

EXECUTIVE SUMMARY OF DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT & EMP

FOR

Proposed Expansion Project for Manufacturing of Manmade Fibre
(From 328.5 KTA to 1620 KTA)

AT

Survey No. 148, 149/2, 150/A, 168/123, 168/124, 168/124A, 168/137 & 138, 175/1, 177/1 to 4, 178, 180, 180/1 to 3, 180/6 & 7, 181, 182, 183/1 to 4, 183/8A, 183/9A, 184, 185/1 & 2, 186/A, 189/3, 190/5 & 6, 191/1 to 4, 193/1, 193/2, 193/4, 203/1 to 6, 210/1 to 7, 210/5A, 211/1, 212, 212/B, 213/1 to 14, 214/1 to 3, 215, 216/1 to 8, 216/4B, 216/8A, 217/1 & 2, 218, 219, 223/1 to 5, 224/1 to 3, 225/1, 225/2, 225/5, 227, 228/2, 228/ 4, 228/5, 229/1A, 229/1 & 2, 234/1 & 2, Dabhel Ind. Co. Op. Soc. Ltd., Dabhel, Daman - 396 210 (U.T. of DNH & DD).

Report No.: PLPL/Ex. Summary–Eng./Wellknown/2021

Project Sector & Category: 5(d)-“Manmade Fibre”, Category B

Baseline Monitoring Period: December 2019 to February 2020

Project Proponent:



Prepared By:



1st Floor, Bhanujyot Complex, Plot C5/27, Opp. Oriental Ins. Co. Ltd.
Nr. GIDC Char rasta, Vapi – 396 195

NABET Accreditation Certificate No.: NABET/EIA/1821/SA 0127
Issue Date: 03/02/2021, Valid Upto: 29/01/2022



Executive Summary

1. PROJECT DESCRIPTION

M/s. Wellknown polyesters Ltd. (WPL) started its manufacturing activities in October 1996. Also, since 2008, the unit is engaged in manufacturing of POY & FDY through continuous polymerization as a part of backward integration program.

WPL, Daman has obtained EC –

- a) For manufacturing of existing products i.e., Partially Oriented Yarn (POY)/ Fully drawn Yarn (FDY) @328.5 kTA, vide file no. J-11011/318/2008-IA-II (I) dated 25th Sep 2008.
- b) For manufacturing of Polyester Staple Fiber (PSF) from Polyester Chips @160 kTA, vide F. No.: CF/DMN/13/2018-19/58 dated 3rd Jan 2020.

WPL now plans for proposed expansion of polyester plant by capacity enhancement and addition of similar category new product PSF (Polyester Staple Fiber) from 328.5 KTA to 1620 KTA at Survey No. 148, 149/2, 150/A, 168/123, 168/124, 168/124A, 168/137 & 138, 175/1, 177/1 to 4, 178, 180, 180/1 to 3, 180/6 & 7, 181, 182, 183/1 to 4, 183/8A, 183/9A, 184, 185/1 & 2, 186/A, 189/3, 190/5 & 6, 191/1 to 4, 193/1, 193/2, 193/4, 203/1 to 6, 210/1 to 7, 210/5A, 211/1, 212, 212/B, 213/1 to 14, 214/1 to 3, 215, 216/1 to 8, 216/4B, 216/8A, 217/1 & 2, 218, 219, 223/1 to 5, 224/1 to 3, 225/1, 225/2, 225/5, 227, 228/2, 228/ 4, 228/5, 229/1A, 229/1 & 2, 234/1 & 2, Dabhel Ind. Co. Op. Soc. Ltd., Dabhel, Daman - 396 210 (U.T. of DNH & DD).

The list of products is given in table 1.

Table 1: List of Products

S. No.	Product	Production Capacity (KTA)		
		Existing	Proposed	Total
1.	Partially Oriented Yarn (POY)/ Fully drawn Yarn (FDY)#	328.5	584.0	912.5
2.	Polyester Staple Fiber (PSF) #	--	547.5	547.5
3.	Polyester Staple Fiber (PSF) from Polyester Chips*	--	160.0	160.0
Total		328.5	1291.5	1620.0

Note:
 1. #POY, FDY & PSF manufactured through continuous polymerization process using raw materials such as PTA + MEG.
 2. *EC had obtained for Polyester Staple Fiber (PSF) from Polyester Chips vide F. No.: CF/DMN/13/2018-19/58 dated 3rd Jan 2020.

(Source: Wellknown polyesters Ltd. Daman)

The current EIA report has been prepared in compliance to the awarded TORs by MoEF&CC (in absence of UTEIAA during that period), vide its file no. J-11011/318/2008-IA-II(I) dated 20th Feb 2021.

2. RESOURCE REQUIREMENTS

The resource requirements of the proposed project are as below:

Table 2: Resource Requirement

Resource type	Requirement	Source
Land	<ul style="list-style-type: none"> • Existing WPL Complex: 214651 m² • Proposed: 60211 m² • Total: 274862 m² 	The existing set up is not sufficient to fully accommodate the proposed expansion project hence the additional plots for the project have been purchased from private owners and transferred in the company's name. These plots are adjacent to the existing site/units. All the plots are located in Industrial Zone-I as per the revised regional plan of Daman District 2005–2021.



Resource type	Requirement	Source
Raw-materials	<ul style="list-style-type: none"> • Purified Terephthalic Acid - 0.858 T/T • Mono Ethylene glycol - 0.325 T/T • Titanium Dioxide - 0.00272 T/T • Catalyst - 0.0003 T/T • Modifier - 0.00015 T/T 	The raw materials for the CP process are indigenously available and also imported.
Water	<p>Existing: 379 KLD (Fresh – 110.5 + Recycle – 268.5)</p> <ul style="list-style-type: none"> • Domestic: 14 KLD • Industrial: 328 KLD • Gardening: 37 KLD <p>Proposed: 14096 KLD (Fresh – 9494.5 + Recycle – 4601.5)</p> <ul style="list-style-type: none"> • Domestic: 46 KLD • Industrial: 13767 KLD • Gardening: 283 KLD <p>Total: 14475 KLD (Fresh – 9605 + Recycle – 4870)</p> <ul style="list-style-type: none"> • Domestic: 60 KLD • Industrial: 14095 KLD • Gardening: 320 KLD 	Dabhel Gram Panchayat Pond/ Canal Water/ Kolak River Check Dam
Power	<p>Existing: 15.95 MW</p> <p>Proposed: 57.7 MW</p> <p>Total: 73.65 MW</p>	<ul style="list-style-type: none"> • Daman Electricity Board • D.G. Set – standby
Fuel	<p>Existing:</p> <ul style="list-style-type: none"> • FO – 25 KLD • LDO – 100 L/hr <p>Proposed:</p> <ul style="list-style-type: none"> • FO – 200 KLD OR • Natural Gas – 261840 scm/day OR • Biomass Briquette – 450 TPD • LDO – NIL <p>Total:</p> <ul style="list-style-type: none"> • FO – 225 KLD OR • Natural Gas – 261840 scm/day OR • Biomass Briquette – 450 TPD • LDO – 100 L/hr 	<ul style="list-style-type: none"> • FO – Reliance Industries Ltd. • Natural Gas - GSPC • Biomass Briquette - Local Market • LDO – Local Market
Man-power	<p>Existing: 250 Nos.</p> <p>Proposed: 626 Nos.</p> <p>Total: 876 Nos.</p>	<ul style="list-style-type: none"> • Local Area

(Source: Wellknown polyesters Ltd. Daman)

3. POLLUTION POTENTIAL & MITIATION MEASURES

The summarized statement for proposed pollution load is provided in the following table.

Table 3: Pollution Load Statement

Pollution Load	Remarks/ Mitigation
Wastewater	
<p>Existing: 268.5 KLD</p> <ul style="list-style-type: none"> • Domestic: 11.5 KLD • Industrial: 257 KLD <p>Proposed: 4772.5 KLD</p> <ul style="list-style-type: none"> • Domestic: 38.5 KLD • Industrial: 4734 KLD <p>Total: 5041 KLD</p> <ul style="list-style-type: none"> • Domestic: 50 KLD 	<ul style="list-style-type: none"> • The total wastewater generated from the existing operations is 268.5 KLD (Domestic: 11.5 KLD & Industrial: 257 KLD). The streams like process washing, effluent from CP, softener regeneration along with septic tank overflow@189.5 KLD are treated in in-house ETP and recycled for cooling tower makeup. Remaining 79 KLD cooling tower blowdown is recycled (i.e. 50 KLD is recycled for cooling tower makeup & 29 KLD is



Pollution Load	Remarks/ Mitigation
<ul style="list-style-type: none"> Industrial: 4991 KLD 	<ul style="list-style-type: none"> recycled for greenbelt development). After proposed expansion projects, the streams like process washing, effluent from CP, effluent from PSF along with septic tank overflow @2240 KLD will be treated in in-house ETP. Treated water @50 KLD will be used for greenbelt development. The utility streams like softener regeneration, DM plant regeneration, Boiler blowdown & cooling tower blowdown along with remaining ETP treated effluent @4865 KLD will be diverted to RO system. Reject from RO @243 KLD will be sent to MEE for evaporation. Permeate from RO along with MEE condensate @4820 KLD will be recycled for industrial uses.
Air Emissions	
<p>Process Emission: Off gases from stripping column & glycol ejector.</p> <p>Emission from utility stack</p> <p>Existing:</p> <ul style="list-style-type: none"> TFH - 2 Nos. (Capacity: 10 Million KCal/hr each) D.G. Set: 12 Nos. (Capacity: 625 kVA each)- as Standby power source. <p>Proposed Additional for CP:</p> <ul style="list-style-type: none"> FO/ NG fired TFH - 6 Nos. (Capacity: 10 Million KCal/hr each) (Working – 5 + standby-1) OR Biomass Briquette fired TFH - 3 Nos. (Capacity: 25 Million KCal/hr each) (Working – 2 + standby-1) FO/ NG fired Steam Boiler: 4 Nos. (Capacity: 20 TPH) (Working – 3 + standby-1) OR Biomass Briquette fired Steam Boiler: 3 Nos. (Capacity: 30 TPH) (Working – 2 + standby-1) D.G. Set: 30 Nos. (Capacity: 625 kVA each)- as Standby power source. <p>Proposed Additional for PSF from Polyester Chips:</p> <ul style="list-style-type: none"> FO/ NG fired Steam Boiler: 3 Nos. (Capacity: 10 TPH) (Working – 2 + standby-1) D.G. Set: 15 Nos. (Capacity: 625 kVA each)- as Standby power source. 	<ul style="list-style-type: none"> Off gases generated as process emission are to be burnt in Thermic fluid heater. In existing operations FO & LDO are used as fuel. For the proposed expansion project, it is proposed to use either of NG/ FO/ Biomass Briquette as fuel options in TFH and Boilers.. The D.G. Sets act as standby unit and are utilized only in case of power failure. Multi-cyclone with Bag filter will be used as APCM in Biomass Briquette fired TFH & ESP to Biomass Briquette fired boilers to control PM emission. Adequate chimney height is/ will be provided. Good housekeeping to be maintained in the plant.
Hazardous & Non-Hazardous waste	
<ul style="list-style-type: none"> ETP waste - 122 T/Month, MEE Salt – 360 T/Month Used Oil- 625 L/Month, Empty bags- 97250 Nos./Month, Empty PP Liner- 61500 Nos./Month, Empty drums- 1050 Nos./Month, Polymer waste- 48.2 T/Month Fly Ash – 955 T/Month 	<ul style="list-style-type: none"> The Hazardous wastes are handled, stored & transported as per CPCB/ MoEF&CC Guidelines ETP sludge is/ will be disposed to GEPIL, Silvassa or to be sent for Co-processing to Cement Industry. MEE salt will be disposed to GEPIL, Silvassa. Empty bags/ PP liners is/ will be sold to authorized scrap vendor. Empty drums is/ will be sold to authorized reconditioners Used oil is/ will be sold to registered recyclers/ reprocessors. Polymer waste is/ will be sold to actual users.



Pollution Load	Remarks/ Mitigation
	<ul style="list-style-type: none"> Fly ash will be sold to brick manufactureres/ neighbouring farmers to use as manure.
Noise	
Expected levels Inside the plant: <85dB(A)	<ul style="list-style-type: none"> The noise generation inside plant is expected in a range from 75- 90 dB(A). In CP plant, DCS based operating system is/ will be provided. Minimum manual operation is/ will be done. Safety PPE like earplugs & ear muffs are/ will be provided to workers. Also, acoustic enclosure is/ will be provided to D.G. Set. Regular maintenance of equipment is/ will be done to minimize the noise generated by the equipment.

(Source: Wellknown polyesters Ltd. Daman)

4. BASELINE ENVIRONMENTAL STATUS

The baseline monitoring for meteorology, ambient air quality, water quality, noise levels, soil quality, hydrogeological aspects, biological environment, landuse/ land cover and socio-economic studies has been carried out during post-monsoon season (December 2019 to February 2020) by Precitech Laboratories Pvt. Ltd.

Table 4: Baseline status of the study area

Environmental parameter	Details
Physiography	<ul style="list-style-type: none"> The area is situated in the southernmost part of the Gujarat, which is adjacent to coastal area in western side and hill area in eastern side. Interstate boundary of Dadra & Nagar Haveli and Gujarat is situated in western side at range of 2-5 kms. The area is located on the western side of the foothills of the Western Ghats and some geographical area is covered with patches of reserved forests. The river Kolak and Damanganga criss-cross the area and drain into Arabian Sea near Daman. Towards the northeast it is surrounded by the ranges of Sahyadri Mountains (Western Ghats). The soil is rich and fertile.
Meteorology	<ul style="list-style-type: none"> Temperature: Max. = 36.75°C, Min. =15.15°C, Avg. = 26.05°C. Relative Humidity: Max. = 94%, Min. = 8%, Avg. =42.63%. Cloud cover (Tenths): Max. = 10, Min. = 0, Avg. = 3.64. Rainfall: No rainfall recorded during the study period. Wind Speed: Max. = 6.81 m/s, Min. = Calm, Avg. = 2.62 m/s. Wind pattern: Pre-dominant Direction = NNE, Avg. Wind Speed = 2.62 m/s.
Ambient Air Quality	<ul style="list-style-type: none"> Ambient air quality has been monitored at 9 locations for PM₁₀, PM_{2.5}, SO₂, NO₂, TVOC, CO, HC as methane & HC as non-methane. Range of values recorded in the study area during December 2019 to February 2020. <ul style="list-style-type: none"> PM₁₀ - 47 µg/m³ to 95 µg/m³. PM_{2.5} - 12 µg/m³ to 41 µg/m³. SO₂ – 9 µg/m³ to 25 µg/m³. NO₂ – 15 µg/m³to 37 µg/m³. CO - 0.145 mg/m³ to 1.036 mg/m³. TVOC (as iso-butylene) - 0.022 mg/m³ to 0.202 mg/m³. HC as Methane - 0.313 ppm to 2.027 ppm. HC as Non-Methane - <0.5 ppm



Environmental parameter	Details														
Noise Level	<ul style="list-style-type: none"> Range of recorded values during December 2019 to February 2020: <table border="1"> <thead> <tr> <th rowspan="2">Areas</th> <th colspan="2">L_{eq} range</th> </tr> <tr> <th>Day time</th> <th>Night time</th> </tr> </thead> <tbody> <tr> <td>Industrial area</td> <td>57 to 69.3 dB(A)</td> <td>50.2 to 58.5 dB(A)</td> </tr> <tr> <td>Commercial area</td> <td>54.4 to 56.2 dB(A)</td> <td>46.7 to 47.4 dB(A)</td> </tr> <tr> <td>Residential area</td> <td>47 to 53.8 dB(A)</td> <td>41.1 to 45.7 dB(A)</td> </tr> </tbody> </table> <p>Observed values were well within the prescribed noise standards of CPCB in industrial, residential and commercial area. In Residential zone values are slightly higher than the prescribe standards due to vehicular movements.</p>	Areas	L _{eq} range		Day time	Night time	Industrial area	57 to 69.3 dB(A)	50.2 to 58.5 dB(A)	Commercial area	54.4 to 56.2 dB(A)	46.7 to 47.4 dB(A)	Residential area	47 to 53.8 dB(A)	41.1 to 45.7 dB(A)
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Water Resources & Quality	<p><u>Surface water quality</u></p> <ul style="list-style-type: none"> 8 surface water samples were taken from rivers and ponds falling in the study area. In case of water sample of SW6, DO is falling under class E. It may be due to domestic activities. All parameters of sample SW5, SW7 & SW8 are falling under class A. <p><u>Ground water quality</u></p> <ul style="list-style-type: none"> 8 nos. of ground water samples were taken from ground water sources from different villages within the study area. In the majority of the study area, TDS level, Total Hardness, Calcium, Total Alkalinity, Magnesium and Chlorides crossed the desirable limits. However, the levels of all parameters are found well within the permissible limits as per IS: 10500:2012 Drinking Water Standards. Also, the Total Coliform and Faecal Coliform in all the ground water samples have been found <2 MPN/100ml. 														
Land use/ Land cover pattern	<ul style="list-style-type: none"> Agriculture area covers around 35.61% while remaining 21.82% are fallow land Tree clad area in the study area is around 3%. Road network occupies nearly 1.05% of the total study area which include roads, State Highway and National highway. Settlements occupy around 9.71% & Industries occupy 7.12%. 														
Ecological Layout	<ul style="list-style-type: none"> During the study, total 458 floral species were observed in the study area, which were distributed among 95 Families. 1 Near Threatened species listed IUCN Red list (2021-1) have been recorded in the study area, whereas 102 Least Concern species listed IUCN Red list (2021-1) have been recorded in the study area. Total 286 faunal species belonging to 127 families have been observed or reported by local people. Total 152 species (1- Vulnerable, 150-Least Concern/Lower Risk, 1- Data deficient) are found to be listed in IUCN Red list (2021-1). Total 109 species (4 -Schedule I, 7-Schedule II, 1 -Schedule III, 96-Schedule IV and 1 -Schedule V) are found to be covered in schedules of WPA, 1972 (Amendment 2006). The detailed Ecological Layout has been presented in subsequent Section-3. 														
Socio economic layout	<ul style="list-style-type: none"> A total of 75 villages/town falls fully or partially in the radial distance of 10 km from the project site. Among these, 60% villages fall in Paradi taluka of Valsad district, 28% villages in Daman UT and 12% in Umbergoan Taluka. Thus, taluka level macro level study has been carried out for the radial distance 10 km. 														

5. ACTIVITIES, IMPACTS & MITIGATION MEASURES

5.1. AIR ENVIRONMENT

(a) During Construction phase

- The main source of dust emissions during the construction phase will be from excavation during foundation, levelling of surfaces after foundation works, transportation of construction materials and workers etc. However, the overall impact of these emissions will be short term, reversible, localised and is not expected to contribute significantly to ambient air quality.

*(b) During Operation phase*

- The predicted level of criteria pollutants in the ambient air are well below the limits as prescribed under the National Ambient Air Quality Standards (NAAQS, 2009) and hence the impacts in terms of change in prevailing ambient air quality status can be acceptable for the proposed project with provision of appropriate pollution abatement measures like ESP with Biomass Briquette fired Boiler & Multicyclone + Bag filter with Biomass Briquette fired TFH and adequate stack height.
- The process emission to be emitted as volatile off-gases due to the CP process from Immersion vessels/ glycol ejectors and from Organic stripper to be diverted to be burnt in the Thermic fluid heaters for complete incineration.
- Closed storage & handling system will be provided to reduce fugitive emissions likely to occur during storage, handling & transferring of raw materials & fuel. Leak detection and repair program should be implemented.

5.2. NOISE ENVIRONMENT*(a) During Construction phase*

- Construction activities such as operation of construction equipment, transportation of equipment, man and material etc. are likely to cause an increase in the ambient noise levels. However, the incremental noise generated will be localised & temporary.

(b) During Operation phase

- The major noise generating sources from the proposed project will be from esterification area, polymerization area & spinning area in the manufacturing plant area and TFH, boilers & D.G. Set in utility area. However, from the modelling studies carried out for the prediction of ambient noise due to the proposed project, it has been observed that there will be no considerable increase in the ambient noise levels due to proposed operations. And with the provision of adequate dense greenbelt, the impact due to the proposed project on the noise environment will be negligible.

5.3. WATER ENVIRONMENT*(a) During Construction phase*

- The water requirement for proposed project will be fulfilled by Dabhel Gram Panchayat Pond/ Canal Water/ Kolak River Check Dam.
- Wherever possible, existing facilities to be utilized for handling domestic effluent during construction. Moreover, provision of temporary toilets also to be made, before start of construction activity.
- Hence, there is no significant impact envisaged on water resources and on water environment during the construction phase.

(b) During Operation phase

- The total wastewater generated from the existing operations is 268.5 KLD (Domestic: 11.5 KLD & Industrial: 257 KLD). The streams like process washing, effluent from CP, softener regeneration along with septic tank overflow @189.5 KLD are treated in in-house ETP and recycled for cooling tower makeup. Remaining 79 KLD cooling tower blowdown is recycled (i.e. 50 KLD is recycled for cooling tower makeup & 29 KLD is recycled for greenbelt development).
- After proposed expansion projects, about 5041 KLD wastewater will be generated (Domestic: 50 KLD & Industrial: 4991 KLD). The streams like process washing, effluent from CP, effluent from PSF along with septic tank overflow @2240 KLD will be treated in in-house ETP. Treated water @50 KLD will be used for greenbelt development.
- The utility streams like softener regeneration, DM plant regeneration, Boiler blowdown & cooling tower blowdown along with remaining ETP treated effluent @4865 KLD will be diverted to RO system. Reject from RO @243 KLD will be sent to MEE for evaporation. Permeate from RO along with MEE condensate @4820 KLD will be recycled for industrial uses.



- With optimizing the water consumption & efficient wastewater management, no major adverse impacts on the water environment are envisaged due to the proposed project.

5.4. LAND ENVIRONMENT

(a) During Construction phase

- The proposed expansion will be set up in existing site as well as land adjacent to the existing premises, designated for industrial use as per the revised regional plan of Daman District 2005–2021. Hence, the change in land use will be as per the planning of the UT of DNH & DD.
- Solid waste/ debris generated during the excavation work, filling of foundation activity & construction work should be collected, segregated, stored and disposed as per the 'Construction & Demolition Waste Management Rules, 2016' so that it doesn't affect the topography of the site.

(b) During Operation phase

- All necessary mitigation measures suggested for control of PM, SO₂, NO₂ & CO emissions generated from project must be provided to ensure that there will be no direct impacts on the land use/ land cover in the vicinity.
- Development of dense greenbelt should be ensured to generate positive impact.

5.5. SOIL QUALITY

(a) During Construction phase

- The improper disposal of construction waste may cause impact on the top soil layer. Hence, Construction waste should be disposed as per Construction & Demolition Rules 2016. Excavated top soil to be utilized for greenbelt development.
- Proper lining should be provided to the area for making of concrete to control runoff of water & avoid soil contamination due to exposure of solid waste generation like debris, spillage of concrete mixture containing additives and construction materials containing heavy metals, paints, coating, liners etc.

(b) During Operation phase

- All the operations of material handling, storage and transportation should be done with utmost care and adequate storage & transfer facilities should be provided and maintained to ensure that no soil contamination occurs occur due to accidental spillage of hazardous materials.
- Improper storage & disposal of hazardous waste may increase the level of toxic compound in soil. Adequate storage area & proper disposal facilities for proper storage of hazardous/ Non-hazardous waste generated to be provided. Liners to be provided in hazardous waste storage area to avoid soil contamination. The hazardous waste carrying vehicles to be covered to prevent spillage or dusting.

5.6. SOCIO-ECONOMIC ENVIRONMENT

(a) During Construction phase

- The proposed expansion project is to be sited within the existing operational site as well as land in proximity to the existing premises, which is designated for industrial use. Hence, no resettlement and rehabilitation (R&R) is required.
- Local contractors to be engaged for construction activities.
- All the necessary health and sanitation facilities to be provided at the construction site.
- The social impacts during construction phase are likely to create direct and indirect employment including business opportunities for the local people, which can improve their economic conditions and quality of life in the region.

*(b) During Operation phase*

- The project site is well connected with the National highway and there will be no requirement of additional infrastructures.
- Impacts on social environment are likely to occur mainly due to the pollution potentials of the project, competing use of water resources, air emission, hazardous material handling & storage, hazards associated with hazardous chemical & operations of the project, noise generation, traffic load on local approach road.
- No wastewater disposal outside premises and adoption of ZLD unit policy for 100% recycling/reuse of treated wastewater to be ensured.
- The emissions generated due to proposed project will be controlled by implementation of appropriate pollution abatement measures and with provision of adequate chimney height for better dispersion.
- All necessary mitigation measures suggested for noise control should be provided to reduce the impacts of noise generation due to proposed project.
- The hazardous materials & waste will be managed efficiently in line with statutory requirements for hazardous substance transportation, handling, storage & use as well as hazardous waste handling, storage, transportation & disposal.
- All safety measures and required essential plans should be provided and implemented for safety, disaster & emergency action, as mentioned in RA Report for proposed project.
- Existing road network seems adequate to cater additional traffic load due to proposed project.
- Approximately 626 nos. of people are expected to benefit from direct employment from the expansion project.
- Social development programs should be conducted as the part of CSR/ CER activities.
- Beneficial impacts on employment & contract services are likely due to indirect employment in transportation activities.

5.7. ECOLOGICAL ENVIRONMENT*(a) During Construction phase*

- The plant is to be established at the land designated for industrial use and clearance of vegetation is not required. Hence impact on ecology due to conversion of land is not anticipated. However, greenbelt development is suggested to improve the ecological conditions.
- Minor impacts on flora & fauna due to dust generation may occur due to construction activities. To mitigate these impacts, construction site should be barricaded and water sprinkling arrangement should be provided.
- Noise generation during construction of the proposed project does not have any considerable impacts on the ecology as the site is considerable away from the nearest ecological Habitat.

(b) During Operation phase

- It is observed that the predicted incremental level of criteria pollutants with APCD would be well below the limits as prescribed under the National Ambient Air Quality Standards (NAAQS, 2009) and hence the impacts on ecology due to change in ambient air quality status would be minor and acceptable.
- However, considering uncontrolled emission, level of the main air pollutant (PM) may go high in ambient air resulting in considerable impact on ecology. Hence, provision of appropriate pollution control technology like ESP for Boiler & Multicyclone + Bag filter for TFH along with of adequate height stack height shall be provided and their uninterrupted operation shall be ensured to mitigate the impact of PM on Ecology
- Closed storage & handling system will be provided to reduce fugitive emissions likely to occur during storage, handling & transferring of raw materials & fuel. Leak detection system should be provided.



- The process emission to be emitted as volatile off-gases due to the CP process from Immersion vessels/ glycol ejectors and from Organic stripper to be diverted to be burnt in the Thermic fluid heaters for complete incineration.
- The wastewater generated from proposed project, especially from process, can have very high load of organic load mainly due to MEG. Stripper column to be provided for recovery of organics from wastewater for maximum vapour to be recovered & reused/recycled in the process. However, since full-fledged ETP for treatment of high COD effluent stream, RO followed by MEE for utility effluent streams will be provided and 100% treated water to be reused, impact on ecology due to wastewater is not envisaged to be considerable.
- Impact (like impaired hearing, hearing loss, pain in head) may occur on terrestrial fauna & avi-fauna dwelling near the project site due to high noise generation from project. It is suggested to provide the effective noise control & noise attenuation measures and provision of thick greenbelt in periphery to prevent any disturbance to the local faunal species due to noise generation from plant premises.
- All safety measures to be provided, and all required essential plans to be implemented for emission reduction from storage & handling, safety, disaster & emergency action as mentioned in RA Report for proposed project to avoid any kind of major impact on ecology.
- Contribution should be made to ecological welfare & forest development activities conducted by Govt. Organization, NGOs and other such organizations.
- Regular monitoring of Valued Environmental Components as per Environmental Monitoring Programs designed for the project should be carried out.
- Thus, it is envisaged that impacts on ecological environment would not be major due to the proposed project operations.

6. POST PROJECT MONITORING PLAN

As a part of EIA study, a post-project monitoring plan has been prepared and necessary suggestion & guidelines for post project monitoring are provided therein. The capital cost for proposed project will be Rs. 410 crores. The CapEx for implementation of Environmental Management Systems will be Rs. 46.70 crores and OpEx for environment protection & continual improvement will be Rs. 38.46 crores/ annum.

Post project monitoring plan covers sampling & analysis of water, air emission, wastewater, noise, hazardous wastes. The environmental compliance report should be prepared and submitted as per the regulatory guidelines.

7. ADDITIONAL STUDIES

The Risk Assessment study involving consequence analysis related to fire due to storage/ handling of fuel and raw material has been carried out. Accordingly, a Disaster Management Plan has been prepared. The suggestions cited in RA report should be implemented for fire & explosion hazard prevention, emergency management, other potential occupational health hazard prevention, safety gear etc. A safety & environment management cell has been designated to manage the responsibilities delineated in the EMP.

The proposed project will be established on existing site & land in proximity to the existing premises, designated for industrial use vide the regional plan of revised regional plan of Daman District 2005–2021, which is in possession of WPL. Hence, there will not be any resettlement & rehabilitation due to the proposed project. Therefore, R&R study has not been conducted for the proposed project.

Public consultation is applicable to the proposed project as per the TOR granted by MoEF&CC. Hence, Environment Public hearing will be conducted as scheduled by Pollution Control Committee (PCC) and necessary action to address the issues raised in Environment Public hearing will be initiated after public hearing & same will be incorporated in Final EIA report.



8. PROJECT BENEFITS

From the proposed project, employment opportunities will be generated directly as well as indirectly. Local people will be benefited from the proposed project. Additionally, 626 people will be employed from the proposed project.

The construction and commissioning phase will require a substantial man-power and resources. The unit proposes to employ local contractual services for the same. Hence, with the growth in the economic conditions the project may lead to growth in the social stature & improvement of the quality of life in the surrounding area.

The total cost of the project is Rs. 410 crore and about 0.75% (Rs. 3.075 crore) have been allocated for CER Programs.

9. ENVIRONMENT MANAGEMENT PLAN

Environmental Management Plan has been formulated as a part of the EIA study. The major issues of predicted impacts of proposed expansion project have been considered for delineation of necessary action plan. The EMP has been formulated considering all necessary mitigation measures to prevent/ minimize/ eliminate the environmental impacts as well as to delineate implementation schedule and responsibilities. Necessary action plans for ecological conservation & welfare, social upliftment by CER, greenbelt development, energy efficiency & conservation and resources conservation through “Cleaner Production Activities” have been covered in the EMP prepared for the proposed project.

10. CONCLUSION

As evaluated and shown at Chapter 4, the cumulative value of significance of the project, in terms of the impacts on the environment, without mitigation measures and with mitigation measures works out to be, (-)36.55 and (-)7.06 respectively, which indicates that with the implementation of the mitigation measures, the negative impacts of the project can be reduced significantly and brought down to acceptable levels.

The proponent of the project has agreed to proceed in line with the EIA agency's comments and suggestions to mitigate the adverse impacts to the most techno-economically viable extent.