DOCUMENT
FOR

PUBLIC HEARING

OF

CLINKER GRINDING UNIT (2X2 MTPA)
AT
MIDC AREA NARDANA, TALUKA-SHINDKHEDE, DIST. DHULE, MAHARASHTRA

Proponent

M/S WONDER CEMENT LTD.
R.K. NAGAR, TEHSIL: NIMBAHERA
DIST : CHITTORGARH, RAJASTHAN

CONSULTANT

ENVIRO TECHNO CONSULT PRIVATE LIMITED
68, MAHAKALI NAGAR-2
NEAR MANEWADA SQUARE
NAGPUR 440 024 (MS)

ACCREDITATION FOR EIA
LISTED AT SR. NO. 45, DATED NOV. 07, 2016

JANUARY 2017

EXECUTIVE SUMMARY

M/s Wonder Cement Ltd. (WCL) has proposed to locate a clinker grinding unit at village Jatoda in Nardana MIDC industrial area of Shindkhede Taluka of Dhule district. Capacity of grinding unit will be 2x2 MTPA. Proposed project is under Category "B" as per EIA notification dated 14/09/2006 & amended on 01/12/2009.

This report is based on environmental monitoring during post monsoon season (October–December 2016). Area within 10 km of the project was surveyed. Environmental monitoring was carried out as per MOEF & CC norms.

It is proposed to locate a clinker grinding unit within Nardana MIDC industrial area near village Jatoda in Dhule district. Capacity of the unit is 2x2 MTPA and will be completed in two phases. Cement will cater to the needs of the region.

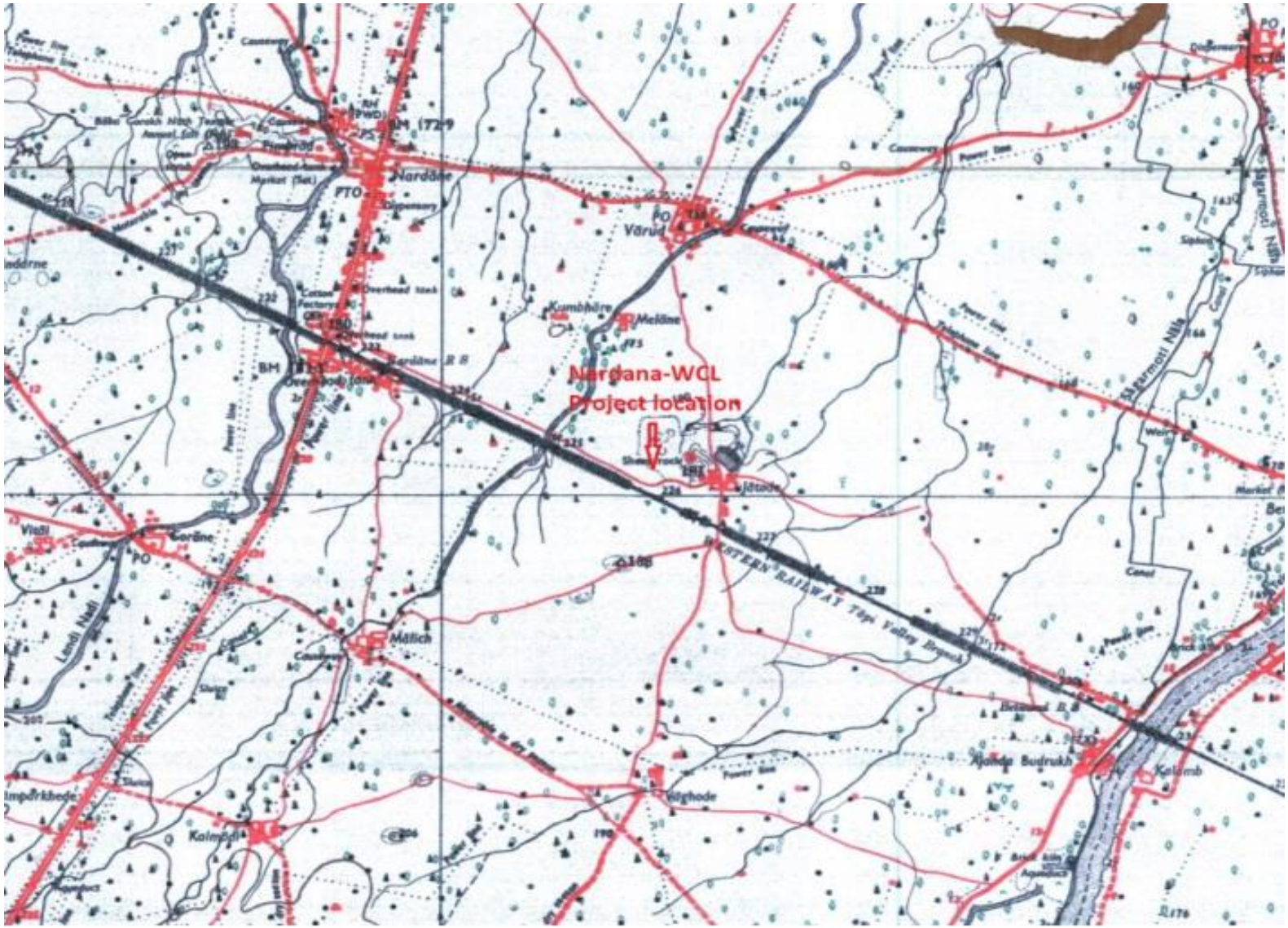
It is proposed to produce cement after grinding clinker and mixing gypsum & ash in proper proportions. There are two types of cement i.e. Portland Pozzolana cement (PPC) and Ordinary Portland cement (OPC). PPC will require clinker @ 65%, fly ash @ 30% & gypsum @ 5% by weight and OPC will need clinker @ 95%, gypsum @ 5%.

Project will be completed in two phases. Total production in Phase 1 being 2 MTPA followed by 2 MTPA in the 2nd phase.

WCL have finalized a site in MIDC area near Nardana. Location of MIDC industrial area near village Jatoda in Shindkhede taluka on S.O.I. sheet is shown in **Figure 1.** Plot no 4 in MIDC area has been allotted to WCL and is shown in **Figure 2.** Google imagery is in **Figure 3.**

There are no sensitive eco systems or water bodies within 10 km radius of MIDC area. Besides, i) blending material viz. fly ash is available, ii) assured power supply and iii) water. Market/ consumers of product are readily accessible. It is expected that about 184 personnel (skilled & unskilled) will be employed in the proposed plant.

FIGURE 1

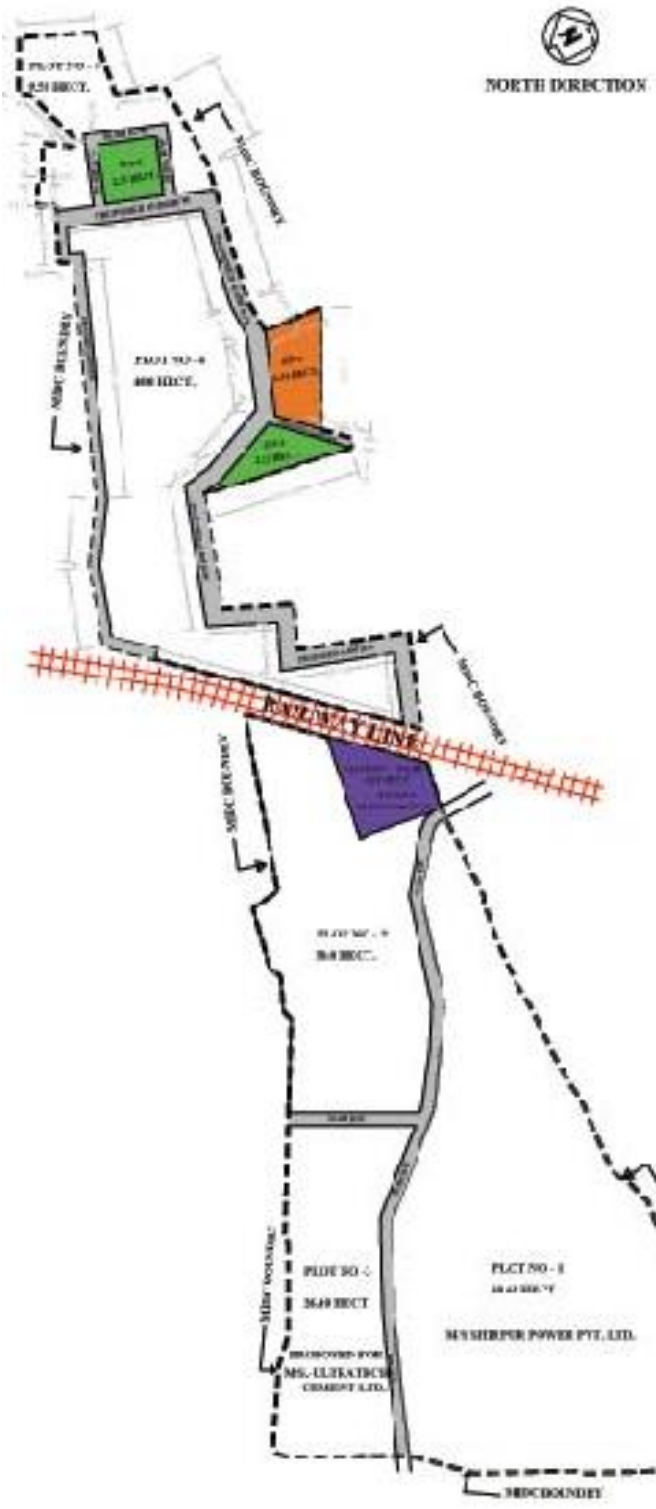


S.O.I. TOPOSHEET NO. 46 K/16

FIGURE 2

MIDC

NARDHANA (PH-I) INDUSTRIAL AREA



NARDHANA (PH-I) AREA STATEMENT

1.Total area	224.17 Hect
2.Deduction:	
a.Area of plot above 4.0 Hect	180.06 Hect.
b.Area under deep slope/nalla	NIL
c.Area under encroachment	NIL
D Plotable land(Yet to be Plan)	NIL
3.Total deduction area	180.06 Hect
4.Net area (1-3)	**44.11 Hect**
5.Required Open Space (10%)	4.41 Hect
6.Provided Open Space	4.40 Hect
7.Required Amenity (5%)	2.20 Hect
8.Provided Amenity	3.34 Hect

MIDC AREA

FIGURE 3

GOOGLE IMAGERY

It needs to be mentioned that only a clinker grinding unit and not an integrated cement plant has been proposed. WCL has chosen most energy-efficient machinery. Besides, compliance of other points mentioned by SEAC have been complied and included during baseline environmental survey, impact assessment and for management plan. These include

- Air pollution control by using bag filters & covered conveyor belts in the plant.
- AAQ monitoring at four stations in Shirpur power plant, down wind direction of the plant and miscellaneous as per local activities.
- MIDC has sanctioned water supply @ 500 m^3/day which is a part of agreement and water balance for 500 m^3/day
- Details of proposed STP and suitable waste management for canteen waste at the plant.
- Description of environment friendly 6.5 MW DG.

FIGURE 4

SURVEY OF INDIA TOPO SHEET NO. 46 K/16

Cement production at the plant will be associated with handling of clinker, gypsum and fly ash. Daily requirement of clinker, fly ash and gypsum requirement for production of cement @ 5797 T/day, will be clinker: @ 3768 T/day; fly ash @ 1739T/day and mineral gypsum @ 290 T/day.

Ultimate water requirement will be @ 500 $m^{3/}$/day for process drinking, dust control and cooling purposes. A 3-day storage water reservoir/tank is proposed.

Dry process for cement production has been selected.

Material flow is shown schematically in the following figure and process flow digramme is shown in **Figures 5**. Project layout is given in **Figure 6**.

Material flow

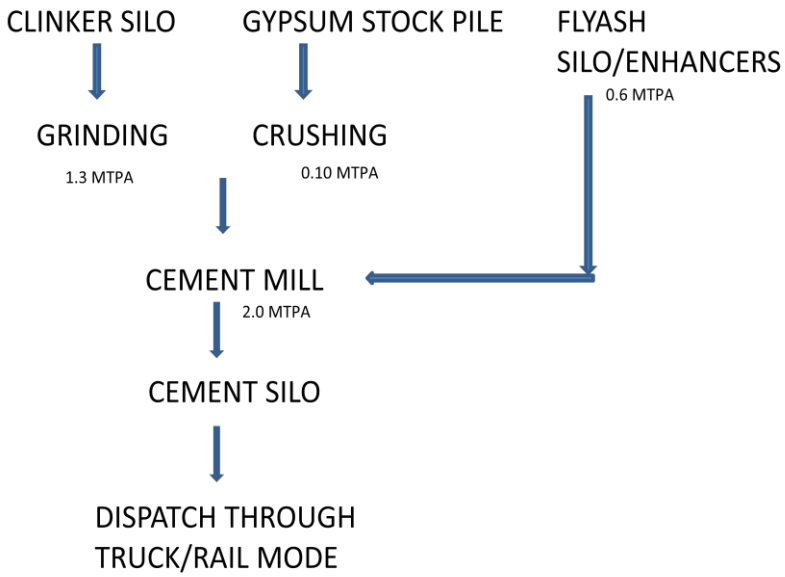
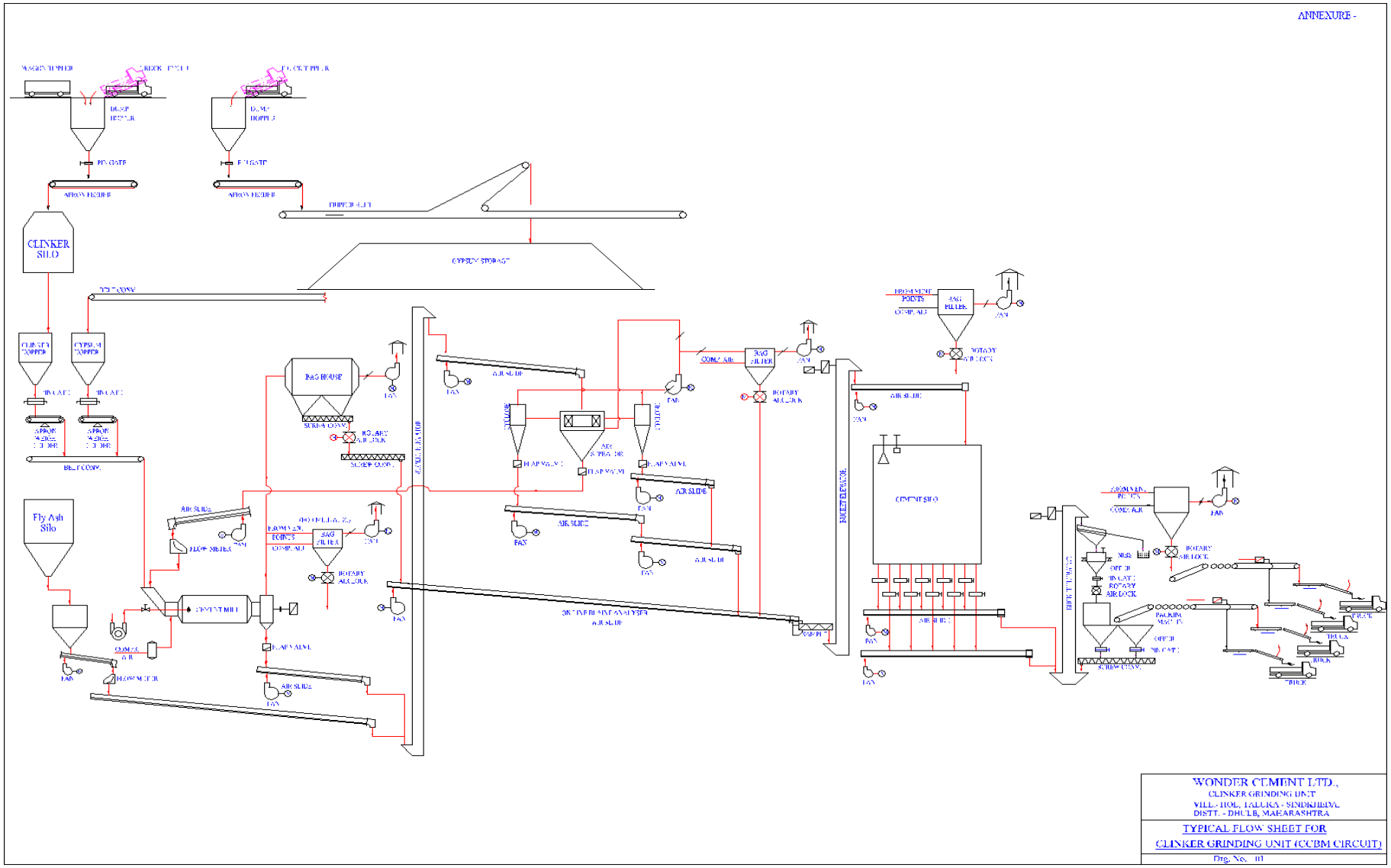
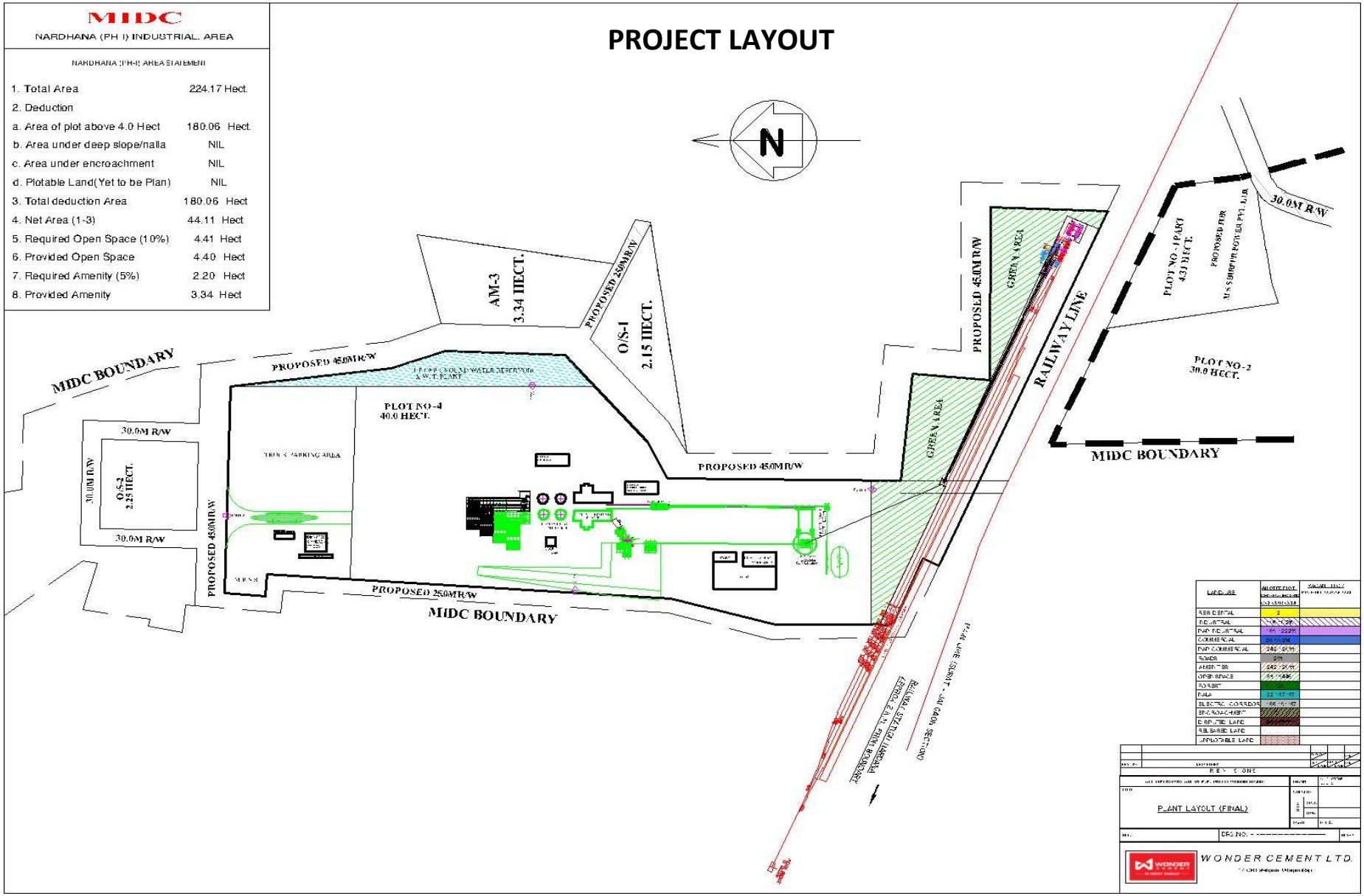


FIGURE 5



Process flow diagramme

FIGURE 6


MIDC
NARDHANA (PH I) INDUSTRIAL AREA
NARDHANA (PH-I) AREA STATEMENT
1. Total Area 224.17 Hect.
2. Deduction
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4. Net Area (1-3) 44.11 Hect
5. Required Open Space (10%) 4.41 Hect
6. Provided Open Space 4.40 Hect
7. Required Amenity (5%) 2.20 Hect
8. Provided Amenity 3.34 Hect
PROJECT LAYOUT
N
AM-3
3.34 HECT.
PROPOSED 25.0M R/W
O/S-1
2.15 HECT.
PROPOSED 45.0M R/W
GREEN AREA
RAILWAY LINE
PLOT NO - 1 PART
4.31 HECT.
PROPOSED FOR
M/S SHRIPATI POWER PVT. LTD.
30.0M R/W
PLOT NO - 2
30.0 HECT.
MIDC BOUNDARY
MIDC BOUNDARY
PROPOSED 45.0M R/W
PLOT NO -4
40.0 HECT.
TRUCK PARKING AREA
PROPOSED 45.0M R/W
30.0M R/W
O/S-2
2.25 HECT.
30.0M R/W
PROPOSED 45.0M R/W
PROPOSED 25.0M R/W
MIDC BOUNDARY
PLANT LAYOUT (FINAL)
WONDER CEMENT LTD.

Dust control at silos, transfer points, stock yards and in the plant area will be by bag filters, proper ventilation with stacks and water sprinkling. There appearance will be as shown in following photographs of the "state of the art" control equipments being used by WCL at Nimbahera plant. and of those proposed at the unit are given below:

Bag filters

Fly ash silo

Transfer points

Clinker silo

Separate truck yard

Water sprinkling

Present appearance of MIDC area is shown in **Plates 1- 2**.

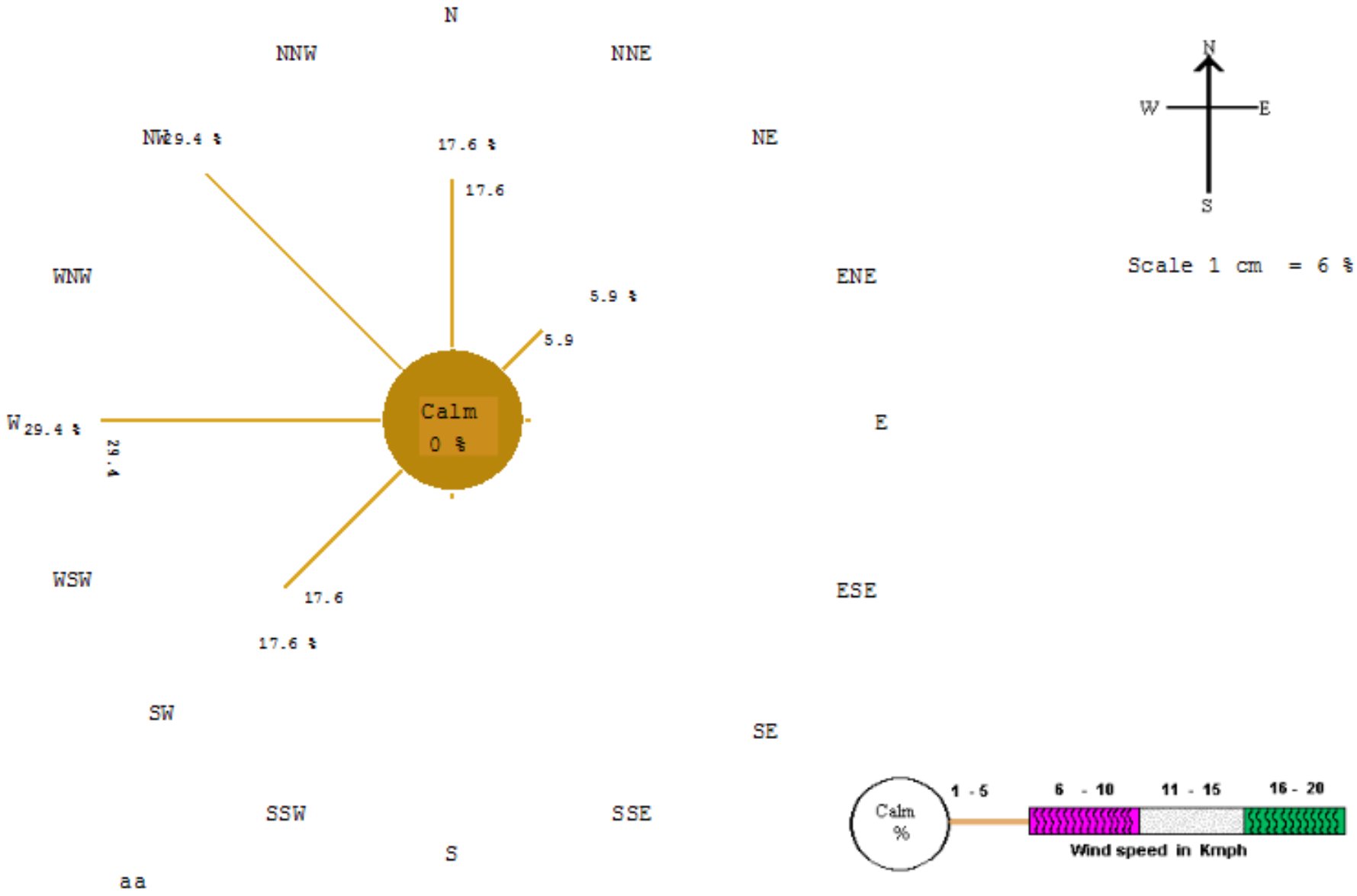
Plate 1

Plate 2

Surveys for ambient air quality, noise levels, water quality, socio economic surveys etc. were conducted during post monsoon season (October-December) 2016. At present there are no industries within 10 km area.

Regional data for annual wind pattern recorded at Dhule air port showed that predominant wind direction is in order of frequency is W > E- ; W>E ; W SW>ENE ; W NW> SE ; E NE > W NW ; E > W ; ESE -> W NW. This wind pattern for area was used to decide sampling stations along with wind rose for the monitoring period which is given in **Figure 7**.

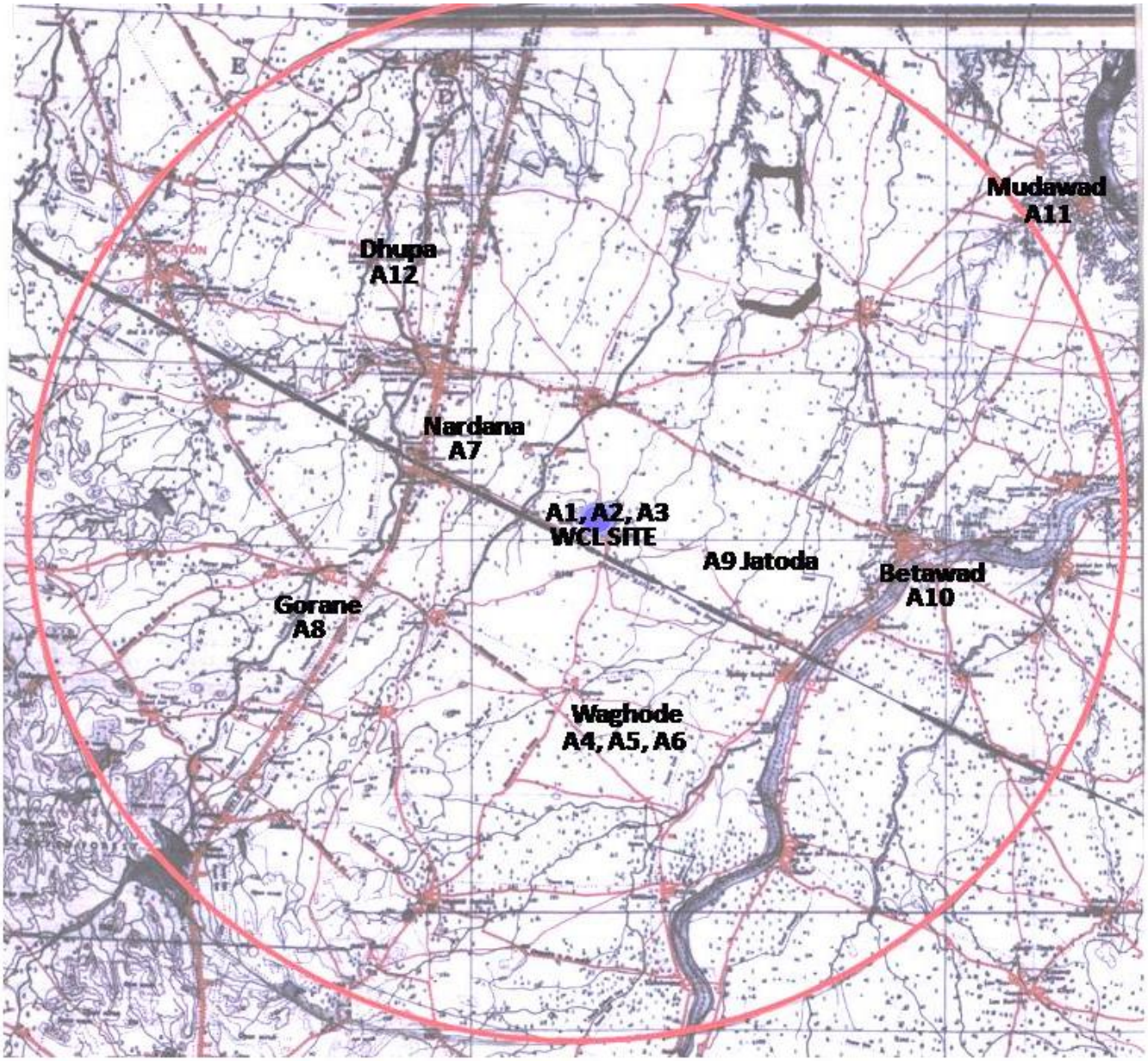
Figure 7



WIND ROSE – MONITORING PERIOD

Ambient air quality monitoring stations are shown in **Figure 8.**

FIGURE 8



Sampling code	Name of sampling station	Sampling code	Name of sampling station
A1-A3	Project site	A9	Jatoda
A4-A6	Shirpur TPS - Waghoda	A10	Betawad
A7	Nardana	A11	Mudawad
A8	Gorane	A12	Dhupa

AAQ MONITORING STATIONS

Ambient air quality recorded at AAQ stations during the survey is included in **Table 2**.

Table 2: Ambient air quality monitoring data

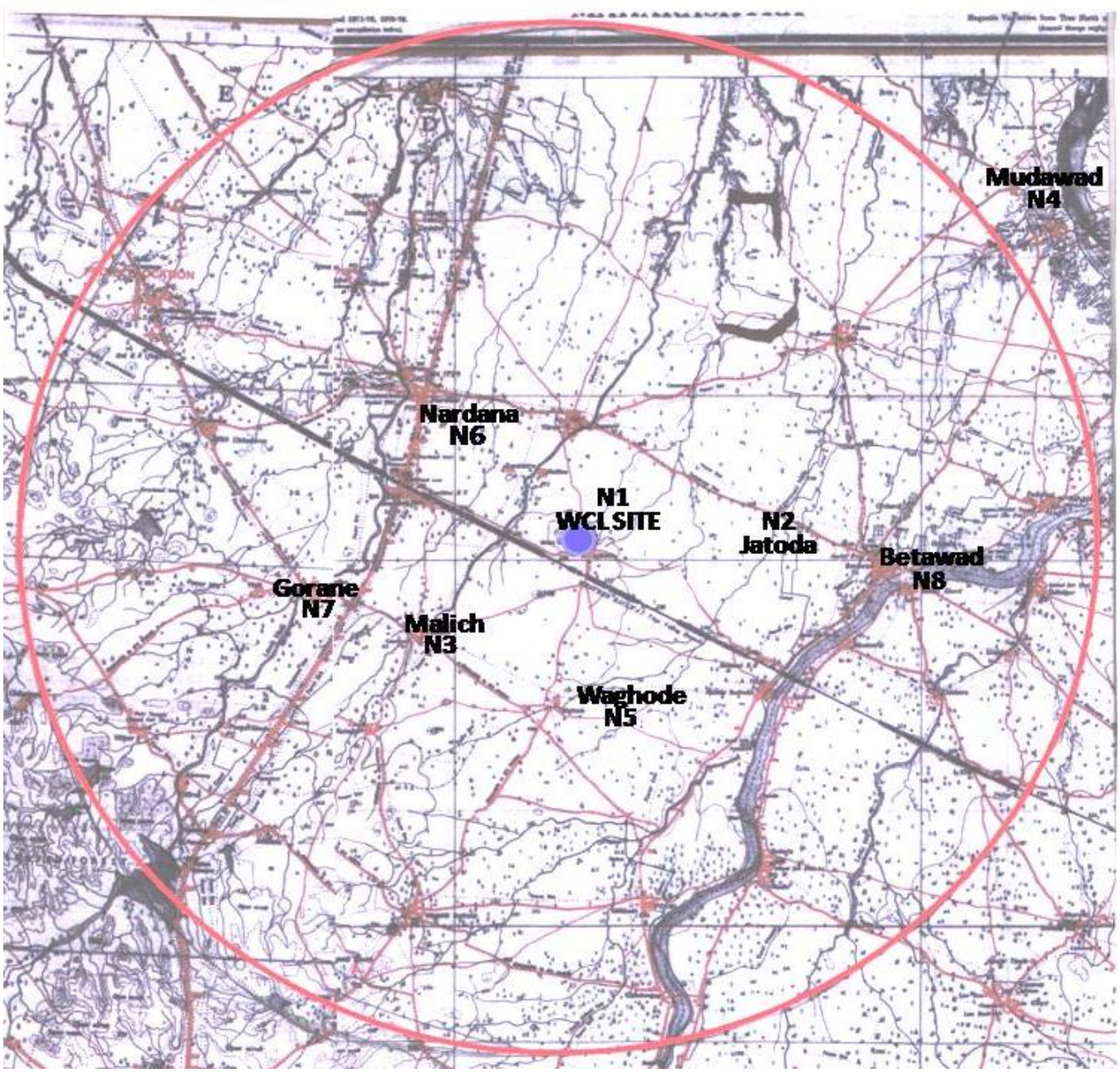
A1: South of project site				
Week	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NOx µg/m^3
Minimum	42.6	8.3	6.0	4.6
Maximum	53.6	11.6	7.6	6.7
Average	48.7	9.8	6.5	5.7
98 percentile	53.3	11.6	7.5	6.6
A2: Project site				
Minimum	43.7	7.8	5.8	5.2
Maximum	58.3	12.3	6.4	7.3
Average	51.7	10.0	6.1	6.2
98 percentile	58.3	12.3	6.4	7.2
A3 : Project site				
Minimum	43.7	4.3	6.3	7.0
Maximum	63.6	9.2	9.8	12.1
Average	53.4	5.9	7.9	8.6
98 Percentile	62.7	8.8	9.8	12.0
A4 : Shirpur TPS site – Waghoda				
Minimum	37.6	1.4	5.6	5.2
Maximum	55.7	13.4	10.3	7.3
Average	45.4	8.6	9.2	6.2
98 percentile	54.5	12.8	10.3	7.2
A5 : Shirpur TPS site – Waghoda				
Week	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3
Minimum	39.2	1.6	5.1	5.2
Maximum	52.9	12.3	7.9	7.3
Average	46.7	9.2	6.7	6.2
98 Percentile	52.8	12.0	7.7	7.3

A6 : Shirpur TPS site – Waghoda				
Minimum	29.8	5.2	4.8	5.0
Maximum	48.6	9.6	6.5	7.6
Average	38.7	7.2	5.9	6.1
98 percentile	47.8	9.1	6.4	7.5
A7 : Nardana				
Minimum	39.4	8.0	4.9	5.1
Maximum	59.6	13.2	6.4	7.7
Average	50.2	10.0	5.6	5.9
98 Percentile	58.1	12.9	6.3	7.6
A8 : Gorane				
Minimum	31.2	5.8	4.3	5
Maximum	48.6	9.6	11.6	7.3
Average	38.9	7.3	8.9	5.8
98 percentile	47.8	9.4	11.3	7.1
A9 : Jatoda				
Minimum	41.5	7.4	5.3	5.2
Maximum	59.3	11.6	8.2	7
Average	51.1	9.5	7.0	5.9
98 percentile	59.1	11.6	8.2	7.0
A10 : Betawad				
Minimum	30.7	6.0	6.2	5.0
Maximum	57.6	12.4	9.8	7.1
Average	46.2	8.7	8.3	5.8
98 percentile	56.8	11.9	9.7	7.0
A11 : Mudawad				
Minimum	38.6	7.6	5.1	5.0
Maximum	52.6	11.4	9.3	6.7
Average	45.6	9.2	7.4	5.7
98 percentile	52.4	11.3	9.3	6.6
A12 : Dhupa				
Minimum	34.2	6.2	5.2	6.1
Maximum	56.4	11.2	6.6	8.6
Average	42.8	8.0	5.8	7.5
98 percentile	56.4	10.8	6.5	8.5

Noise

Ambient noise levels were recorded at eight places viz. project area, Jatoda, Malich and Mudawad. There are no industrial noise sources. Noise levels were recorded at one hr interval 24 hours. Readings were used to compute Ld, Ln and Ldn.

F IGURE 9



NOISE LEVEL MONITORING STATIONS

Table 3: Noise Levels dB(A)

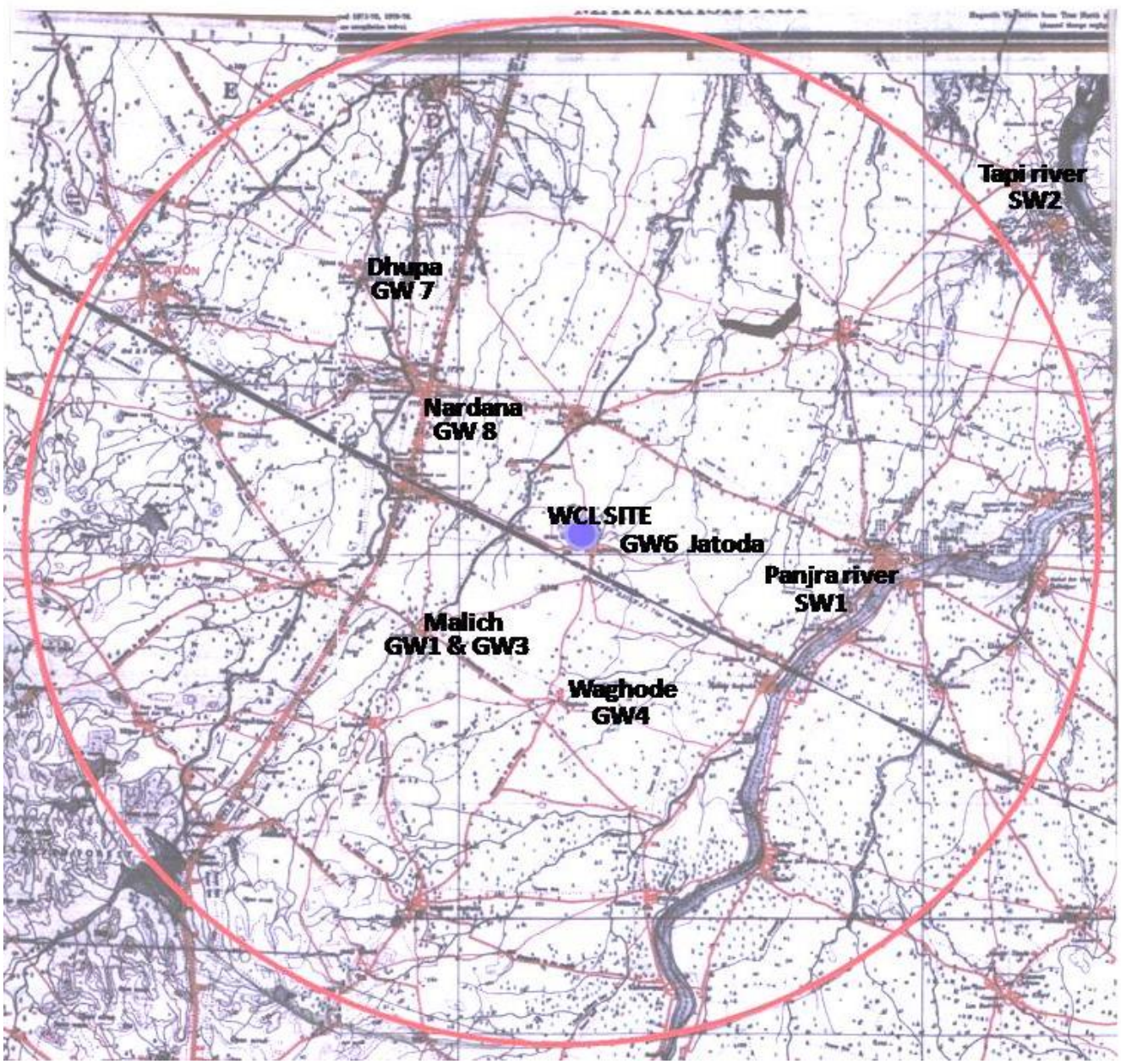
Time in hrs.	Sampling points			
	N1 Project area	N2 Jatoda	N3 Malich	N4 Mudawad
Range	41.3-48.3	41.9-55.5	39.9-61.8	36.2-55.4
Ld	45.5	51.0	55.8	49.6
Ln	45.5	46.7	40.8	40.7
Ldn	51.9	54.1	54.5	50.1

	N5 Waghode	N6 Nardhana	N7 Gorane	N8 Betawad
Range	30.2-46.4	37.6-53.6	32.4-45.2	32.0-55.6
Ld	43.0	48.9	43.0	50.1
Ln	36.2	42.1	36.9	40.4
Ldn	44.5	50.4	44.9	50.2

There are no drains in the MIDC area. Area is flat. The only surface source within the buffer zone is the river Panjara. Other surface sources in buffer zone are the river Tapi and the river Arunavati. Samples were collected from these sources.

Groundwater sources were collected from dug wells at Malich & Varshi gram panchayat well. Samples were also collected from bore wells at Malich school, a bore well sunk in the bed of Panjara river at Waghode, Dahiwad and at Jatoda (**Plate 3**). These sources have been shown in **Figure 10.**

Figure 10



WATER SAMPLING STATIONS

Water quality in these sources is given in **Tables 4, 5 & 6**.

Table 4 : Surface water quality

Sr. No	Parameters	Unit	IS-10500-1991		Sampling stations		
			Desir-able	Permi-ssible	SW 1 River Panjra	SW2 River Tapi	SW3 River Arunawati
1.	Ambient Temperature	°C			28	28	28
2.	Colour	Hazen	05	25	CL	CL	CL
3.	Odour		UO	UO	UO	UO	UO
4.	Taste		AG	AG	-	-	-
5.	Turbidity	NTU	05	10	<2	7	10
6.	pH		6.5-8.5	NR	8.5	7.9	7.9
7.	Dissolved oxygen	mg/L	*	*			
8.	BOD	mg/L	*	*	<5	<5	<5
9.	COD	mg/L	*	*	<8	<8	<8
10.	Elect. conductance	µS	*	*	498	433	512
11	T. Dissolved Solids	mg/L	500	2000	336	293	319
12.	T. Suspended Solids	mg/L	*	*	<2	11	15
13.	Alkalinity as $CaCO_3$	mg/L	200	600	144	114	146
14.	Hardness as $CaCO_3$	mg/L	300	600	120	180	158
15.	Calcium as Ca	mg/L	75	200	25	42	35
16.	Magnesium as Mg	mg/L	30	100	14	18	17
17.	Chlorides as Cl	mg/L	250	1000	26	25	18
18.	Sulphate as SO_4	mg/L	200	400	16	15	15
19.	Nitrate as NO_3	mg/L	45	100	1.5	0.84	0.67
20.	Fluoride as F	mg/L	1.0	1.5	0.5	0.8	0.8
21.	Iron as Fe	mg/L	0.3	1.0	0.07	0.08	0.08
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	BDL	BDL	BDL
24.	Manganese as Mn	mg/L	0.1	0.3	BDL	BDL	BDL
25	Boron	mg/L	1.0	5.0	NIL	NIL	NIL
26.	Oil & Grease	mg/L	0.01	0.05	Nil	Nil	Nil
27.	Coliforms	MPN/ 100ml	--	--	93	75	64
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	NIL	NIL	NIL
30.	Chromium	mg/L	0.05	NR	NIL	NIL	NIL
31.	Arsenic	mg/L	0.05	NR			
32.	Pesticides	mg/L	ABSENT	0.001	BDL	BDL	BDL

NR : No Relaxation * : No specific limit prescribed CL : Colourless UO : Unobjectionable
AG : Agreeable BDL : Below detectable level

Table 5: Dug well water quality

Sr. No.	Parameters	Unit	IS-10500-1991		Sampling stations			
			Desirable	Permissible	GW1 Malich School bore well	GW2 Gram Panchayat Varshi	GW3 Malich well	GW4 Waghode
1.	Ambient Temperature	°C			27	27	26	27
2.	Colour	Hazen	05	25	CL	CL	CL	CL
3.	Odour		UO	UO	UO	UO	UO	UO
4.	Taste		AG	AG	-	-	-	-
5.	Turbidity	NTU	05	10	<2	<2	<2	<2
6.	pH		6.5-8.5	NR	8.0	8.1	8.0	8.0
7.	Dissolved oxygen	mg/L	*	*				
8.	BOD	mg/L	*	*	<5	<5	<5	<5
9.	COD	mg/L	*	*	<8	<8	<8	<8
10.	Electrical conductance	µS	*	*	1640	1494	1298	684
11	T. Dissolved Solids	mg/L	500	2000	1095	1183	917	401
12.	T. Suspended Solids	mg/L	*	*	<2	<2	<2	<2
13.	Alkalinity as $CaCO_3$	mg/L	200	600	268	360	270	130
14.	Hardness as $CaCO_3$	mg/L	300	600	330	340	300	150
15.	Calcium as Ca	mg/L	75	200	66	48	50	33
16.	Magnesium as Mg	mg/L	30	100	40	53	42	16
17.	Chlorides as Cl	mg/L	250	1000	246	220	152	34
18.	Sulphate as SO_4	mg/L	200	400	93	56	71	18
19.	Nitrate as NO_3	mg/L	45	100	7.1	7.1	5.6	1.0
20.	Fluoride as F	mg/L	1.0	1.5	0.9	1.1	1.1	0.5
21.	Iron as Fe	mg/L	0.3	1.0	Traces	0.1	0.14	0.14
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	BDL	BDL	BDL	BDL
24.	Manganese as Mn	mg/L	0.1	0.3	BDL	BDL	BDL	BDL
25	Boron	mg/L	1.0	5.0	NIL	NIL	NIL	NIL
26.	Oil & Grease	mg/L	0.01	0.05	NIL	NIL	Nil	Nil
27.	Coliforms	MPN/ 100ml	--	--	460	1100	210	150
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	NIL	NIL	NIL	NIL
30.	Chromium	mg/L	0.05	NR	NIL	NIL	NIL	NIL
31.	Arsenic	mg/L	0.05	NR			NIL	NIL
32.	Pesticides	mg/L	ABSENT	0.001			Absent	Absent

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AG : Agreeable BDL : Below detectable level

Table 6 : Bore well water quality

Parameters	Unit	IS-10500-1991		Sampling stations			
		Desir-able	Permi-ssible	GW 5 Dahiwad	GW 6 Jatoda	GW 7 Dhupa	GW 8 Nardhana
Ambient Temp.	°C			26	26	25	26
Colour	Hazen	05	25	CL	CL	CL	CL
Odour		UO	UO	UO	UO	UO	UO
Taste		AG	AG	-	-	-	-
Turbidity	NTU	05	10	<2	<2	<2	<2
pH		6.5-8.5	NR	7.9	6.8	7.1	6.9
Dissolved oxygen	mg/L	*	*				
BOD	mg/L	*	*	<5	<5	<5	<5
COD	mg/L	*	*	<8	<8	<8	<8
Elec. conductance	µS	*	*	613	877	678	729
T. Dissolved Solids	mg/L	500	2000	483	537	467	513
T. Suspended Solids	mg/L	*	*	<2	<2	<2	<2
Alkalinity as $CaCO_3$	mg/L	200	600	108	216	134	167
Hardness as $CaCO_3$	mg/L	300	600	118	306	214	237
Calcium as Ca	mg/L	75	200	35	74	27	62
Magnesium as Mg	mg/L	30	100	7	29	11	23
Chlorides as Cl	mg/L	250	1000	103	54	62	54
Sulphate as SO_4	mg/L	200	400	49	54	38	42
Nitrate as NO_3	mg/L	45	100	Nil	6.6	4.3	4.9
Fluoride as F	mg/L	1.0	1.5	1.4	1.7	1.2	0.9
Iron as Fe	mg/L	0.3	1.0	0.1	0.11	0.10	0.10
Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL	BDL
Zinc as Zn	mg/L	5.0	15	BDL	BDL	BDL	BDL
Manganese as Mn	mg/L	0.1	0.3	BDL	BDL	BDL	BDL
Boron	mg/L	1.0	5.0	NIL	NIL	NIL	NIL
Oil & Grease	mg/L	0.01	0.05	Nil	Nil	Nil	Nil
Coliforms	MPN/ 100ml	--	--	210	121	150	121
Cadmium	mg/L	0.01	NR	BDL	BDL	BDL	BDL
Lead	mg/L	0.05	NR	NIL	NIL	NIL	NIL
Chromium	mg/L	0.05	NR	NIL	NIL	NIL	NIL
Arsenic	mg/L	0.05	NR	NIL	NIL	NIL	NIL
Pesticides	mg/L	ABSENT	0.001	Absent	Absent	Absent	Absent

NR : No Relaxation * : No specific limit prescribed; CL : Colourless
UO : Unobjectionable AG : Agreeable BDL : Below detectable level

Findings of hydrogeology investigations of this tehsil are abstracted in **Table 7** indicated that there is a scope for development of ground water sources.

Table 7: Abstract of hydrogeology report* for Shindkhede tehsil:

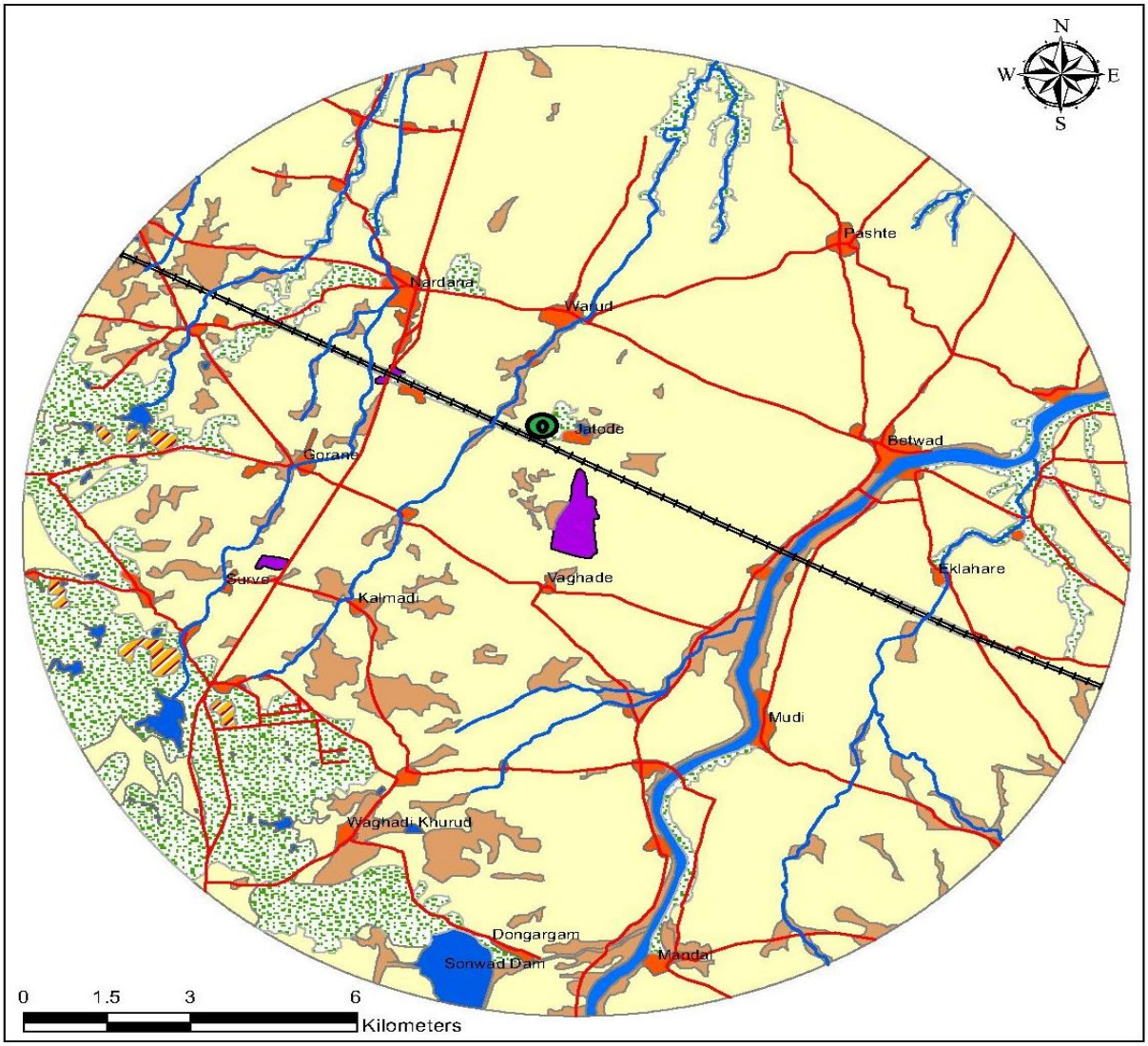
1	Net G.W availability	19503 .12 ha. m
2	Annual G.W draft	7887.4 ha. m
3	Draft for domestic & industrial use	405.97 ha. m
4	Total draft for all uses (2+3)	8293.37 ha. m
5	Provision for domestic & industrial use up to 2025	823.11 ha. m
6	Net G.W. availability for irrigation	10897.09 ha. m
7	G.W. development stage	42.52 %

* source CGWB report

Present land- use features of the buffer zone are shown in the satellite imagery in Figure 3. This figure shows that there is some area shown as industry which is the thermal power plant which is not operational. Land use and land cover map of the study area from a satellite imagery is shown in **Figure 11.** It was interpreted by an expert and break up of land use is given as "legend" in this figure.

FIGURE 11

Land Use/ Land Cover Map of Study Area



Legend

- Crop Land
- Fallow Land
- Industry
- Land with Scrub
- Mine/Quarry
- Pond/Lakes
- River
- Settlement
- Project Site
- Drainage
- Railway
- Road

Project Name :

CEMENT GRINDING UNIT @ 2 X 2 MTPA

Client Name :

WONDER CEMENT LTD.

Prepared By :

Fauna /flora:

MIDC area is not a part of any forest. It does not provide suitable habitat for wild life. Common domestic animals are found. Field rats, cats, dogs are seen. Trees like babhool, neem, mangoes are scanty over the terrain.

Tree plantation/green cover will be created along the compound wall and over vacant space after erection of plant and machinery.

Water balance is given in **Table 8**.

Table 8 : Water Balance -Nardana (m^3/day)

particular	Requirement	Consumption	Losses (Evapor-ation, blow down, drft)	Waste-water	Recycle	Net fresh water intake /day
Process	220	220	220	0	0	
Cooling	11017	203	203	10814	10814	
Domestic	50	40		10	10	
Greenbelt	20	20	20	0	0	
Others (dust suppression/ fire etc.)	30	30	30	0	0	
Total	11337	513	473		10824	513

All figures in m^3/day.

Conservation /rain water harvesting:

Run off from the area:

Annual average rainfall in Dhule region is 674 mm. Presuming this figure for MIDC area, total rainfall over WCL plot (44.11 ha) would be 0.29 Mm^3. Run off rate would be 0.72 m^3 /sec when computed by rational method Q = C. I. A , where C is peak run off rate in m^3/s , C is run off coefficient (0.5) for the soil , I average rainfall intensity (0.5 m/hr), A is drainage area (app.44 ha).

Storm water drains will be designed to collect the runoffs from vacant space and store it appropriately.

Provision for roof top rain water harvesting and to store it appropriately will be made.

A separate cell will be formed to look after i) statutory compliances, ii) effective performance of control equipment, iii) work place environment etc.

Rehabilitation and resettlement will not be required. Project activities will start after E.C. and statutory permissions as given in **Table 9** below..

Table 9 : Tentative budget

Item	Amount, Rs. Lakhs
Land /site development	2,828
Civil works & structures	11,086
Plant, machinery & electrical	15,710
Technical know- how fees	100
Training	50

Miscellaneous, fixed assets, power distribution	6,651
Pre operative expenses	4,179
Contingencies	1,926
Margin money	2,479

Project will be completed in 18 months after all regulatory approvals. Capital cost for environment protection will be Rs. 7 crores. It will include cement mill bag filter, bag filters for de-dusting of storages & auxiliaries at different sections and bag filters for de-dusting of all feed and transfer points.

WCL has decided to operate the plant in environmentally compatible manner. In order to ensure this approach to cement production WCL will

- select proper personnel
- study individual's concern /interest in environment during placement to section and designate with responsibility for environment in his respective work place
- Update their knowledge towards environment management by deputation to training
- Conduct training programmes for a) skilled, b) unskilled, c) supervisory and d) managerial levels indicating individual's responsibility to environment in the organized sector. Pogrammes will highlight legal responsibilities of individuals and WCL.