.

Risk Assessment

The unit will be handling flammable and toxic chemicals and few reactions are also hazardous which may pose fire and toxic release hazards. Probable hazards due to proposed activities are identified and their mitigation measures and control measures are also proposed. Consequence analysis is carried out for major storage inventories and their threat zones are mapped on site plan and study area map to review the impact distances and sutiable actions to minimize the risks.

There will be inbuilt safety in the plant through DCS automation, monitoring instruments and alaram systems. Also, the technology adopted will be most proven technology already implemented in similar units of the group. The unit will install the fire systems as fire hydrants, sprinklers, and extinguishers in all the areas. Thus, the risks associated with the project will be of low probability and severeity.

EBIL will develop and put in practice the Disaster Management Plan (DMP) which will include emergency preparedness plan, emergency response team, emergency communication, emergency responsibilities, emergency facilities and emergency actions. The outline of the On-site and off-site emergency plan has been covered in the EIA Report.

Environment Budget Allocation

The capital cost for the environmental management system for the proposed Project is INR 288.8 lakh and recurring cost is INR 225.45 lakh / Annum.

Conclusion

- As evaluated using impact evaluation method, the proposed Project will have Minor to Moderate impact with proposed embedded control measures and proper implementation of mitigation measures as suggested.

- The proposed products are already manufactured at Ankleshwar plant and hence, best available technology implemented at Ankleshwar plant will be adopted for the proposed Project to minimize pollution due to chemicals manufacturing processes, storages, and handling.
- The proposed Project site is located within Integrated Industrial Area (IIA) notified by MIDC. The site is in close proximity to various industrial areas as Talegaon MIDC, Chakan and Pimpri Chinchwad MIDC which are home to the largest engineering and automobile companies who would be probable clientage for EBIL.
- Proposed project will be beneficial to the surrounding area or community in terms of employment generation, increase in economical activities as opportunities for ancillary businesses related to canteen services, transportation services, repairs and maintenance, use of local vendors for various materials requirement.
- EBIL have allocated 411.3 Lakhs under Enterprise Social Committments (ESC). The item-wise details and time-bound action plan will be prepared based on public hearing concerns. This funds will be allocated to various activities based on the public hearingfor education, improvement in health and sanitation facilities and water body improvements in nearby areas.
- EBIL is a market leader in primary and secondary insulation segment having almost half of the market share. It is also consistently increasing its share in India for electronic and engineering material segment (~15% in 2020). Owing to the fast development of commodity related industries, demand for these chemicals in Indian as well as global market is increasing at a considerable rate. Presently the proposed products are partially imported and partially supplied by indigenous production. The increase in production capacity will decrease the import from other countries and hence would increase the overall economic of the country.

Thus, the proposed Project with impact and risk mitigation measures in place will have minimum adverse impacts on the environment and shall be beneficial to socio-economic environment and overall growth of the country and hence shall be feasible.

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ERM India Private Limited
Building 10B
3rd Floor, DLF Cyber City
Gurgaon, NCR – 122002

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