ENGLISH EXECUTIVE SUMMARY

For

Environmental Clearance

For

AMALGAMATION AND MODERNIZATION OF EXISTING METALLURGICAL ACTIVITY

at

Plots D-2, D-3, D-3/1 & D-3/2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra

[Project falls under Schedule 3(a) Metallurgical industries (ferrous), Cat – B1]

[ToR granted by SEAC File No. SIA/MH/IND1/564190/2026 dated 23.01.2026]

proposed by

M/s Ghatge Patil Industries Ltd. (Plant-2)

prepared by

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QCI-NABET Certificate No: NABET/EIA/24-27/RA0356; Valid till 22 May, 2027

laboratory engaged

M/s. Nilawar Laboratories

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NABL Accreditation no. TC-9782.

Study Period – October - December 2025

Report No.: OA/GPIL/071/EIA/03/2026/01 Month & Year – March 2026

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Executive Summary

1. INTRODUCTION OF THE PROJECT

Ghatge Patil Industries Ltd (GPIL), established in 1960, is a well-established engineering and foundry enterprise headquartered in Kolhapur, Maharashtra. The company has evolved into a leading manufacturer of high-precision S.G. Iron (Spheroidal Graphite Iron) and Grey Iron castings, along with a wide range of machined components, engineering assemblies, and heavy engineering products. With over six decades of experience, GPIL has built a strong reputation for quality, innovation, and reliability, serving reputed clients in automotive, engineering, agriculture, hydraulics, construction equipment, and general engineering sectors.

The company operates multiple manufacturing facilities, among which Ghatge Patil Industries Ltd (GPIL Plant-2) located at Plot D-2 and Indus Ferro-Tech Limited (IFTL) located at Plots D-3, D-3/1, and D-3/2 at Kagal-Hatkanangale Five-Star MIDC are major production units.

GPIL Plant-2 has been grated Environmental Clearance (EC) from State Environment Impact Assessment Authority (SEIAA), Environment Dept. Government of Maharashtra vide letter No. SEAC-2014/CR-343/TC-2 dated 31 December, 2015 for manufacturing of S.G. Iron and Grey Iron castings capacity – 72,000 MT/Year at Plot D-2, Kagal-Hatkanangale Five-Star MIDC. GPIL Plant-2, has obtained Consent to Establish from Maharashtra Pollution Control Board (MPCB) vide letter No BO/JD(APC)/EIC No. KP-888-11/E-CAC-195 dated 20th January 2012 for the installation of the Plant. Subsequently, GPIL Plant-2 obtained Consent TO Operate (CTO) from MPCB, vide letter No 1.0/BO/EIC No.17752-15/CAC-CELL/CAC-6387 dated 13 May 2016 and commenced the operations of the S.G. Iron and Iron castings. The CTO was renewed time to time.

Indus Ferro-Tech Limited (IFTL) was granted EC from SEIAA, Maharashtra vide EC No. SEAC-2014/CR-263/TC-2 dated 22nd January, 2015 located adjacent to GPIL Plant-2 at Kagal-Hatkanangale Five-Star MIDC, specifically on Plots D-3, D-3/1, and D-3/2 for manufacturing of engineering industrial activity of shot blasting, fettling, machining and painting of jobs capacity of 1,00,000 Nos/Month. IFTL granted CTE from the MPCB vide its letter no. No. BO/JD(APC)EICNo.KP-8890-11/CC-408 dated 07.06.2012. Subsequently, IFTL granted CTO from MPCB, vide its letter no. 1.0/BO/JD/ (APC)/EIC No.KP-16797-15/O/CC-10878 dated 14.08.2015. The CTO was renewed time to time.

Further, the management of IFTL and GPIL Plant-2 is common, and a strategic decision was taken to amalgamate the operations of IFTL with GPIL Plant-2, along with the total land owned by IFTL. Accordingly, on 27th January 2022, the Hon'ble National Company Law Tribunal (NCLT) issued an order approving the merger of M/s Indus Ferro-Tech Ltd. with M/s Ghatge Patil Industries Ltd., covering plots D-3, D-3/1, and D-3/2 in the Kagal-Hatkanangale Industrial Area, Kolhapur. Stating that *the amalgamation is expected to result in integration of processes thereby resulting in synergies of operations. The scheme is intended to rationalize the business operations and activities of the transferor and the transferee company, to utilize the potential for growth and diversification, optimization of costs and resources within the GPIL group and more simplification of the group structure*.

Following the NCLT approval, the matter was placed before the regulatory authorities for consent consolidation. The timeline of subsequent actions is as follows:

- 24th May 2022 – The 3rd Consent Appraisal Committee (CAC) meeting considered the amalgamated consent proposal and approved it subject to conditions.
- 28th May 2022 – Ghatge Patil Industries Ltd. submitted a formal request to the Regional Office, MIDC Kolhapur, seeking an update of consent records in line with the approved merger.
- 23rd June 2022 – The Maharashtra Pollution Control Board (MPCB) issued a communication referencing the merger and consent request dated 28th May 2022, acknowledging the proposal and confirming that the amalgamation had been taken into consideration.
- 02nd July 2022 – The MPCB granted the amalgamated Consent to Operate (CTO) for the merged entity via Letter No. MPCBCONSENT-0000134401/CR/2207000106, with validity up to 31st May 2025.
- Subsequent to the amalgamated consent, GPIL Plant-2 was granted a valid CTO by the MPCB vide Letter No. 0000245099/CR/2509000786 dated 09th September 2025, which is valid up to 31st May 2030.

Table 1 Chronology of EC, CTE, CTO, NCLT Order w.r.t. GPIL Plant-2 and IFTL

S. No	Particulars	Ghatge Patil Industries Ltd. – Plant 2	Indus Ferro-Tech Ltd.	After amalgamation and modernization
1	Company Status	Existing GPIL Plant-2; currently operational.	Separate company (till 2022). Later merged into GPIL through NCLT.	GPIL Plant-2
2	Original Plot Nos.	D-2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra.	D-3, D-3/1, D-3/2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra. adjacent plot.	D-2, D-3, D-3/1, D-3/2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra.
3	Project Cost	**As per EC-** 146.41 Cr	**As per EC-** 98.81 Cr	Existing project cost: ₹330.2704 Crore Proposed additional cost: ₹3.8364 Crore Total project cost after addition: Total ₹334.1068 Crore
4	Area Statement	**As per EC-** Total Plot Area – 66,289.00 sq.m Built-up Area -31406.15 sq.m Green Belt Area – 13904.00 sq.m	**As per EC-** Total Plot Area – 62,491.00 sq.m Built-up Area -24381.66 sq.m Green Belt Area – 11452.70 sq.m	Total Plot Area – 1,28,780 sq.m Built-up (Existing 53,218.6 + proposed phosphating Plant-5,659.96 sq.m) = Total Built up Area - 58,878.56 **sq.m** Green Belt Area – 25,356.7 sq.m.
5	Incorporation Date	31st July 2015	24th March 2007	-
6	CTE	20th January 2012 (MPCB)	07th June 2012 (MPCB)	-
7	EC	31st December 2015 (SEIAA) vide No. SEAC-2014/CR-343/TC-2 for: • SG Iron, grey Iron - 6000 MT/Month (i.e., 72,000 MT/Year) casting production	22nd January 2015 (SEIAA) vide No. SEAC-2014/CR-263/TC-2 for: Shot blasting, Fettling, Machining, Painting Activity (Engineering activity)	Amalgamate both the EC's on Ghatge Patil Industries Ltd. – Plant 2

S. No	Particulars	Ghatge Patil Industries Ltd. – Plant 2	Indus Ferro-Tech Ltd.	After amalgamation and modernization
8	1st CTO –	13th May 2016	14th August 2015	-
9	RCTO	02nd July 2022 (Valid till 31st May 2025)	27th December 2021	-
10	NCLT Order (Merger)	Became legal owner of Industry A's assets, operations, and land.	Merged into GPIL on 27th January 2022 (plots D-3, D-3/1, D-3/2)	-
11	CTO Amalgamation	CTO updated to include all merged plots: D-2, D-3, D-3/1 & D-3/2	CTO merged with GPIL CTO on 02nd July 2022, MPCB Letter No. CONSENT-0000134401	As per NCLT order Amalgamated consent, GPIL Plant-2 was granted a valid CTO by the MPCB vide Letter No. 0000245099/CR/2509000786 dated 09 September 2025, which is valid up to 31st May 2030.
12	Existing Production as on Today (2025)- as per ECs	SG & Grey Iron Casting: 72,000 MT/Year	Engineering industrial activity of shot blasting, fettling, machining & painting of jobs (without surface treatment): 12,00,000 Nos./Year	1. SG & Grey Iron Casting: 72,000 MT/Year 2. Engineering industrial activity of shot blasting, fettling, machining & painting of jobs (without surface treatment): 12,00,000 Nos./Year 3. Phosphating & Painting of Engineering Job Work – 40,000 Nos./Year
13	Proposed Production under Modernization	Phosphating & Painting of Engineering Job Work – 40,000 Nos./Year	Not applicable (merged entity).	
14	Water Requirement	815 CMD	39 CMD	Existing – 854 CMD Proposed - 2.6 CMD Total – 856.6 CMD
15	Effluent Generation	Domestic Effluent – 50 CMD Industrial Effluent- 25 CMD	Domestic Effluent – 22.5 CMD Industrial Effluent- 7.5 CMD	**Domestic Effluent** – 74.3 CMD (72.5 CMD existing + 1.8 CMD Proposed) Treated in existing 75 KLD STP **Industrial Effluent-** 32. 9 CMD (32.5 CMD existing + 0.4 CMD Proposed) Treated in existing 62 KLD ETP. Treated effluent reused in process and green belt development in own premises.

2. PROJECT DESCRIPTION

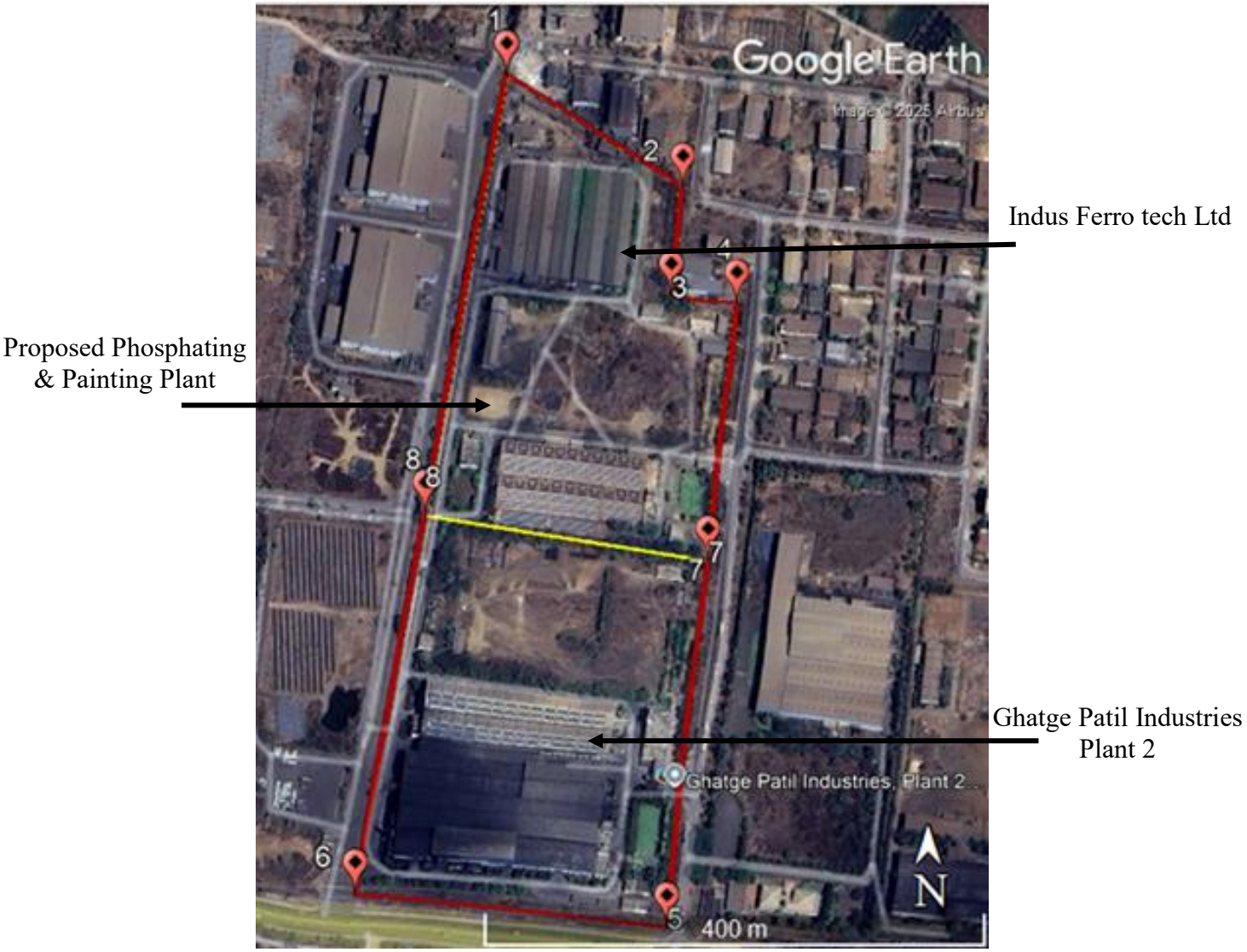
2.1. Type of Project

The proposed project falls under Category 'B1', Item No. 3(a) – Metallurgical industries (ferrous), as per the Environmental Impact Assessment (EIA) Notification dated 14th September 2006 and its subsequent amendments. Therefore, the project will be appraised by State Level Expert Appraisal Committee (SEAC) and the State Environmental Impact Assessment Authority (SEIAA), Department of Environment; Govt. of Maharashtra and requires Environmental Clearance (EC).

3. SITE SETTING

The project activity is located in the notified MIDC industrial area at Plot Nos. D-2, D-3, D-3/1 and D-3/2, Kagal-Hatkanangale Five-Star MIDC, Taluka Hatkanangale, District Kolhapur, Maharashtra.

The project site is supported by established infrastructure including internal paved roads, assured power supply, water supply, and stormwater drainage facilities. The surrounding area comprises engineering, foundry, and other manufacturing industries, consistent with the designated industrial land use. The site is well connected by road and is accessible via the Pune–Bengaluru National Highway (NH-48), with Kolhapur city located nearby.



Source: Google Earth

Figure 1. Satellite view of the Project Site

Table 2. Environmental Setting

<table>
<tr><th>S.No</th><th>Particulars</th><th>Details</th></tr>
<tr><td>A</td><td colspan="2">Project Details</td></tr>
<tr><td>1</td><td>Name of the Project</td><td>Amalgamation & Modernization of Existing Metallurgical Activity at Plots D-2, D-3, D-3/1 & D-3/2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra by M/s Ghatge Patil Industries Ltd. (Plant-2).</td></tr>
<tr><td>2</td><td>Project Area (amalgamation and modernization)</td><td>Total Plot Area after Amalgamation – 1,28,780 sq.m</td></tr>
<tr><td>3</td><td>Project Cost</td><td>Existing project cost: ₹330.2704 Crore.
Proposed additional cost: ₹3.8364 Crore.
Total project cost after Amalgamation and Modernization: ₹334.1068 Crore.</td></tr>
<tr><td>B</td><td colspan="2">Location</td></tr>
<tr><td>4</td><td>Location of Project (after amalgamation and modernization)</td><td>D-2, D-3, D-3/1, D-3/2, Kagal-Hatkanangale Five-Star MIDC, Kolhapur, Maharashtra</td></tr>
<tr><td>5</td><td>Village</td><td>Kagal-Hatkanangale Five-Star MIDC</td></tr>
<tr><td>6</td><td>District</td><td>Kolhapur</td></tr>
<tr><td>7</td><td>State</td><td>Maharashtra</td></tr>
<tr><td>8</td><td>Latitude and Longitude</td><td>
<table>
<tr><th>Pillar Number</th><th>Latitude</th><th>Longitude</th></tr>
<tr><td>BP 1</td><td>16°36'53.38"N</td><td>74°22'25.27"E</td></tr>
<tr><td>BP 2</td><td>16°36'50.52"N</td><td>74°22'30.05"E</td></tr>
<tr><td>BP 3</td><td>16°36'47.71"N</td><td>74°22'29.67"E</td></tr>
<tr><td>BP 4</td><td>16°36'47.47"N</td><td>74°22'31.37"E</td></tr>
<tr><td>BP 5</td><td>16°36'31.48"N</td><td>74°22'29.55"E</td></tr>
<tr><td>BP 6</td><td>16°36'32.44"N</td><td>74°22'21.15"E</td></tr>
</table>
</td></tr>
<tr><td>9</td><td>Toposheet No.</td><td>E43U6</td></tr>
<tr><td>10</td><td>Present Land use</td><td>Industrial</td></tr>
<tr><td>C</td><td colspan="2">Environmental Settings</td></tr>
<tr><td>11</td><td>Nearest City</td><td>Nearest town: Kolhapur, 17.10 km, NW</td></tr>
<tr><td>12</td><td>Highway</td><td>Kagal MIDC road: adjacent
NH48: 6.86 Km, E
SH 129: 2.03 Km, S
SH277: 3.03 km, E</td></tr>
<tr><td>13</td><td>Nearest Railway Station</td><td>Hatkanangale Railway Station -15.9 km
Chhatrapati Shahu Maharaj Kolhapur Railway Station: 17.58 km, NW</td></tr>
<tr><td>14</td><td>Nearest Airport</td><td>Chhatrapati Rajaram Maharaj Airport: 10.65 km, NW.</td></tr>
<tr><td>15</td><td>Archaeological Important Place</td><td>None, within 10 Km radius area of project site.</td></tr>
<tr><td>16</td><td>Ecological Sensitive Park, Wildlife Sanctuary, Reserve etc.)</td><td>There is no National Park, Wildlife Sanctuary and Biosphere Reserve within 10 Km of Project site.</td></tr>
<tr><td>17</td><td>Reserved/Protected Forest within 10 Km Radius.</td><td>Nil within 10 km Study area.</td></tr>
</table>

S.No	Particulars	Details
18	Nearest River/water Body	• Panchganga River - 6.26 km, NE • Kagal Pazar Talav - 5.07 km, SW • Jaisingrao Talav - 6.23 km, SW • Kaneri Lake - 9.6 km, W • Canal - 0.50 km, ESE • Pattan Kadoli Lake - 4.68 km, N • Doodhganga River - 8.35 km, SW • Vasagde Lake - 8.47km, NW • Dudhganga - Vedganga River confluence - 8.73 km, SE • Vedganga River - 9.10 km, SE
19	School	• Garud Zep Academy Pvt Ltd - 7.19 Km, W • Shri Shahu High School and Junior College- 7.32 km, SW • Jawahar Navodaya School- 5.44 km, SW
20	Hospitals	• Mahalakshmi hospital, Hupari- 3.14 Km, E • ESI Kagal Dispensary- 2.50 km, W • Primary Health Centre, Pattan Kodoli - 4.56 km, N • Primary Health centre, Vasagade - 8.50km, NW • Government Hospital - 2.22 km, S
21	Temples	• Laxmi Temple Dadditot Karadga - 6.4 km, SE
22	Elevation Range	The highest elevation of the project area is 614 m MSL & lowest elevation is 599 m MSL

Source: Site Survey

4. PRODUCTION DETAILS

Table 3 Production Details

Sr. No	Products Name	UOM	Quantity		
			Existing	Proposed	Total
	GPIL Plant -2				
1	SG & Grey Iron Casting	MT/A	72,000	-	72,000
2	Phosphating and Painting of Engineering Job Work	Nos./Y	-	40,000	40,000
	IFTL				
3	Engineering industrial activity of shot blasting, fettling, machining & painting of jobs (without surface treatment)	Nos./Y	12,00,000	-	12,00,000

5. PROJECT REQUIREMENTS (Land, Raw Material, Water, Power, Fuel with Sources)

5.1. Land Requirement

GPIL Plant-2 is operating on a total plot area of 66,289.00 sq. m for SG Iron and Grey Iron casting, while IFTL was operating on a plot area of 62,491.00 sq. m for engineering job works. As per the NCLT Order dated 27.01.2022; the plot of IFTL has been transferred to GPIL Plant-2 by MIDC vide Order No. MIDC/RO(Kolhapur)/Kagal–Hatkanangale Five Star/LMS-754/202506000170 dated 16.01.2025, both

plants have been merged and are operating under GPIL Plant-2. Accordingly, the management has proposed amalgamation of both the units (GPIL Plant-2 and IFTL), with addition of Phosphating unit.

The existing green belt area of 25,370.56 sq. m, constituting 19.70% of the total plot area (1,28,780 sq.m), is maintained within the premises. Thus, sufficient land is available with the project proponent for the proposed modernization activities. The detailed area statement of both the plants is given in following tables.

Table 4 Area Details (Amalgamation and Modernization)

S. No	List of Area	Area in sq. m.		
		Existing	Proposed	Total
1	Total Plot Area	66,289.00	62,491.00	1,28,780

Source- Land Allotment Letter from MIDC

Table 5 Area Statement of the Plant Area

S. No.	Description	Area in Sq. m.			
		Existing		Proposed	
	List of Area	GPIL	IFTL		Total
1	Total Plot Area	66289	62491		128780
2	Ground Coverage area	20493.4	18277.2	5,659.96	44430.47
3	Green Belt Area	13904	11452.7		25356.7
4	Area under Road	6629	6249		12878
5	Parking Area	6775	6391		13166
	Amenity	3320	3125		6445
6	Open space available	15168	16997		26503.83

5.2. Raw Material Requirement

Basic raw materials required for existing as well as proposed project along with their quantities and sources are listed in following table.

Table 6 Raw Material Details

Sr. No	Name of Raw Material	UOM	Quantity			Transportation	Source
			Existing	Proposed	Total		
	GPIL Plant -2						
1	Unicoat Green Top Coat 2K PU	Ltrs/A	-	4808	4808	By Road	Open Market
2	Epoxy Hardner	Ltrs/A	-	3261	3261	By Road	Open Market
3	Thinner	Ltrs/A	-	7800	7800	By Road	Open Market
4	Phosphating Chemicals	Kg/A	-	14000	14000	By Road	Open Market
5	PRIMER 2K Epoxy Harvest	Ltrs/A	-	6582	6582	By Road	Open Market
6	Pig Iron	MT/M	7,500	-	7,500	By Road	Open Market
7	Ferrous Silicon	MT/M	4500	-	4500	By Road	Open Market
8	Copper Scrap	MT/M	100	-	100	By Road	Open Market
9	Bentonite Powder	MT/M	3000	-	3000	By Road	Open Market
10	Unwashed Sand	MT/M	2500	-	2500	By Road	Open Market

Sr. No	Name of Raw Material	UOM	Quantity			Transportation	Source
			Existing	Proposed	Total		
11	Washed Sand	MT/M	6000	-	6000	By Road	Open Market
12	H.S. Diesel	KL/M	70	-	70	By Road	Open Market
13	Carbon Dioxide Gas	MT/M	10	-	10	By Road	Open Market
14	Liquid Oxygen	M^3/M	500	-	500	By Road	Open Market
15	Ferro Magnesium	MT/M	2000	-	2000	By Road	Open Market
16	Ferro Chromium	MT/M	600	-	600	By Road	Open Market
17	Pure Magnesium	MT/M	80	-	80	By Road	Open Market
18	LPG (33 KG)	MT/M	100	-	100	By Road	Open Market
19	Lubricants	KL/M	3	-	3	By Road	Open Market
20	Grease	MT/M	3	-	3	By Road	Open Market
21	Argon Gas Cylinder	Nos/M	250	-	250	By Road	Open Market
22	Acetylene Gas	M^3/M	500	-	500	By Road	Open Market
23	Nickel Sulphate	MT/M	1	-	1	By Road	Open Market
24	Hydrochloric Acid	Ltr/M	25	-	25	By Road	Open Market
25	Sodium Hydroxide/ Caustic Soda	Kg/M	25	-	25	By Road	Open Market
27	Ammonium Hydroxide	Kg/m	25	-	25	By Road	Open Market
28	Common Salt	MT/M	5	-	5	By Road	Open Market
29	Boric Acid	Kg/M	100	-	100	By Road	Open Market
30	Sodium Silicate	MT/M	60	-	60	By Road	Open Market
31	Citroninol Oil	Ltr/M	50	-	50	By Road	Open Market
32	Core Wash –Spirit Base	Ltr/M	100	-	100	By Road	Open Market
33	Core Box- Part –I- Resin	MT/M	60	-	60	By Road	Open Market
34	Core Box- Part–II- Activator	MT/M	60	-	60	By Road	Open Market
35	Resin- No Bake	MT/M	1	-	1	By Road	Open Market
36	Catalyst-No Bake	MT/M	1	-	1	By Road	Open Market
37	Core Box-Part–III- Amine	MT/M	15	-	15	By Road	Open Market
38	Nitrogen Gas	M^3/M	200	-	200	By Road	Open Market
	IFTL			-		By Road	
39	Rough Castings	No/M	-	1,00,000	1,00,000	By Road	Open Market
40	Paint	Ltr/M	-	18000	18000	By Road	Open Market
41	Thinner	Ltr/M	-	6000	6000	By Road	Open Market
42	Steel Shots (SS460, SS550)	MT/M	-	20	20	By Road	Open Market
43	Cutting Oil	Ltr/M	-	1000	1000	By Road	Open Market
44	Grinding Wheels	Nos/M	-	2000	2000	By Road	Open Market
45	HSD	Ltr/Hr	-	300	300	By Road	Open Market

5.3. Basic Requirements

Table 7 Basic Requirements of Project

Sr. No	Particulars	Existing	Proposed	Total
1	**Water Requirement**	854 (KLD)	2.6 (KLD)	586.6 (KLD)
2	**Power** (KVA)	13,700	105	13,805
3	**Fuel**			
	LPG	110 kg/hr	-	110 kg/hr
	HSD	250 lit/Hr	-	250 lit/Hr
4	**Manpower**			
	ITI trained	67	22	89
	Diploma Engineer	75	2	77
	Graduate Engineer	65	1	66
	B.Sc/M.Sc	25	5	30
	Commerce graduate	18	0	18
	Graduate	12	0	12
	Unskilled/contractual	1028	15	1043
	Total	**1290**	**45**	**1335**

6. OPERATIONAL ACTIVITY

6.1. Existing Process Details of S.G. Iron & Grey Iron Casting

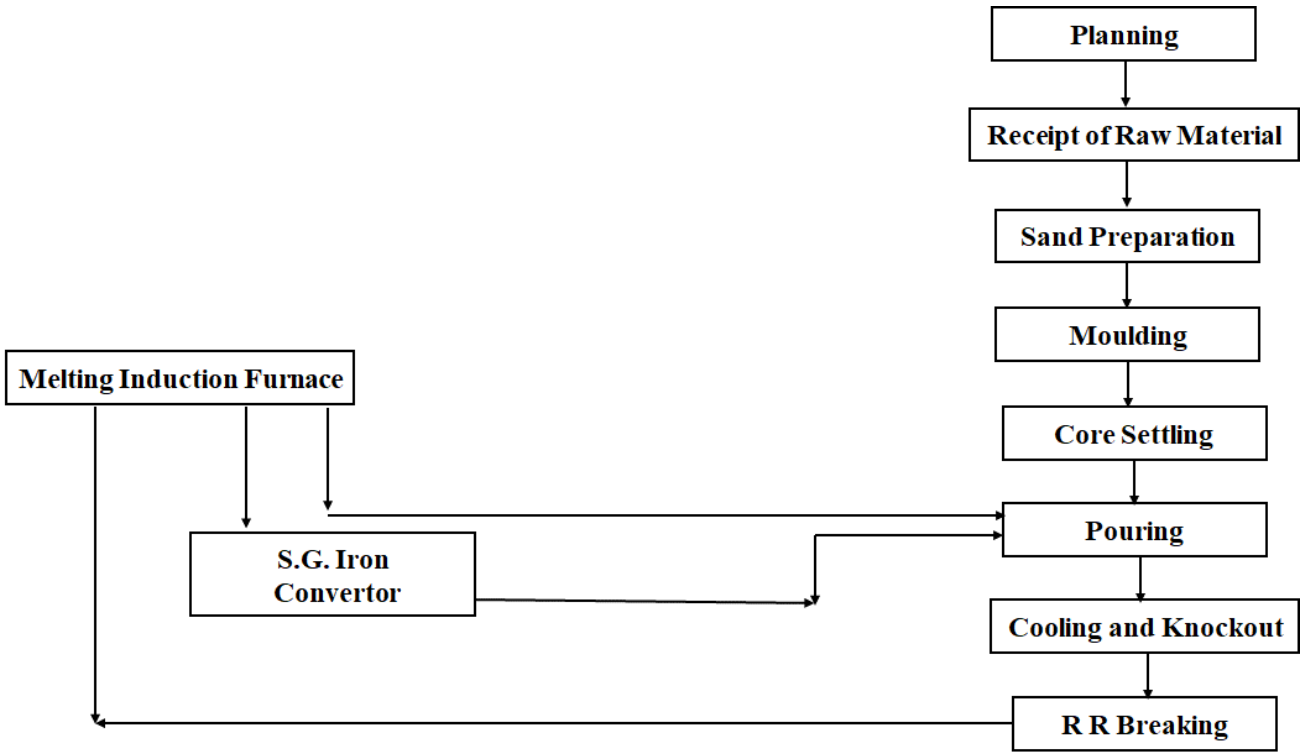


Figure 2. Process Flow Chart of S.G. Iron & Grey Iron Casting

6.2. Existing Process Details of Engineering Job work

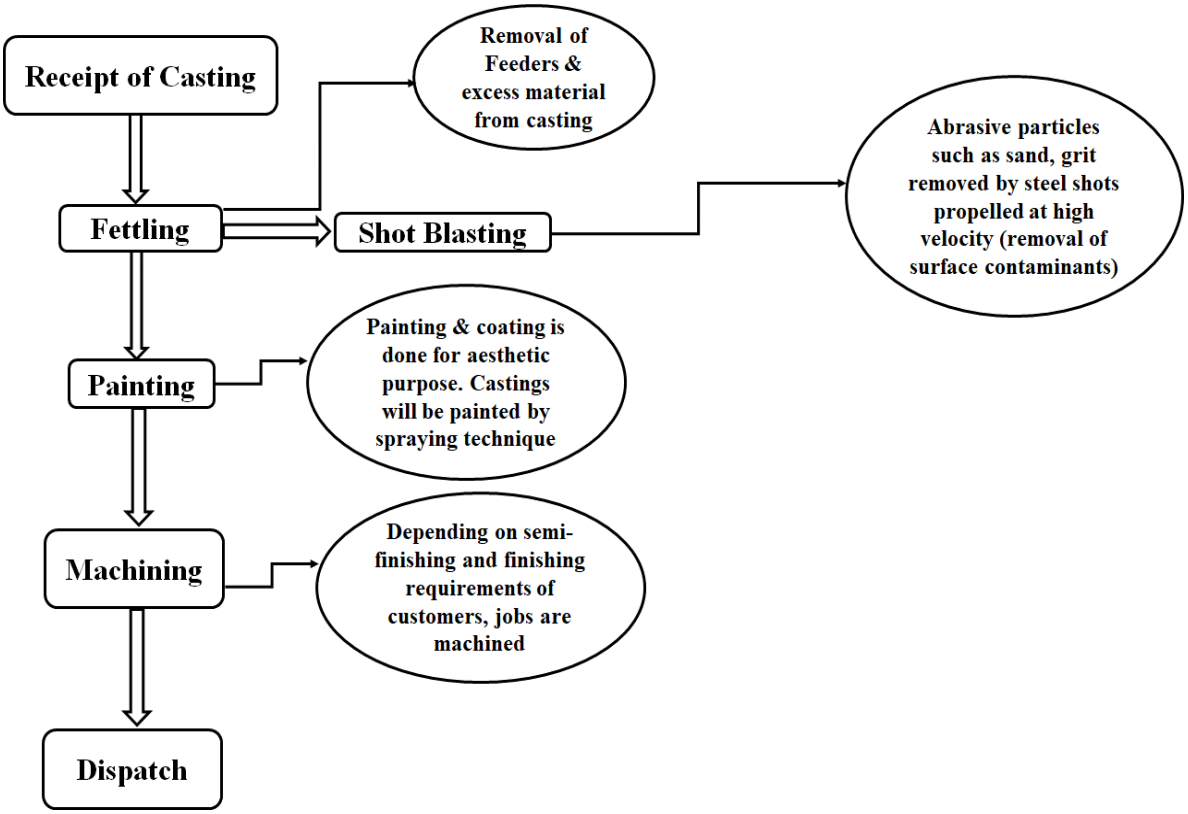


Figure 3. Process Flow Chart of Engineering Job work

6.3. Proposed Process Details of Phosphating Unit

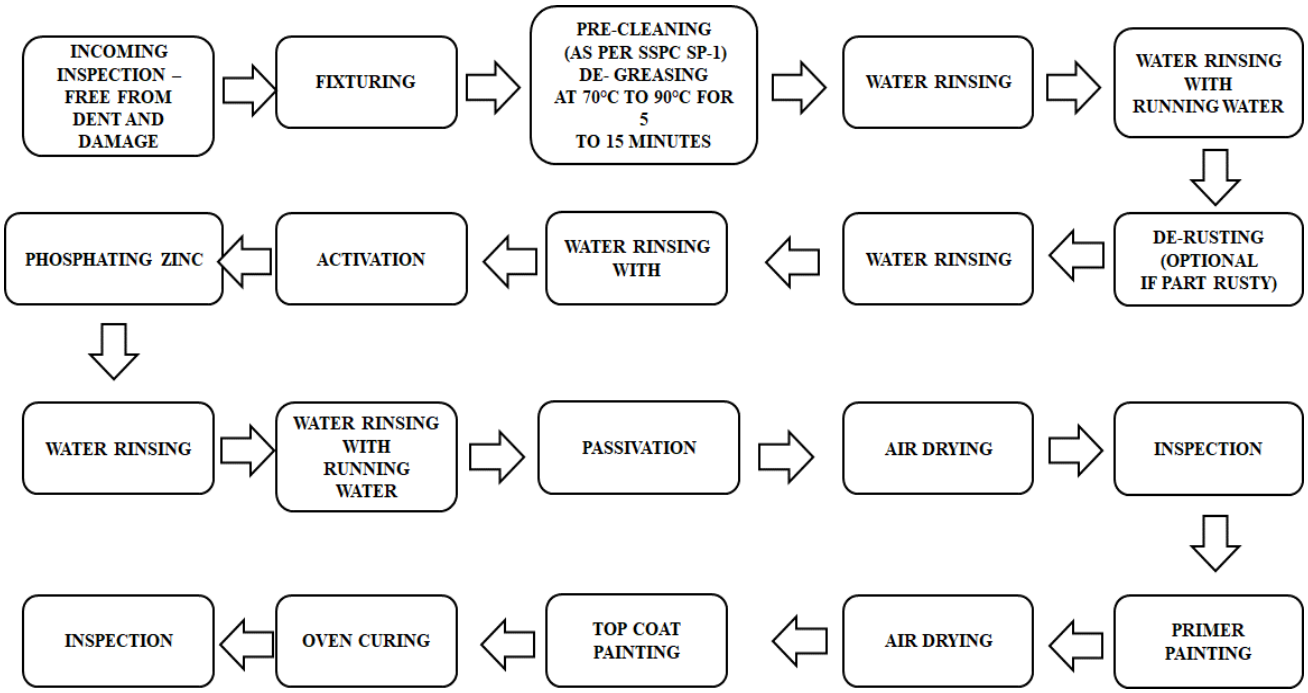


Figure 4. Process Flow Chart Phosphating Unit

Detailed Process Description in given in Chapter 2, Sub section 2.7.

7. BASELINE ENVIRONMENT STUDIES

7.1. Land requirement

The total project site area is 1,28,780 sq. m. The site comprises 66,289 sq. m belonging to GPIL Plant-2 and 62,491 sq. m belonging to IFTL. The proposed Amalgamation and Modernization Project will be implemented within these existing plant premises. The project site is located within the Kagal–Hatkanangale Five-Star MIDC Industrial Area and falls under designated industrial land use. The land is already in possession of M/s Ghatge Patil Industries Ltd. (GPIL Plant-2).

7.2. Baseline Environmental Conditions

The field studies conducted from October to December 2025 for the Environmental Impact Assessment (EIA) study provided baseline data for the present environmental scenario within a 10 km radius of the project site. A data collection survey for the study, which included geology, hydrology, meteorology, ambient air quality, water quality, soil characteristics, noise levels, flora and fauna, land use patterns, demographics, amenities, and infrastructure, was undertaken by the field team of experts and analysed.

7.2.1. Ambient Air Quality Monitoring

- The PM_{10} concentrations across all monitoring stations ranged between 44.6 to 72.2 µg/m³.
- $PM_{2.5}$ concentrations varied from 19.2 to 32.4 µg/m³.
- All PM_{10} and $PM_{2.5}$ values are well within the NAAQS of 100 µg/m³ and 60 µg/m³ respectively (24-hour average).
- Sulphur dioxide (SO_2) concentrations ranged from 14.2 µg/m³ to 27.4 µg/m³.
- Nitrogen dioxide (NO_2) concentrations ranged between 18.0 µg/m³ and 31.7 µg/m³.
- Carbon monoxide (CO) levels were below detection limits (BDL) at all monitoring stations during the monitoring period.

Overall, the ambient air quality in the project area meets the prescribed limits for all monitored parameters as per the NAAQS specified by the CPCB.

7.2.2. Noise Environment

Noise levels vary from 39.2 to 66.1 Leq dB(A) during the daytime. Noise levels during the night time noise levels range from 38.9 to 63.6 Leq dB(A). Thus, noise levels at all locations were observed to be within the prescribed limits. From the above study and interpretation, it can be concluded that noise levels in the study area are well within the prescribed limits as prescribed by the CPCB and the State Pollution Control Board.

7.2.3. Traffic Study

A traffic study was conducted to assess the existing traffic conditions and to evaluate the impact of the proposed modernization project on the surrounding road network. The study included assessment of existing traffic volume, project-related vehicular movement, and the carrying capacity of nearby roads. It is observed that the proposed modernization will not result in any significant increase in vehicular

movement. Therefore, no adverse impact on the existing traffic scenario or road infrastructure is anticipated.

7.2.4. Surface Water

The Surface water analysis of the results indicates that

- The pH of the water ranged between 7.98 and 8.50.
- Electrical conductivity and TDS values were low (136-943 µS/cm and 85-576 mg/L).
- Total alkalinity and total hardness were also low (40-130 mg/L and 78-374 mg/L).
- The Dissolved Oxygen (DO) levels were good (6.0-8.6 mg/L).
- Biochemical Oxygen Demand (BOD) BDL in all locations & Chemical Oxygen Demand (COD) values were also low (5.8-20.2 mg/L).

7.2.5. Ground Water

The ground water analysis of results indicates that:

- pH varies from 8.12 to 8.53
- Total hardness varies from 117 mg/l to 194 mg/l
- Total Dissolved Solids vary from 410 mg/l to 510 mg/l.

7.2.6. Soil Quality

The soil analysis results are presented in Chapter 3, Table No. 3.14. The results obtained are compared with the standard soil classification as given in the agriculture handbook. Samples collected from the identified locations indicate that the pH value ranges between 6.74 to 7.45, which shows that the soils are neutral in nature. Total Potassium value ranges from 175.8 to 393 kg/ha & Total Phosphorus varies from 16.25 to 282.68 kg/ha

7.2.7. Biological Environment

The survey conducted within a 10 km radius of the project site revealed findings regarding the Avian, Insect, and Mammalia community in the surveyed area. The survey of plants was limited to the core region due to the rapid assessment and time limitations.

There is no Biosphere Reserve, National Parks, Wildlife Sanctuary, Tiger Reserve and Elephant -Reserve within 10 km radius of the project site.

7.2.8. Land Use

The 10 km buffer study area (33,072.107 ha) is predominantly agricultural, with 55.31% of the land under cultivation, indicating a primarily rural landscape. Plantation (10.27%) and built-up land (9.44%) form the next significant land use categories. Scrub, fallow, and open lands together contribute a moderate share, while mining (0.76%) and water bodies (0.84%) occupy minimal areas. Overall, agriculture remains the dominant land use pattern in the study area.

7.2.9. Socio–Economic Profile of the Study Area

The socio-economic study of the 10 km radius area covering 36 villages across Kolhapur (Maharashtra) and Belgaum (Karnataka) districts indicates a predominantly rural and agriculture-based economy with a

total population of 2,69,763 and a literacy rate of 72.83%. Basic infrastructure such as electricity, roads, schools, and transportation is available; however, advanced healthcare, sanitation, technical education, and skill development facilities require improvement. The workforce participation rate stands at 41.26%, with agriculture and labor work as the primary occupations. The proposed project expansion will generate additional direct and indirect employment opportunities, positively contributing to the local economy. Since the project is located in MIDC Kagal, no rehabilitation or resettlement issues are anticipated.

7.2.10. Topography

The Kagal MIDC (Five Star MIDC) is located in the southern part of Kolhapur district, Maharashtra, near the Maharashtra–Karnataka boundary. The topography is plain. The area forms part of the Deccan Plateau and is characterized by gently undulating terrain with basaltic rock formations typical of the Deccan Trap. The project site elevation ranges from about 599 m to 614 m above mean sea level. The Dudhganga River is the major river in the region, flowing in a north-easterly direction and supporting local agriculture and water resources. The soil in the area is predominantly black cotton soil, with patches of lateritic soil. The site is well connected, being located about 20–21 km from Kolhapur city and having access to the Pune–Bangalore National Highway.

8. ENVIRONMENTAL IMPACT ASSESSMENT

Table 8 Impacts and Mitigation Measures During Construction and Operation Phase

Sr. No	Particulars	Impact	Mitigation Measures
1	Air	**Construction phase** • During the construction phase, furnace-related activities such as structural erection, refractory lining, and installation of burners and electrical systems may generate temporary fugitive dust, welding fumes, and noise. Emissions arise mainly from cutting, grinding, and welding, while noise is due to cranes, compressors, and material handling equipment. **Operational Phase** • Handling of raw materials such as scrap metal, fluxes, alloys, and additives will be a regular activity. These operations may cause fugitive dust, material spillage, and occupational exposure • Dust deposition on vegetation affecting photosynthesis • Respiratory problems – coughing, wheezing and shortness of breath • High SO2 and NOX - lung disorders, wheezing and shortness of breath.	**Construction phase** • Water sprinkling on internal roads and construction areas • Covered transportation of construction materials • Regular maintenance of construction equipment **Operational Phase** • SO2 and NOX at a single location will not increase as vehicular movement and machines will be mobile. • APC systems, like Bag filters / Wet scrubbers, will be provided • Adequate stack height shall be maintained • Covered conveyors and enclosed material handling • Greenbelt development and maintenance
2	Water	**Construction Phase** • Runoff carrying silt and debris • Minor wastewater generation **Operational Phase** • Wastewater generation from industrial and domestic activities	**Construction phase** • Provision of proper stormwater drains • Avoidance of construction during heavy rainfall • No discharge of untreated wastewater **Operational Phase** • Treatment of wastewater • Reuse of treated water for dust suppression and green belt & in process • Zero liquid discharge
3	Noise	**Construction Phase**	**Construction Phase** • Use of low-noise equipment and acoustic enclosures

Sr. No	Particulars	Impact	Mitigation Measures
		• Temporary increase in noise levels from machinery and vehicles **Operational Phase** • Foundry equipment such as induction furnaces, moulding machines, shot blasting machines, and fettling operations • Continuous noise from machinery	• Provision of PPE such as earplugs and earmuffs • Periodic noise monitoring **Operational Phase** • Regular maintenance of machinery and equipment to ensure smooth operation and minimize noise generation. • Installation of silencers and dampers on compressors, blowers, and other rotating equipment to reduce noise at the source
4	Soil and Land Use	**Construction Phase** • Temporary Disturbance during construction **Operational Phase** • Risk of contamination from spills	**Construction Phase** • Proper waste collection and disposal • Spill prevention and control measures • Regular housekeeping **Operational Phase** • Raw material and product storage areas are being provided with impervious flooring • Spillage of raw materials, fuels, and oils is being prevented through good housekeeping practices • Oil traps and collection systems are being provided in areas prone to oil and grease contamination
5	Biodiversity and Habitat	**Construction Phase** • Minor Disturbance during construction **Operational Phase** • No significant adverse impact	**Construction Phase** • Dust suppression measures to protect vegetation **Operational Phase** • Maintenance and densification of the green belt • Plantation of native species • Noise-generating and vibrating machinery would be provided with a proper acoustic enclosure • A water sprinkling arrangement shall be provided to curb dust emissions during construction activities.

Sr. No	Particulars	Impact	Mitigation Measures
			• Workers staying onsite shall be supplied with a fuel source such as LPG, Kerosene etc. for cooking. Moreover, proper care shall be taken so that the surrounding ecological area is duly conserved.
6	Risk, Hazard and Occupational Health & Safety	**Construction Phase** • Risk of injuries, dust exposure and noise **Operational Phase** • Dust, noise, heat stress, and physical hazards	**Construction Phase** • Provision of PPEs such as helmets, masks, safety shoes, gloves, and goggles • Availability of first-aid and medical facilities **Operational Phase** • Use of modern machinery • • PPEs • Safety training • Fire protection and emergency response systems
7	Socio-Economic	**Construction Phase** • Employment generation • Improvement in the local economy **Operational Phase** • Long-term employment • Local economic development	**Construction Phase** • Preference to local manpower **Operational Phase** • First-aid facilities and tie-ups with nearby medical facilities will be provided for emergency medical care. • Periodic health check-ups, including occupational health monitoring, will be conducted for employees. • Skill development and job-oriented training programs will be encouraged for local youth, either directly or through collaboration with technical and vocational training institutes

9. ANALYSIS OF ALTERNATIVES

The project will be implemented entirely within the existing MIDC industrial premises on already acquired land. No additional land acquisition, population displacement, or rehabilitation and resettlement is involved. The project complies with applicable land-use and environmental regulations

10. ENVIRONMENTAL MONITORING PROGRAMME

By monitoring and evaluating baseline conditions and impacts predicted in Chapter 4, the monitoring programme will serve as an indicator for any deterioration in environmental conditions due to the operation of the project. The industry will undertake environmental monitoring on a regular basis to assess pollution levels within the Amalgamation & Modernization area, as well as in the surrounding environment. Accordingly, a systematic and continuous monitoring program for relevant environmental parameters is essential to effectively evaluate the pollutant status of the study area. The objective of the monitoring is as follows:

- To evaluate the effectiveness and efficiency of pollution control measures
- To satisfy the statutory and community obligations
- Examine the efficiency of the pollution control system adopted at the industry
- To conduct compliance monitoring for the proposed project operations

Table 9 Plan for Monitoring of Environmental Attributes (Construction Phase)

Sr. No	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility
1	Vehicular movement,	Air Quality (Ambient, Work Zone)	PM10, PM2.5, SO2, NOx, CO	Within construction activities	Once during construction	MoEF&CC & NABL Approved External Lab
2	Loading and unloading	Noise Levels (Ambient, Work Zone)	Leq (Day & Night)	Within construction activities & Nearby Area		
3	Soil Quality Maintenance	Soil Quality	Soil nutrients, heavy metals (if required)	Within construction activities		

Source: MoEF&CC & CPCB Guideline

Table 10 Plan for Monitoring of Environmental Attributes within Industrial Premises

Sr. No	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility
1	Manufacturing & Utility Operations	Air Quality (Ambient Air – 8 locations, Work Zone- 9 Locations)	PM10, PM2.5, SO2, NOx, CO	Within plant premises & near process area	Monthly	MoEF&CC & NABL Approved External Lab
2	Stack Emission	Stack Emission monitoring – 9 Locations	SPM, SO2, NOx	• OCMS is already provided to existing project • Manual monitoring as per CTO condition.	Monthly	
3	Plant Operations & Material Handling	Noise Levels (Ambient, Work	Leq (Day & Night)	Near machinery, boundary of plant	Monthly	

Sr. No	Activity	Aspect	Monitoring Parameter	Location	Frequency	Responsibility
		Zone – 9 Locations)				
4	Untreated and Treated effluent (STP & ETP)	Water Quality - 4 Samples	pH, TDS, TSS, BOD, COD, Oil & Grease	ETP inlet & outlet / water storage area	Monthly	
5	Drinking Water	Water quality of Surface - 2 Locations & ground water – 1 Location	IS: 10500-2012	Surface Water 2 location Ground water as per availability	Monthly Yearly	
6	Soil Quality Maintenance	Soil Quality – 1 Location	Soil nutrients, heavy metals (if required)	Within plant premises	Yearly	
7	Waste Handling & Storage	Solid & Hazardous Waste	Quantity, storage condition, disposal records	Waste storage area	Continuous / Monthly review	Regular check-ups as per Factories act.
8	Vegetation and Greenbelt Development	Flora & Fauna	Number of plants, species diversity	Within plant premises	Yearly	Environment Management Cell (EMC)
9	Employee & Migrant Labour Health Check-ups	Occupational Health	BP, Chest X-ray, Eye vision, general health parameters.	Employees of factory	Six Monthly	As per Factories Act / Authorized Medical Practitioner
10	Green Belt Maintenance	Green Cover	Survival rate of planted saplings	Within industry premises	Yearly	EMC in consultation
11	Corporate Environment Responsibility (CER) Activities	Social Environment	As per approved CER activities	Project influence area	Six Monthly	EMC / CSR Cell

Source: MoEF&CC & CPCB Guideline, Existing Industry Practices

10.1. Emissions and Discharges from the Plant

The emissions from the plant mainly comprise air emissions from process stacks, material handling operations, and vehicular movement. Adequate Air Pollution Control Equipment (APCE) such as scrubber, dust collectors are provided/shall be provided to control particulate matter and gaseous emissions, ensuring compliance with applicable emission standards.

Industrial wastewater generated from process activities will be treated in the existing Effluent Treatment Plant (ETP) and reused within the premises. Domestic wastewater will be treated in the existing Sewage Treatment Plant (STP) and reused for greenbelt development and process. The plant will operate under a Zero Liquid Discharge (ZLD) system, and no untreated effluent will be discharged outside the premises. As per existing practices.

10.2. Green Belt

Out of the total land area of 1,28,780 sq.m, approximately 25,356.7 sq.m (about 19.68%) has already been developed and is being maintained as green belt. At present, 2,111 trees of native and suitable species exist within the plant premises. Detailed green belt development Plan incorporated in Chapter 2, Sub Section 2.8.4.

10.3. Social Parameters

The project is located in an established industrial area and does not involve displacement of population or loss of livelihood. The proposed activities are expected to have a positive social impact through direct and indirect employment generation, preference to local manpower, and skill development opportunities. Improvement in local infrastructure, increased economic activity, and support to ancillary industries will further strengthen the socio-economic profile of the region. Corporate Environment Responsibility (CER) initiatives will continue to address community needs such as health, education, sanitation, and social welfare. Overall, the project will contribute positively to social development with no significant adverse social impacts anticipated. The detailed Socio-Economic Report is added in Chapter 3 and its impact and mitigation measures are addressed in Chapter 4.

11. ADDITIONAL STUDY

11.1. Risk Assessment

A detailed Risk Assessment and Hazard Identification & Risk Assessment (HIRA) has been carried out for all operational activities, including foundry, machining, welding, painting, and material handling operations. Identified hazards are effectively mitigated through engineering controls, administrative measures, PPE usage, training programs, LOTO systems, and strict adherence to SOPs, ensuring risks remain within acceptable limits.

A structured Occupational Health & Safety (OHS) management system and comprehensive Disaster Management Plan (DMP), including an Off-Site Emergency Plan, have been developed in compliance with the provisions of the Factories Act, 1948 and the Environment (Protection) Act, 1986. Adequate firefighting systems, emergency response facilities, and coordination with district authorities are in place to address any unforeseen incidents. Overall, the project is planned with robust safety and emergency preparedness measures to minimize occupational, environmental, and disaster-related risks.

11.2. Public Consultation

As per the EIA Notification dated 14th September 2006 and the ToR to be issued by SEAC, Maharashtra, vide letter No. vide File No. SIA/MH/IND1/564190/2026 dated 23.01.2026. This Draft EIA Report has been prepared for the amalgamation & modernization by addition of a phosphating and painting facility at Kagal-Hatkanangale Five-Star MIDC, Kolhapur. After issuance of ToR, the EIA study will be finalized accordingly. The Draft EIA/EMP Report will be submitted to MPCB for conducting the Public Hearing, and the proceedings shall be incorporated in the Final EIA/EMP Report. And then Action plan to address the issues raised during public consultation will be incorporated in final EIA report.

12. ENVIRONMENTAL MANAGEMENT PLAN

Environmental management plan deals with administrative aspect and monitoring, evaluation, training part which has to be imparted to employees and environment in order to keep a check on pollutants. The EMPs have been developed for the following stages of the plant activities at the site.

- Project preparation stage
- Project construction stage
- Project operation stage
- Plant closure and post closure stage

To support implementation of EMPs, regular monitoring of environment quality(ambient air, Ground water, noise and waste water) will be undertaken by the project developer during construction as well as operation of the plant.

Table 11 Environment Management Plan

Sr. No	Management Plan	Key Measures / Description
1	Air quality management plan	• Installation and operation of adequate Air Pollution Control Equipment (APCE); • Water sprinkling on internal roads; • Covered material handling; • Regular maintenance of vehicles and machinery; • Periodic ambient air quality and stack monitoring to ensure compliance with prescribed standards. This all practices follow in existing project
2	Solid and hazardous waste management plan	• Segregation of solid and hazardous wastes at source; • Reuse and recycling wherever feasible; • Storage of hazardous waste in designated, impervious areas; • Disposal through authorized recyclers / TSDF as per Hazardous & Other Wastes Rules; • Maintenance of manifests and records. This all practices follow in existing project
3	Effluent management plan	• Industrial effluents treated in existing ETP; • Domestic wastewater treated in existing STP; • Treated water reused for gardening, floor washing, and other non-potable uses; • No untreated discharge outside premises ensuring Zero Liquid Discharge (ZLD). This all practices follow in existing project
4	Storm water management plan	• Separate stormwater drainage network; • Provision of silt traps and oil & grease traps; • Prevention of mixing of stormwater with effluent; • Rainwater harvesting structures to reduce runoff and improve recharge.

5	Occupational health and safety management plan	• Provision of PPEs; • Regular health check-ups; • Safety training programs; • Safe operating procedures; • Emergency preparedness and fire protection systems; • First-aid and medical facilities at site. This all practices follow in existing project
6	Green belt development plan	• Maintenance and expansion of green belt within plant premises; • Plantation of native and fast-growing species; Development along boundary and open spaces to act as pollution sink and improve aesthetics.
7	Socio-economic management plan	• Preference to local manpower; • Skill development and training; • Support to local infrastructure; • Continuation of Corporate Environment Responsibility (CER) initiatives as per approved plans

13. ENVIRONMENTAL MANAGEMENT COST

Table 12 Capital as well as O & M Cost of Proposed Project

Details	Environmental Protection Measures	Capital Investment (Lakhs)	O & M Cost (Lakhs)
Air Pollution Control Systems	Fume Extraction System followed by Wet Scrubber and stack to the phosphating section, paint booth	22.40	2.5
Occupational Health	Fire Hydrant System, Fire Detecting System	0.20	
	Fire Fighting Cylinders	0.20	
	Occupational Health Centre	0.20	
Green Belt	Tree Plantation	0.50	
Environmental Monitoring	Environmental Monitoring (Air, Water, Waste Water, Work Zone, Stack)		1.00
	Total	**23.50**	**3.50**

14. FRAMEWORK FOR IMPLEMENTATION & MONITORING OF MITIGATION MEASURES

The Environmental Management Plan (EMP) will form an integral part of project planning, design, construction, and operation of GPIL Plant 2. Environmental safeguards and mitigation measures shall be incorporated into engineering design specifications, procurement documents, and construction contracts to ensure effective implementation. Contractors engaged for construction and installation activities will be required to comply with EMP provisions, occupational health and safety requirements, and applicable statutory norms.

All essential environmental protection measures and health & safety systems shall be in place prior to commencement of construction activities. During the operational phase, environmental management

measures will be implemented as part of routine plant operations, including air pollution control, wastewater treatment under ZLD, solid and hazardous waste management, and greenbelt maintenance.

GPIL already follows structured environmental management practices and will continue to strengthen these systems in line with the proposed expansion. The project shall be operated under an Environmental Management System (EMS) compatible with ISO 14001 standards, supported by regular monitoring, internal audits, and corrective actions. Periodic review of environmental performance will be carried out by the Environmental Management Cell (EMC) to ensure compliance with regulatory requirements and continual improvement in environmental performance.

15. CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

Under the CER notification dated 1st May, 2018, the company shall spend Rs. 10.00 Lakhs. this will fulfil public demand and bring about the overall improvement of the locality, and shall be spent for the overall development of the locality and local people. Some of the community development plans can be considered by the project Developer as part of corporate social responsibility.

16. PROJECT COST AND ESTIMATED TIME OF COMPLETION

Existing project cost: ₹330.2704 Crore.

Proposed additional cost: ₹3.8364 Crore.

Total project cost after Amalgamation and Modernization: ₹334.1068 Crore.

As per the initial estimate, approximately 8-9 months will be required for implementation of the project

17. CONCLUSION

The proposed expansion project of GPIL Plant-2 is expected to have minimal and manageable environmental impacts. With effective implementation of the Environmental Management Plan (EMP) and adherence to mitigation measures recommended in the EIA/EMP report and stipulated by MoEF&CC, CPCB, and the State Pollution Control Board, potential adverse impacts will be minimized to a great extent.

Under the proposed modernization process, the existing casting production capacity will remain unchanged. The proposal includes only the addition of a new phosphating plant with a capacity of 40,000 numbers per year. There will be no change in the existing pollution control equipment, as the current systems are adequate to manage the environmental aspects of the proposed activity.

Overall, considering the environmental safeguards proposed and the substantial economic and social benefits, the project is beneficial to the region as well as to the nation and aligns with the principles of sustainable industrial development.