

**APPLICATION FOR
TERMS OF REFERENCE (ToR)**

FOR

**Thermal Power Plant Facility (CPP of 15 MW) by
Shree Digvijay Cement Company Limited.**

**[Schedule 1(d) Category–B1 as per EIA Notification 2006 But treated as
Category- A due to applicability of general condition (ESZ of Marine National
Park at 2.5 Km)]**

At

Old Survey No: 72/2- 50- 71- 70/2- 73/2- 69/2- 51/1

New Survey No. 136-388-389-390-391-392-393

**Digvijaygram, Jamnagar – 361140,
Gujarat, India.**

Existing Land: 99.147 Ha

Proposed Land for TPP from Existing Land: 2.5 Ha

Capacity: 15 MW

Applicant

**SHREE DIGVIJAY CEMENT
COMPANY LIMITED.**

Digvijaygram, Jamnagar – 361140,
Gujarat, India.

narendranthimma@digvijaycement.com

Tel No: +91 288 2344272

Consultant

ECO CHEM SALES & SERVICES

Office Floor, Ashoka Pavilion “A”,
New Civil Road, Surat, 395001.

(QCI Accreditation No#
NABET/EIA/1720/ RA 051)

E-mail: eco@ecoshripad.com

Tel No: +9126-12231630

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EXECUTIVE SUMMARY

Shree Digvijay Cement Company Limited is an India-based company engaged in the manufacturing and selling of cement. The Company offers products, such as Ordinary Portland Cement 53 grade (OPC), Ordinary Portland Cement 43 grade (OPC), Sulphate Resisting Portland Cement (SRPC), Oil Well Cement Class G Grade HSR and Portland Pozzolana Cement. The Company's other products include special cements, such as Oil Well Cement, Sulphate Resisting Portland Cement and Railway Sleeper Manufacturing Cement. The Company offers its products through KAMAL brand. The Company caters to the domestic market. The Company exports cement and cement clinker to various countries, including the United Arab Emirates, Somalia, Yemen, Bangladesh, Qatar, Sri Lanka, Iraq, Kuwait, Bahrain, Philippines, and other South Asian Association for Regional Cooperation and African countries. The Company has a manufacturing facility at Sikka, Jamnagar.

Shree Digvijay Cement Co. Ltd. (SDCCL) proposes to set up a captive 15 MW Thermal Power Plant at Old Survey No: 72/2- 50- 71- 70/2- 73/2- 69/2- 51/1, New Survey No: 136-388-389-390-391-392-393, Digvijaygram, Jamnagar – 361140, Gujarat, India. Total land area of SDCCL is 991479.7 m². Plot area of the proposed project consists of 25,000 m² and Around 33 % (8250 m²) of proposed plot area will be developed as greenbelt. The Existing greenbelt area has been already developed to comply the government norms. The project cost is estimated to be around INR 108.64 Crores.

As per the EIA notification dated 14th September, 2006, as amended till date, the proposed products fall in category including Project / Activity: 1(d) – Thermal Power Plant. This project shall be treated as Category ‘B1’ but treated as Category ‘A’ due to applicability of general condition (ESZ of Jamnagar Marine National Park at 2.5 km). Figure 1 shows location of ESZ (Eco-Sensitive Zone) of Jamnagar Marine National Park at 2.5 km from project site.

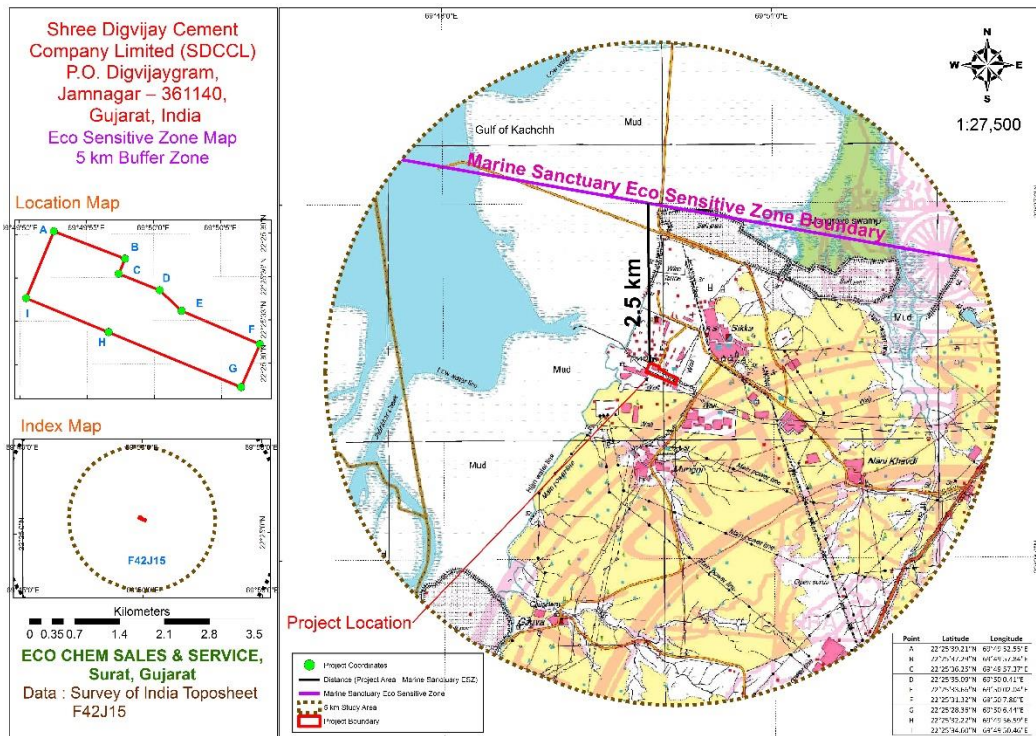


Figure 1: Location of ESZ (Jamnagar Marine National Park) from Project Site

Table 1: Project Summary

S. No.	Description	Proposed Project Details			
1.	Name of project	Environment Clearance (Expansion) for Captive Thermal Power Plant (CPP) with Capacity of 15 MW at Digvijaygram, Jamnagar – 361140, Gujarat, India by Shree Digvijay Cement Company Limited.			
2.	Project Site	New Survey No. 136-388-389-390-391-392-393, Digvijaygram, Jamnagar – 361140, Gujarat, India.			
3.	Project Category	1(d) – Thermal Power Plant Category “A” due to applicability of general condition (ESZ of Jamnagar Marine National Park at 2.5 km as per figure 1)			
4.	Capital Cost including EMP Cost	Rs. 108.64 Crores			
5.	Products	Existing: Cement 1.2 Million TPA & 8.5 MW WHR (Water Heat Recovery) Proposed: 15 MW Power as CPP			
6.	Fuel as Raw Material	S. No.	Name of Fuel	Existing Consumption MTA	Proposed Consumption MTA
		1	Indonesian Fuel	-	72000
		2	Pet Coke	120000	50000
		3	South African (SA) Coal	-	155000
		4	Lignite	-	85000
7.	Resource Requirement				
(i)	Land	Total land area of SDCCL is 991479.7 m ² . Plot area of proposed TPP – 25,000 m ² or 2.5 Ha (2.5 Ha will be use from Existing 99.147 Ha). Out of Plot area of proposed 8250 m ² (33%) will be utilized for Greenbelt development.			
(ii)	Water	Source: Borewell/ Dugwell Existing: 525 KLD Proposed: 280 KLD Total: 805 KLD			
(iii)	Electricity	Power requirement of 1.8 MW will be sourced from Gujarat Energy Transmission Corporation Ltd. (GETCL) and DG set of capacity 300 KVA will be used as standby back-up supply for emergency conditions & safe shutdown of power plant in case of main power failure.			
(iv)	Man power	<ul style="list-style-type: none"> • Existing Manpower: 585 • Proposed: 53 • Total: 638 			
(v)	Utility	Steam			
8.	Greenbelt	Existing area of greenbelt: 143234 m ² Proposed area of greenbelt: 8250 m ²			

9.	Source of Pollution	
(i)	Wastewater Generation	Wastewater will be generated from RO/DM plant, Boiler and Cooling Tower operations. The RO/DM plant reject & Boiler blow down is being/will be treated in pre-treatment treatment plant (PTP) and is being /will be utilized for dust suppression and firefighting.
(ii)	Air Emission	<p>Existing Flue gas: from D.G. set</p> <ul style="list-style-type: none"> • PM : <150 mg/Nm³ • SO₂ : < 100 ppm • NO₂ : < 50 ppm <p>Proposed Flue gas: from Boiler/Furnaces</p> <ul style="list-style-type: none"> • PM : <150 mg/Nm³ • SO₂ : < 100 mg/Nm³ • NO_x : < 100 mg/Nm³
(iii)	Solid/Hazardous waste Generation	<p>Existing: Sludge and filters contaminated with oil (26.2 MTPA) Chemical sludge from waste treatment sludge (78000 MTPA) Spend used oil (72 MTPA)</p> <p>Proposed: Fly ash (20275 MTPA) and Used Oil (66 MTPA) will be generated from burning of fuel in boilers, which shall be stored in closed silo and used in existing cement plant.</p>

2. INTRODUCTION OF PROJECT

2.1 Project Proponent

Shree Digvijay Cement Company Limited (SDCCL) is a Public Limited Company incorporated in the State of Gujarat, India, under the Companies Act, 1956, having its Registered Office at Digvijaygram, Jamnagar -361140, Gujarat, India. SDCCL is one of the leading cement manufacturing industry. The authorized person for the project is Mr. Timma L. Narendran who will coordinate for day to day activity and technical details.

List of directors and Promoters along with their designation is given in Table 2.

Table 2: List of Directors

S. No.	Name	Experience
1.	Mr. Anil Singhvi	Finance, Corporate strategy, Project and general management
2.	Mr. A.K Chhatwani	Director (Independent)
3.	Mr. K. K. Rajeev Nambiar	Chief Executive Officer & Managing Director
4.	Mr. Pramod Kabra	Strategy, Finance, M & A and Supply Chain Management
5.	Ms. Mini Menon	Journalism and business management
6.	Mr. Mahesh Gupta	Business management and all dimensions of finance, merger & acquisitions

2.2 Nature of the Project

The proposed project is Captive Thermal Power Plant of 15 MW. It will be based on state-of-the-art, environment friendly blending of fuel namely imported coal. This project is fall under 1(d), category is “B1” but treated as Category “A” due to applicability of general condition (ESZ of Jamnagar Marine National Park at 2.5 km as per figure 1).

2.3 Need of the Project

The proposed thermal power plant is required to carter the power requirement of existing Cement Plant of SDCCL.

2.4 Demand – Supply Gap and Import vs. Indigenous Production

Demand of power in nearby industry units is envisaged. No power plant is available in the region and they have to rely on the grid power and own small boilers. Hence, to fulfill their requirement, this power plant is proposed.

2.5 Employment Generation

There are possibilities to generate employment during the construction as well as operation phase of the proposed project. Based on organizational pattern, technical staff for plant, General staff for administrative work and other ancillary services *i.e.* Security, O&M contractor and maintenance services will be required in this phase. It is estimated that around 53 Nos. of employee will get direct/indirect employment during operation phase of TPP. Existing manpower is 585 Nos of employee.

3. PROJECT DESCRIPTION

3.1 Type of Project

Captive Thermal Power plant (CPP) by Shree Digvijay Cement Company Limited (SDCCL) is coming up in existing SDCCL Cement Company. All the industrial infrastructure facility has been available to support proposed development.

3.2 Location of Project

Shree Digvijay Cement Company Limited (SDCCL) decided to set a thermal power plant at existing SDCCL premises *i.e.* P.O. Digvijaygram, Jamnagar – 361140, Gujarat, India. Total land area of SDCCL is 991479.7 m². Plot area of the proposed project consists of 25,000 m². Around 33 % (8250 m²) of total plot area will be developed as greenbelt. Table 3 shows Co-ordinates of Site Boundary of proposed thermal power plant. Location of plant site and Key map and Google image of proposed project site is depicted as figure 2 & 3 respectively. Figure 4 shows layout of Cement plant of SDCCL & Figure 5 shows layout of proposed thermal power plant. Figure 6 shows google image of proposed Thermal power plant project site. Project coordinate is as under:

Table 3: Co-ordinates of Site Boundary

Point	Latitude	Longitude
A	22°25'39.21"N	69°49'52.55"E
B	22°25'37.29"N	69°49'57.84"E
C	22°25'36.25"N	69°49'57.37"E
D	22°25'35.09"N	69°50'0.41"E
E	22°25'33.66"N	69°50'2.04"E
F	22°25'31.32"N	69°50'7.86"E
G	22°25'28.36"N	69°50'6.44"E
H	22°25'32.22"N	69°49'56.59"E
I	22°25'34.60"N	69°49'50.46"E

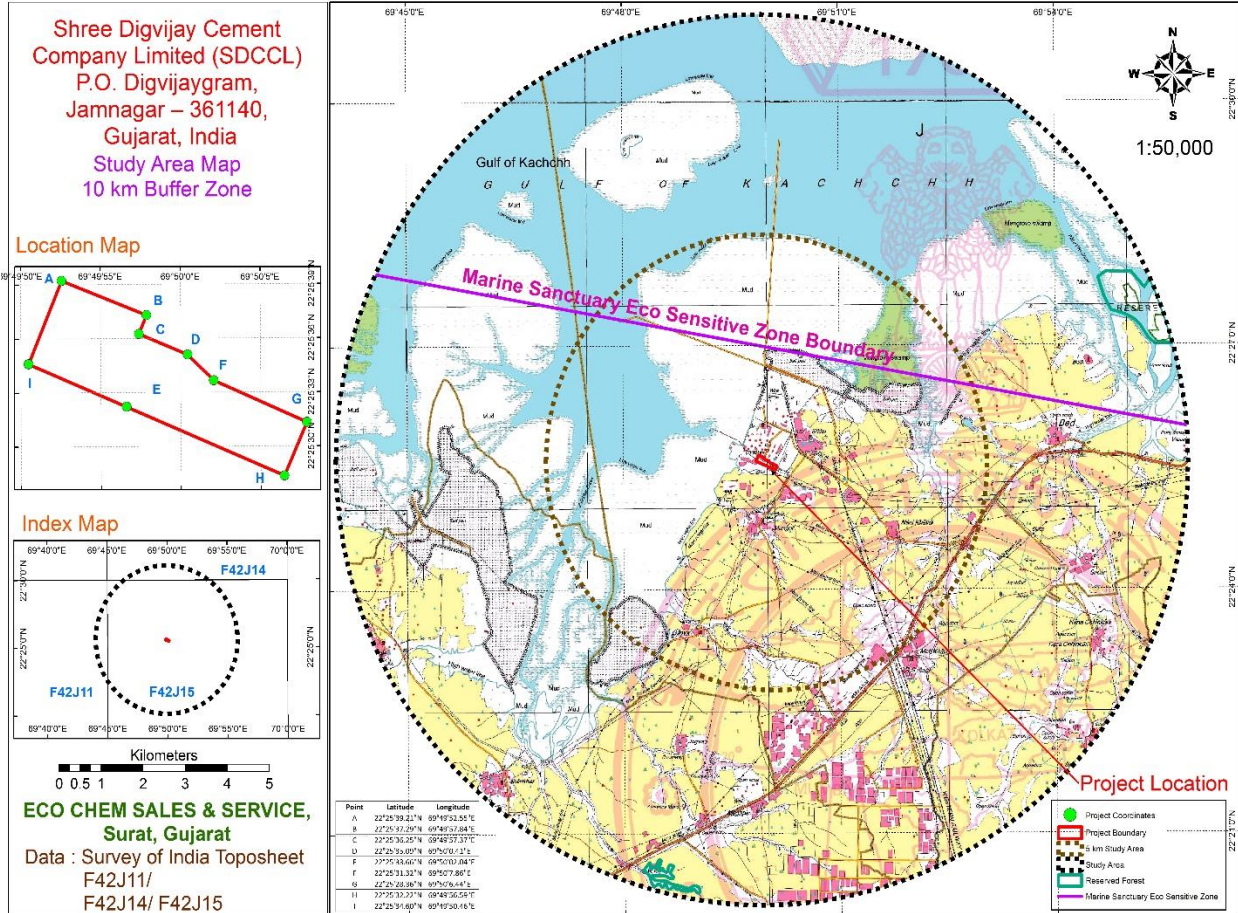


Figure 2: Study Area Map

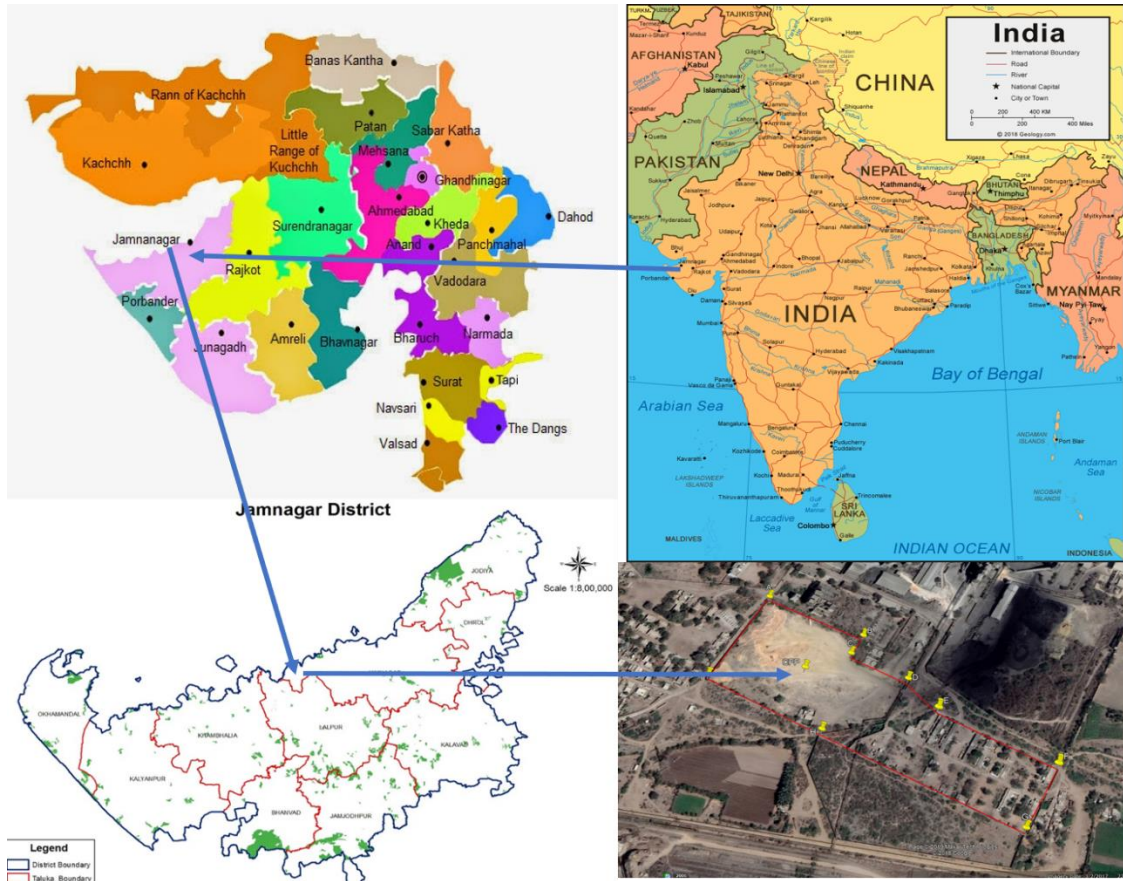


Figure 3: Location Map

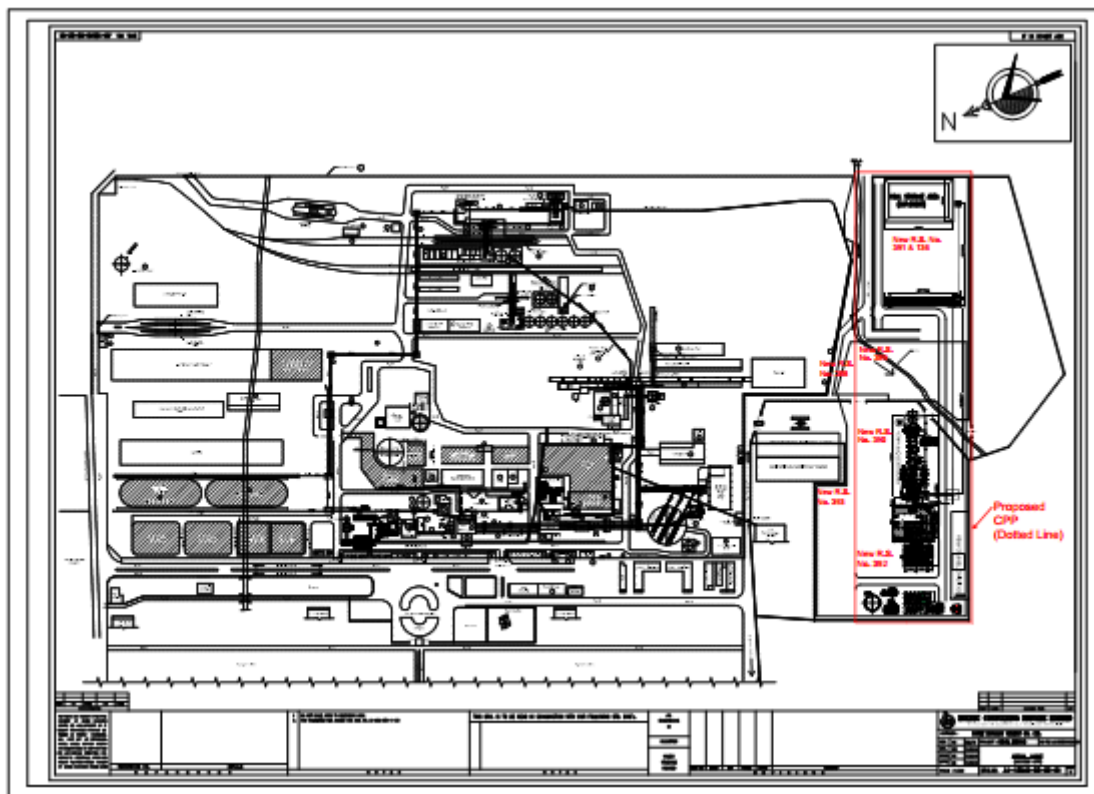


Figure 4: Layout Plan of Digvijay Cement Plant

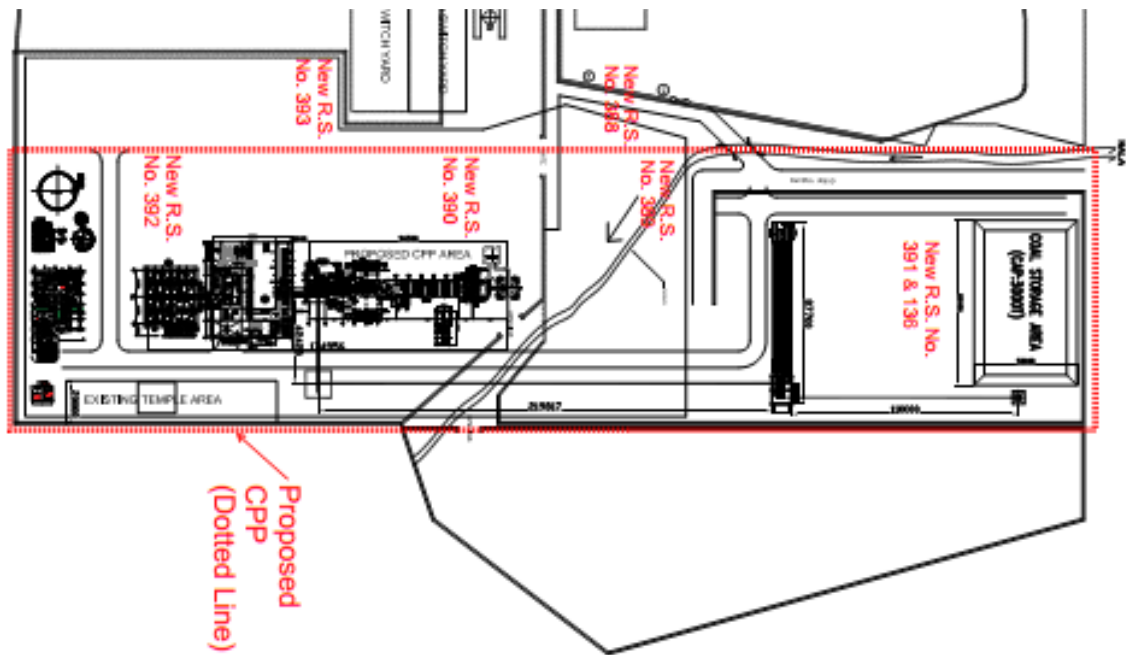


Figure 5: Layout Plan for Proposed Thermal Power Plant

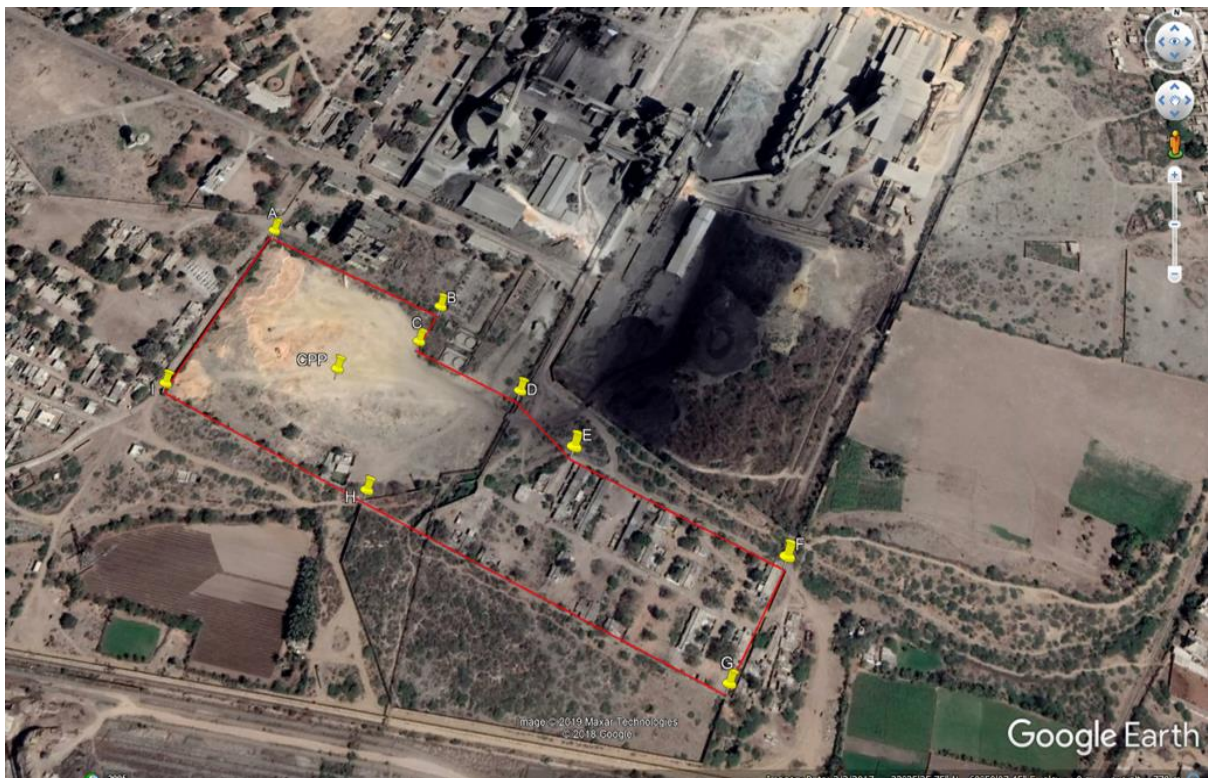


Figure 6: Google Image of Proposed Thermal Power Plant Project Site

3.3 Alternative Site

No alternative site study will be carried out as the proposed captive thermal power plant is to be developed in existing premises by using existing land & infrastructure.

3.4 Size of Operation

Project proponent will be proposing Captive Thermal Power Plant with Capacity 15 MW.

3.5 Products & Manufacturing Process

Process Description

After proposed CPP project, power will be generated from 15 MW Steam Turbine which will be operated using existing 75 TPH Main Boiler. A Turbine is basically a Curtis Wheel with a few extra steps for converting high enthalpy superheated steam to motive energy and generating Electrical power in turn. While this energy conversion takes place, the steam loses its pressure and temperature and is brought out of the turbine at pressure and temperature suitable to the manufacturing process requirement. However, since the extra fuel required for raising the enthalpy of the Steam to the required level [about 30%] is very nominal, such electric power can be considered the most environment friendly way to generate using coal by Co-generation, where steam is a major process requirement also.

The coal / lignite / petcock will be fed to furnace of the CFBC Boilers (75TPH) through coal handling plant into Bunkers. The individual fuel or fuel mix will be fired in the furnace by means of FD-Fan air. The saturated steam is generated in the boiler drum and passed to the primary, secondary & In-bed super heaters to get the superheated steam @ 540°C from the boilers. The superheated steam is fed to the steam turbine and it rotates the steam turbine at the speed of ~3000 rpm. The steam Turbine is coupled with Reduction gears and Alternators. The power of 15 MW will be generated in the Alternators. Flue gas shall meet the statutory norms. Design of ESPs will be as per the state government norms. General process flow diagram of power plant is given below in figure 7:

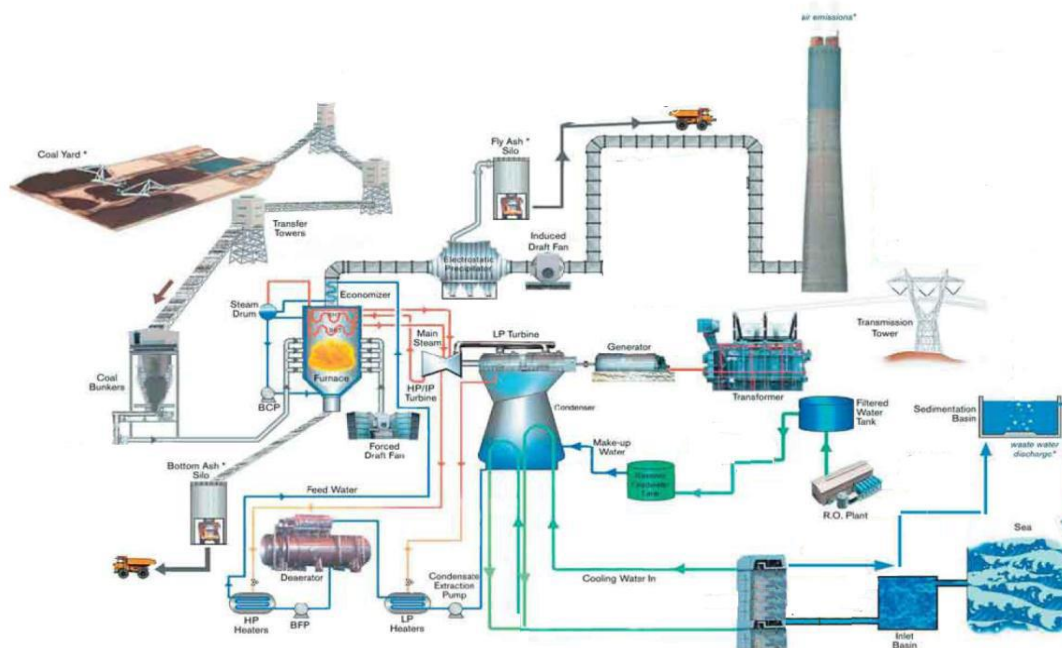


Figure 7: Manufacturing Process

Coal Handling System: Coal / Lignite / Petcock from trucks will be unloaded by Tipplers in the coal handling plant. Then the coal will be fed to crusher and reduced sized coal will be fed to the coal storage bunkers through conveyor belts. The coal will be then taken to the Boiler.

Ash Handling System: The fly ash produced from combustion will be collected at various locations such as economizer, air preheater, electrostatic precipitators, etc. along with bottom ash and shall be stored in closed system to storage silos. The Fly Ash shall be 100% utilized in our cement plant. All ash generated will be utilized in our cement plant. RCC silos will be provided having storage capacity of 20275 MTPA to store Fly Ash and 75 MT bed ash. Adequate capacities of bag filters will be provided to avoid dusting.

3.6 Fuel Requirement

During operation phase use of Indonesian Fuel/Pet Coke/South African (SA) Coal/Lignite, is being/will be purchased from open market. Lignite will be available from nearby port at a distance of about 200 km by road from the plant site. Pet Coke will be available at open market located at a distance of about 20 km by road from the plant site. Indonesian fuel will be available at nearby port located at a distance of about 200 km by road from the plant site. And South African (SA) Coal will be available at nearby port located at a distance of about 200 km by road from the plant site. Details of fuel along with the quantity and means of storage is given in Table 4.

Table 4: Details of Fuel Quantity and Means of Storage

S. No.	Product	Name of Fuel	Existing Consumption MTA	Proposed Consumption MTA	Physical State	Source	Means of Transportation
1.	Power	Indonesian Fuel	-	72000	Solid	Nearby Port	Road 200 km
2.		Pet Coke	-	50000	Solid	Open Market	Road 20 km
3.		South African (SA) Coal	-	155000	Solid	Nearby Port	Road 200 km
4.		Lignite	-	85000	Solid	Nearby Port	Road 200 km
5.	Cement	Coal/Pet coke	1,20,000	-	Solid	Nearby Port	Road 200 km

3.7 Resource Requirement

Existing resource requirement details include details of all the plants at Digvijay cement unit while proposed resource requirement to be required has been discussed below.

3.7.1 Land

SDCCL will be using own land for the proposed thermal power plant project. Total land area available is 99.147 Ha. Bifurcation of plot area is mentioned in table 5.

Table 5: Land Bifurcation

S. No.	Particulate	Area (m ²)		
		Existing	Proposed	Total
1.	TPP	-	16750	16750
2.	Cement Plant	157857.35	-	157857.35
3.	Admin & CCR			
4.	STP			
5.	Cooling Tower			
6.	Stores & Utilities	143234	8250	151484
7.	Greenbelt			

8.	Open Area	141032.9	-25000	116032.9
9.	Land under Transfer to G.R.B	150644.2	-	150644.2
10.	Residential Colony	398711.228	-	398711.228
	Total	991479.7	0	991479.7

3.7.2 Water

Total water is required after the setting TPP will be 937 KLD out of which, the fresh water requirement will be 805 KLD. The water will be met through existing borewell and dug wells.

Source: Dug well/ Bore well, CGWA permission under process for 1058 KLD.

Water use propose plan will be shown in table 6 and the balance of water to be used is shown in figure 8. Figure 9 shows existing water balance and figure 10 shows total balance of water.

Construction Phase:

- Domestic – 0.7 KLD
- Construction activities, curing and Dust suppression – 1.0 KLD

Operation Phase:

- Existing 525 KLD
- Expansion 280 KLD

Note: The fire water tank (250 KL) are in existing will be utilized for fire-fighting. The requirement will be met from existing source and this will be one-time requirement.

Table 6: Water Consumption

S. No.	Process/Purpose	Water Requirement (KLD)		
		Existing	Proposed	Total
1.	Cement Plant	300	00	300
2.	Cooling Tower	100	129.00	373
3.	RO/DM Plant		144.00	
4.	Boiler		00	
5.	Greenbelt	125 (Recycled)	7 (Recycled)	132 (Recycled)
6.	Domestic	125	7	132
	Fresh Water	525	280	805
	Total Water (Fresh + Recycled)	650	287	937

Proposed Water Balance Diagram

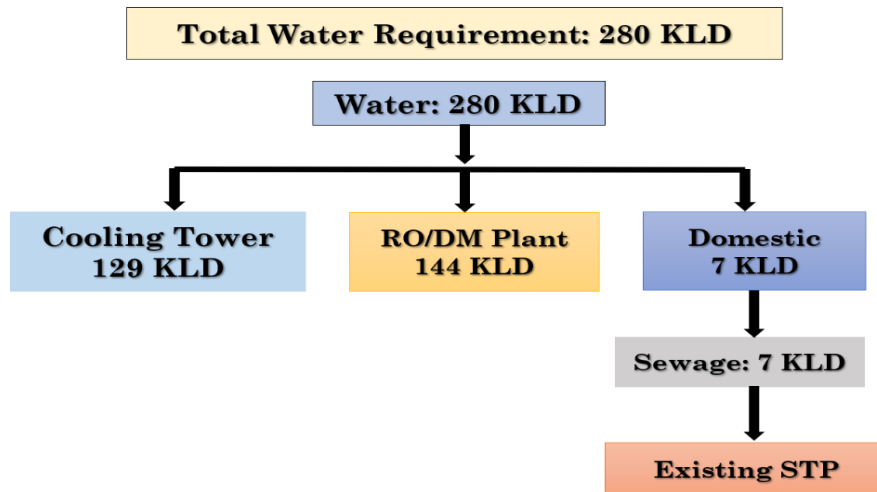


Figure 8: Proposed Water Balance Diagram

Existing Water Balance Diagram

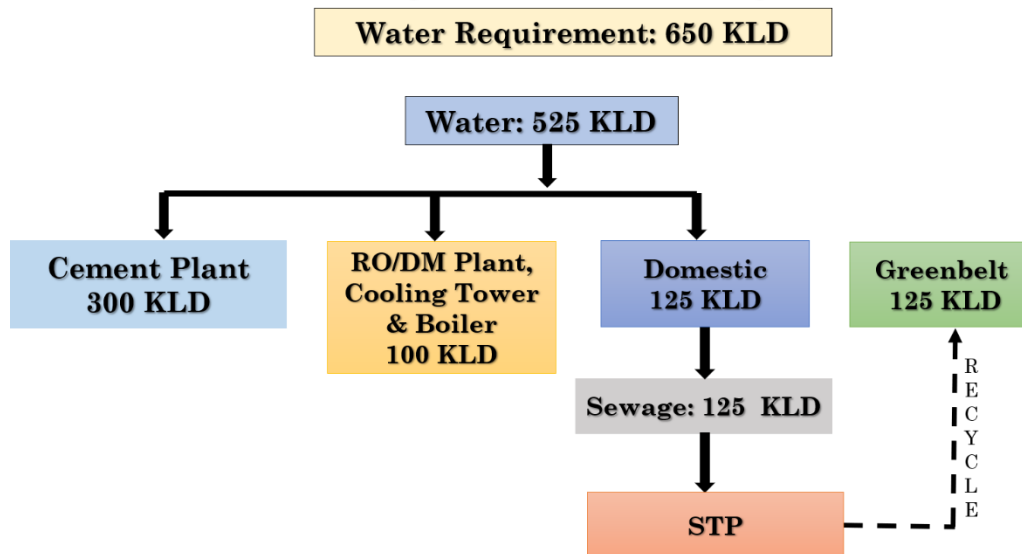
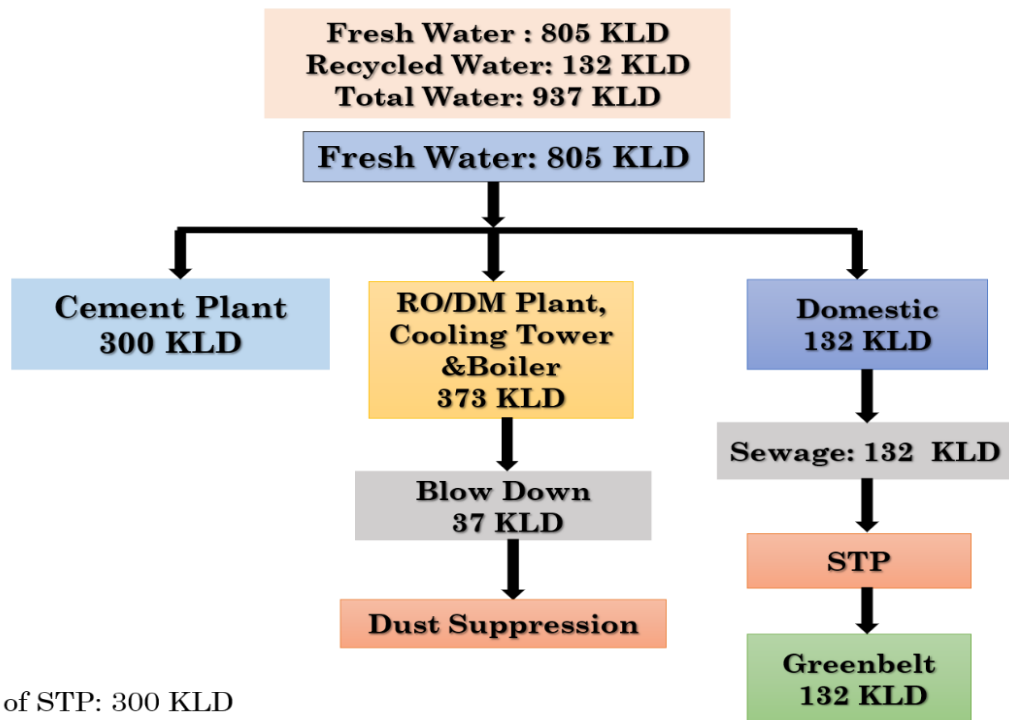


Figure 9: Existing water balance Diagram

Water Balance Diagram



Capacity of STP: 300 KLD

Figure 10: water balance Diagram

3.7.3 Electricity

Power requirement of 1.8 MW for start-up will be sourced from Gujarat Energy Transmission Corporation Ltd. (GETCL) and DG set (300 KVA) will be used as standby back-up supply for emergency conditions & safe shutdown of power plant in case of main power failure.

3.7.4 Manpower

There are possibilities to generate employment during the construction as well as operation phase of the proposed project. Based on organizational pattern, technical staff for plant, General staff for administrative work and other ancillary services *i.e.* Security, O&M contractor and maintenance services will be required in this phase. It is estimated that around 53 Nos. of employee will get direct/indirect employment during this phase shown in table 7. Total manpower in existing 585 Nos. are employed currently.

Table 7: Manpower details

S. No.	Position/Categories	Manpower Numbers		
		Existing	Expansion	Total
1.	Top Management (GM and above)	10	1	11
2.	Managers	127	1	128
3.	Technicians	8	15	23
4.	Engineers	63	20	83
5.	Skilled workers	37	8	45
6.	Semi-skilled workers	10	8	18
7.	Unskilled workers	30	-	30
8.	Indirect - On Contract	300	-	300
	Total	585	53	638

3.8 Waste to be generated

It is envisaged that due to proposed project activity various wastes to be generated which are described as under:

3.8.1 Sewage

Sewage to be generated during construction phase of 0.7 KLD from labors. During operation phase 7 KLD sewage will be generated from additional technical staff. Sewage from both construction and operation will be treated in existing STP of Capacity 300 KLD facility of SDCCL.

3.8.2 Effluent

SDCCL has no industrial effluent streams from the inception stage of plants. The water from DM and blow down of Cooling Tower will be reuse in dust suppression.

3.8.3 Air Emission

Air emission from flue gas nature of emitted pollutants and system provided for air pollution control in proposed and existing plant is mentioned in table 8A & 8B. Air emission from process gas in existing is shown in table 8C.

Table 8A. Flue gas Air Emission (Proposed)

S. No.	Source of emission With Capacity	Stack Height (meter)	Name of the fuel	Quantity of Fuel MT/hr. & MT/Day	Type of emissions i.e. Air Pollutants	APCM
1.	Boiler (75 TPH)	45	Lignite	16.67 MT/Hr. 400 MT/Day	PM SO _x NO _x	ESP
			Imported Coal	8.4 MT/Hr. 203 MT/Day		
			Petcoke	6.42 MT/Hr. 154 MT/Day		

Table 8B: Flue gas Air Emission (Existing)

Sr. no.	Source of emission With Capacity	Stack Height (meter)	Type of Fuel	Quantity of Fuel MT/Day	Type of emissions i.e. Air Pollutants	APCM
1	DG Set (750 KVA)	11	HSD	1.2	PM SO ₂ NO _x	Accosting enclosure

Table 8C: Process gas Air Emission (Existing)

S. no.	Source of emission	Type of emission	Stack/Vent Height (meter)	Air Pollution Control Measures (APCM)
1.	Raw mill & Kiln Exit	Particulate Matter SO ₂ NO _x HCL HF TOC Hg and Dioxin	61	Bag Filter

2.	Cement mill kiln CKCP cement mill	Particulate Matter SO ₂ NO _x HCL HF TOC Hg and Dioxin and furnace	50	Bag Filter
3.	Cooler exit	Particulate Matter SO ₂ NO _x HCL HF TOC Hg and Dioxin and furnace	22	ESP
4.	Coal mill	Particulate matter	32	Bag Filter

3.8.4 Solid/Hazardous Waste

Fly ash and used oil will be generated from new thermal power plant. Detail of solid waste generation, storage and treatment is shown in table 9.

Table 9: Solid/hazardous Waste Generation & Management

S. No.	Name of Waste	Existing Qty. TPA	Proposed Qty. TPA	Solid waste Storage/Disposal/Management
1.	Fly Ash	-	20275	Stored in silo and used in Existing Cement Plant
2.	Used Oil	-	66	Stored in HDPE Drums and used in Kiln as AFR
3.	Sludge and filters contaminated with oil	26.2	-	Collection, storage, transportation and sell out to registered recycler disposed in to TSDF site.
4.	Chemical sludge from waste treatment sludge	78000	-	Collection, storage, transportation and reuse for cement manufacturing.
5.	Spend used oil	72	-	Collection, storage, transportation and sell out to registered recycler.
6.	Oil containing cargo residue	0.200	-	Collection, storage, transportation and disposal by selling to registered recycler.

Waste coming from other industries under Alternative Fuel & Raw Material (AFR)

S. No.	Name of Waste	Existing Qty. TPA	Proposed Qty. TPA	Solid waste Storage/ Disposal / Management
1.	Waste residue	2.4	-	Collection, storage and reuse

2.	Discarded containers	1.0	-	Collection, storage, transportation and disposal by selling to registered recycler.
3.	FO sludge & Filter contaminated with oil	264	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
4.	Chemical Sludge from wastewater treatment	78000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
5.	Used oil spent oil	72.00	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
6.	Oil containing cargo residue	0.20	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
7.	Waste residue containing oil	249	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
8.	Mixed Waste Liquid	76000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
9.	Mixed Waste Solid	6000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
10.	Spent Carbon	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
11.	Processing waste residues & sludge (Paint Sludge)	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
12.	Spent ion exchange resin containing toxic metals (plastic & resin waste)	5.00	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
13.	Waste or Residue containing oil	2000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
14.	Phosphate Sludge	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
15.	Contaminated cotton rags or other cleaning material (oil rags)	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
16.	Off Specification products	500	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
17.	Date expired product	500	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.

18.	Process waste sludge/ Residue containing acid, toxic metals, organic compounds.	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
19.	Organic residue from process	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
20.	Spent Clay containing Oil	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
21.	Cathode residue including pot lining waste	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
22.	Metal Sludge	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
23.	Sludge from acid recovery unit	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
24.	Distillation residue generating from production and or industrial use of solvent	420	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
25.	Waste or residue (not made with vegetable or animal material)	1000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
26.	Dust from air control System	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
27.	Process residue & waste	1500	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
28.	Spent Catalyst	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
29.	Spent Solvent	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
30.	Process Waste or residue	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
31.	Sludge containing residual pesticides	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.
32.	Chemical containing residue	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.

	arising from decontamination			
33.	Exhaust Air or gas coming residue	15000	-	Reception, Collection, storage & Reuse/Recycle for co-processing in the cement kiln within the premises.

3.8.5 Noise

Construction Phase: Noise will be generated during construction phase due to vehicular movement, operation of construction equipment. Well maintain vehicles and construction equipment shall be engaged to minimize the noise pollution.

Operation phase: During operation phase, noise will be generated due to various industrial activities. Proper mitigation measures will be implemented to control the noise to keep it within the prescribed norms.

Greenbelt acts as a noise barrier and restricts noise propagation outside the premises. SDCCL has already been developed greenbelt within the factory premises and in colony and outside area.

3.9 Purpose of EIA Study

As per the provision made in EIA Notification Dated 14th September 2006 and its amendment till date, it has been noticed that the proposed project to be developed for thermal power plant project activity falls under schedule I: 1(d)–Thermal Power Plants. Project category is “B1” but treated as Category “A” due to applicability of general condition (ESZ of Jamnagar Marine National Park at 2.5 km as per figure 1). It is necessary to get Environmental Clearance (EC) prior to commissioning of the proposed project by applying to EAC, MoEF&CC New Delhi, along with the Environment Impact Assessment Study Report. Therefore, the EIA study is required to be conducted for obtaining the EC.

4. SITE ANALYSIS

Proposed project site were selected for evaluation based upon their general suitability for industrial development. Site analysis was done to ensure that development is undertaken in such a way that reduces negative impacts to the onsite environment and surrounding ecosystems. Proposed project site is supported by various basic infrastructure facilities i.e. water supply, transportation, electricity supply, fuel supply etc.

4.1 Connectivity

Proposed project site is connected with road, rail and air transport. Raw materials, finished products & personnel during the construction and operation phase shall be done by means of existing transportation facility.

- Railway station: Jamnagar (24.04km @ENE)
- Highway: NH-947 (5.43km @S)
SH 92 (2.71km @SE)
- Airport: Jamnagar airport (19.04km @ENE)

4.2 Land form & Land Use

Details of nearby villages/town is given in Table 10.

Table 10: Details of Nearby Villages/Town

S. No.	Villages/Town	Distance in km	Direction
1.	Digvijaygram	0.86	NNE
2.	Sikka	1.03	ESE
3.	Urjanagar	1.09	SE
4.	Mungani	1.37	S
5.	Nani khavdi	4.02	ESE
6.	Gagva	4.04	SW
7.	Jogvad	6.56	SSW
8.	Sapar	7.13	ESE
9.	Bed	7.23	E
10.	Meghpar	7.94	SSW
11.	Kana chhikari	8.06	SE
12.	Moti Khavdi	8.10	N
13.	Jhakhar	9.68	SW
14.	Dera chhikari	9.76	ESE

Proposed project site is in notified industrial area; thus, land use pattern is non-agricultural and declared for the industrial activities by town planner. Environmental settings available surrounding the proposed project site are as under,

Table 11: Environmental Settings

#	Particulars	Description
1.	Forest & Marine Sanctuary	Marine National Park 2.5 km @N shown in figure 1
2.	Stream / Rivers	Sasori River at 7.0 km @E
3.	Sea	Gulf of Kutchh 23.25 km @W
4.	Water body/Pond/Lack	Lakota lake 24.52 km @ENE
5.	Hill / Mountain	There is no Hill /Mountain within 10 kms. radius of proposed project site.

6.	Nearest Villages	Digvijaygram 0.86km @NNE Sikka 1.03km @E Urjanagar 1.09km @SE Mungani 1.37km @S Nani Khavdi 4.02km @ESE Gagva 4.04km @SW
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4.3 Topography

Jamnagar, Jodiya, Khambaliya and Kalyanpur talukas are characterized by plain topography, whereas Jam Jodhpur, Lalpur and Bhanwad talukas are characterized by hilly terrains. Cliffs are found in the Dwarka taluka with height up to 30m. Barda, Alech, Gop etc. are famous hill ranges in the district. Mount Venu is the highest summit of Barda hills that attains a height of 617.1 meters. coastal dunes and sand banks run along the north and west coasts. Jamnagar, Jodiya and Kalyanpur are plain areas. Project site shown on Toposheet No. 41F/15 and 41F/11.

4.4 Existing Infrastructure (Social/Commercial)

Key infrastructures such as hospitals, schools, bank, places of worship and social/ community facilities such as park, market, playground etc. education, health care, community development, income distribution, employment and social welfare are available in nearby area of proposed project site.

4.5 Soil Classification

Soils of the Jamnagar may be broadly classified as Coastal alluvial, medium black, shallow black and hilly. The medium black and shallow black soils are the main soil type of the district, while the coastal and hilly soils are the sub-soils. The black soil is rich in mineral and organic matter and is more fertile. The medium black soils are found in Dhrol, Jamnagar, Khambaliya, and Kalyanpur talukas. These soils are generally 25 to 50 cm deep. Shallow black soils are found in Kalawad, Jam Jodhpur, Bhanwad, Okhamandal and Lalpur talukas. It is about 25cm deep. The coastal alluvial soils are found in Kalyanpur, Khambaliya, Jamnagar and Jodiya talukas. These soils are mostly saline and alkaline in nature.

4.6 Climatic data from Secondary sources

The climatic data is based on the long-term climatological tables (1951 – 1980) published by Indian Meteorological Department (IMD) Jamnagar. The Jamnagar district has semi-arid climate. Extreme temperatures, erratic rainfall and high evaporation are the characteristic features of this type of climate. The average annual normal rainfall is 573.4 mm for 30 years.

Temperature

The period from March to June is one of continuous increase in temperatures. May is generally the hottest month with a mean daily maximum temperature of about 36.4°C and mean daily minimum of about 26.2°C. The weather is intensely hot in summer and on some days the day temperature may reach up to 45°C. The highest temperature recorded is 47.8°C on 27th May 1916. From November, both day and night temperatures begin to decrease rapidly. January is generally the coldest month with the mean daily maximum temperature at about 26.3°C and mean daily minimum at about 10.7°C.

Rainfall

The distribution of rainfall in the region, which includes the study area, is uneven. Average rainfall in the region is 573 mm. About 93 percent of the annual rainfall in the region is received during the southwest monsoon months i.e. June to September. July is the rainiest month. The annual average rainfall is about 573 mm. Maximum rainfall in any one month was recorded in the month of July which was about 197.6 mm.

Humidity

Most humid conditions are found in the monsoons, followed by post-monsoons, winter and summer in that order. During post-monsoon season, average humidity remains between 55-64%.

Table 12: Average Meteorological Data of Jamnagar IMD Station (1951-1980)

Month	Mean Daily Temperature		Rainfall (mm) Monthly Total	Relative Humidity (%), Morning
	Max	Min		
January	26.3	10.7	1.7	52.5
February	29.0	12.8	1.8	54.0
March	33.0	17.4	1.1	58.0
April	35.4	21.4	0.0	62.0
May	36.4	24.9	0.9	65.5
June	35.9	26.7	91.6	70.5
July	33.0	25.7	197.6	78.0
August	31.5	24.8	180.3	80.5
September	32.2	23.5	62.0	76.5
October	34.5	21.2	28.6	62.0
November	31.8	16.7	7.0	52.0
December	27.9	12.4	0.8	52.5
Total	-	-	573.4	-
Average	32.24	19.85	-	63.7

5. PLANNING BRIEF

SDCCL has proposed to plan a captive thermal power plant capacity of 15 MW within existing premises to meet the demand of cement industry. The proposed new plant will be started after getting Environmental clearance and plant commissioning will be expected in the year 2020. Further proposed project activities will take care of all the rules and regulations of statutory authority and provide control measures and devices to achieve the standard norms. Site falls under the seismic intensity Zone IV, which is classified as Moderate Risk zone. Thus, suitable seismic coefficients accordingly shall be adopted while designing the structures to make it earthquake resistant. Transportation of raw material will be carried out through existing SH-92.

5.1 Population Projection

It is estimated that around 53 Nos. of employees will get direct / indirect employment during the operation phase of new thermal power plant.

5.2 Land use Planning

SDCCL will be using own land for the captive thermal power plant project. Land use map is shown in figure 11.

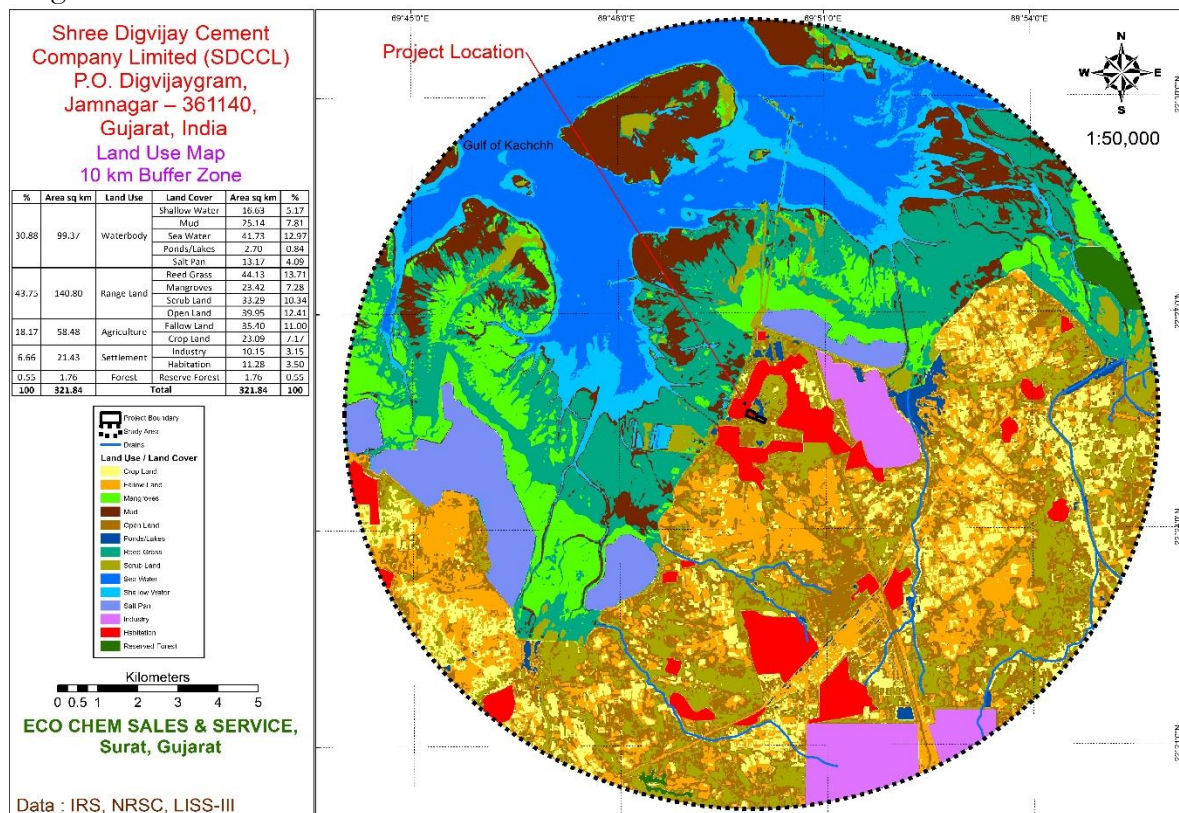


Figure 11: Land Use Map

5.3 Amenities / Facilities

All amenities/facilities required to develop new project are available in existing plant of SDCCL as well as within the colony.

Social Infrastructure available: SDCCL has developed banking facility, parks, recreation center, shopping complex, temple, post office, hospital and school etc. as part of social infrastructure.

6. PROPOSED INFRASTRUCTURE

Proposed project will require following infrastructure facilities for propose project.

Table 13: Proposed Infrastructure

S. No.	Proposed infrastructure	Description
1.	Industrial area for TPP	25000 m ²
2.	Green belt	8250 m ²
3.	Social Infrastructure	Key infrastructures such as hospitals, schools, bank, places of worship and social/ community facilities such as park, market, playground etc. education, health care, community development, income distribution, employment and social welfare are available in nearby area of proposed project site. School: SDCCL public school 0.83km @NNE Hospital: Gurukrupa Hospital 0.90km @E College: Digvijaygram college 0.93km @E
4.	Connectivity	Road: NH 947: 5.43 @S SH 92: 2.71 @SE Railway: Jamnagar railway station 24.04 @ENE Airport: Jamnagar Airport 19.04 @ENE
5.	Drinking water management	Pipeline will be used.
6.	Sewerage system	The domestic effluent of 7 KLD from the proposed plant will be treated in existing sewage treatment plant (STP) of capacity 300 KLD is in operation for treatment of sewage coming from SDCCL Township. Treated sewage from the same is reused in gardening/horticulture.
7.	Industrial waste management	No additional effluent will be sent to out of company premises.
8.	Solid waste management	Fly ash will be generated from the thermal power plant and that will be used in existing Digvijay cement plant.
9.	Power requirement & Supply source	1.8 MW Power requirements will be met through Gujarat Energy Transmission Corporation Ltd (GETCL).

7. REHABILITATION & RESETTLEMENT (R&R) PLAN

Proposed captive thermal power plant plan shall be carried out within existing premises, which is developed for industrial purpose and there is no population or local inhabitant at the proposed project site. Thus, Rehabilitation & Resettlement (R&R) Plan is not applicable to propose project.

8. PROJECT SCHEDULE & COST ESTIMATION

8.1 Project Schedule

The project will be started after getting Environmental Clearance from EAC, consent to Operate from GPCB and other statutory clearances required for.

8.2 Cost Estimation

Capital towards proposed thermal power plant development including building construction, plant machinery – purchase and commissioning, environmental management, greenbelt development etc. The overall project cost has been estimated Rs.108 .64 Cr and is summarized in table 14.

Table 14: Project Cost

S. No.	Description	Rs. (Lakhs)
1.	Land cost	-
2.	Land Development	125
3.	Building & Civil structures	1525
4.	Plant and Machinery/Engineering Cost	7464
5.	Contingency	220
6.	EMP	1500
	Total	10864

All above cost are inclusive of commissioning expenses.

8.3 Project Benefit

Environment Benefit

- Adopt water conservation, air pollution control techniques and pollution abatement measures to protect existing environment and ecology.

Financial Benefit

- Proposed new project will contribute to state and national economic growth to a measurable extent.

Social Benefit

- Approximately 53 Nos. will be employed directly during operation phase.
- All local people shall be employed as per their skills, qualifications and company's requirement during operation phase.

9. ANALYSIS OF PROPOSAL & RECOMMENDATIONS

9.1 Financial and Social Benefits

If this project comes up, it will satisfy the Demand of power and steam in their adjoining Cement units, hence will reduce the dependency on the Grid.

During the construction phase around 32 workers will be hired.

During operation phase, 53 employees will get direct employment to operate proposed thermal power plant.

The positive impacts include enhanced direct employment for technical/administrative works and indirect employment opportunities for transporters of raw material like Coal.