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# **EXECUTIVE SUMMARY**

of

## **Draft Environmental Impact Assessment Report**

Baseline Monitoring: Winter 2020

**Proposed Dighi Port Based Industrial Area**  
located at  
Taluka Mangaon and Roha, District Raigad

Project Proponent  
**Maharashtra Industrial Development Corporation**  
**(MIDC)**



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## EXECUTIVE SUMMARY

### Project Background

This proposal is mooted by Maharashtra Industrial Development Corporation (MIDC), which was established in 1962, under Maharashtra Industrial Development Act of 1961 as the premier industrial infrastructure development agency of Government of Maharashtra. MIDC has been designated as Special Planning Authority (SPA) under Maharashtra Regional and Town Planning Act 1966. MIDC has established 289 Industrial Areas over 66,273.82 hectares of land. MIDC has vast experience in developing Industrial estates and has developed specialized parks for different industrial sectors including Chemical, Engineering, Textile, Mixed, Information Technology (IT), Biotechnology (BT), Special Economic Zone (SEZ), Wine (Grape Processing) Park, Silver Zone, Gems.

The proposal is for the development of the Dighi Port based Industrial Area (DPIA) in Mangaon and Roha talukas of Raigad district in Maharashtra. The total land available for development in the DPIA comprises of 5040 Ha. The proposed development will be carried out by Maharashtra Industrial Development Corporation (MIDC).

The proposed project is covered under Category 7 (c) as per the EIA Notification of Ministry of Environment Forest & Climate Change (MoEF & CC), dated 14/09/2006 and subsequent amendments. Therefore, the proposed development requires obtaining Environmental Clearance from Ministry of Environment & Forest (MoEF & CC).

### Project Description

The plot is strategically located adjacent to the Mumbai Goa National Highway (NH66), the SH60 Pune - Kolad Highway and the SH97 Pune to Harihareshwar Highway as also the Konkan Railway passes adjacent to the site in the North – south direction.

There is no land cutting/ filling envisaged – plots will be sold on “as is” basis, the overall development will be governed by Development Control Regulations of MIDC, of 2009.

Development includes area development and development of land infrastructure like:

- Plotting and zoning (Engineering, Pharmaceutical (Formulations only) and Food Processing zone)
- Supporting infrastructure (Residential zone) is proposed over 556.53 Ha to help create good residential facilities for MIDC staff and that from nearby industries
- Access roads to MIDC 60 m RoW (2 nos.) of 4 lanes connecting Indapur Bypass and Pansai (length: 1820 m) and connecting Sutarwadi (at Kolad-Pune State Highway SH60) to Pahur (length: 130 m)

- Approximately 290 km long internal road network (~110 km long & 7.5 m wide road of 2 lanes, ~87 km long & 5 m wide road of 1 lane, ~ 93 km long & 15 m wide road of 4 lanes).
- Construction of Common Facility Centre, Fire Station, Bank, Police stations and other supporting infrastructure in amenity plots
- Social upliftment by giving the Project affected Persons (PAPs) a chance to achieve their entrepreneurial ambition by opting for special plots for use for supporting activities viz Industrial, Commercial and/or residential
- Common Sewage Treatment Plant (STP), and Municipal Solid Waste Treatment (MSW) facility to treat Municipal solid waste be developed for residential zone to ensure low impact development
- Internal Water supply network (to provide water to Member industries and residential zone)
- Streetlighting etc.

The project brief is summarized in the table below.

**Table 1: Project summary at a glance**

Sr. No.	Particulars	Details
1	Name of Project	Proposed Dighi Port Based Industrial Area (DPIA) by Maharashtra Industrial Development Corporation (MIDC) in Raigad District
2	Location (villages)	<b>Taluka Mangaon:</b> Raatwad (part), Koshimbale (Nizampur), Pansai, Kalwan, Nilaj, Ghotwal, Dakhane, Potner, Bhale, Javate, Nizampur, Kandalgao Budruk <b>Taluka Roha:</b> Jamgaon, Patharshet, Pahur
3	Connectivity	Site is adjacent to the Mumbai- Goa National Highway (NH66), Pune-Kolad Highway (SH60) and Pune to Harihareshwar Highway (SH97) passes partly through site on Eastern boundary. Site is located near Indapur Railway station (1.3km to W) and Mandgaon Railway station on Konkan Railway. RO-RO Service of Konkan Railway at Kolad railway Station is 2.4km NW. Dighi Port is located 26.5km to West while airports are seen at Mumbai (85km NW) and Pune (66km NE).
4	Government Order relating to the site	Notification under MIDC Act 1961 by GoM dt 3rd August 2012.
5	Total land area	5040.04 Ha
6	Proposed Zones	<ul style="list-style-type: none"> <li>▪ Engineering Zone - 2053.16 Ha</li> <li>▪ Food Processing Zone - 384.39 Ha</li> <li>▪ Pharmaceutical Zone - 757.03 Ha</li> <li>▪ Residential Zone - 556.53 Ha</li> <li>▪ Open Space - 752.99 Ha</li> <li>▪ Amenity Space - 356.00 Ha</li> <li>▪ Area under Roads - 179.94 Ha</li> <li><b>Total - 5040.04 Ha</b></li> </ul>

Sr. No.	Particulars	Details
7	Total proposed built up area	Generally a FSI of 1 is permitted as per MIDC DC Regulations 2009 – thus for overall development in all four zones, Built up area will be in range of 3751.11 Ha
8	Major raw materials	<p><b>For Road construction</b> (over five years)</p> <p>Metal : 10,49,805 cum  Asphalt : 43,200 cum  Soil : 3,17,000 cum  Murrum : 40,00,000 cum  Water : 65 cmd</p> <p><b>For Civil Works</b> (over five years)</p> <p>Cement : 9,000 cum  Sand : 14,000 cum  Metal : 18,000 cum  Steel : 1500 MT  Water : 27 cmd</p>
9	Water	During construction phase 122 cmd water required will be sourced by tankers (92 cmd construction & 30 cmd domestic) Water required in operation phase is 85 MLD will be sourced from Kundalika river by Jackwell at Kamat village about 3.5km to the North of site. Agreement is signed with Irrigation Department for supply of 102 MLD for the project. Conventional water treatment will be provided.
10	Power	Construction Phase 1 MW using DG sets and temporary power connections from MSEDCL Operation phase 3.5 MW (for water pumping, streetlighting) through MSEDCL and back up by DG sets
11	Proposed manpower	<p><b>Construction Phase :</b>  300 to 350 nos. for development of infrastructure like Roads, CFC Centre, WTP, CSTP, MSW landfill and other Civil works mostly to be engaged by Contractor who will be engaged for developing the infrastructure over 5 year period. Around 50 nos of MIDC personnel will supervise the development.</p> <p><b>Operation Phase</b>  Around 300 Nos of MIDC personnel will be responsible for Operation and Maintenance and Establishment activities.  It is expected that the proposed establishment of industries will lead to employment for more than 50,000 persons by way of direct and indirect employment and give an alternative employment opportunity for people in Konkan region</p>
12	Project cost estimate	Rs 2100 cr (excluding Land)

### Industrial Development Planned

It is proposed to develop three industrial Zones viz Engineering 2053.16 Ha (approximately 41% of total area), Pharmaceutical Formulation and Biotech 757.03 Ha (15% of total area) and

Food Processing 384.39 Ha (7.6 % of total). These industries are of low polluting type do not attract the provisions of EIA Notification (except secondary metallurgical activities in engineering zone which are covered as category B projects under EIA Notification, 2006). Most of the industries to be set up will be in Orange/Green/White category as per CPCB Categorisation of Industries. The balance land will be used for supporting infrastructure – a residential zone will be developed over 556.53 Ha (11% of total area) to provide housing to skilled manpower and balance area for road infrastructure 179.94 Ha. Amenity space plots will occupy 356 Ha and provide opportunity to local PAPs to attain their entrepreneurial dreams. Green belt and open spaces will cover 752.99 Ha (15%).

### **Water requirement**

Water requirement for construction phase will be 122 cmd (92 cmd for construction {65 cmd for road construction} and 27 cmd (for civil works)) and 30 cmd for domestic requirement of labours).

During operation stage, water requirement for the proposed Dighi Port Industrial Area project is estimated as 83.25 MLD. Water requirement for engineering zone (at 3 KL/Ha/d) is lowest (5.6 MLD) while it is considerable in Food zone (13.83 Ha) and Pharmaceutical zone (15.14 Ha).

The development includes a large residential zone of 556.53 Ha. Considering an average household family size of 4 and freshwater requirement of 90 lpcd, the fresh water use for residential area works out to 21,500 cmd say 21.5 MLD.

### **Wastewater Generation & Treatment**

#### **Construction Stage**

The wastewater generation during construction stage due to domestic activities will be around 25.5 cmd. Sewage will be treated in septic tank - soak pits /packaged type sewage treatment plant of 27 cmd capacity.

#### **Operation Stage**

##### **Domestic Waste Water**

Considering sewage generation at 85%, the maximum sewage generated will be 20 MLD. Domestic sewage from the residential zone will be treated in common sewage treatment plant of capacity 20 MLD based on Sequential Batch reactor (SBR) (or cyclic Activated sludge process) with Tertiary treatment facilities (disinfection/filtration) to BOD level less than 5 mg/L which offers advantage of Nitrification, denitrification and phosphorous removal. Treated sewage will be recycled fully for cooling, flushing and balance to green belt development to achieve Zero Liquid discharge.

##### **Industrial Wastewater**

Zones proposed for development will be Pharmaceutical (Non API and Non Intermediates only Formulations, Biotech industries), Food processing and Engineering – Effluents generated in these industries are biodegradable and easily treatable. Industries proposed to

be set up and innovative measures which can be deployed to reduce pollution potential are detailed below:

Market Segment	Innovative measures to reduce pollution load	Waste water characteristics & Treatment & potential issues for ZLD
<b>Metallurgical industry</b>	Cutting & Coolant oil treatment & reclamation.	<b>Characteristics:</b> Varying pH, presence of oils and metals like Fe, Mn, Zn, Cr, Cd, Ni and PO4 etc
<b>Engineering Industry</b>	In process improvement (like Degreasing, Phosphating) to reduce carryover of pollutants & reduce water use	<b>Treatment:</b> Wastewater amenable to physico-chemical treatment with near complete removal of pollutants <b>Issue for ZLD :</b> TDS in treated wastewater needs to be removed
<b>Food &amp; Beverage</b>	In process improvement;	<b>Characteristics:</b> Wastewater akin to sewage with high BOD/COD ratio, low pH variations moderate TSS and low TDS & low contaminants <b>Treatment:</b> Waste water amenable to biological treatment and will meet Norms completely <b>Issue for ZLD:</b> limited potential for reuse in plant for flushing, cooling but can be used for green belt development due low level of contaminants & TDS
<b>Pharmaceutical Formulations and Biotech Industries</b>	In process improvement;	<b>Characteristics:</b> Wastewater easily degradable with high BOD/COD ratio, with low pH variations with low to moderate TSS and TDS, but may have chemical contaminants <b>Treatment:</b> Waste water amenable to biological treatment and will meet Norms completely <b>Issue for ZLD:</b> limited potential for reuse in plant for cooling and flushing due contaminants

To reduce pollution load and increase feasibility for reuse and Zero Liquid Discharge, MIDC will:

- Reserve a plot for installing Evaporator for Pharmaceutical formulation and Biotech industries and Engineering zone to remove TDS and contaminants
- The condensate from the Evaporator will be reused in engineering zone for process use and/or for green belt development by MIDC
- Provide algal ponds for final polishing of treated food industry waste water – this will give benefit of a natural treatment to remove any carryover pollutants before reuse making the effluent more amenable for reuse on land for green belt development

## **Municipal Solid Waste and Hazardous Waste**

### **Construction Phase**

Total solid waste i.e. Municipal waste (domestic and or commercial wastes): 5 kg/day from labour camp. There is no land cutting/filling envisaged – plots will be sold on as is basis. Substratum removed will be used back in road construction.

### **Operation Phase**

#### **Waste Generation**

Wastes generated during operation phase will be Hazardous waste, Biomedical waste, E waste & other waste and sludges. A review of Schedule annexed to Hazardous Waste Management and Handling Rules, 2016 indicates that hazardous wastes generated from engineering industries (mostly used/cutting oils, spent baths, wastes during neutralisation and other waste treatment processes) are readily identifiable while waste from Pharmaceutical formulations are mostly due to discarded medicines and primary ETP sludge. MIDC has developed Common Hazardous Waste Treatment, Storage and Disposal Facilities on a BOOT basis at Taloja (through Mumbai Waste Management Ltd), Pune (through SMS Envoclean) and TTCWMA (through TBIA association). DPIA is located nearly equidistant from each of these facilities.

MPCB has also authorised various units for recycling of waste/spent oils (64 nos), e- wastes (76 numbers), battery waste management, drum cleaning facilities and also delineated facilities for Common Biomedical Waste Management, Treatment and Disposal (CBMWTSDF) at Taloja (through MWML).

MPCB has allotted various parts of Maharashtra to each Waste Treatment and disposal facilities area wise as also depending upon their capacity for treatment and disposal. MPCB grants combined consent and authorisation for each unit whereby all hazardous wastes are listed and their treatment/disposal is clearly delineated based on various Guidelines of CPCB. In absence of any information on the industries likely to be set up quantum of waste generation is difficult to gauge, however it can be safely said that disposal will meet the requirements of various Rules for Waste Management and Guidelines from CPCB/MOEFCC in this regard.

Municipal solid waste generated from residential area will be degradable and non degradable (inert) in nature. Estimated Municipal solid waste generation will be to the tune of 72 TPD- biodegradable waste being 43.2 TPD and non degradable waste 28.8 TPD.

For management of MSW, facilities will be provided for segregation of waste and collection of inert wastes like Plastic waste, e- waste in each sector of residential zone and also in common collection area. The biodegradable waste will be treated in Biomethanation/ anaerobic digester and inert waste disposed off by landfill to be located within the Common Facility Centre provided by the MIDC. Segregated recyclable waste will be disposed off to

MPCB authorized recyclers. MIDC will provide area of 5 acres in residential zone for Municipal Waste Management.

### **Energy Conservation Measures**

MIDC as the planning authority will enforce use of Energy Efficient Fixtures and Non-Conventional Energy Use during Project Development Phase.

MIDC will also ensure use of solar energy for streetlighting, pumps for irrigation, on admin buildings and common facility centre, Fire station and public toilets etc. where ever possible.

### **Green Belt Area Development**

More than 15% of total area (752.99 Ha) will be developed as green belt by planting trees which are indigenous to Konkan belt and will be maintained to keep the ecological harmony.

Detailed ecological studies have been carried out and Conservation Plan has been developed considering the proximity of Western Ghats and Reserved Forest.

### **Baseline Data Collection**

For the purpose of assessing the impacts, a study area of 10 km radius around the proposed plot boundary was identified for the baseline studies as per MoEFCC guidelines.

A Survey of India (SOI) Toposheet with 1:50,000 scale is used to identify topographic features within 10 km radius around project site. Survey of India toposheet numbers E43, E43H4, E43H7 and E43H8 cover the study area around proposed project site.

It is observed that MIDC at Vile Bhagad having primarily engineering industries (like Posco Maharashtra, INOX etc) and road traffic along NH66 are major sources of pollution within study area. Rest of area is primarily rural in nature.

Each of the environmental aspects: Land, Air & Noise, Ecology & Biodiversity and Socio Economics are considered. Summary of findings are given below:

#### **Land environment**

Site is well connected to main traffic roads and Konkan railway line. Site is located in between Indapur and Mandgaon railway stations. The 15 villages in site and most of the villages in study area have distinctly rural setting. Soil quality was monitored at --- locations and observed to be slightly acidic with low TOC and low levels of nutrients. Predominant land use within site is Agriculture, Pasture, Barren & Un-cultivable Land- Forest land within the villages in question is excluded from the proposed development. Paddy is major crop cultivated in villages within site.

#### **Ambient Air Quality Monitoring (AAQM) & Ambient Noise Levels**

AAQ was monitored at 12 locations at various villages within site and study area of project. AAQ study shows levels below the National ambient air quality standards (NAAQS). The levels ambient air quality are seen to be relatively higher near the highways and lower at other stations, but well within NAAQS norms. Noise levels were higher near highways sometimes exceeding EP Act criteria for ambient noise levels.



## Water environment

The northern part of site and area to north is drained by Kundalika - a perennial river located about 3.5km north of site. This river will form the major source of fresh water for the site. The southern portion of the site is traversed by two non perennial rivers – Ghod (which drains the western portion of the site) and river Kal –which drains eastern portion of the site. Ghod and Kal rivers further meet at Mangaon (about 5.3 km to the south) to form Kal river which further traverses through hilly areas to meet Savitri river at Dasgaon village about 21.5km to the south of site. The site itself has 2-3 fresh water lakes located at Ratwad, Bhale and Jamgaon – the MI tank at Village Pahur being a source of water supply to nearby villages. Most of the villages in site and study area have distinctly rural setting and use ground water as water source. Water quality was monitored at about --- nos of wells and --- surface water samples were collected. The water quality meets IS 10500: 2012 standards for Drinking water quality in terms of physico-chemical parameters – however in some wells localized microbial contamination is observed.

## Biological Environment

Site is located in Konkan region of Maharashtra known for its rich biodiversity. Western Ghat hill ranges are located about 4.5 to 5km towards the east of site. Tamhini Wild Life sanctuary is located about 4.7km to the east of site and the nearest ESZ village of Tamhini is located 4.5 km to the east as per recently notified ESZ of Tamhini WLS. The four ESA villages (as per Directions dt 13.11.2013 pertaining to Western Ghats) of Bhuvan, Vawe Diwali, Bondshet and Kumbharte are located adjacent to the site. The baseline studies of Ecological environment was carried out in monsoon and winter seasons of 2020-21 as per additional TOR specified by EAC, MoEFCC.

### Major findings

- Presents low to mid-elevation grasslands, with patches of semi-evergreen and deciduous forests
- Terrain dominated by grassland, during monsoon, ephemeral flushes develop around water-logged areas and low to mid-elevation plateaus
- Total 98 floral species belonging to 43 families observed on field (65 herbs, 22 trees, six shrubs and five climbers)
- Most prevalent is Family Fabaceae with, 15 species, followed by Malvaceae, 8 species
- 21 families represented by only one species each
- A total of four ephemeral herbs identified in the area
- Only one floral species, *Erinocarpus nimmonii*, belongs to Rare, Endangered, Threatened list, and is classified as Rare
- A total of 104 species of birds were observed during the fieldwork (Most prevalent is Family Muscicapidae species (11), followed by Accipitridae (7))
- 78 species belong to Schedule IV, three species to Schedule I
- Mammals - 54 species, distributed across 24 families (Most prevalent is Family Muridae with seven species, followed by Vespertilionidae with six species)

- 32 mammal species were seen both inside and outside, 22 species only outside the boundary.
- No Schedule I, Critically Endangered, Endangered, Vulnerable and Near Threatened species within the boundary
- Herpetofauna (reptiles) and arthropoda (butterflies & insects) were also noticed

#### Seasonal variations

- habitats at Pansai, boundaries of Kal river, Kalvan and Dakhane plateau and Kumbharte and other areas showed greater levels of variation
- Seasonal puddles supporting ephemeral vegetation and amphibians and odonates were observed during monsoons, which disappeared in winters due to dry conditions
- Amphibian density was greatest in monsoons, diversity and density decreased during winter
- Conversely, bird diversity increased during the winters
- Kalvan and Dakhane plateaus supported grasses and ephemeral vegetation in monsoons, which were not observed in winters

#### **Socioeconomic Environment**

- 10 km radius study area map is divided in 3 zones for SE study ( 0-3, 3-5 & 5-10 km) and comprises 183 villages & two census towns (Mangaon and Indapur) in 5 talukas (Mandgaon 110 Villages + 1 CT), Roha (46 villages + 1 CT), Tala ( 20 villages).
- According to census 2011, study area, has 33318 households with a total population of 141524 (total male population 50.24% and female population 49.76%)
- Population density for 183 villages was 191 persons per sq km.
- total working population was 44.83% of the total population (mostly males 63%)
- Primary survey was carried out at 10 villages within site and in villages in study area. Main findings-
- The study area was rural dominant, most of the villages have low population with all types of religion and castes.
- The main employment pattern in the study area is agriculture & labor work. The average daily wage ranges between Rs. 200-500 depending on the type of work.
- Unemployment rate found high at all sampling location.
- majority of the people are in favor of the proposed project as it will help develop the region.
- Respondent's main demands from MIDC are employment opportunities to the local workforce, infrastructure development in villages, low polluting industries, etc.
- Respondents main concern is, pollution may affect the health status of population.
- local youth are curious about type of industries to be set up, workforce required, educational background needed to get employment in the industries.

- Infrastructure facilities like roads, drinking water, etc. will be developed by MIDC authority, surrounding villages also get benefits from these facilities
- Overall feeling is that migration of local workers in other places will be decrease in the study area