



**ABHILASH CHEMICALS &
PHARMACEUTICALS PVT
LTD. (API DIVISION)**

**Form-1 for Amendment in ToR
Granted for Proposed API Plant at
Naickenpatti Village, Madurai East
Taluk, Madurai District, Tamilnadu**

DECEMBER 2018



Kadam

Environmental Consultants

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Environment *for* Development

ABHILASH CHEMICALS & PHARMACEUTICALS PVT. LTD. (API DIVISION)

Form-1 for Amendment in ToR Granted for Proposed API Plant at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu

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PROJECT DETAILS							
Name of Publication	Form-1 for Amendment in ToR Granted for Proposed API plant at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu						
Project Number	1624102105	Report No.	1	Version	1	Released	December 2018
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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	Revised Form I submission
1	Name of the Project/s	Amendment in ToR Granted for Proposed API plant at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu by M/s Abhilash Chemicals & Pharmaceuticals Pvt. Ltd.
2	S. No. in the Schedule	5 (f)
3	Proposed capacity / area / length / tonnage to be handled/ command area / lease area / no. of wells to be drilled	For Production capacity please refer Annexure 1 in additional attachments. Total plot area is ~ 1,62,563 m ²
4	New / Expansion / Modernization	New
5	Existing Capacity / Area etc.	Production capacity is given in Annexure 1 in additional attachments.
6	Category of Project (A or B)	Category 'A'
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.	S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,), 37/(8A, 8C, 8E, 8F, 8G, 8H), 27/4
	Village	Naickenpatti
	Tehsil / Taluka / Mandal	Madurai East Taluk
	District	Madurai
	State	Tamil Nadu
10	Nearest railway station / airport / along with distance in km.	<u>Nearest Railway Station</u> Koodal Nagar Railway Station, located at an aerial distance of ~16.21 km in SSW Madurai railway Station, located at an aerial distance of ~ 18.5 km in SSW <u>Nearest Airport</u> Madurai International Airport, located at an aerial distance ~27 km in SSW direction
11	Nearest town, city, district headquarters along with distances in km	<u>Nearest town, city and district Headquarters</u> Name: Madurai; Distance from Site: ~11 km in SSW direction

S. No.	Item	Revised Form I submission
12	Village Panchayat, Zila Parisad, Municipal Corporation, Local Body (complete postal address with telephone nos. to be given)	The appropriate local bodies governing the area are: Madurai East Panchayat Union Office Chinna Chokkikulam Madurai 625002 Phone: 0452 2538841 District Collector Madurai District Collectorate, Madurai - 625001 Phone : 0452 2532501, 2532503 to 2532505 Fax : 0452-2530925
13	Name of the applicant	M/s. Abhilash Chemicals & Pharmaceuticals Pvt Ltd. (API Division)
14	Registered address	26-D, Ganeshapuram, K. Pudur, Madurai- 625007
15	Address for correspondence	
	Name	Mr. Abhilash. L
	Designation	Director
	Address	26-D, Ganeshapuram, K. Pudur, Madurai
	Pin Code	625007
	E-mail	ec@abhichem.com
	Telephone no.	+91 452 4368132 / 4369132 / 4246933
	Fax no.	+91 452 2567663
16	Details of alternative sites examined, if any. Location of these sites should be shown on the Topo sheet	The existing site is selected as it has good access to Madurai city as well as Tuticorin port and is also <15-25 Km from both the Madurai-Bangalore highway and the Madurai-Chennai highway
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	No
22	Whether there is any Government order / policy, relevant / relating to the site	No
23	Forest land involved (ha.)	No
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	No

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)	No	<u>Land use:</u> For proposed project Non-Agricultural (NA) land is already acquired. Hence, there is no permanent or temporary change in land use. <u>Land cover:</u> There is no major vegetation at site. Site Location Map is shown as Annexure 2 in additional attachments.
1.2	Clearance of existing land, vegetation and buildings?	No	No clearance of vegetation will be required for the proposed project.
1.3	Creation of new land uses?	No	For proposed project Non-Agricultural (NA) land is already acquired. So, no new landuses.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	No	
1.5	Construction works?	Yes	Construction work will be done for establishment of proposed production units.
1.6	Demolition works?	No	---
1.7	Temporary sites used for construction works or housing of construction workers?	No	As workers employed will be local, temporary sites will not be required.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	Suitable buildings/structures for proposed project shall be established
1.9	Underground works including mining or tunneling?	No	
1.10	Reclamation works?	No	
1.11	Dredging?	No	
1.12	Offshore Structure?	No	
1.13	Production and manufacturing processes?	Yes	Manufacturing process along with material balance is given vide Annexure 4 in additional attachments.
1.14	Facilities for storage of goods or materials?	Yes	Storage details of raw materials are given in Annexure 5 in additional attachments.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Waste Water Generation and their treatment is presented in Water Balance Diagram at Annexure 6 in additional attachments.
1.16	Facilities for long term housing of operational workers?	No	No housing facility for operational workers is proposed as employees will be hired locally from nearby city & towns.
1.17	New road, rail or sea traffic during construction or operation?	No	<u>Construction Phase:</u> Road traffic will be increased during construction phase. There will not be increase in rail and sea traffic during construction phase. <u>Operation Phase:</u> Road trips will be generated for movement of personnel, raw material and finished goods transfer

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			during operation phase.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	No additional transport infrastructure is required.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	It is not required to close or divert existing transport routes and infrastructure.
1.20	New or diverted transmission lines or pipelines?	No	
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	
1.22	Stream crossings?	No	Site does not involve any stream crossing.
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Water will be sourced from Borewell inside premises. Water Consumption Existing: 275 KLD After Proposed Amendment: 99 KLD Water Consumption Break-up is presented at Annexure 6 in additional attachments. Permission is received to draw the water from bore well. The permission letter is attached as Figure 4 in additional attachments.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	The site will be leveled and filled properly in the construction phase and surface run off from site will be channelized through storm water drains hence no change in drainage pattern envisaged.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	<u>Construction phase</u> Transport of personnel: ~ 50 (for typically 12 months only when construction takes place). These workers will not require any special transport facilities since they will be hired locally Transport of materials: Additional Road Trips will be generated due to transport of construction material. <u>Operation Phase</u> Transport of personnel: ~ 250 employees will be employed for the proposed project. Transport of materials: Raw materials will be transported by truck /tankers. <u>Decommissioning</u> No decommissioning is envisaged.
1.26	Long-term dismantling or decommissioning or restoration works?	No	Proposed project does not involve any long term dismantling or decommissioning or restoration works.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	-
1.28	Influx of people to an area either temporarily	No	<u>Construction Phase</u>

S. No.	Information/Checklist Confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
	or permanently?		Construction workers as also plant workers will mainly be sourced locally. <u>Operation Phase</u> During operation phase ~250 people will be employed.
1.29	Introduction of alien species?	No	-
1.30	Loss of native species or genetic diversity?	No	-
1.31	Any other actions?	No	-

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	Total plot area is 1,62,563 sq.m. A total of 34.2 % green belt (55,724 sq.m of land) is proposed in the site premises.
2.2	Water (expected source & competing users) unit: KLD	Yes	Fresh water consumption will be 99 KLD Water after proposed amendment will be sourced from onsite borewell. Water Consumption is given vide Annexure 6 in additional attachments. Permission is received to draw the water from bore well. The permission letter is attached as Figure 4 in additional attachments.
2.3	Minerals (MT)	No	-
2.4	Construction material stone, aggregates, sand / soil (expected source, MT)	Yes	Construction material such as steel, cement will be purchased from local market.
2.5	Forests and timber (source, MT)	No	
2.6	Energy including electricity and fuels (source, competing users) unit: fuel (MT), energy (MW)	Yes	Power supply from Grid: Connected load: 2000 HP Supplied by: Tamilnadu Electricity Board Emergency Power: DG Sets : 1500 KVA Fuel sourcing and consumption details are given in <i>Error! Not a valid result for table.</i> in additional attachments.
2.7	Any other natural resources (use appropriate standard units)	No	

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	Yes	<u>List of Hazardous Chemicals</u>

S. No.	Information / Checklist confirmation	Yes / No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
	or the environment (flora, fauna, and water supplies)		<ul style="list-style-type: none"> Xylene, Methanol, hydrochloric acid Use, storage, transport and handling will be done carefully by qualified and trained persons.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	It is anticipated that ~250 numbers of persons will be employed during operation phase. The proposed activities will generate indirect employment in the region due to the requirement of workers in construction phase, supply of raw material, auxiliary & ancillary works, which would marginally improve the economic status of the people.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	-
3.5	Any other causes	No	No other causes identified.

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	No	-
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Paper /carton waste is sold to recycler.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Proposed Hazardous Waste generation details are vide Annexure 9 in additional attachments.
4.4	Other industrial process wastes	Yes	Boiler ash will be sent to flyash brick manufacturers.
4.5	Surplus product	No	-
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Sludge generated from effluent treatment plant is listed in Annexure 9 in additional attachments. STP sludge will be utilized as manure.
4.7	Construction or demolition wastes	No	-
4.8	Redundant machinery or equipment	No	-
4.9	Contaminated soils or other materials	No	-
4.10	Agricultural wastes	No	-
4.11	Other solid wastes	No	

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	<u>Construction phase</u> Emission of Fossil fuels shall be from use of Construction machineries, vehicles. <u>Operation Phase</u> Adequate stack height is provided to flue gas stacks. Stack emission quality will be maintained as per the

S. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
			SPCB norms.
5.2	Emissions from production processes	Yes	Proper Central Absorption system will be provided in processing area.
5.3	Emissions from materials handling including storage or transport	No	As closed system will be provided in material handling unit so no fugitive emission is envisaged.
5.4	Emissions from construction activities including plant and equipment	Yes	During the construction activities, minor emissions will be in the form of dust.
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	Yes	Construction Phase: as per 5.4 above. Odor problem is not envisaged.
5.6	Emissions from incineration of waste	No	
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	No waste will be burnt in open air.
5.8	Emissions from any other sources	No	There will be no other emission source.

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	No	Noise will be generated from operation of DG set, Boiler etc. Adequate enclosures and necessary PPE will be provided to exposed employees.
6.2	From industrial or similar processes	Yes	<u>Noise</u> All Machinery Equipment shall be such that noise levels are within permissible limits. However DG set will be operated as and when required & will generate minor noise. D.G. with facility of acoustic enclosures will be provided to reduce the noise levels <u>Vibration</u> No vibration anticipated. <u>Emission of Light and Heat</u> No emission of light and heat anticipated.
6.3	From construction or demolition	Yes	<u>Noise</u> During construction phase, noise will be generated due to construction equipment for a short duration of time. Demolition work is not envisaged
6.4	From blasting or piling	No	-
6.5	From construction or operational traffic	Yes	During construction and operational phase noise will be generated due to traffic influx in the company premises due to material and personal transport. But it will be minimal and for a short term only.
6.6	From lighting or cooling systems	Yes	Minor noise will be generated from operation of cooling towers.
6.7	From any other sources	No	-

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 fuel/ chemicals spills may occur. These will not affect water or land because of appropriate flooring & presence of spill control procedures. Moreover all of the hazardous waste is disposed as per guidance of State Pollution Control Board.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Domestic Sewage will be treated in STP and used for gardening. Effluent will be treated in ETP and reused back in plant premises passing through Evaporation system. Hence, there will not be contamination of land, groundwater or surface water.
7.3	By deposition of pollutants emitted to air into the land or into water	No	All air pollutants are controlled properly through proper APCM. The norms are maintained within the stipulated norms set by SPCB.
7.4	From any other sources	No	-
7.5	Is there a risk of long term buildup of pollutants in the environment from these sources?	No	Same as 7.1 & 7.2

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 hazardous substances	Yes	<u>Spillage:</u> Spillage of various liquid can affect human health and environment. <u>Fire/ Explosion:</u> Fire protection and fighting system will be installed as per norms.
8.2	From any other causes	Yes	Common risks in factories such as: <ul style="list-style-type: none"> • Electric Shock • Hit by Objects • Fall / Slips • Hot Work such as Welding and Cutting Safe operating procedure provided to prevent above risk
8.3	Could the project be affected by natural disasters causing environmental damage e.g. floods, earthquakes, landslides, cloudburst etc)?	No	The project area lies in the seismic intensity Zone II, which is classified as low damage risk zone. Building design shall be as per seismic zone.

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	-
9.2	Lead to after-use of the site, which could have an impact on the environment	No	-
9.3	Set a precedent for later developments	No	-
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	-

III. Environmental Sensitivity

S. No.	Information/Checklist confirmation	Yes / No?	Aerial distance (within 15 km.) of Proposed Project location boundary wit
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 other water bodies, coastal zone, biospheres, mountains, forests	Yes	Five Reserve Forests (RF) are present within 10 km. of proposed project. 1. Alagar Hills R.F at ~ 0.150 km in N 2. Kiluvamalai R.F. at ~ 3.7 km in NW 3. Usilampatti R.F. ~ 4.71 km in NW 4. Sanamalai R.F. ~ 6.61 km in N 5. Perumalmalai R.F. ~ 7.70 km in SE Another seven reserve forests are present in between 10 km to 15 km. 1. Chembulimalai R.F. ~ 10.3 km in NNE 2. Vellaimalai R.F. ~ 11.56 km in NNW 3. Perumalai R.F. ~ 10.33 km in NNW 4. Sirumalai R.F. ~14.48 km in NW 5. Sembatti Hills R.F. ~ 13 km in NW 6. Waguttumalai R.F. ~ 14.10 km in WNW 7. Motamalai R.F. ~ 13.5 km in NNE
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	-
4	Inland, coastal, marine or underground waters	Yes	1. Periyar Canal (Kallandhiri) ~1.75 km in S
5	State, National boundaries	No	-

S. No.	Information/Checklist confirmation	Yes / No?	Aerial distance (within 15 km.) of Proposed Project location boundary wit
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Yes	1. SH 72A ~ Madurai – Melur road 2. SH 72 ~ Madurai – Natham road 1. Alagarmalai cavern with Panchapandava beds ~ 4.06 (NE) 2. Ladan Koil, Anamalai, Madurai~ 7.84 (SE) 3. Sivankoil (Arittapatti) ~8.97 (ESE) 4. Ovalamalai Kalvettu ~ 7.4 (SE)
7	Defense installations	No	
8	Densely populated or built-up area	Yes	Madurai City (Corporation limit) at ~11 km in SSW
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Yes	1. GMS-MAVMM Polytechnic at ~0.04 in E 2. CR Engineering College at ~1 km in NE 3. Madurai Crescent Campus (College) at ~2.17 km in WSW 4. Alagar Kovil Temple at ~1.5 in NE Pazhamudhircholai Murugan Temple at ~3.64 km in NNE
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No	-
11	Areas already subjected to pollution or environmental damage. (Those where existing legal environmental standards are exceeded)	No	-
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)	No	Earthquake: The proposed site falls in Seismic Zone II (Low)

2 ANNEXURES

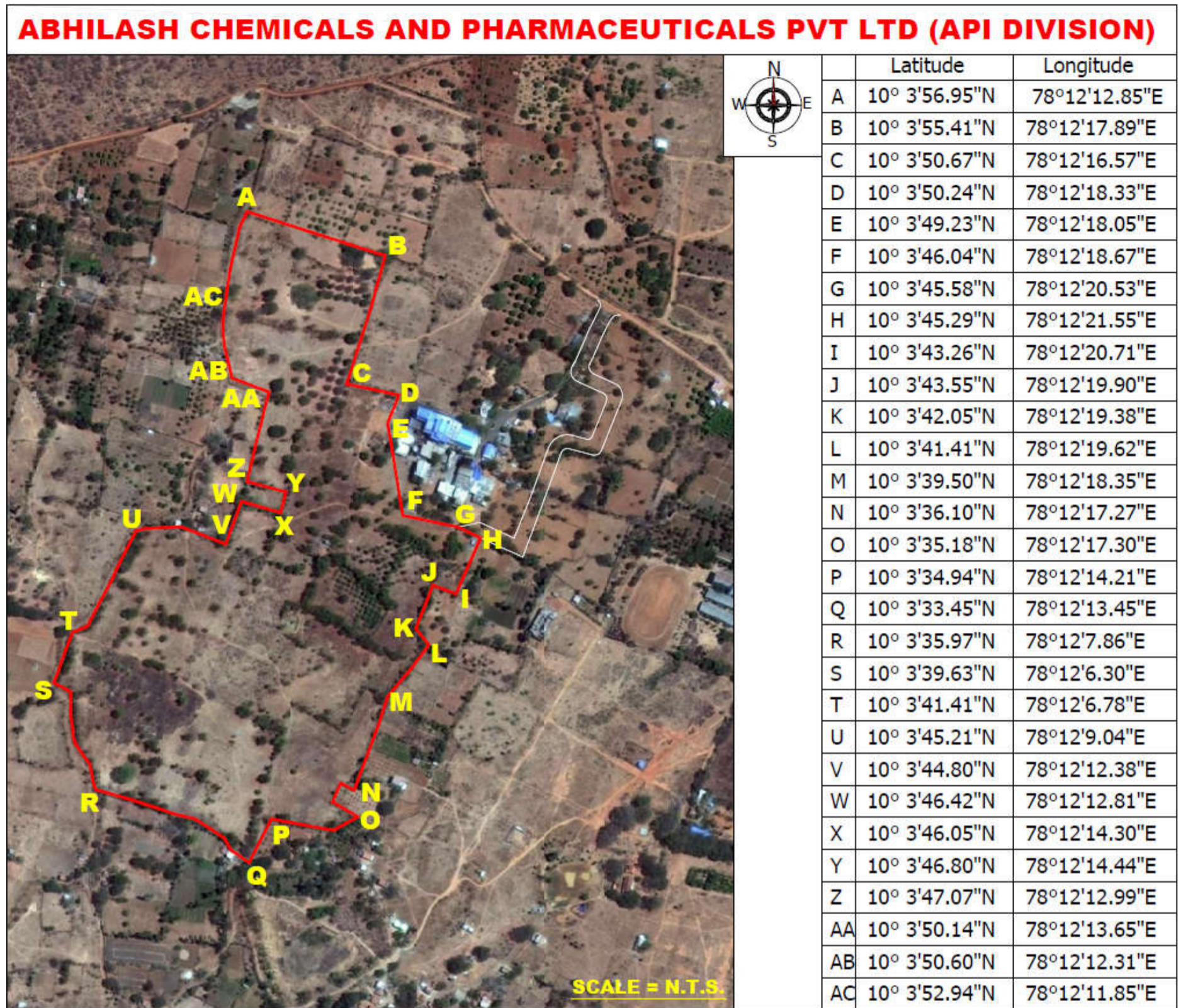
Annexure 1: Production Details

S. No.	Name of Products	Production Capacity in MT/Month	
		Existing approved in ToR	Proposed after amendment
Products			
1	Metformin Hydrochloride	1000	1000
2	Paracetamol	1200	0
3	Bronopol	25	0
	Total	2225	1000
By-Products			
1	Acetic acid (dilute)	2400	0
2	NaBr solution	55	0
3	NaCl Salt	800	0
	Total	3255	0

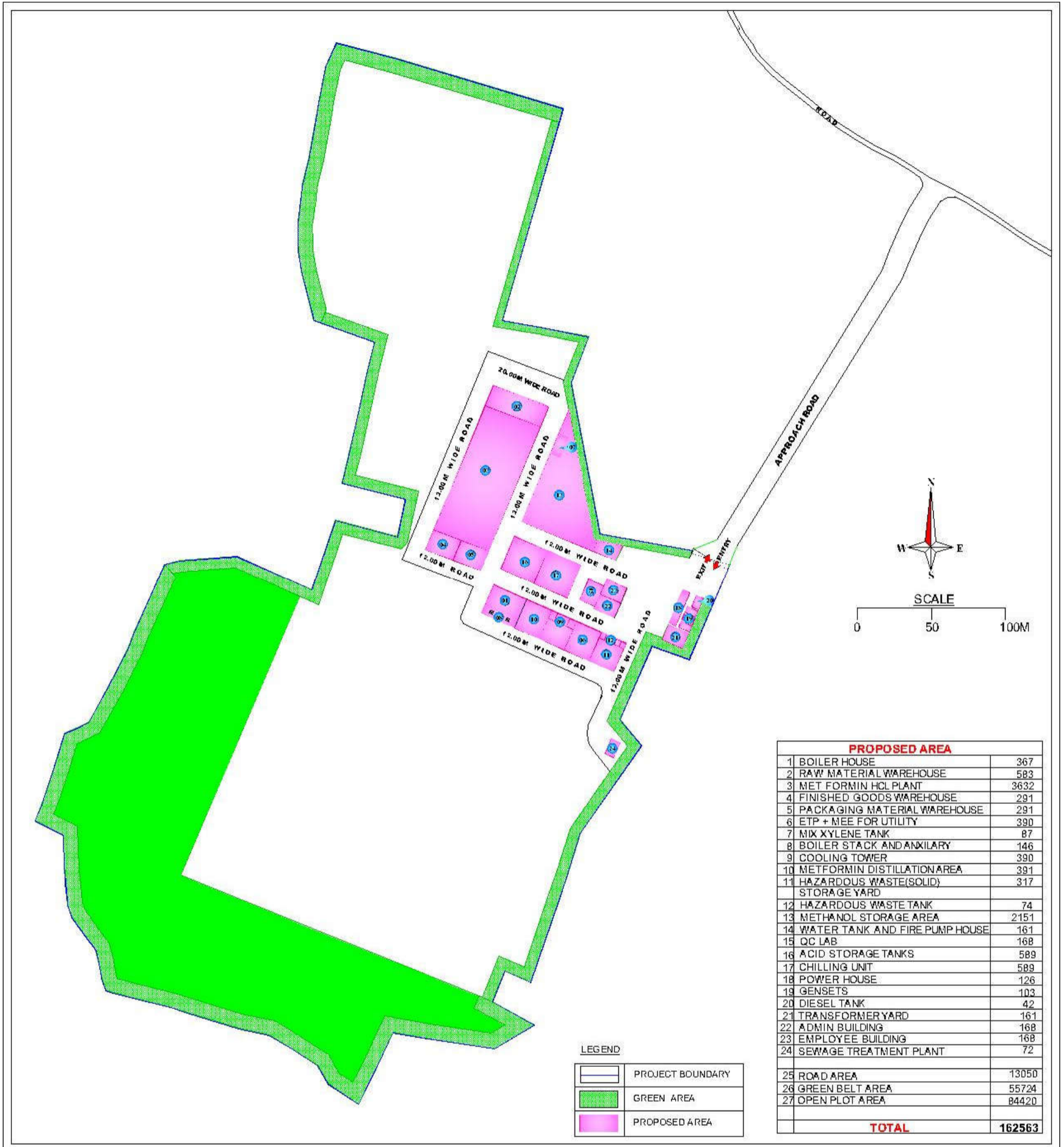
Final Product List after Amendment

S. No.	Name of Products	Production Capacity in MT/Month
1	Metformin Hydrochloride	1000

Annexure 2: Site Location shown on Google image



Annexure 3: Site Layout Map



PROPOSED AREA		
1	BOILER HOUSE	367
2	RAW MATERIAL WAREHOUSE	583
3	MET FORMIN HCL PLANT	3632
4	FINISHED GOODS WAREHOUSE	291
5	PACKAGING MATERIAL WAREHOUSE	291
6	ETP + MEE FOR UTILITY	390
7	MIX XYLENE TANK	87
8	BOILER STACK AND ANKILARY	146
9	COOLING TOWER	390
10	METFORMIN DISTILLATION AREA	391
11	HAZARDOUS WASTE(SOLID) STORAGE YARD	317
12	HAZARDOUS WASTE TANK	74
13	METHANOL STORAGE AREA	2151
14	WATER TANK AND FIRE PUMP HOUSE	161
15	QC LAB	168
16	ACID STORAGE TANKS	589
17	CHILLING UNIT	589
18	POWER HOUSE	126
19	GENSETS	103
20	DIESEL TANK	42
21	TRANSFORMER YARD	161
22	ADMIN BUILDING	168
23	EMPLOYEE BUILDING	168
24	SEWAGE TREATMENT PLANT	72
25	ROAD AREA	13050
26	GREEN BELT AREA	55724
27	OPEN PLOT AREA	84420
TOTAL		162563

LEGEND	
	PROJECT BOUNDARY
	GREEN AREA
	PROPOSED AREA

Table 1: Area breakup at Site

S. No.	Particular	Area in m2	% Area Breakup
1	Boiler house	367	0.23
2	Raw material warehouse	583	0.36
3	Metformin HCL plant	3632	2.23
4	Finished goods warehouse	291	0.18
5	Packaging material warehouse	291	0.18
6	ETP + MEE for utility	390	0.24
7	Mix Xylene Tank	87	0.05
8	Boiler stack and auxiliary	146	0.09
9	Cooling tower	390	0.24
10	Metformin distillation area	391	0.24
11	Hazardous water (Solid) storage yard	371	0.23
12	Hazardous water storage tank	74	0.05
13	Methanol storage area	2151	1.32
14	Water tank and fire pump house	161	0.10
15	QC Lab	168	0.10
16	Acid storage tanks	589	0.36
17	Chilling unit	589	0.36
18	Power house	126	0.08
19	Gensets	103	0.06
20	Diesel tank	42	0.03
21	Transformer Yard	161	0.10
22	Admin Building	168	0.10
23	Employee building	168	0.10
24	Sewage treatment plant	72	0.04
25	Road area	13050	8.03
26	Greenbelt area	55724	34.28
27	Open plot area	82278	50.61
	TOTAL	162563	100.00

Annexure 4: Manufacturing Processes and Mass Balance

1. Metformin Hydrochloride

Dicyandiamide and Dimethylamine hydrochloride undergo chemical reaction in Mix Xylene as solvent medium. The product formed is extracted in water. The Mix xylene is sent for solvent recovery. A solution of the product in water is treated with activated charcoal then filtered and crystallized by removing water. Methanol is added and then the product is centrifuged. The centrifuged product is washed in methanol and dried to give Metformin HCL of suitable purity. Hydrochloric acid is used for pH adjustments of the product solution during isolation / purification. The mother liquors from the centrifuge are sent for solvent recovery.

Figure 1: Process Flow diagram of Metformin Hydrochloride

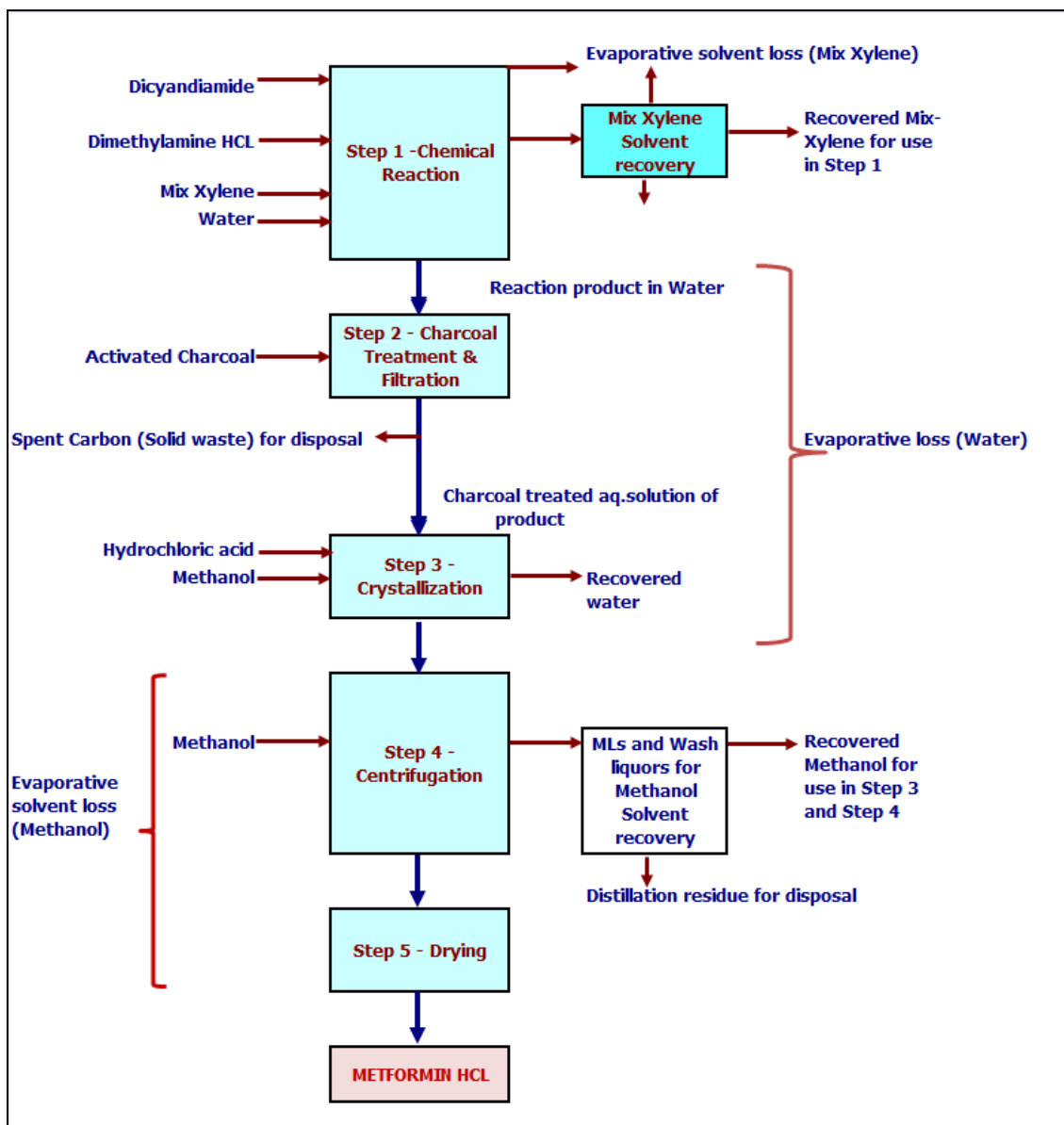


Table 2: Mass balance of Metformin Hydrochloride

S. No.	Input/MT of Product					Quantity (MT)
	Raw Materials					
1	Dicyandiamide					0.60
2	Dimethylamine hydrochloride					0.65
3	Mix Xylene					0.95
4	Water					2.16
5	Activated Carbon					0.0030
6	Hyflosupercel					0.0010
7	Methanol					0.65
8	Hydrochloric acid					0.04
Total						5.054
S. No.	Output MT/MT of Product					Remark
	Product	Liquid Effluent	Air Emission	Recovery/ Product	Solid Waste	
1	Metformin Hydrochloride			1.00		Product
2	Recovered Mix Xylene			0.94		Recycled back in process
3	Recovered Methanol			0.47		
4	Waste (Spent carbon and Hyflow)				0.004	To be sent to TSDF / AFR / Cement Industries
5	Recovered Water			2.02		Recycled back in process
6	Water Evaporation Loss		0.23			To atmosphere
7	Solvent Loss		0.19			To atmosphere
8	Process / Distillation Residue				0.2	To be sent to TSDF / AFR / Cement Industries
Total		0.000	0.42	4.43	0.2085	
					5.054	

Annexure 5: Storage Details

Table 3: Storage Details of Raw Material

S. No.	Chemical Name	State	Consumption (MT / month)	Means of storage	Capacity	No of storage
1	Dicyandiamide	Solid	600	Bags	160	1
2	Dimethylamine hydrochloride	Solid	650	Bags	100	1
3	Mix Xylene	Liquid	10	Tank	12 MT	1
4	Activated Carbon	Solid	3	Bags	5 MT	1
5	Hyflosupercel	Solid	1	Bags	2 MT	1
6	Methanol	Liquid	180	Tank	50 MT	2
7	Hydrochloric acid (30% w/w)	Liquid	40	Tank	50 MT	1

Table 4: Storage Details of Products

S. No.	Chemical Name	State	Means of storage	Capacity	No of storage
1	Metformin Hydrochloride	Solid	Bags/Drums	100 MT	1

Annexure 6 : Water Consumption and Effluent Generation Details

Table 5: Existing Water Consumption and Effluent Generation Pattern

S. No.	Description	Water Consumption in KLD	Wastewater Generation in KLD	Wastewater Treatment Facility
A	Process			
1	Bronopol	1.3	1.2	Go with NaBr solution as By Product
2	RO Plant	244	122	Used for cooling tower make up and Bathing/Flushing activities
i	RO Reject Water	122		
a	Cooling Tower	97	25	Blow Down to ETP followed by MEE
b	Domestic Use (Bathing & Flushing)	25	25	To STP & treated sewage will be reused for Gardening
ii	RO Permeate Water	122		
a	Metformin (HCL)	47	37.5	Reused for Cooling Tower Make up after distillation
b	Paracetamol	75	59	Go to Salt Recovery System and condensate will be reused in process & Salts will be sold as by product
B	Boiler	24	5	Blow Down to ETP followed by MEE
C	Domestic (Canteen)	5.7	5	To STP & treated sewage will be reused for Gardening
	Total Water Consumption & wastewater Generation	275	230	30 KLD - will be treated in STP and treated sewage will be reused for gardening. 30 KLD - will be treated in ETP followed by MEE and condensate from MEE will be reused for boiler make up & Gardening. The MEE salts will be sent to TSDF facility. The surplus 170 KLD wastewater are reused in process.

Table 6: Proposed Water Consumption and Effluent Generation Pattern (Total After Amendment)

S. No.	Description	Water Consumption in KLD	Wastewater Generation in KLD	Wastewater Treatment Facility
A	PROCESS			
	RO Plant	61	53.50	
(i)	RO permeate water (For Metformin HCL process)	45	37.50	Taken to central ETP followed by Tertiary RO and MEE
(ii)	RO Reject Water	16	16	Taken to central ETP followed by Tertiary RO and MEE
B	COOLING TOWER	13	16.5	Blow Down from cooling tower taken to central ETP followed Tertiary RO and MEE
C	BOILER	5	2.5	Blow Down from boiler taken to central ETP followed by Tertiary RO and MEE
D	DOMESTIC USE (CANTEEN, FLUSHING & BATHING)	20	20	To STP & treated sewage will be used for Gardening
	Total Water Consumption & wastewater Generation	99	92.50	20 KLD from (D) will be treated in STP and water will be used for Gardening. 72.50 KLD from A(i), A(ii), B and C will be taken to central ETP, followed by Tertiary RO and MEE. Permeate from Tertiary RO (54 KLD) and MEE condensate (17.5 KLD) are reused in cooling tower and boiler make up respectively.

Figure 3: Water Balance Diagram after Proposed Amendment

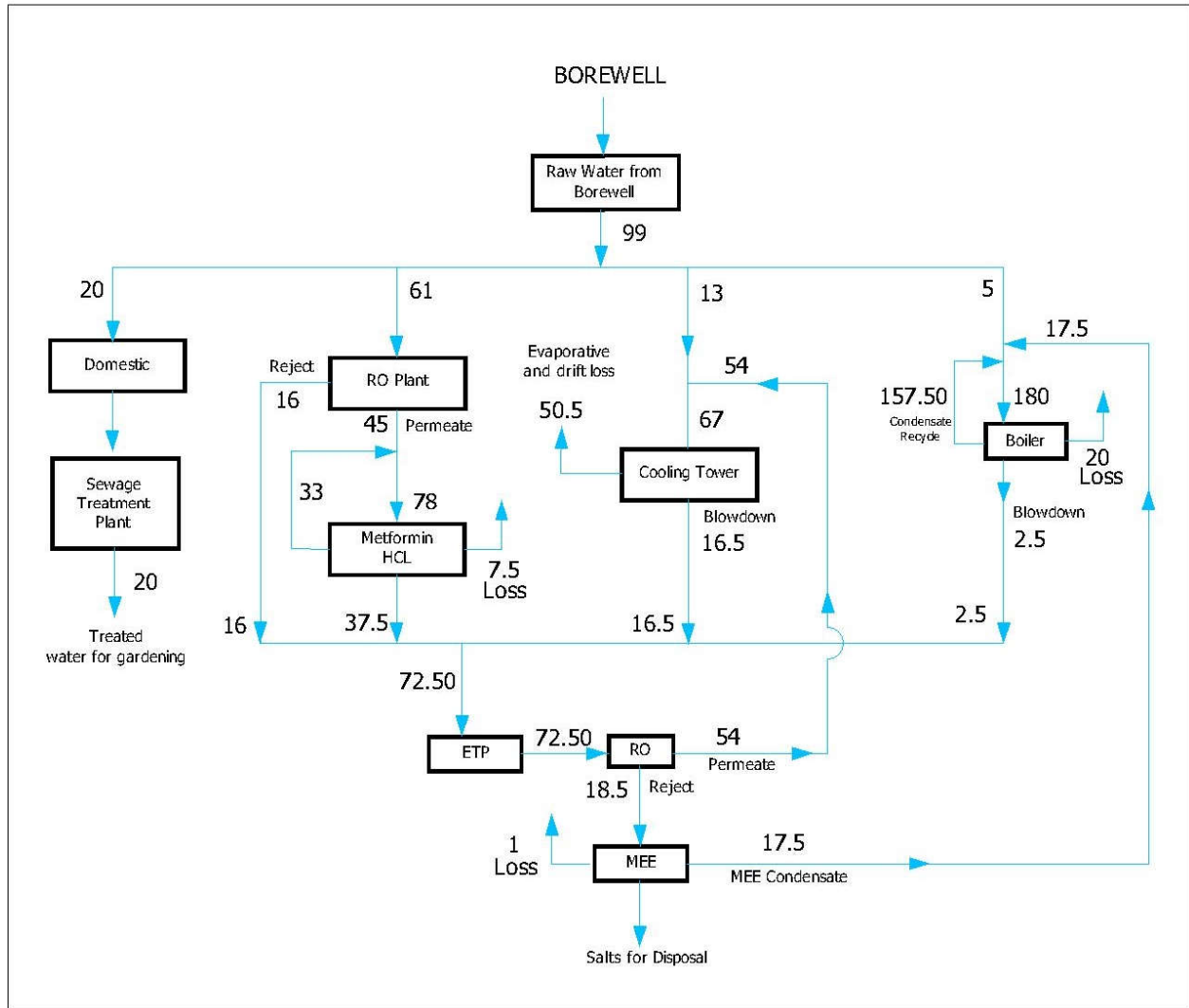



Figure 4: Copy of Permission to Draw Water through Bore well



GOVERNMENT OF TAMIL NADU- PUBLIC WORKS DEPARTMENT
WATER RESOURCE DEPARTMENT

From:
Er. C.T. Sankar, B.E.
Chief Engineer, WRD/PWD,
State Ground & Surface Water
Resources Data Centre,
Tharamani, Chennai - 600 113.

To:
**M/s. Abhilash Chemicals And
Pharmaceuticals Pvt Ltd,**
26/D Ganeshapuram,
K.Pudur, Madurai -625007

Lr.No. OT 9 / G-3 /50/ 2018 / NOC /Madurai/ 2018 dated: 22.05.2018.

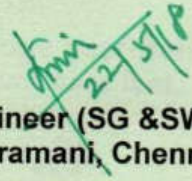
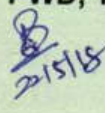
Sir,

Sub: "No Objection Certificate" for drawal of groundwater to
"M/s. Abhilash Chemicals and Pharmaceuticals Pvt Ltd",
Nayakanpatti Village, Kallandhiri Firka, Madurai East Taluk, Madurai
District - NOC Issued- Reg.

Ref: 1. The firm NOC application dt: 02.04.2018.
2. SE/GWC/ Madurai/Lr.No.73CE/ AG/Spl Consl/GWC/ 2018/
Dt: 16.05.2018.

Please find the enclosed "No Objection Certificate", for drawal of
groundwater to "M/s. Abhilash Chemicals and Pharmaceuticals Pvt Ltd",
Nayakanpatti Village, Kallandhiri Firka, Madurai East Taluk, Madurai District.
You are requested to strictly adhere to the quantity permitted and conditions
mentioned in the certificate and renew NOC every year with in time.

Enclosure:
1. No Objection Certificate & Conditions


**Chief Engineer (SG & SWRDC),
PWD, Tharamani, Chennai-113**




Certificate No. 50 / 2018


Dated: 22.05.2018

GOVERNMENT OF TAMIL NADU
WATER RESOURCES DEPARTMENT
STATE GROUND & SURFACE WATER RESOURCES DATA
CENTER CHENNAI – 113
No Objection Certificate

This is to certify that "M/s. Abhilash Chemicals and Pharmaceuticals Pvt Ltd", Nayakanpatti Village, Kallandhiri Firka, Madurai East Taluk, Madurai District, falling under the "Safe Category" as on 2011 Categorisation, is hereby given the "No Objection Certificate" for the drawal of total quantity of 1,20,000 LPD (One Lakhs Twenty thousand litres per day only) of ground water for the purpose of "Industry" from the Ground water structure listed below with strict adherence of stipulated conditions.

Sl. No	Referred Well / Bore Well & SF. No	Village / Firka	Co-ordinates		Quantity Permitted for pumping in LPD
			Latitude	Longitude	
1	Bore Well-I / 27/4	Nayakanpatti / Kallandhiri	10° 03'47" N	78° 12'24" E	70000
	Bore Well-3 / 31/3	Nayakanpatti / Kallandhiri	10° 03'40" N	78° 12'14" E	50000
Total					1,20,000

This No Objection Certificate now issued is valid only for one year from the date of issue and the NOC is accorded under the conditions laid down over leaf.


Chief Engineer (SG & SWRDC),
PWD, Tharamani, Chennai-113

Conditions

- 1 **This No Objection certificate issued for ground water extraction applies to the referred ground water abstraction structure only.**
- 2 All the **other ground water abstraction structures** (dug wells/bore wells/dug-cum bore wells) other than the permitted one inside the plant area **should not be considered** for this permission.
- 3 Such structures as said in Condition No.2 should be closed or used only for **Rain water harvesting** purposes.
- 4 This Certificate is applicable for drawal of permitted Quantity of ground water only and **not for transportation.**
- 5 The Company should install necessary "flow meters" to the referred well /bore well and monitor the quantity which should not exceed the permitted level. **Proper Records** should be maintained continuously from the date of drawal. Monthly statement of daily drawal of water should be sent to the Executive Engineer, Groundwater Division, Madurai as per format enclosed.
- 6 As and when the officials of Ground Water Wing of PWD inspect the site/premises, perusal of drawal records and water quality observations should be allowed.
- 7 **Rain water harvesting structure** is to be established as per the direction of this department. Rain water harvesting structures already exist inside the plant premises, it should be maintained properly.
- 8 **If there is any Public protest for the drawal of Ground Water in the referred bore well location it will leads to cancellation of the permission.**
- 9 **Violation of the above stipulations in any form may lead to cancellation of the permission accorded by the Government.**
- 10 The Company should be ready to pay the **levy/charges for drawal of ground water** for commercial purposes, if Government / Ground Water Authority imposes any such orders in future.
- 11 The company has to **drill one new bore well** within the extraction well located premises for monitoring water level and observing water quality within 30 days from the date of issue of NOC. The bore well should have been **constructed with platform and locking arrangements** (in full shape). If any bore well already existing and unused within the premises of the plant the same may also be utilized for the purpose.
- 12 It is also informed that during the renewal of the NOC, depending upon the hydrogeological condition the category of the area and the site conditions, the quantity will be vary from permitted quantity. The company should make alternate arrangements for the reducing quantity for sustaining their industrial activity by means of availing water through local bodies/by desalinization of sea water /or using the urban waste water after proper treatment
- 13 This No Objection Certificate is applicable **only for the purpose of "Industry"**, if any deviation in the usage of ground water is found, the NOC accorded is automatically deemed to be cancelled.
- 14 The **Executive Engineer, Ground Water Division** of the respective District **would inspect** either the rain water harvesting structures established in the premises of the firm or the records maintained or even the drawal of ground water as and when needed and it is the mandatory of the firm to maintain the Rain water harvesting structure/ structures properly and show the records needed.
- 15 **If any information / Documents submitted by this firm is found to false / in correct or any data provided by the firm is found to be incorrect, the NOC issued to the firm will be cancelled by this department without any prior notice.**

[Handwritten Signature]
22/5/18
Chief Engineer, (SG&SWRDC),
PWD, Tharamani, Chennai- 113.

Annexure 7: Details of Wastewater Treatment Philosophy

Details of wastewater generation, treatment scheme and disposal/reuse is given below:

Wastewater stream	Source	Treatment Scheme Provided	Remarks
Washing and Cleaning	Production areas	-	Reused back in respective process
Process Water	Metformin	ETP followed by RO & MEE	Reused back in Cooling tower
Utility blow down	Cooling tower and Boiler	ETP followed by RO & MEE	Reused back in utility
Domestic sewage	Domestic	Sewage Treatment Plant	Gardening

Water treatment

Utility blowdown from Cooling tower, Boiler along with Process water from evaporative crystallization of Metformin will be processed in a Effluent treatment plant having Primary treatment, followed by Tertiary RO (recovered Permeate is used in Cooling tower makeup / Reject is sent to MEE) and MEE. MEE condensate will be used for boiler feedwater makeup.

Residue handling

MEE sludge will be sent to TSDF / AFR / Cement Plant.

Distillation bottom residue resulting from evaporative crystallization of Metformin will be sent to TSDF/AFR/Cement plant.

Sewage Treatment Plant

Domestic wastewater will be treated in STP and used for gardening within site premises.

Annexure 8: Fuel Consumption and Stack Details

Table 7: Fuel Consumption & Flue Gas Stack Details

Sr. No.	Stack Attached to	Capacity	Stack Nos.	Stack Height	Type of Fuel used	Fuel consumption	Remarks
Existing							
1	Boiler	5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	15 MT/Day	Replaced by proposed Boilers
2	Boiler	5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	15 MT/Day	
3	Boiler	1.5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	5 MT/Day	
4	DG Set	500 KVA	3	9	HSD	60 Lit/Hr each	No Change
Total After Proposed Amendment							
1	Boiler 1, Boiler 2, Boiler 3	Each capacity 2500 kg/Hr. (Total 7500 kg/Hr.)	1 (common stack)	30.5	Firewood/ Agro waste briquettes	7.5 MT/Day per boiler (Total 22.5 MT/Day)	-
2	DG Set	500 KVA	3	9	HSD	60 Lit/Hr each	-

Table 8: Details of Process Vents

Vent Attached to	Air Pollution Control Measures System attached	Height of Vents	Pollutants Emitted	Remarks
Existing				
Central Absorption System in paracetamol Plant	Alkali/Water Scrubber	Building height + 6 m	HC	Not Required after proposed Amendment
Central Absorption System in Bronopol Plant	Alkali/Water Scrubber	Building height + 6 m	Bromine vapors	
Total After Proposed Amendment				
There will be no process emissions because of mostly water-based process. In addition, all processing is carried out in completely closed systems				

Annexure 9: Hazardous Waste Generation Details

Table 9: Existing Hazardous Waste Generation Details

S. No.	Type of Waste	Hazardous Waste Category as per Rule 2008	Quantity MT per Year	Source	Treatment / Disposal
1	Used/spent oil	5.1	4	Industrial Operations using mineral/synthetic oil as lubricant in hydraulic system	To authorized recycler
2	Wastes/Residues containing oil	5.2	1.5		
3	Distillation Residues	20.3	1210	Production/Industrial Use of solvents	To TSDF/AFR/Cement industry
4	Residues and wastes	28.1	2317	Production/Formulation of drugs/ Pharmaceuticals & health care product	To TSDF/AFR/Cement industry
5	Spent catalyst/Spent Carbon	28.2	728		
6	Date expired, discarded and off specification drugs	28.4	1.3		
7	Discarded containers/ barrels, liners, contaminated with hazardous wastes/chemicals	33.3	300	Disposal of barrels containers used for handling of hazardous waste chemicals	To TSDF/AFR/Cement industry/ recycler
9	Chemical sludge from waste water treatment	34.3	21	Purification and treatment of air, water & waste water from the processes in this schedule and common industrial effluent treatment Plants (ETPs)	To TSDF/AFR/Cement industry

Table 10: Hazardous Waste Generation Details – Total after Proposed Amendment

S. No.	Type of Waste	Hazardous Waste Category as per Rule 2016	Quantity MT per Year	Source	Treatment / Disposal
1	Used/spent oil	5.1	4	Industrial Operations using mineral/synthetic oil as lubricant in hydraulic system	To authorized recycler
2	Wastes/Residues containing oil	5.2	0.5		
3	Distillation Residues	20.3	1200	Production/Industrial Use of solvents	To TSDF/AFR/Cement industry
4	Residues and wastes	28.1	1200	Production/Formulation of drugs/ Pharmaceuticals & health care product	To TSDF/AFR/Cement industry
5	Spent Carbon (From production of drugs)	28.3	48		
6	Date expired drugs	28.5	0.5		
7	Empty barrels/containers/liners contaminated with hazardous chemicals / wastes	33.1	100	Disposal of barrels containers used for handling of hazardous waste chemicals	To TSDF/AFR/Cement industry/ recycler
9	Chemical sludge from waste water treatment	35.3	50	Purification and treatment of air, water & waste water from the processes in this schedule and common industrial effluent treatment Plants (ETPs)	To TSDF/AFR/Cement industry



Environment *for* Development

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**ABHILASH CHEMICALS &
PHARMACEUTICALS PVT
LTD. (API DIVISION)**

**Pre-Feasibility Report for Amendment
in ToR Granted for Proposed API Plant
at Naickenpatti Village, Madurai East
Taluk, Madurai District, Tamilnadu**

DECEMBER 2018



Kadam

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ABHILASH CHEMICALS & PHARMACEUTICALS PVT LTD.

Pre-Feasibility Report for Amendment in ToR Granted for Proposed API Plant at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu

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PROJECT DETAILS							
Name of Publication	Pre-feasibility Report for API plant at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu						
Project Number	1624102105	Report No.	1	Version	1	Released	December, 2018
Prepared & Managed By	Jitixa Upadhyay & Anand Kunte		Released By		Sangram Kadam		
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1 EXECUTIVE SUMMARY

1.1 Introduction and Background

This Pre-feasibility report is part of documentation filed by Abhilash Chemicals and Pharmaceuticals Pvt Limited (i.e. ACPL) (API division) as part of the Environment Clearance (EC) Process, a mandatory regulatory clearance required from the Ministry of Environment and Forests (MoEF) prior to establishment of a new plant for the manufacture of Active pharmaceutical ingredients (APIs) at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu State.

ACPL proposes to setup a Greenfield Active pharmaceutical ingredient (API) manufacturing plant to produce Metformin HCl (anti-diabetic API)

The company seeks to grow into a reputable international generic API supplier for this product.

1.2 Proposed Plant Features and Production Capacity

The proposed project was for manufacturing Greenfield Active pharmaceutical ingredient (API) manufacturing plant to produce Metformin HCl Paracetamol and Bronopol located S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,), 37/(8A, 8C, 8E, 8F, 8G, 8H) of Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The estimated cost of the proposed project is INR ~26 Crores. The Production capacity 2225 MT/Month and by-products generation capacity will be 3255 MT/Month. ToR from Moef&CC was granted for this project vide ToR Letter No. F. No. J-11011/170/2016-IA-II (I) dated 19th July 2017.

Here we are applying for the Amendment in ToR for the following project. The proposed project is for manufacturing Greenfield Active pharmaceutical ingredient (API) manufacturing plant to produce Metformin HCl located S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,), 37/(8A, 8C, 8E, 8F, 8G, 8H), 27/4 of Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The estimated cost of the proposed project is INR ~20 Crores. The Production capacity will be 1000 MT/Month and there will be no by-products / co-products.

1.3 Water

Existing water consumption is 275 KLD. The fresh water requirement after proposed amendment will be 99 KLD. Water will be sourced from onsite borewells.

1.4 Effluent Generation, Treatment and Disposal

Waste Water Generation

Existing waste water generation is 230 KLD and after proposed amendment total waste water generation will be 92.5 KLD.

Water treatment

Utility blowdown from Cooling tower, Boiler along with Process water from evaporative crystallization of Metformin will be processed in a Effluent treatment plant having Primary treatment, followed by Tertiary RO (recovered Permeate is used in Cooling tower makeup / Reject is sent to MEE) and MEE. MEE condensate will be used for boiler feedwater makeup.

Residue handling

MEE sludge will be sent to TSDF / AFR / Cement Plant.

Distillation bottom residue resulting from evaporative crystallization of Metformin will be sent to TSDF/AFR/Cement plant.

Sewage Treatment Plant

Domestic wastewater will be treated in STP and used for gardening within site premises.

1.5 Power Requirement

The power requirement for the proposed facility will be met through power supplied by Tamilnadu Electricity Board (TNEB). Total estimated connected electrical load for the proposed manufacturing unit is around 2000 HP. The unit will install additional DG sets totaling to 1500 KVA for emergency power back up during grid failure.

1.6 Air Emissions

1.6.1 Flue Gas Stacks

Existing

There will be boilers (3 Nos.) and DG sets (3 Nos.)

Adequate stack height will be provided to all flue stacks, based preferably on the Environment Protection Rules, or in the absence of specific guidance in regulations, good engineering practice.

After Proposed Amendment

There will be boilers (3 Nos.) connected to common stack and DG sets (3 Nos.) with individual stacks

Adequate stack height will be provided to all flue stacks, based preferably on the Environment Protection Rules, or in the absence of specific guidance in regulations, good engineering practice.

1.6.2 Process Vents

Existing

There will be 2 process vents. One vent will be attached to the central absorption system in paracetamol plant (proposed) and another vent will be attached to the central absorption system in the Bronopol plant (proposed).

All process vents will be adequately scrubbed with cyclonic scrubber / wet alkali (or) water scrubber to ensure that process emissions do not reach the atmosphere. Adequate stack height will be provided to all flue stacks, based preferably on the Environment Protection Rules, or in the absence of specific guidance in regulations, good engineering practice.

After Proposed Amendment

There will be no process emissions because of mostly water-based process. In addition, all processing is carried out in completely closed systems.

1.7 Solid/Hazardous Waste Generation and Disposal

Hazardous Solid wastes generated at Abhilash Chemicals and Pharmaceuticals Pvt Ltd (API division) will be handled as per Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016

2 INTRODUCTION

2.1 Identification of Project and Project Proponent

Abhilash Chemicals and Pharmaceuticals Pvt Ltd (ACPL) proposes to establish a greenfield project for the manufacture of active pharmaceutical ingredients (API) at Naickenpatti Village near Madurai, which is 1,62,563 sq.m.

The proposed project will involve creation of state of the art production plant for the manufacture of Metformin HCL (Anti diabetic API).

2.2 Brief Description of nature of the Project

The proposed project was for manufacturing Greenfield Active pharmaceutical ingredient (API) manufacturing plant to produce Metformin HCl Paracetamol and Bronopol located S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,), 37/(8A, 8C, 8E, 8F, 8G, 8H) of Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The estimated cost of the proposed project is INR ~26 Crores. The Production capacity 2225 MT/Month and by-products generation capacity will be 3255 MT/Month. ToR from Moef&CC was granted for this project vide ToR Letter No. F. No. J-11011/170/2016-IA-II (I) dated 19th July 2017.

Here we are applying for the Amendment in ToR for the following project. The proposed project is for manufacturing Greenfield Active pharmaceutical ingredient (API) manufacturing plant to produce Metformin HCl located S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,), 37/(8A, 8C, 8E, 8F, 8G, 8H), 27/4 of Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The estimated cost of the proposed project is INR ~20 Crores. The Production capacity will be 1000 MT/Month and there will be no by-products / co-products

The detailed production capacities are given as below in **Table 2-1**.

Table 2-1: Production Capacities

S. No.	Name of Products	Production Capacity in MT/Month	
		Existing approved in ToR	Proposed after amendment
Products			
1	Metformin Hydrochloride	1000	1000
2	Paracetamol	1200	0
3	Bronopol	25	0
	Total	2225	1000
By-Products			
1	Acetic acid (dilute)	2400	0
2	NaBr solution	55	0
3	NaCl Salt	800	0
	Total	3255	0

Final Product List after Amendment

S. No.	Name of Products	Production Capacity in MT/Month
1	Metformin Hydrochloride	1000

2.2.1 Technology

The project will use state of the art process design, plant & machinery and engineering. The project will use the latest safety measures / water recovery concepts and pollution abatement measures.

Metformin HCL will be manufactured from basic commodity ingredients using clean synthesis techniques and will involve unique recovery, recycling strategies to minimize raw material and water usage. In addition, state of the art engineering / automation / process safety measures will be applied.

2.2.2 Company Vision and Strategy

In the next 5 years, ACPL's vision is to become a global participant in the Pharmaceutical industry and be recognized, admired for setting high standards in safety, cGMP / regulatory compliance and business practices.

The company's vision is to create a state of the art supply base for Metformin HCL in terms of safety, efficiency, capacity and the highest cGMP / regulatory compliance.

The company also intends to employ unique processes and achieve highest cGMP / regulatory compliance. The proposed project will enable the company to establish a foothold in this product which has a huge global consumption potential.

2.3 Need for the project and it's importance to the country and/or region

The proposed project involves the setting up state of the art, global capacity plants to produce Metformin hydrochloride Active pharmaceutical ingredients (APIs) which is on the WHO list of essential medicines.

The plant will employ unique recovery, recycling strategies that will make it a model, environmentally friendly plant producing a critical essential API.

The proposed project/unit will be a significant tax payer, generator of valuable foreign exchange and EXIM commerce through Tuticorin Seaport. The proposed plant will be a valuable source of stable, local employment for hundreds of people.

The need for this project is thus justified and is important for the region and the nation.

2.4 Demand Supply Gap

Metformin HCL

Annual global demand for Metformin HCL has been estimated between 40,000 – 45,000 MT with global prescription demand for Metformin HCL growing at above 10% per annum - thus requiring at least 4000 – 4500 MT additional supply per year.

In addition, the increasing stature of Metformin HCL as a safe, proven, cost effective, gold standard drug of choice for Diabetes treatment has resulted in various favorable developments such as a) the inclusion of Metformin HCL in almost all Government funded / aided Drug supply program worldwide b) rapid growth in volume demand for Metformin HCL in emerging markets.

More than 90% of the global production capacity for Metformin HCL bulk drug is located in India on account of various factors including India's strong methylamine supply chain, very well-established process / product quality and the significant amount of Finished dosage form manufacturing taking place in India for export markets.

2.5 Import vs. Indigenous Production

All requirements for Metformin HCL in India are currently being met by local manufacturers. India has one of the world's largest population of Diabetic patients and Metformin HCL is considered to be a gold standard drug of choice.

2.6 Export Possibility

The prime focus area of this proposed project is in the creation of state of the art production facilities for export-oriented manufacture of bulk Metformin HCL. Metformin HCL API from India is already very well accepted and in demand from the Global Pharmaceutical Industry. So there is definite Export possibility supported by growing demand from the Domestic market.

2.7 Employment Generation (Direct and Indirect) due to the project

The proposed unit would generate employment both directly and indirectly, also due to development of downstream industries. A large portion of these is likely to trickle down to the local people. Besides this, suitably qualified persons from the study area will get employment on permanent basis for actual operation of the plant in the form of skilled or semi-skilled, or unskilled labour.

Thus, substantial amount of employment and income are expected to be generated for the local people. Hence, it can be ascertained that the project is going to have significant employment and income effects.

During construction phase: 50 persons

During Operation phase: 250 persons

3 PROJECT DESCRIPTION

3.1 Type of Project including interlinked and interdependent projects, if any

3.1.1 Type of Project

The proposed project is for manufacturing of synthetic organic chemicals that is covered under Category – 5 (f) "A" as per new EIA notification vide gazette no. S.O. 1533 dated 14th September 2006.

3.1.2 Interlinked and Interdependent Project

There is no project interlinked or interdependent with the proposed project.

3.2 Location (map showing general location, specific location and project boundary & project layout) with coordinates

The proposed facility will be located at Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The total plot area of the unit is 1,62,563 sq.m. Site Boundary Map on google image is presented at **Figure 3-1**. Site Layout Map of project area is presented as **Figure 3-2**.

Figure 3-1: Site Boundary Map on Google Image

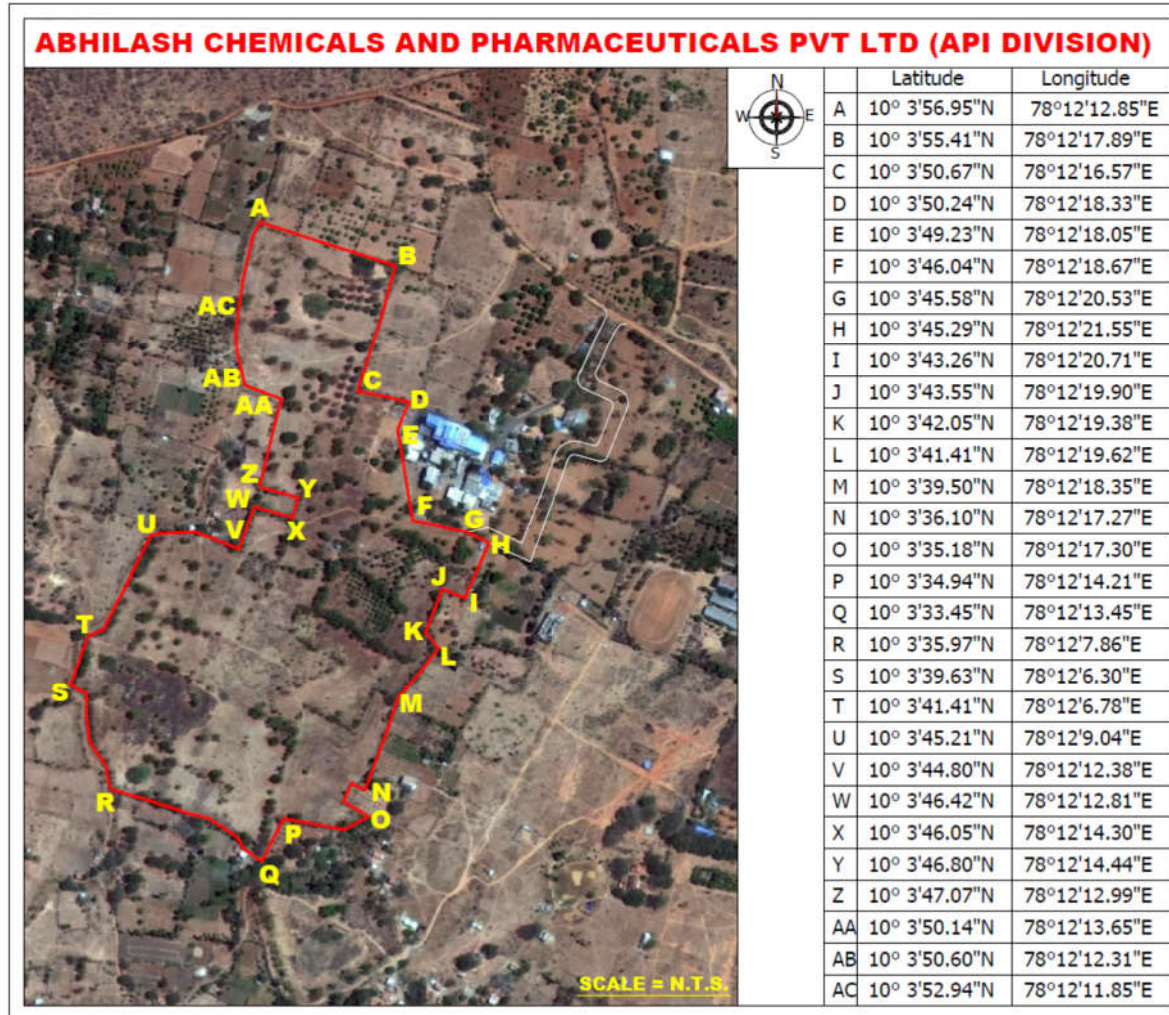
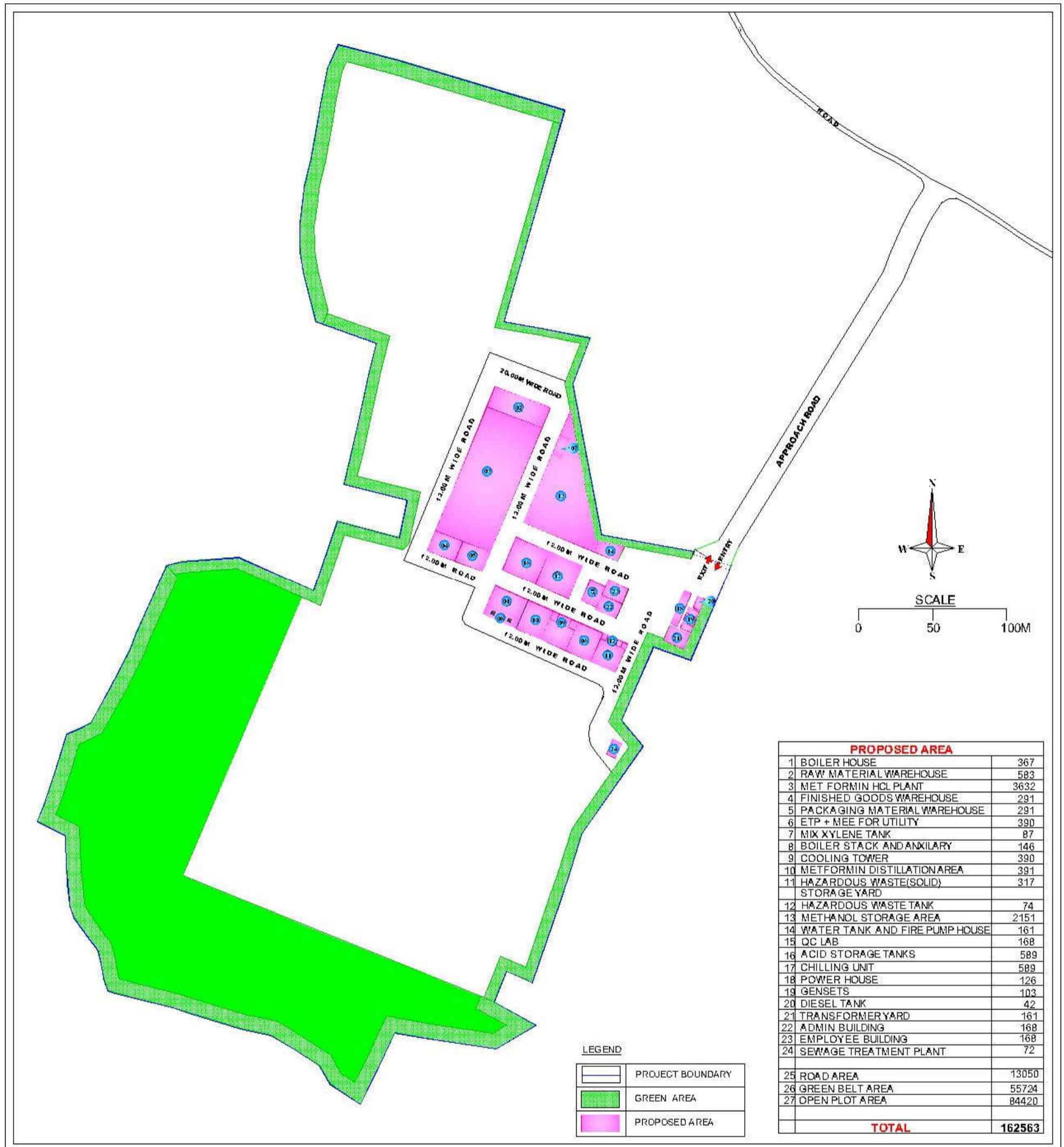


Figure 3-2: Site Layout Map



3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted

Not applicable, as the application is for amendment in ToR.

3.4 Size or Magnitude of Operation

Abhilash Chemicals and Pharmaceuticals Pvt Ltd (API division) plans to establish a Greenfield project for the production of active pharmaceutical ingredients (APIs) with proposed capacity of 1000 MT / Month. 34.3% of the land will be used for green cover (55,660 m²). The estimated cost of the proposed facility is INR 20 Crores. Details pertaining to the production capacity have already been provided in **Table 2-1**.

3.5 Process Description with Process Details (Schematic Diagram / Flow Chart showing the project lay out, component of the project etc. should be given)

Process description with process flow diagram of all products are given in **Annexure 4 of Form-1**.

3.6 Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

Several raw materials will be required for the manufacture of active pharmaceutical ingredients at Abhilash Chemicals and Pharmaceuticals Pvt Ltd (API division). These include organic and inorganic compounds and maybe used in gas, liquid and solid forms. The required quantity of raw materials will be obtained from different suppliers across the country and may also be imported. Raw materials and finished products will be transported primarily through road. Important raw materials and their proposed storage capacities are as listed below.

Storage Details are provided in **Annexure 5 of Form-1**.

3.6.1 Transportation details of Raw Materials

Table 3-1: Transportation Details of Raw Material

S. No.	Chemical Name	State	Consumption (MT / month)	Means of storage	Capacity	No of storage
1	Dicyandiamide	Solid	600	Bags	160	1
2	Dimethylamine hydrochloride	Solid	650	Bags	100	1
3	Mix Xylene	Liquid	10	Tank	12 MT	1
4	Activated Carbon	Solid	3	Bags	5 MT	1
5	Hyflosupercel	Solid	1	Bags	2 MT	1
6	Methanol	Liquid	180	Tank	50 MT	2
7	Hydrochloric acid (30% w/w)	Liquid	40	Tank	50 MT	1

Table 3-2: Storage Details of Products

S. No	Chemical Name	State	Means of storage	Capacity	No of storage
1	Metformin Hydrochloride	Solid	Bags/Drums	100 MT	1

3.7 Resource Optimization / recycling and reuse envisaged in the project, if any, should be briefly outlined

The company shall apply state of the art concepts, engineering and process design to reduce resources required for production namely - Raw materials, fuel, Water, Electricity and Solvents.

It is recognized that water is a precious resource and accordingly all production systems shall be conceived with the objective of reduction, stream segregation, recycle, reuse of water.

The use of solvents will be minimized. However, wherever solvents need to be used - they will be recovered and reused using state of the art recovery techniques.

The company will also put in place systems to ensure that resource usage is monitored and resource optimization / Environmental objectives are met.

3.8 Availability of water its source, energy/power requirement and source should be given

3.8.1 Water consumption

The below tables shows the water consumption and waste water generation figures.

Table 3-3: Existing Water Consumption and Effluent Generation Pattern

S. No.	Description	Water Consumption in KLD	Wastewater Generation in KLD	Wastewater Treatment Facility
A	Process			
1	Bronopol	1.3	1.2	Go with NaBr solution as By Product
2	RO Plant	244	122	Used for cooling tower make up and Bathing/Flushing activities
i	RO Reject Water	122		
a	Cooling Tower	97	25	Blow Down to ETP followed by MEE
b	Domestic Use (Bathing & Flushing)	25	25	To STP & treated sewage will be reused for Gardening
ii	RO Permeate Water	122		
a	Metformin (HCL)	47	37.5	Reused for Cooling Tower Make up after distillation
b	Paracetamol	75	59	Go to Salt Recovery System and condensate will be reused in process & Salts will be sold as by product
B	Boiler	24	5	Blow Down to ETP followed by MEE
C	Domestic (Canteen)	5.7	5	To STP & treated sewage will be reused for Gardening
	Total Water Consumption & wastewater Generation	275	230	30 KLD - will be treated in STP and treated sewage will be reused for gardening. 30 KLD - will be treated in ETP followed by MEE and condensate from MEE will be reused for boiler make up & Gardening. The MEE salts will be sent to TSDF facility.

				The surplus 170 KLD wastewater are reused in process.
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Table 3-4: Proposed Water Consumption and Effluent Generation Pattern (Total After Amendment)

S. No.	Description	Water Consumption in KLD	Wastewater Generation in KLD	Wastewater Treatment Facility
A	PROCESS			
	RO Plant	61	53.50	
(i)	RO permeate water (For Metformin HCL process)	45	37.50	Taken to central ETP followed by Tertiary RO and MEE
(ii)	RO Reject Water	16	16	Taken to central ETP followed by Tertiary RO and MEE
B	COOLING TOWER	13	16.5	Blow Down from cooling tower taken to central ETP followed Tertiary RO and MEE
C	BOILER	5	2.5	Blow Down from boiler taken to central ETP followed by Tertiary RO and MEE
D	DOMESTIC USE (CANTEEN, FLUSHING & BATHING)	20	20	To STP & treated sewage will be used for Gardening
	Total Water Consumption & wastewater Generation	99	92.50	20 KLD from (D) will be treated in STP and water will be used for Gardening. 72.50 KLD from A(i), A(ii), B and C will be taken to central ETP, followed by Tertiary RO and MEE. Permeate from Tertiary RO (54 KLD) and MEE condensate (17.5 KLD) are reused in cooling tower and boiler make up respectively.

3.8.2 Power Requirement

The power requirement for the proposed facility will be met through HT supply from the grid of Tamilnadu electricity board (TNEB). Total estimated electrical load for the proposed manufacturing unit is around 2000 HP. The proposed plant will have 3 DG sets of 500 KVA each for emergency power back up.

Table 3-5: Fuel Consumption

Sr. No.	Stack Attached to	Capacity	Stack Nos.	Stack Height	Type of Fuel used	Fuel consumption	Remarks
Existing							
1	Boiler	5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	15 MT/Day	Replaced by proposed Boilers
2	Boiler	5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	15 MT/Day	
3	Boiler	1.5 T/Hr	1	30.5	Firewood/ agrowaste briquettes	5 MT/Day	

Sr. No.	Stack Attached to	Capacity	Stack Nos.	Stack Height	Type of Fuel used	Fuel consumption	Remarks
4	DG Set	500 KVA	3	9	HSD	60 Lit/Hr each	No Change
Total After Proposed Amendment							
1	Boiler 1, Boiler 2, Boiler 3	Each capacity 2500 kg/Hr. (Total 7500 kg/Hr.)	1 (common stack)	30.5	Firewood/ Agro waste briquettes	7.5 MT/Day per boiler (Total 22.5 MT/Day)	-
2	DG Set	500 KVA	3	9	HSD	60 Lit/Hr each	-

3.9 Quantity of waste to be generated (liquid and solid) and scheme for their management /disposal

The generation of pollutants associated with the proposed project will be in the form of Gaseous emissions, Liquid effluent, Solid waste, and Hazardous waste.

3.9.1 Liquid Management

Details of wastewater generation, treatment scheme and disposal/reuse is given below:

Table 3-6: Waste Water Treatment Scheme

Wastewater stream	Source	Treatment Scheme Provided	Remarks
Washing and Cleaning	Production areas	-	Reused back in respective process
Process Water	Metformin	ETP followed by RO & MEE	Reused back in Cooling tower
Utility blow down	Cooling tower and Boiler	ETP followed by RO & MEE	Reused back in utility
Domestic sewage	Domestic	Sewage Treatment Plant	Gardening

Water treatment

Utility blowdown from Cooling tower, Boiler along with Process water from evaporative crystallization of Metformin will be processed in a Effluent treatment plant having Primary treatment, followed by Tertiary RO (recovered Permeate is used in Cooling tower makeup / Reject is sent to MEE) and MEE. MEE condensate will be used for boiler feedwater makeup.

Residue handling

MEE sludge will be sent to TSDF / AFR / Cement Plant.

Distillation bottom residue resulting from evaporative crystallization of Metformin will be sent to TSDF/AFR/Cement plant.

Sewage Treatment Plant

Domestic wastewater will be treated in STP and used for gardening within site premises.

3.9.2 Solid / Hazardous Waste

Hazardous Solid wastes generated at proposed site will be maintained as per Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 and will be disposed of as per the details given in **Error! Reference source not found.**

Table 3-7: Existing Hazardous Waste Generation Details

S. No.	Type of Waste	Hazardous Waste Category as per Rule 2008	Quantity MT per Year	Source	Treatment / Disposal
1	Used/spent oil	5.1	4	Industrial Operations using mineral/synthetic oil as lubricant in hydraulic system	To authorized recycler
2	Wastes/Residues containing oil	5.2	1.5		
3	Distillation Residues	20.3	1210	Production/Industrial Use of solvents	To TSDF/AFR/Cement industry
4	Residues and wastes	28.1	2317	Production/Formulation of drugs/ Pharmaceuticals & health care product	To TSDF/AFR/Cement industry
5	Spent catalyst/Spent Carbon	28.2	728		
6	Date expired, discarded and off specification drugs	28.4	1.3		
7	Discarded containers/ barrels, liners, contaminated with hazardous wastes/chemicals	33.3	300	Disposal of barrels containers used for handling of hazardous waste chemicals	To TSDF/AFR/Cement industry/ recycler
9	Chemical sludge from waste water treatment	34.3	21	Purification and treatment of air, water & waste water from the processes in this schedule and common industrial effluent treatment Plants (ETPs)	To TSDF/AFR/Cement industry

Table 3-8: Hazardous Waste Generation Details – Total after Proposed Amendment

S. No.	Type of Waste	Hazardous Waste Category as per Rule 2016	Quantity MT per Year	Source	Treatment / Disposal
1	Used/spent oil	5.1	4	Industrial Operations using mineral/synthetic oil as lubricant in hydraulic system	To authorized recycler
2	Wastes/Residues containing oil	5.2	0.5		
3	Distillation Residues	20.3	1200	Production/Industrial Use of solvents	To TSDF/AFR/Cement industry
4	Residues and wastes	28.1	1200	Production/Formulation of drugs/ Pharmaceuticals & health care product	To TSDF/AFR/Cement industry
5	Spent Carbon (From production of drugs)	28.3	48		
6	Date expired drugs	28.5	0.5		
7	Empty barrels/containers/liners contaminated with hazardous chemicals / wastes	33.1	100	Disposal of barrels containers used for handling of hazardous waste chemicals	To TSDF/AFR/Cement industry/ recycler
9	Chemical sludge from waste water treatment	35.3	50	Purification and treatment of air, water & waste water from the processes in this schedule and common industrial effluent treatment Plants (ETPs)	To TSDF/AFR/Cement industry

3.10 Schematic Representation of the Feasibility Drawing which give Information of EIA Purpose

A drawing (i.e. Site Layout Plan) explaining the salient project features with an index giving area break up is attached as **Figure 3-2**.

4 SITE ANALYSIS

4.1 Connectivity

The project site is located at Naickenpatti Village, near Madurai Tamilnadu. A brief summary of connectivity of the site by Road / Air / Rail is as per below:

By Road

The project is located with excellent road access to the nearest city, Madurai via State highway 72 (~ 1 KM – E) [Madurai city (Corporation limit) - 11 KM (SSW)]. It is also located very close to the below listed roadways which connect it all major cities and markets in Tamilnadu and other parts of South India.

- State highway 72A (Madurai to Alagarkovil to Melur Road) - 5.1 KM (SW)
- State highway 72 (Madurai to Natham Road) ~ 1 KM (E)
- National highway 7 (Varanasi to Kanyakumari Road) - 25 KM (W)
- National highway 45B (Trichy to Tuticorin Road) - 21.3 KM (E)

Distances of project site from some key cities and locations in South India are as per below:

- Tuticorin (Nearest seaport) 175 km (S)
- Chennai (Capital city, Seaport, Airport) 460 km (NE)
- **Major cities in Tamilnadu** : Dindigul - 61 km (NW), Erode - 200 KM (NNW), Coimbatore – 217 KM (NW), Salem - 240 KM (N), Tirunelveli - 187 km (SSW), Tiruchirapalli (Trichy) - 120 KM (NE)
- **Major cities in South India** : Cochin, Kerala - 292 km (W), Trivandrum, Kerala - 336 km (SSE), Bangalore, Karnataka - 440 km (N)

By Air

The nearest airport is Madurai International Airport which is 36 km (SSW) away. Madurai airport is one of the largest airports in Tamilnadu with daily connectivity to Chennai, Bangalore, Hyderabad and Mumbai. It also offers international flights to Colombo and Dubai.

Other airports that may be used are Tiruchirapalli international airport which is 140 km (NE) away. Chennai international airport (which is the largest airport in the state and one of the biggest airports in India) is approx. 460 km (NE) away.

By Rail

The nearest railway station in Madurai junction which is located - 18.5 km (SSW) away. It is graded A1 by the Indian railways (as amongst the 100 busiest stations in India). It is extremely well connected to Chennai (with multiples trains running daily) (which is south India's largest train station) and also connected to other cities in Tamilnadu and south India. There are also several weekly trains to Maharashtra, Andhra Pradesh, Telangana, and Karnataka. Other nearby railway stations include Dindigul, Tiruchirapalli and Tirunelveli.

4.2 Land Form, Land Use and Land ownership

The proposed project is a Greenfield project and will be taken up in land which is already completely owned by the project proponents and is already compounded / fenced. The site and surroundings are non-agricultural and the total plot area of the unit is 1,62,563 m². Total Green Belt area in the site premises will be 55,660 m² (34.2% of total site area).

4.3 Topography (along with map)

The city of Madurai lies on the flat and fertile plain of the river Vaigai, which runs in the northwest-southeast direction through the city, dividing it into two almost equal halves. The Sirumalai and Nagamalai hills lie to the north and west of Madurai. The district is endowed with a semi-arid tropical climate.

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, etc sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

Five reserve forests (RF) are present within 10 km. of proposed project.

1. Alagar Hills R.F at ~ 0.150 km in N
2. Kiluvamalai R.F. at ~ 3.7 km in NW
3. Usilampatti R.F. ~ 4.71 km in NW
4. Sanamalai R.F. ~ 6.61 km in N
5. Perumalmalai R.F. ~ 7.70 km in SE

Another seven reserve forests are present in between 10 km to 15 km.

1. Chembulimalai R.F. ~ 10.3 km in NNE
2. Vellaimalai R.F. ~ 11.56 km in NNW
3. Perumalai R.F. ~ 10.33 km in NNW
4. Sirumalai R.F. ~14.48 km in NW
5. Sembatti Hills R.F. ~ 13 km in NW
6. Waguttumalai R.F. ~ 14.10 km in WNW

4.5 Existing Infrastructure

Supporting infrastructure such as approach roads, drainage, parking, electricity etc are already in place.

4.6 Soil classification

The Soil at proposed site is red loamy hilly soil at depth of 15 to 60 cms, below which bouldery strata is present.

4.7 Climatic data from secondary sources

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD), Long Term Climatological Tables, 1961-1990, Madurai (A). These tables give useful information about a region's weather, since they are collected over a 30-year period.

4.7.1 Temperature

Mean daily maximum temperature is recorded in the month of May at 40.8°C. January is generally the coldest month, with minimum morning temperature at 18.4°C.

4.7.2 Wind

Table 4-1: Predominant Wind Direction

Predominant Month	First		Second		Third	
	Morning	Evening	Morning	Evening	Morning	Evening
January	N	NE	NE	E	NW	N
February	N	NE	NE	E	NW	SE
March	NE	E	N	NE	E	SE
April	NE	SE	N	E	E	S
May	NW	SE	N	S,W	NE, W	E
June	W	W	NW	NW	SW	S, SE
July	NW	W	W	NW	N	S, SE, SW
August	NW	W	W	S	N	SE
September	NW	W	N	SE	W	S
October	N	NE	NW	E	NE	SE
November	N	NE	NE	E	NW	N, SE
December	N	NE	NE	E	NW	N

4.7.3 Rainfall

The total rainfall in year is observed to be 833.9 mm. Distribution of rainfall by season is 25.7 mm in winter (January, February), 111.5 mm in summer (March, April, May), 325.3 mm in South West monsoon (June, July, August, September) and 367.4 mm in North East monsoons (October, November & December).

4.7.4 Cloud Cover

The area remains cloudy between the months of June – September, which is the active period of the monsoon season. Cloud cover is 6.1- 6.4 oktas during monsoon season.

4.7.5 Humidity

Most humid conditions are found in the North East monsoons, followed by winter, summer and South West Monsoon in that order. Mornings are more humid than evenings and humidity ranges from a high of 76 – 79% in North East monsoon mornings to a low of 38 – 46% in summer evenings. During South West monsoon season, in morning humidity remains between 58 – 66% and in the evening it remains between 47 – 55%.

4.8 Social infrastructure available

The project site is located about 11 km from Madurai city corporation limits where all conceivable major social infrastructure is available.

There are neighboring villages within 2 - 3 km where supplementary infrastructure such as housing, sanitation, residential infrastructure, education, primary health center, etc are available.

5 PLANNING BRIEF

5.1 Planning Concept (type of industries, facilities, transportation etc) Town and Country Planning/Development authority Classification

The proposed project will be established in land that is completely owned by the project proponents and is already compounded / fenced. The site and surroundings are non-agricultural and land use is unclassified. The project site is extremely well connected to nearest major urban center (Madurai city) and also to State and National highways.

5.2 Population Projection

During the Construction and Execution phase of the Project, it is estimated that about 50 workers will be involved.

Thereafter during the operation phase at the new plant around 250 positions will be created and filled over the course of startup of the project.

5.3 Land Use planning (Break up along with green belt etc.)

The area breakup at site is given in **Table 5-1**.

Table 5-1: Area Breakup at Site

S. No.	Particular	Area in m ²	% Area Breakup
1	Boiler house	367	0.23
2	Raw material warehouse	583	0.36
3	Metformin HCL plant	3632	2.23
4	Finished goods warehouse	291	0.18
5	Packaging material warehouse	291	0.18
6	ETP + MEE for utility	390	0.24
7	Mix Xylene Tank	87	0.05
8	Boiler stack and auxiliary	146	0.09
9	Cooling tower	390	0.24
10	Metformin distillation area	391	0.24
11	Hazardous water (Solid) storage yard	371	0.23
12	Hazardous water storage tank	74	0.05
13	Methanol storage area	2151	1.32
14	Water tank and fire pump house	161	0.10
15	QC Lab	168	0.10
16	Acid storage tanks	589	0.36
17	Chilling unit	589	0.36
18	Power house	126	0.08
19	Gensets	103	0.06
20	Diesel tank	42	0.03
21	Transformer Yard	161	0.10
22	Admin Building	168	0.10
23	Employee building	168	0.10
24	Sewage treatment plant	72	0.04

S. No.	Particular	Area in m ²	% Area Breakup
25	Road area	13050	8.03
26	Greenbelt area	55724	34.28
27	Open plot area	82278	50.61
	TOTAL	162563	100.00

5.4 Assessment of Infrastructure Demand (Physical and Social)

The proposed project is located at S.F No. 28/8, 29/(1,2), 30/(1,4), 31/(1A,1B,1C,3), 32/2, 33/(7,8,9), 34/(3,4,5) 35/(3A,3B, 4A,4B,4C,4D,4E,,), 37/(8A, 8C, 8E, 8F, 8G, 8H), 27/4 Naickenpatti Village, Madurai East Taluk, Madurai District, Tamilnadu. The site is located ~ 11 km from Madurai city corporation limit.

Physical Demand:

Water: Water demand will be met from onsite borewells. The water demand will be 99 KLD.

Electricity: The electricity will be sourced from the grid of Tamilnadu electricity board (TNEB). DG sets will be installed to provide backup power in case of power outage. Total proposed connected load will be ~ 2000 HP.

Machinery: Machinery that will be installed include Reactors, Storage tanks, Day tanks, distillation columns, condensers, Chilled Water unit, scrubbers, evaporators, spray dryer, Boilers and other similar equipment.

Materials and Others: Raw material requirements will be met by domestic suppliers from within the state as well as from other states. Some raw materials will also be imported via Tuticorin seaport. Other general materials such as industrial consumables, spares and engineering items shall be procured locally. Other general facilities are all available in the area.

5.5 Amenities / Facilities

Following facilities will be made available at site:

- Occupational health center
- First Aid Facility
- Ambulance van
- Hygienic Drinking Water Facility
- Green Area
- Regular Worker Medical Checkup Facility
- Locker room, Rest area, Toilets, Shower and Dining areas

6 PROPOSED INFRASTRUCTURE

6.1 Industrial Area (processing area)

The proposed project will be established in land which is completely owned by the project proponents and is already compounded / fenced. Infrastructure suitable for operations of Active pharmaceutical ingredients plant including approach roads, supporting infrastructure etc are already available.

Infrastructure for production, storage, power distribution, firefighting, testing etc. will be appropriately added after thorough scientific due diligence and detailed engineering.

6.2 Residential Area (non-processing area)

No residential facility will be provided.

6.3 Green belt

Around 34.3% of total plot area will be developed as greenbelt.

6.4 Social Infrastructure

As described in previous sections, the project site is located about 11 km from Madurai city corporation limits where all conceivable major social infrastructure is available.

There are neighboring villages within 2 - 3 km where supplementary infrastructure such as housing, sanitation, residential infrastructure, education, primary health center, etc are available.

The project proponents may work with the local villages to strengthen social infrastructure as part of CSR activity.

6.5 Connectivity (Traffic and transportation road/ rail/metro/water ways etc.)

As described in Section 4.1 earlier the site is extremely well connected by Road, Air and Rail. No new infrastructure is envisaged or required.

The project proponents may work with the local villages to strengthen road infrastructure as part of CSR activity.

6.6 Drinking water management (source & supply of water)

Safe, hygienic drinking water will be provided on site. The drinking water will be generated in-house.

6.7 Sewage system

Water from domestic usage and sewage will be collected and treated in a sewage treatment plant. The treated water from the STP shall be utilized for gardening.

6.8 Industrial waste management

Wastewater management is given in **Annexure 7** of **Form 1**. Hazardous Waste management is given in **Annexure 9** of **Form 1**.

6.9 Power requirement & supply/ source

The power requirement for the proposed facility will be met through HT supply from the grid of Tamilnadu electricity board (TNEB). Total estimated electrical load for the proposed manufacturing unit is around 2000 HP. The proposed plant will have 3 DG sets of 500 KVA each for emergency power back up.

7 REHABILITATION AND RESETTLEMENTS (R&R) PLAN

7.1 Policy to be adopted (central/state) in respect of the project affected persons including home oustees, land oustees and landless labourers (a brief outline to be given)

Not applicable as rehabilitation and resettlement will not be required.

8 PROJECT SCHEDULE AND COST ESTIMATE

8.1 Likely date of start of construction and likely data of completion (time schedule for the project to be given)

The Project Time Schedule for the Project is as given in **Table 8-1**.

Table 8-1: Project Time Schedule for project at ACPL

Activities	Start	Finish
EC & CTE Approval	March 2019	July 2019
Detailed Engineering	August 2019	November 2019
Procurement and Delivery	August 2019	March 2020
Construction at Site (Buildings, Mech., Piping, Elec., Inst etc.)	August 2019	July 2020
Mechanical Commissioning	July 2020	September 2020
Pre-Commissioning	August 2020	September 2020
Process Startup and Stabilization (Phase I)	October 2020	December 2020

8.2 Estimated project cost along with analysis in terms of economic viability of the project.

8.2.1 Fixed Capital

Existing project cost was INR 26 Crores. The total project cost after proposed amendment will be INR 20 Crores. Below is a brief summary of capital investment at site to develop necessary infrastructure and install manufacturing capabilities.

S. No	Cost Head	Cost (INR Crore)
1	Land	0.5
2	Land Development	
3	Building	7
4	Plant & Machinery (including Utilities)	9
5	Other Infrastructure	1
	Sub Total (A)	17.50
6	Project Consultancy	0.34
7	Statutory clearances	0.34
	Sub Total (B)	0.68
	Total (A+B)	18.18
8	Contingency @ 10%	1.82
	Grand Total	20

9 ANALYSIS OF PROPOSAL

9.1 Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area

The proposed project will have a significant impact on the economics of the surrounding hamlets and villages by creating employment opportunities for qualified local people, by creating indirect economic activity and by providing opportunities for local tradesmen and entrepreneurs.

Although South Tamilnadu has very favorable demographics and potentially qualified workforce, there are very few companies in the Chemical / Pharmaceutical sector in the region. The projects will be amongst the very few ones to have emerged in the Pharmaceutical Sector from Tamilnadu in the last 10 years and will create hundreds of technical and skilled jobs. The company also has the potential to attract back several skilled and senior professionals employed in the pharma industry / Speciality chemical industry from other parts of India/abroad and result in incubation of specialized skills and work culture amongst locally educated junior employees.

The project will also be a consistent generator of Direct, In-direct taxes and Foreign exchange in the Madurai Region which is not as industrialized as parts of Maharashtra, Gujarat or the Greater Chennai region in Tamilnadu.

The proposed project will trigger multifold increase in export/import activity and will proportionately positively impact the company's contribution to the development of Tuticorin Seaport - which is a small, but strategically emerging regional port.

As a long term stakeholder in the local community nearby the project site, the company shall make social investments as part of its CSR initiatives to improve healthcare, education, sanitation, infrastructure in the area and thus contribute to the well being and long term development of the local community.



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